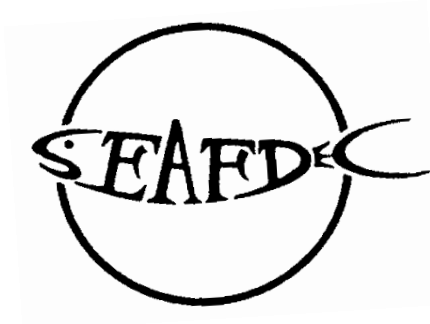


**REPORT OF
THE THIRTY-NINTH MEETING OF THE PROGRAM COMMITTEE
OF THE SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER**

**Yogyakarta, Indonesia
28-30 November 2016**



**THE SECRETARIAT
SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER**

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EXECUTIVE SUMMARY

The Thirty-ninth Meeting of the Program Committee of the Southeast Asian Fisheries Development Center (SEAFDEC) was held in Yogyakarta, Indonesia from 28 to 30 November 2016 and hosted by the Inland Fishery Resources Development and Management Department (IFRDMD). The Meeting reviewed the programs implemented by SEAFDEC in 2016 and scrutinized the programs to be implemented in 2017 to ensure that these have been formulated and implemented in line with the priorities and needs of the Member Countries. The list of SEAFDEC Programs and Activities for 2016-2017 appears as *Appendix 1*. The Meeting was chaired by the Secretary-General of SEAFDEC in his capacity as the Chairperson of SEAFDEC Program Committee.

The Meeting took note of the progress and achievements made by SEAFDEC in the implementation of the **Program under the FCG/ASSP Mechanism** in 2016, which comprises twenty-three (23) projects, 21 of which have been categorized under five Program Thrusts: 1) Developing and promoting responsible fisheries for poverty alleviation and food security; 2) Enhancing capacity and competitiveness to facilitate international and intra-regional trade; 3) Improving management concepts and approached for sustainable fisheries; 4) Providing policy and advisory services for planning and executing management of fisheries; and 5) Addressing international fisheries-related issues from a regional perspective; and two under the “Special Project”. In addition, the Program Committee noted the completion in 2016 of one project. After the deliberations, the Program Committee approved the implementation of the programs, and provided recommendations summarized as follows:

Program Thrust 1: Developing and Promoting Responsible Fisheries for Poverty Alleviation and Food Security:

1. Human Resources Development (HRD) for Sustainable Fisheries

- TD to consider the lessons learned from the project implementation in the AMSs in continuing the implementation of the project
- TD to share lessons learned from the activities at pilot-learning sites in Cambodia, Viet Nam and Myanmar, with the other AMSs
- TD to involve EAFM trainers of Malaysia in the planned activities in Myanmar and other countries in the future, where the experience of Malaysia could be shared
- TD to mobilize the experiences and lessons learned from this project in exploring the ways and means of strengthening the capacity of the AMSs in creating alternative livelihoods for small-scale fishers
- Myanmar to coordinate with TD in the implementation of relevant activities at the project-learning site in Myanmar
- TD to revisit the activities workplans to ensure that the project objective on “strengthening knowledge and skills of the national officers in dealing with the sustainable fisheries development in all aspects” is achieved
- TD to highlight and compile some significant findings from the project implementation during 2013 to 2016 and share such information with the AMSs
- TD to cooperate with other relevant regional initiatives on this aspect, *e.g.* FAO/GEF, Sweden, USAID-Oceans, in the formulation and implementation of workplans taking into consideration the abovementioned recommendations

2. Optimizing Energy Use/Improving Safety Onboard in Fishing Activities

- Japan to conduct training for trainers on safety at sea and energy saving in Malaysia, with trainers to be provided by Japan and funding to be secured from various sources, *e.g.* JTF etc.
- TD to establish clear goals and indicators of achievements of the project (to include trawls and seines)
- TD to explore other funding sources for the project activity on vessels design to be carried out beyond 2017
- TD to come up with a documentation of the techniques on energy saving based on the outputs of the activities

- TD to mobilize the results from studies on carbon footprints for tuna capture fisheries conducted by Indonesia for the improvement of the project activities, especially in minimizing the use of energy in capture fisheries
- TD to collaborate with the Philippines in the implementation of this project taking into consideration the experiences of the Philippines in promoting safety at sea and optimizing energy for small-scale fishing vessels, especially fiberglass fishing vessels
- TD to mobilize the information from updates and progress on ASEAN activities on climate change mitigation and adaptation measures to improve the implementation of this project
- TD to summarize the major achievements of the project for dissemination to the Member Countries
- SEAFDEC to provide assistance to Malaysia on improvement of safety at sea and working conditions of fishers onboard fishing vessels, to enable the country to comply with international requirements

3. Promotion of Sustainable Fisheries Resources Enhancement Measures in Critical Habitats/Fishing Grounds in Southeast Asia

- TD to include capacity building activities on monitoring and evaluation of the effectiveness of fisheries resources enhancement designs/measures developed by the project, and to improve scientific monitoring techniques for resource/habitat enhancement
- TD to consider merging some of the activities with the fisheries *refugia* project to optimize allocation of resources
- TD to continue the activity in Lao PDR in 2017 as follow-up on the previous activities conducted under the project
- Malaysia to collaborate with TD in a joint research particularly in comparing the efficiency between FADs and ARs, and to share information on its experiences and lessons learned in designing FADs
- TD to include Myanmar in the implementation of this project through the country's participation in relevant training courses
- Indonesia to share with TD and other AMSs the experiences gained from the country's research institutes on stock enhancement of inland fisheries

4. Environment-friendly, Sustainable Utilization and Management of Fisheries and Aquaculture Resources

- AQD to share the results from laboratory research work implemented under the activity on "Use of Plant-based Protein Source in Tilapia Feeds for Improved Production Traits" with the Member Countries
- AQD to incorporate the experience of Viet Nam on rice-shrimp farming systems in relevant training courses to be conducted by AQD as this could serve as model for climate change adaptation measures in aquaculture
- AQD to consider conducting collaborative research with national agencies of Malaysia on research and training in aquaculture
- AQD to share the results of the activity on "Use of Plant-based Protein Sources in Tilapia Feeds for Improved Production Traits" as well as those from the activity on "Appropriate Transport and Acclimation Strategies of Seashorses" with Malaysia
- AQD to extend support for the participation of Malaysia in training courses particularly on breeding of commercial aquatic species

5. Enhancement of Sustainability of Catadromous Eel Resources in Southeast Asia

- Member Countries that have eel industry, to monitor and record the annual and monthly data from wild caught eels and from eel aquaculture for compilation of long-term statistics on eel resources
- IFRDMD to support the data recording system of Myanmar for the country to come up with better information on the trends of eel stocks, and to provide technical assistance to Myanmar on conservation and management of eels as well as in addressing eel farming issues

6. **Promotion of Responsible Utilization of Inland Fisheries in Southeast Asia**
 - TD to include Viet Nam in the implementation of the “Study on Co-management and Rights-based Fisheries Management Applicable for Inland Fisheries in the Region” to enable the country to share its experiences on inland fisheries management
 - IFRDMD to compile relevant information on inland capture fisheries in the region and to come up with a publication on inland fisheries profile of the Southeast Asian region
 - SEAFDEC to make reference to the “2015 Rome Declaration: 10 Steps to Responsible Inland Fisheries” in formulating programs for the sustainable development of inland fisheries in the Southeast Asian region

7. **Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management**
 - MFRDMD to coordinate with concerned participating countries in the capacity building activities for small-scale fishers to be carried out in Brunei Darussalam, Indonesia and Malaysia

Program Thrust II: Enhancing Capacity and Competitiveness to Facilitate International and Intra-regional Trade

8. **Chemical and Drug Residues in Fish and Fish Products in Southeast Asia - Biotoxins (ASP, AZA and BTX) and Harmful Algal Bloom (HABs) in the ASEAN region**
 - MFRD to extend the conduct of biotoxins monitoring surveys in other areas of Myanmar, and to consider the participation of Myanmar in future relevant training courses
 - MFRD to include Malaysia during the training course on identification of common harmful algal bloom species (HABs)
 - MFRD to come up with a handbook on protocols for biotoxins monitoring surveys that could serve as reference for the Member Countries

9. **Cold Chain Management of Seafood**
 - MFRD to share the results of the project among the Member Countries as well as finalize the Guidelines on Cold Chain Management for Seafood during the end-of-project seminar

10. **Reinforcement and Optimization of Fish Health Management and the Effective Dissemination in the Southeast Asian Region**
 - AQD to include Malaysia in the activities related to the establishment of protective measures against persistent and emerging parasitic diseases of tropical fish, epidemiology of the EMS/APHND, technology extension and demonstration, sharing of information, and to consider the participation of Malaysian representatives in the training course in Lao PDR
 - AQD to continue conducting training courses on fish health management in Myanmar in 2017 considering that the occurrence of aquatic animal diseases in the country could be escalated by climate change
 - AQD to involve Thailand in activities on epidemiology of the EMS/AHPND, and on technology extension and demonstration
 - AQD to exchange information on fish health management with the ASEAN Network on Aquatic Animal Health Centre (ANAAHC) to improve the implementation of this project

Program Thrust III: Improving Management Concepts and Approaches for Sustainable Fisheries

11. **Strategies for Trawl Fisheries By-catch Management**
 - The progress and achievements in the implementation of this project were noted

12. **Promotion of Countermeasures to Reduce IUU Fishing Activities**
 - TD to consult with the Member Countries prior to the inclusion of vessels less than 24 meters in length in the RFVR Database
 - Member Countries to maximize utilization of RFVR Database, and TD to monitor the frequency of usage of the RFVR Database by the AMSs, and to extend technical assistance to AMSs in conducting awareness campaign on the Database

- TD to develop a mechanism of sharing the information in the RFVR Database with relevant national agencies of the AMSs, *e.g.* coastguards in order to promote maximum utilization of the Database
- SEAFDEC and Member Countries to address the recommendations and challenges identified during the Workshop on Regional Cooperation for Implementation of PSM to Improve Fisheries Management and Reduce IUU Fishing in Southeast Asia in November 2016
- SEAFDEC to develop a work plan to support the Member Countries in the implementation of the Port State Measures Agreement (PSMA), especially in terms of reflecting the requirements of PSMA in their respective national laws and legal frameworks
- TD to explore the possibility of including IUU fishing countermeasures in inland capture fisheries under this project

13. Combating IUU Fishing in the Southeast Asian Region through Application of Catch Certification for Trading of Fish and Fishery Products

- SEAFDEC to raise during the forthcoming Meeting of ASWGFi in 2017, the possibility of transforming the “ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain” into a mandatory instrument to ensure its future implementation and eventual elimination of the entry of illegal fish and fishery products into the supply chain
- SEAFDEC to seek directives from the forthcoming SEAFDEC Council Meeting on the proposed consultation between SEAFDEC and the ASEAN Secretariat and AMAF towards the effective implementation of the 11 key items stipulated in the ASEAN-SEAFDEC Joint Declaration on Regional Cooperation for Combating IUU Fishing and Enhancing the Competitiveness of ASEAN Fish and Fishery Products

14. Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand

- The progress of implementation of the project and the activities proposed for 2017 were noted

Program Thrust IV: Providing Policy and Advisory Services for Planning and Executing Management of Fisheries

15. Fisheries Resource Survey and Operational Plan for M.V. SEAFDEC 2

- Viet Nam to collaborate and communicate with TD for the arrangements on the resources survey on stock assessment of small pelagic using the M.V. SEAFDEC 2 in May to June 2017
- SEAFDEC to consider equipping the M.V. SEAFDEC 2 with better scientific echo-sounder that is more appropriate for scientific surveys

16. Offshore Fisheries Resources Exploration in Southeast Asia

- TD to explore the possibility of conducting training on fish handling onboard the M.V. SEAFDEC 2 during the small pelagic survey in Viet Nam in May to June 2017
- TD to consider conducting on-site training on post-harvest fish handling onboard fishing vessels in the AMSs

17. Enhancing the Compilation and Utilization of Fishery Statistics and Information for Sustainable Development and Management of Fisheries in the Southeast Asian Region

- TD to include Viet Nam in the activity on “monitoring and evaluation of appropriate activities to be sustainable for CBRM/Co-management” considering that this is relevant to the country’s efforts to modify relevant provisions of its Fishery Law
- TD to facilitate coherent understanding of the AMSs on the various management concepts being promoted, *e.g.* community-based fisheries management, co-management, EAFM
- MFRDMD to develop a work plan on how the regional database on sharks could be mobilized to support the AMSs in developing and/or implementing their respective NPOA-Sharks

- AMSs to report the necessary fishery statistics at species or species group levels to facilitate compilation of information for the Fishery Statistical Bulletin of Southeast Asia
- AMSs to exert efforts in improving their respective systems of collecting inland capture fisheries statistical data
- Thailand to submit to IFRDMD a proposal on the use of GIS and remote sensing technologies to facilitate monitoring of resources and supporting activities, for consideration and seeking support from appropriate donors

18. Comparative Studies for Management of Purse Seine Fisheries in the Southeast Asian Region

- MFRDMD to take into consideration the strategies for reducing bycatch of juveniles of commercial pelagic species in improving the implementation of the project activities
- MFRDMD to include assessment of the impact of various management measures including closed season for small pelagic fisheries in the study, taking into consideration the results from studies in the Philippines on establishment of reference points for management of small pelagic fisheries

19. Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region

- AMSs to improve their capacity in species identification of sharks and rays to be able to provide better data and information on landings and utilization of sharks and rays
- MFRDMD to continue collaborating with Myanmar on the implementation of the project especially in collecting scientific information on species of sharks and rays

Program Thrust V: Addressing International Fisheries-related Issues from a Regional Perspective

20. Assistance for Capacity Building in the Region to Address International Fish Trade-related Issues

- SEAFDEC to conduct annual regional consultation to review and discuss the identified important international fisheries-related issues to be reflected by the Member Countries at relevant regional/international fora such as COFi, in order to safeguard the priorities and interests of the countries in the region, and to incorporate the results of such consultation into the project activity for 2017
- SEAFDEC to consider incorporating during the regional consultations issues on abandoned, lost or discarded fishing gears (ALDFG) and on marking of fishing gears
- SEAFDEC to strengthen cooperation with other organizations and frameworks such as FAO, USAID, and SEAFDEC-Sweden Project as required, for the implementation of activities that address emerging issues in the AMSs including the need to comply with the Rules of Fish and Fishery Products Import Provisions under the US Marine Mammal Protection Act

21. Strengthening SEAFDEC Network for Sustainable Fisheries

- The progress of implementation of the project and the activities proposed for 2017 were noted

Special Project (1): Fisheries and Habitat Management, Climate Change and Social Well-being in Southeast Asia

- SEAFDEC to develop SOP for inspectors to support the implementation of PSMA in Southeast Asia taking into consideration the SOP developed by other more advanced countries, e.g. US, Australia
- SEAFDEC to strengthen linkages and cooperation among sub-regions in fisheries management
- SEAFDEC to set its priority and come up with a joint management plan in 2017 for specific sub-region focusing on tonggol tuna and kawakawa
- Viet Nam to share with SEAFDEC and other AMSs scientific information on the management of blue swimming crab resources
- SEAFDEC to support Myanmar in strengthening bilateral cooperation with Thailand on management of transboundary fishery resources

Special Project (2): USAID-SEAFDEC “Oceans and Fisheries Partnership”

- USAID Oceans to provide technical support to Viet Nam for the improvement of its online database systems
- USAID Oceans to work closely with other relevant projects including the SEAFDEC-Sweden Project on gender, labor rights, and EAFM among others, to enhance the impact and achieve the desired results
- SEAFDEC and USAID Oceans to assure that integration of the e-ACDS and USAID CDT is in place

Departmental Programs

The Program Committee also endorsed **Departmental Programs** proposed for 2017 which comprise eight continuing programs from 2016, five of which would be implemented by AQD, namely: 1) Quality Seed for Sustainable Aquaculture; 2) Healthy and Wholesome Aquaculture; 3) Maintaining Environmental Integrity through Responsible Aquaculture; 4) Adapting to Climate Change; and 5) Meeting Socio Economic Challenges in Aquaculture, and three by TD, namely: 1) Promotion on Strengthening SEAFDEC Visibility and Image; 2) Tailor-made Training Program; and 3) Improvement of Fisheries Technology and Reduction of Impacts from Fishing. The Program Committee provided recommendations on these programs summarized as follows:

1. Aquaculture Department

- AQD to have clear outputs and outcomes of its Departmental program activities and to report the progress of the activities corresponding to each year to enable the audience to follow the implementation of the activities
- Malaysia to collaborate with AQD on the conduct of R&D on quality seeds for sustainable aquaculture through the country’s national research institutes and relevant national agencies
- AQD to support Myanmar in the promotion of marine aquaculture technology in potential areas of Myanmar

2. Training Department

- TD to send notification to Member Countries through respective National Coordinators when new information of interest to the Member Countries are available to facilitate access to such information
- TD to collaborate with the Philippine Bureau of Fisheries and Aquatic Resources (BFAR) on the country’s effort to develop technical guidelines on criteria for set net site survey protocol and selection criteria which would be shared with the other AMSs
- TD to share with Indonesia the results of the activity on “Energy Audit for Trawlers in the Gulf of Thailand”
- TD to consider conducting activity on energy audit in the AMSs and develop a proposal for seeking funding support from various sources for the activities on energy optimization

Other Programs

The Program Committee also considered and endorsed the two (2) **Other Programs**, namely: 1) **Coastal Area Capability Enhancements in Southeast Asia**; and 2) **Application of Fish Passage Design Principles to Enhance Sustainability of Inland Fishery Resources in the Southeast Asian Region**, and provided the following recommendations:

- MFRDMD to be involved in the implementation of some activities of the project of Coastal Capability Enhancements in Southeast Asia, particularly on research and development on acoustic survey
- SEAFDEC to continue the activities under the project on Application of Fish Passage Design Principles until March 2017

Pipeline Project

The Program Committee took note of the status of the **Pipeline Project** on “**Enhancing Sustainable Utilization and Management Scheme of Tropical Anguillid Eel Resources in Southeast Asia**”, and agreed that:

- SEAFDEC to serve as the proponent of this proposed project, to implement the project soonest once funding is secured, and to share the results of the project with the AMSs
- Project to be placed under the ASEAN-SEAFDEC Strategic Partnership mechanism

- AMSs to consider conducting activities related to the conservation and management of eel species to address the concern on the EU proposal to implement eel resources management
- Myanmar to be involved in the project activities in order that the country could come up with better scientific data on its eel resources

The Program Committee took note of the strengthened cooperation between SEAFDEC and non-member governments and international/regional organizations, particularly the FAO Regional Office for Asia and Pacific (FAO/RAP), the Prefectural Inland Fisheries Training Center of Gifu in Japan, the Embassy of Sweden, and the United States Agency for International Development/Regional Development Mission for Asia (USAID/RDMA).

The Program Committee noted the improvement of the “Monitoring and Evaluation of SEAFDEC Program for 2016 and Onward”, including the matrix showing the summary of achievements that provide better picture on the implementation of the projects and the corresponding achievements. Furthermore, the Program Committee also took note of the progress made by countries in the implementation of the 2011 ASEAN-SEAFDEC Resolution and Plan of Action.

On the “**High-Level Consultation on Regional Cooperation in Sustainable Fisheries Development Towards the ASEAN Economic Community: Combating IUU Fishing and Enhancing the Competitiveness of ASEAN Fish and Fishery Products**”, the Program Committee recommended that since the ASEAN-SEAFDEC Joint Declaration on Regional Cooperation for Combating IUU Fishing and Enhancing the Competitiveness of ASEAN Fish and Fishery Products has already been adopted:

- SEAFDEC should promote the implementation of provisions in the Joint Declaration
- SEAFDEC to develop regional work plan reflecting the issue under the 11 key actions in the Joint Declaration

After taking note of the progress on the preparation of the **Southeast Asian State of Fisheries and Aquaculture (SEASOFIA) 2017**, the Program Committee recommended that:

- Member Countries’ contributors to submit the needed inputs for the publication of SEASOFIA 2017 as soon as possible

On the “**SEAFDEC 50th Year Anniversary**”, the Program Committee suggested that:

- Anniversary event should be a 1-day event, starting with Special SEAFDEC Council Meeting with the aim of adopting the future direction of SEAFDEC beyond its 50th year
- SEAFDEC to give Awards to external personalities and organizations that have provided significant support to SEAFDEC, as well as to outstanding staff including former staff of SEAFDEC
- SEASOFIA 2017 to be launched during the anniversary event

On the “**Concept Proposal Toward the Development of ASEAN Common Fisheries Policy**” the Program Committee commented that:

- Development of the Common Fisheries Policy is not urgent for the region
- Existing Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020 to be used as a basis for the development of such ASEAN Common Fisheries Policy
- Proposal to be discussed more thoroughly during the forthcoming SEAFDEC meetings as appropriate

On Follow-up Actions to the Directives Given at the 48th Meeting of the SEAFDEC Council, the Program Committee agreed that:

- Short summary should be included in the agenda of the SEAFDEC Council Meeting to update the Council on how their recommendations had been addressed by SEAFDEC and Member Countries

The Program Committee adopted the **Report of the 39th Meeting of the SEAFDEC Program Committee** for submission to the 49th Meeting of SEAFDEC Council, and to the ASEAN through the 19th Meeting of the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP).

**PROGRAM OF ACTIVITIES UNDER FCG/ASSP MECHANISM
FOR THE YEAR 2016-2017**

I. Program of Activities under FCG/ASSP Mechanism

Existing Programs

Program Thrust/Project Title	Lead Department	2016	2017
Thrust I: Developing and Promoting Responsible Fisheries for Poverty Alleviation & Food Security			
1. Human Resource Development for Sustainable Fisheries	TD	Y	Y
2. Optimizing Energy Use/Improving Safety Onboard in Fishing Activities	TD	Y	Y
3. Promotion of Sustainable Fisheries Resources Enhancement Measures in Critical Habitats/Fishing Grounds in Southeast Asia	TD	Y	Y
4. Environment-friendly, Sustainable Utilization and Management of Fisheries and Aquaculture Resources	AQD	Y	Y
5. Enhancement of Sustainability of Catadromous Eel Resources in Southeast Asia	IFRDMD	Y	Y
6. Promotion of Responsible Utilization of Inland Fisheries in Southeast Asia	IFRDMD	Y	Y
7. Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management	MFRDMD	Y	Y
Thrust II: Enhancing Capacity & Competitiveness to Facilitate International and Intra-regional Trade			
8. Chemicals and Drug Residues in Fish and Fish Products in Southeast Asia – Biotoxins (ASP, AZA, and BTX) and Harmful Algal Blooms (HABs) in the ASEAN Region	MFRD	Y	Y
9. Cold Chain Management for Seafood	MFRD	Y	Y
10. Reinforcement and Optimization of Fish Health Management and the Effective Dissemination in the Southeast Asian Region	AQD	Y	Y
Thrust III: Improving Management Concepts and Approaches for Sustainable Fisheries			
11. Strategies for Trawl Fisheries By-catch Management	TD	Y	N
12. Promotion of Counter Measures to Reduce IUU fishing activities	TD	Y	Y
13. Combating IUU Fishing in the Southeast Asian Region through Application of Catch Certification for Trading of Fish and Fishery Products	MFRDMD	Y	Y
14. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand	TD	Y	Y
Thrust IV: Providing Policy & Advisory Services for Planning & Executing Management of Fisheries			
15. Fisheries Resource Survey and Operational Plan for M.V. SEAFDEC 2	TD	Y	Y
16. Offshore Fisheries Resources Exploration in Southeast Asia	TD	Y	Y
17. Enhancing the Compilation and Utilization of Fishery Statistics and Information for Sustainable Development and Management of Fisheries in Southeast Asian Region	TD/SEC	Y	Y
18. Comparative Studies for Management of Purse Seine Fisheries in the Southeast Asian Region	MFRDMD	Y	Y
19. Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region	MFRDMD	Y	Y
Thrust V: Addressing International Fisheries Related Issues from a Regional Perspective			
20. Assistance of Capacity Building in the Region to Address International Fish Trade-related Issues	SEC	Y	Y
21. Strengthening SEAFDEC Network for Sustainable Fisheries	SEC	Y	Y

Special Project

Project Title	Lead Department	Period
1. Fisheries and Habitat Management, Climate Change and Social Well-being in Southeast Asia	SEC	2013-2017
2. USAID-SEAFDEC “Oceans and Fisheries Partnership”	SEC	2015-2019

II. Departmental Programs

Project Title	Department	2016	2017
1. Quality seed for sustainable aquaculture	AQD	Y	Y
2. Healthy and wholesome aquaculture	AQD	Y	Y
3. Maintaining environmental integrity through responsible aquaculture	AQD	Y	Y
4. Adapting to climate change impacts	AQD	Y	Y
5. Meeting social and economic challenges in aquaculture	AQD	Y	Y
6. Promotion on Strengthening of SEAFDEC Visibility and Image	TD	Y	Y
7. Tailor-made Training Programs	TD	Y	Y
8. Improvement of Fisheries Technology and Reduction of the Impact from Fishing	TD	Y	Y

III. Other Programs

Project Title	Department	2016	2017
1. Coastal Area Capability Enhancements in Southeast Asia (SEAFDEC/RIHN Collaborative Project)	TD	Y	Y*
2. Application of Fish Passage Design Principles to Enhance Sustainability of Inland Fishery Resources in the Southeast Asian Region (ACIAR supported Project)	TD	Y	Y*

IV. Pipeline Projects and Emerging Needs for Preparation of Future Project Proposals

Project Title	Lead Department	Period
Enhancing Sustainable Utilization and Management Scheme of Tropical Anguillid Eel Resources in Southeast Asia	SEC	2017-2018

Y = Program/project implemented during the year
 N = Program/project not implemented during the year
 * = Project completed in March 2017

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LIST OF ACRONYMS

AEG-CITES	ASEAN Experts Group on the Convention on International Trade in Endangered Species of Wild Fauna and Flora
ACDS	ASEAN Catch Documentation Scheme
ACDT	ASEAN Catch Documentation and Traceability
ACIAR	Australian Centre for International Agricultural Research
AHPND	Acute Hepatopancreatic Necrosis Disease
AMAF	ASEAN Ministers on Agriculture and Forestry
AMSs	ASEAN Member States
ANAAHC	ASEAN Network of Aquatic Animal Health Centres
APFIC	Asia Pacific Fisheries Commission
AQD	SEAFDEC Aquaculture Department
ARs	Artificial Reefs
ASEAN	Association of Southeast Asian Nations
ASSP	ASEAN-SEAFDEC Strategic Partnership
ASWGFi	ASEAN Sectoral Working Group on Fisheries
CCAMLR	Conservation of Antarctic Marine Living Resources
CDS	Catch Documentation System
CDTS	Catch Documentation and Traceability System
CFP	Common Fisheries Policy
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DOF	Department of Fisheries
EAFM	Ecosystem Approach to Fisheries Management
EEZs	Exclusive Economic Zones
EMS	Early Mortality Syndrome
EU	European Union
FADs	Fish Aggregating Devices
FAO	Food and Agriculture Organization of the United Nations
FCG	ASEAN-SEAFDEC Fisheries Consultative Group
FEDs	Fish Enhancing Devices
GEF	Global Environmental Facility
IDB	Islamic Development Bank
IFRDMD	SEAFDEC Inland Fishery Resources Development and Management Department
ILO	International Labour Organization
IMO	International Maritime Organization
ITDS	International Trade Data System
IUU Fishing	Illegal, Unreported and Unregulated Fishing
JAIF	Japan-ASEAN Intergration Fund
JTED	Juveniles and Trash Excluder Devices
JTF	Japanese Trust Fund
MCS	Monitoring, Control and Surveillance
MFRD	SEAFDEC Marine Fisheries Research Department
MFRDMD	SEAFDEC Marine Fishery Resources Development and Management Department
MRC	Mekong River Commission
NACA	Network of Aquaculture Centres in Asia-Pacific
PCM	SEAFDEC Program Committee Meeting
PSM	Port State Measures
PSMA	Port State Measures Agreement
RFMOs	Regional Fisheries Management Organizations
RFPN	Regional Fisheries Policy Network
RFVR	Regional Fishing Vessels Record (for fishing vessels 24 meters in length and over)
RIHN	Research Institute for Humanity and Nature, Japan
RTC	Regional Technical Consultation

SEAFDEC	Southeast Asian Fisheries Development Center
SEASOFIA	Southeast Asian State of Fisheries and Aquaculture
SOM-AMAF	Senior Officials Meeting of the ASEAN Ministers on Agriculture and Forestry
TAC	Total Allowable Catch
TAE	Total Allowable Effort
TD	SEAFDEC Training Department
UNEP	United Nations Environmental Programme
USAID	U.S. Agency for International Development
VMS	Vessel Monitoring System

REPORT OF THE THIRTY-NINTH MEETING OF THE PROGRAM COMMITTEE SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER

Yogyakarta, Indonesia
28-30 November 2016

INTRODUCTION

1. The Thirty-ninth Meeting of the Program Committee of the Southeast Asian Fisheries Development Center (SEAFDEC) was held in Yogyakarta, Indonesia from 28 to 30 November 2016 and hosted by the SEAFDEC Inland Fishery Resources Development and Management Department (IFRDMD).
2. The Program Committee Meeting was attended by the SEAFDEC Program Committee Members for Brunei Darussalam, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam together with their respective delegations as well as representatives from collaborating agencies, namely: the Food and Agriculture Organization of the United Nations/Regional Office for Asia and Pacific (FAO/RAP), Inland Fisheries Training Center of Gifu Prefecture in Japan, Sweden Embassy in Bangkok, United States Agency for International Development/Regional Development Mission for Asia (USAID/RDMA), and the USAID Oceans and Fisheries Partnership. The SEAFDEC Secretary-General, Deputy Secretary-General and Department Chiefs as members of the SEAFDEC Program Committee together with officers from the SEAFDEC Secretariat and Departments also attended the Meeting. The list of participants, observers, and SEAFDEC officers, appears as **Annex 1**.

I. OPENING OF THE MEETING

3. The Advisor to the Minister for Public Policy of the Marine Affairs and Fisheries of Indonesia, *Dr. Achmad Poernomo*, on behalf of Secretary General of Ministry of Marine Affairs and Fisheries (MMAF) and SEAFDEC Council Director for Indonesia *Prof. Sjarief Widjaja*, welcomed the participants to the Meeting and to Yogyakarta. He expressed his appreciation to the staff of IFRDMD and SEAFDEC Secretariat for the arrangements made for the Meeting. He mentioned that during the recent discussion at the 22nd Conference of the Parties of the United Nations Framework Convention on Climate Change (UNFCCC) held in Morocco, the significant role of the ocean in climate change was not proportionally recognized, making it necessary for SEAFDEC to take a closer look at the impacts of climate change and consider addressing the issues during the planning of its new programs and projects as climate change threatens the coastal communities' livelihoods and food security. He also mentioned that the ASEAN Community is now shaping together, where the fisheries sector is one of the 12 priority sectors under the ASEAN Economic Community (AEC). The contribution of fisheries of the ASEAN Member States is significant considering that almost half of the world's fish production comes from this region. He believed that the ASEAN Member States should prepare the readiness of their respective fisheries sector towards the AEC, and SEAFDEC is the key regional organization that plays very crucial role in fisheries development in the region. His Welcome Remarks appears as **Annex 2**.
4. While welcoming the participants to the 39th Meeting of the SEAFDEC Program Committee (39PCM), the Secretary-General of SEAFDEC *Dr. Kom Silapajarn*, in his capacity as the Chairperson of the Program Committee, expressed the appreciation to IFRDMD and MMAF of Indonesia for the arrangements of the Meeting. He reiterated that the important function of the PCM is to review the programs of SEAFDEC in 2016 and scrutinize the activities to be implemented in 2017 to ensure that the activities address the requirements of the Member Countries. He therefore encouraged the participants, as well as the observers and representatives from collaborating agencies to provide recommendations for the improvement of SEAFDEC programs for the benefit of the Member Countries, and then declared the Program Committee Meeting open. His Opening Remarks appears as **Annex 3**.

II. ADOPTION OF THE AGENDA AND ARRANGEMENTS OF THE MEETING

5. The Agenda which appears as **Annex 4** was adopted.

III. REVIEW OF SEAFDEC PROGRAM IMPLEMENTATION FOR THE YEAR 2016 AND PROPOSED PROGRAMS FOR THE YEAR 2017

6. The Program Committee took note of the twenty-one projects under the FCG/ASSP Mechanism which have been categorized based on the SEAFDEC Program Thrusts endorsed by the SEAFDEC Council during its 41st Meeting in 2009, as well as of the two Special Projects. The progress and achievements of the projects in 2016 and the programs of activity for 2017 reported by the SEAFDEC Secretariat and Departments were examined and endorsed by the 39PCM. The results of the review process as well as the recommendations of the 39PCM would be submitted for endorsement to the higher authorities of the ASEAN and SEAFDEC.

3.1 Programs under the FCG/ASSP Mechanism

7. During the discussion, the Program Committee noted the progress and achievements in the implementation of the various projects in 2016, as well as the details of the proposed activities for 2017 (**Annex 5**). The Program Committee then provided recommendations for the improvement of such projects and activities.

3.1.1 Progress of Implementation of Programs under the FCG/ASSP Mechanism in 2016

Program Thrust I: Developing and Promoting Responsible Fisheries for Poverty Alleviation and Food Security

(1) Human Resource Development for Sustainable Fisheries

8. While expressing the appreciation to SEAFDEC for sustaining the implementation of the project on human resource development for sustainable fisheries, the Program Committee Member for Viet Nam suggested that the activities under this project should take into consideration the lessons learned from the project implementation in the Member Countries. In addition, the activities should focus not only in conducting activities at the pilot-learning sites, *e.g.* earlier in Cambodia and Viet Nam, and later in Myanmar in 2017, but also in sharing the experiences and lessons learned from the project implementation at pilot-learning sites with the other ASEAN Member States (AMSs).

9. As regards the training on the Ecosystem Approach to Fisheries Management (EAFM) and Extension Methodology, especially on the proposed activities of the pilot-learning site in Myanmar, the Program Committee Member for Malaysia informed the 39PCM that Malaysia has already established its capability on this aspect and expressed the willingness to send EAFM trainers from Malaysia to participate in the activities in Myanmar and other countries in the future, to share the experiences of Malaysia which would be useful for the other countries in the region, and could be adapted for the other sites in the future.

10. The Program Committee Member for the Philippines also informed the 39PCM that EAFM has already been mainstreamed in the programs and plans of the Philippine Bureau of Fisheries and Aquatic Resources (BFAR). Considering that the capacity building on EAFM under this project focused on providing alternative livelihoods for fisherfolks in selected pilot sites, this project should be able to support the Southeast Asian countries in strengthening their capacity, especially through the exchange of information, experiences and lessons learned among the countries.

11. While expressing the appreciation to SEAFDEC for the conduct of two training courses on EAFM in Myanmar in 2016 that enabled many stakeholders to understand the EAFM concept, the Program Committee Member for Myanmar informed the Program Committee that Myanmar is looking forward to cooperating with TD for the implementation of the project at the project-learning site in Myanmar.

12. The Program Committee Member for Indonesia commended TD for building up and strengthening human capability especially the fisheries officers of Member Countries, and suggested that this would be the most appropriate time to revisit the work plan of these activities to make sure that the project objective on “strengthening knowledge and skills of the national officers in dealing with the sustainable fisheries development in all aspects” is achieved. The Program Committee Member for Malaysia added that since

the project had been ongoing from 2013 to 2016, some significant findings could already be highlighted, and such information should be shared among the Southeast Asian countries.

13. The Program Committee also noted that while this project has received support from the Japanese Trust Fund (JTF), other activities that also aim to enhance the capacity of the Member Countries are being carried out by SEAFDEC with support from other funding sources, *e.g.* FAO/GEF, SEAFDEC-Sweden Project, USAID-Oceans. Nonetheless, the recommendations of the 39PCM would be considered in the implementation of these projects as well as in the formulation of future activities as appropriate.

(2) Optimizing Energy Use/Improving Safety Onboard in Fishing Activities

14. While commending TD for the implementation of the project including the production of the “Regional Guidelines on Optimizing Energy Use and Improving Safety Onboard in Fishing Vessels in Southeast Asia,” the Program Committee for Malaysia informed the 39PCM that Malaysia would translate the Guidelines into the Malaysian language for dissemination to local officers and fishers. He also requested Japan to consider conducting a Training of Trainers (ToT) on safety at sea and energy saving in Malaysia, with Japan providing the resource persons while Malaysia would make the relevant arrangements for the training. On the request of Malaysia, it was clarified that funding support would be sought from various sources, *e.g.* JTF, to enable Japan to conduct such training in Malaysia.

15. The Program Committee Member for Indonesia expressed the apprehension that it might be difficult to achieve the objective of the project activity on “development of appropriate fishing vessels design targeting trawl and seine vessels,” considering that focus of the project is small-scale fisheries, while only two years remain until the end of this project. Nevertheless, he suggested that the activity should already come up with clear goal and indicators of achievement by the end of the project. In this connection, it was clarified that the project would also include trawls and seines, and that SEAFDEC would explore other funding sources for the activity on vessels design, and that the duration of this activity may be extended beyond 2017.

16. The Program Committee Member for Indonesia added that in order for the Member Countries to utilize the technologies developed starting 2017, this project should now come up with a documentation of the techniques on energy saving. He added that Indonesia has conducted studies on carbon footprints for tuna capture fisheries, the results of which would be useful for the improvement of the project activities, especially in minimizing the use of energy in capture fisheries.

17. The Program Committee Member for the Philippines informed the 39PCM that the Philippines is one of the countries that is most concerned with safety at sea and optimizing energy use for small fishing vessels, especially that the country has changed its fishing vessels from wooden to fiber glass. The Philippines is therefore looking forward to cooperating with TD in the implementation of this project.

18. On safety at sea which is closely relevant to climate change, the Program Committee was informed that the ASEAN organized the Experts Dialogue on Climate Change Mitigation and Adaptation in ASEAN on 30 November 2016 in Bali, Indonesia, and would also organize the 5th Meeting of the Ad-hoc Steering Committee on Climate Change and Food Security on 1-2 December 2016 also in Bali, Indonesia. Since these meetings would come up with updates on the progress of ASEAN activities on climate change mitigation and adaptation measures, lessons could be learned from such updates for the improvement of this project’s implementation.

19. The Program Committee Member for Malaysia expressed the view that since this project has been implemented since 2013, the results should be summarized for dissemination to the Member Countries. He added that Malaysia is planning to eliminate all wooden fishing vessels by 2050, so the issue at hand is not only on safety at sea but also on the onboard working conditions of fishers with reference to the standards of the International Labour Organization (ILO) and International Maritime Organization (IMO). In this regard, Malaysia sought the assistance of SEAFDEC in order that Malaysian fishing vessels would be able to comply with international requirements.

**(3) Promotion of Sustainable Fisheries Resources Enhancement Measures in Critical Habitats/
Fishing Grounds in Southeast Asia**

20. The Program Committee Member for Thailand informed the 39PCM of the policy of Thailand to rehabilitate its fishery resources and suggested that the project should not only develop suitable designs/measures for resources enhancement practices but should also include capacity building activities in monitoring and evaluation of the effectiveness of such designs/measures. In addition, the project should also include improvement of scientific monitoring techniques for resources and habitat enhancement.

21. Considering the linkage of this resources enhancement project with the SEAFDEC/UNEP/GEF/SCS project on “Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand,” the Program Committee Member for Viet Nam suggested that certain activities of the resource enhancement project could be merged with the fisheries *refugia* project to optimize allocation of resources. In response, the Program Committee was informed that the resource enhancement project could not be merged with the fisheries *refugia* project because such projects are implemented in different project sites of the participating countries.

22. While expressing the appreciation to SEAFDEC for selecting Lao PDR as one of the project’s pilot sites, the Program Committee Member for Lao PDR mentioned that there has been no follow-up activity under the “Technical Assistance in Pilot Sites for Diagnosis of Fishing Grounds and Evaluation of Fishery Ecosystem Management” in 2016. He therefore requested SEAFDEC to continue this activity for Lao PDR in 2017.

23. In response to the query of the Program Committee Member for Malaysia on the difference between Fish Aggregating Devices (FADs) and Fish Enhancing Devices (FEDs), TD explained that FADs are used for fishing purposes and not directly for resource enhancement, while FEDs are mainly used for fisheries resources conservation. Meanwhile, the Program Committee Member for Malaysia also expressed the willingness to collaborate with TD in a joint research particularly in comparing the efficiency between FADs and ARs, and in sharing information based on their experience and the lessons learned from the country’s national project activities on FADs.

24. While informing the Program Committee that Myanmar has many potential areas not only marine but also inland areas that should be considered for sustainable fisheries management, the Program Committee Member for Myanmar requested TD to include Myanmar in the implementation of this project, *e.g.* through attendance of representatives from Myanmar in the training courses.

25. The Program Committee Member for Indonesia made an observation that there could be differences in resource enhancement measures appropriate for marine and inland areas. He then informed the 39PCM that a research institute in Indonesia has been tasked to undertake activities on stock enhancement of inland fisheries, and that Indonesia is willing to share its experience on this aspect with TD and the other Member Countries.

**(4) Environment-friendly, Sustainable Utilization and Management of Fisheries and
Aquaculture Resources**

26. With regard to the activity on the “Use of Plant-based Protein Sources in Tilapia Feeds for Improved Production Traits,” the Program Committee Member for Viet Nam requested that as the laboratory research work under this activity has already been completed, the results should be shared with the Member Countries. Furthermore, The Program Committee noted that AQD had proposed to implement activities related to eel survival rate in 2017 under this project.

27. For the activity on “Responsible Aquaculture through Aquasilviculture,” the Program Committee Member for Viet Nam informed the Program Committee that farmers in Viet Nam have been implementing rice-shrimp farming systems in the areas of Mekong Delta, the results of which would serve as model for developing climate change adaptation measures. She also expressed the willingness of Viet Nam to participate as one of the pilot sites in the project and share the lessons learned from the successful implementation of such systems with other countries. In this regard, AQD thanked the

Committee Member for Viet Nam and informed the Program Committee that this matter could be included in relevant and appropriate training courses to be conducted by AQD in the near future.

28. The Program Committee Member for Malaysia expressed the interest in collaborating with AQD on training and research in aquaculture, and requested AQD to consider the possibility of conducting collaborative research with the national agencies of Malaysia. In this connection, AQD informed the Program Committee that a number of MOUs had already been established between AQD and some Malaysian universities for conducting collaborative research, and AQD would consider expanding similar collaboration with other national agencies in Malaysia.

29. In addition, the Program Committee Member for Malaysia requested AQD to share the results of the activity on “Use of Plant-based Protein Sources in Tilapia Feeds for Improved Production Traits” as well as those from the activity on “Appropriate Transport and Acclimation Strategies of Seahorses.” Furthermore, AQD was also requested to conduct training courses on breeding of commercial aquatic species. In response, AQD informed the Program Committee that funds for regular training courses provided by JTF could be utilized to support the participation of AMSs in its regular training courses, however, the slots for such training courses should be fairly distributed among all the AMSs.

(5) Enhancement of Sustainability of Catadromous Eel Resources in Southeast Asia

30. The Program Committee Member for Myanmar expressed the appreciation of Myanmar to SEAFDEC for giving them the opportunity to participate in the eel survey in 2016 considering that eels are potential fishery resource for Myanmar. As conservation and management of eels are very important for the region, she supported the efforts of IFRDMD to implement activities under this project that are geared towards the sustainability of wild-caught eels, as well as on aquaculture and genetic analysis for species identification of eels.

31. For sustainable management of eels in the region, the Deputy Chief of IFRDMD emphasized on the need to compile long-term catch statistics of eels as a basic study under this project. In this connection, Member Countries that have eel industry were requested to monitor and record their annual and monthly data from wild catch and from aquaculture of eel resources. Furthermore, Myanmar requested IFRDMD to support the country’s data recording system for wild catch eels as well as provide technical support on aquaculture technologies to enable the country to come up with better information on the trends of eel stocks. In response, IFRDMD signified to provide technical assistance on the conservation and management of eels, and in addressing the eel farming issues of the country.

32. The Program Committee also noted the information from the Deputy Secretary-General of SEAFDEC that a new proposal on “Enhancing Sustainable Utilization and Management Scheme of Tropical Anguillid Eel Resources in Southeast Asia” is being proposed to Japan-ASEAN Integration Fund (JAIF) for possible funding support, with a view of supporting anguillid eel statistics data collection, research on survival rate of juveniles under artificial culture, and management of anguillid eel resources in the region.

(6) Promotion of Responsible Utilization of Inland Fisheries in Southeast Asia

33. The Program Committee Member for Viet Nam informed the 39PCM that Viet Nam is in the process of including rights-based fisheries in reservoirs in the country’s national laws, and that Viet Nam is willing to participate in the activity on “Study on Co-management and Rights-based Fisheries Management Applicable for Inland Fisheries in the Region” to be able to share its experience on inland fisheries management.

34. The Program Committee Member for Indonesia suggested that as basis for promoting sustainable inland capture fisheries, IFRDMD should compile relevant information on inland capture fisheries in the region, and by the end of the project, should come up with a publication that depicts the inland fisheries profile of respective Southeast Asian countries, which should include the status and strategic issues faced by inland capture fisheries. In this connection, the Program Committee was informed that IFRDMD would explore the possibility of sourcing appropriate funds in order to conduct the suggested activities and come

up with the publication of the inland fisheries profile of the Southeast Asian region, while the SEAFDEC Secretariat signified to support the publication of such inland fisheries profile.

35. The representative from FAO commended SEAFDEC for giving attention to inland fisheries in the Southeast Asian region. He shared the information with the Program Committee that the Global Conference on Inland Fisheries organized in January 2015 came up with the “Rome Declaration: Ten Steps to Responsible Inland Fisheries,” which could be referred to in formulating programs for the sustainable development of inland fisheries in the Southeast Asian region.

(7) Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management

36. The Program Committee took note of the implementation of this project by MFRDMD starting 2016 with funding support from the Islamic Development Bank (IDB). During the discussion, the representative from Brunei Darussalam expressed the appreciation to SEAFDEC and IDB for facilitating the implementation of this project, and informed the 39PCM that following the results of the community assessment conducted in 2016, Brunei Darussalam is now preparing to conduct capacity building activities for small-scale fishers under this project. The Program Committee was also informed that capacity building activities under this project would be conducted in the three participating countries, namely: Brunei Darussalam, Indonesia and Malaysia.

Program Thrust II: Enhancing Capacity and Competitiveness to Facilitate International and Intra-regional Trade

(8) Chemicals and Drug Residues in Fish and Fish Products in Southeast Asia – Biotoxin (ASP, AZA and BTX) and Harmful Algal Blooms (HABs) in the ASEAN region

37. While commending MFRD for supporting Myanmar in the implementation of biotoxins monitoring survey in the country, the Program Committee Member for Myanmar informed the 39PCM that based on the results of the said pilot survey, the biotoxin levels of the samples collected do not exceed the levels of the EU standard. Nevertheless, MFRD was requested to consider extending the conduct of biotoxins monitoring surveys in other areas of Myanmar. In addition, MFRD was also requested to consider the participation of Myanmar in its future relevant training courses.

38. The Program Committee Member for Malaysia also welcomed the implementation of the training course on identification of common harmful algal bloom species (HABs), and informed the Program Committee that Malaysia is willing to participate in the training course. He also suggested that by the end of this project, MFRD should come up with a handbook on protocols for monitoring of biotoxins that could serve as reference for the Member Countries.

39. Considering the difficulties faced by Indonesia in exporting shellfishes, *e.g.* mussels, to the EU market due to biotoxins problems, the Program Committee Member for Indonesia supported the proposal that MFRD should come up with the protocols for biotoxins monitoring and analysis.

40. With regard to the extension of the project period until 2019, the Program Committee noted that additional budget would be provided by MFRD to the AMSs participating in the monitoring survey. In connection with the request for development of a handbook on protocols for biotoxins monitoring, the 39PCM was informed that MFRD would publish a Technical Compilation by the end of the project, which would comprise protocols for sampling, methods for analysis, as well as results of the surveys at the pilot sites. The Program Committee was also informed that the methods used in this project are in line with international standards.

(9) Cold Chain Management for Seafood

41. The Program Committee took note of the project on Cold Chain Management for Seafood which would be completed in 2017 with the preparation of the Guidelines on Cold Chain Management for Seafood for distribution to all ASEAN-SEAFDEC Member Countries. In addition, the end-of-project

seminar would be conducted to share and discuss the results of the project among the Member Countries, and finalize the aforementioned Guidelines.

(10) Reinforcement and Optimization of Fish Health Management and the Effective Dissemination in the Southeast Asian Region

42. While recognizing the importance of fish health management, the Program Committee Member for Malaysia expressed the willingness of Malaysia to participate and collaborate in the implementation of the activities of the project, especially on the establishment of protective measures against persistent and emerging parasitic diseases of tropical fish, epidemiology of the EMS/AHPND, technology extension and demonstration, and sharing of information. He also requested for the possibility of Malaysian representatives to participate in the training course to be conducted in Lao PDR.

43. The Program Committee Member for Myanmar expressed the appreciation of Myanmar to AQD for conducting two training courses on fish health management in Myanmar in 2016, which has built up the technical skills of the staff members of the Department of Fisheries (DoF) of Myanmar on this aspect, and requested AQD to continue conducting similar activities in Myanmar in 2017 considering that the occurrence of aquatic animal diseases in the country could be escalated by climate change.

44. The Program Committee Member for Thailand expressed the country's interest to participate in the activities on epidemiology of the EMS/AHPND, and in technology extension and demonstration. However, she suggested that exchange of information on this aspect with the ASEAN Network on Aquatic Animal Health Centre (ANAAHC) should be promoted in order to improve the implementation of the project.

45. In response, the 39PCM was informed that AQD has no regular training program on fish health management although training sessions on this aspect could be conducted upon request. However, AQD is planning to convene the next on-line training course on fish health management in early 2017, which would be announced through the AQD website as well as in the list of SEAFDEC Events (*e.g.* in the Newsletter). In addition, AQD could also conduct relevant onsite training in the Member Countries on cost-sharing basis. With regards to exchange of information on fish health management, AQD has recently conducted a meeting with the Department of Fisheries (DOF) of Thailand, ANAAHC and NACA to concretize the strategies on early warning and preparedness systems for occurrence aquatic animal diseases in the Southeast Asian region.

Program Thrust III: Improving Management Concepts and Approaches for Sustainable Fisheries

(11) Strategies for Trawl Fisheries By-catch Management

46. The Program Committee noted the progress and achievements in the implementation of the project on Strategies for Trawl Fisheries By-catch Management in 2016, which was implemented in five participating countries and would be completed by the end of 2016.

(12) Promotion of Countermeasures to Reduce IUU Fishing Activities

47. While expressing appreciation to SEAFDEC for the development and management of the RFVR Database, the Program Committee Member for Malaysia shared his concern on the inclusion of vessels less than 24 meters in length in the said RFVR Database as this could result in very large number of vessels included in the Database. In this regard, the Program Committee was informed that consultations with the Member Countries would be conducted prior to the inclusion of vessels less than 24 meters in length in the RFVR Database to obtain their clear directives on this aspect.

48. The Committee Member for Malaysia also suggested that SEAFDEC should consider synergizing the activities under this project with those of the RPOA-IUU in order to optimize utilization of resources and extend the activities beyond the Gulf of Thailand Sub-region. He mentioned that this could be achieved following the sub-regional approach, *e.g.* Gulf of Thailand, South China Sea, Sulu and Sulawesi Sea, in order to effectively manage the region's fishing vessels and promote the effective utilization of the RFVR Database system. However, considering the differences in the objectives of the two databases, *i.e.*

the RFVR compiled by SEAFDEC targets those vessels operating in the Southeast Asian waters while the data compiled by the RPOA-IUU is focused on IUU-listed vessels plying in international waters, it might be difficult to consider linking these two databases although the possibility of information sharing between these databases could be explored.

49. The Program Committee Member for the Philippines informed the 39PCM that concerned officers of the Philippines have been encouraged to make use of the information in the RFVR Database system and suggested that this project should also monitor the frequency of usage of the RFVR Database by the AMSs. Nevertheless, in order that utilization of the RFVR Database by the AMSs is maximized, he also suggested that technical assistance or awareness campaign could be extended by SEAFDEC to the AMSs.

50. The Program Committee Member for Indonesia recalled the decision made during the initial phase of the development of the RFVR Database to keep the Database confidential among the AMSs. He therefore suggested that a mechanism should be explored to share the information in the Database with relevant national agencies of the AMSs, *e.g.* coastguards, in order to promote the maximum utilization of the Database by the AMSs.

51. While supporting the project activity on “Strengthening the Implementation of Port State Measures and Other Surveillance Measures,” the Program Committee Member for Malaysia suggested that the recommendations and challenges identified during the Workshop on Regional Cooperation for Implementation of Port State Measures to Improve Fisheries Management and Reduce IUU Fishing in Southeast Asia in November 2016, should be appropriately addressed by SEAFDEC and the Member Countries.

52. In response to the query of the Program Committee Member for Viet Nam on the development of database on fishing license and vessel registration under the activities for 2017, it was clarified that assistance on this aspect could be extended to the AMSs to strengthen their national mechanisms that would enable them to provide data and information relevant to the RFVR Database in the future. The Program Committee Member for Viet Nam also expressed the view that there is a need for SEAFDEC to develop a work plan that would support the Member Countries in the implementation for the Port State Measures Agreement (PSMA), especially in terms of reflecting the requirements of PSMA in their respective national laws and legal frameworks, *e.g.* development of a guidebook and providing support to the Member Countries through the conduct of capacity building activities in consultation with concerned collaborating agencies and donors.

53. The representative from FAO informed the Program Committee that FAO would sustain its support to SEAFDEC for the implementation of PSMA and encouraged ASEAN Member States to implement Port State Measures Agreement in the future.

54. In a related development, the Chief of IFRDMD also requested the Program Committee to consider the possibility of including IUU fishing countermeasures in inland capture fisheries under this project.

(13) Combating IUU Fishing in the Southeast Asian Region through Application of Catch Certification for Trading of Fish and Fishery Products

55. The Program Committee Member for Indonesia commended SEAFDEC for developing the “ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain” which was subsequently endorsed by the 37th Meeting of ASEAN Ministers on Agriculture and Forestry (AMAF) in 2015. While expressing the concern that the Guidelines might not be implemented by the AMSs as far as it remains voluntary in nature, he therefore suggested that the Guidelines could be transformed into a mandatory instrument to ensure its future implementation and eventually eliminate the entry of illegal fish and fishery products into the supply chain.

56. With regards to the aforementioned recommendation, the Program Committee Member for Viet Nam suggested that this matter should be raised for discussion during the forthcoming Meeting of the ASWGFi to be organized in Singapore in 2017. Upon the approval of the ASWGFi, the proposal could be tabled for consideration by the AMAF Meeting in 2017.

57. Furthermore, the Program Committee Member for Indonesia added that the 11 key items stipulated in the “Joint ASEAN-SEAFDEC Declaration on Regional Cooperation for Combating Illegal, Unreported and Unregulated (IUU) Fishing and Enhancing the Competitiveness of ASEAN Fish and Fishery Products” adopted at the High-level Consultation on Regional Cooperation in Sustainable Fisheries Development Towards the ASEAN Economic Community in August 2016 should also be discussed at this 39PCM. More specifically, actions undertaken by the countries to implement the Joint Declaration as well as the aforementioned Guidelines should be discussed, and the results should be raised for consideration by the SEAFDEC Council during its forthcoming meeting. The SEAFDEC Council would then be requested to provide directives for SEAFDEC to consult with the ASEAN Secretariat and AMAF for the effective implementation of the Joint Declaration.

(14) Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand

58. The 39PCM took note of the progress of implementation of the project on “Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand,” as well as the activities proposed for 2017.

Program Thrust IV: Providing Policy and Advisory Services for Planning and Executing Management of Fisheries

(15) Fisheries Resource Survey and Operational Plan for the M.V. SEAFDEC 2

59. The Program Committee for Viet Nam informed the 39PCM that Viet Nam is planning to request TD for the use of the M.V. SEAFDEC 2 during the conduct of a national survey for stock assessment of small pelagic fishes in May-June 2017. She added that the responsible national agencies would be assigned to work with TD for planning and undertaking the activities under the cost-sharing mechanism.

60. The Chief of MFRDMD suggested that the possibility of acquiring new scientific equipment to be installed onboard the M.V. SEAFDEC 2 should also be considered by SEAFDEC, especially the better scientific echo-sounder which would be more appropriate for scientific surveys.

(16) Offshore Fisheries Resources Exploration in Southeast Asia

61. The Program Committee for Viet Nam inquired whether the activity on post-harvest fish handling could be incorporated during the small pelagic survey using the M.V. SEAFDEC 2 planned for May-June 2017. In response, it was clarified that conducting fish handling training onboard the M.V. SEAFDEC 2 may not be appropriate, considering that the species targeted for the training might not be caught during the cruise, while the facility onboard the M.V. SEAFDEC 2 may be different from those in respective countries’ fishing vessels. It was therefore suggested that the training should be conducted onsite in the Member Countries, *e.g.* in Viet Nam.

(17) Enhancing the Compilation and Utilization of Fishery Statistics and Information for Sustainable Development and Management of Fisheries in Southeast Asian Region

62. On “Facilitating Fisheries Activity Information Gathering through Introduction of Community-based Resources Management,” the Program Committee Member for Viet Nam expressed the appreciation to TD for supporting the country in the implementation of rights-based fisheries management and co-management concepts, as well as on data collection through community-based fisheries management. However, for the activity on “monitoring and evaluation of appropriate activities to be sustainable for CBRM/Co-management,” she suggested that in addition to Cambodia, Lao PDR and Thailand, Viet Nam could also be included as one of the participating countries since this is relevant to the country’s effort in modifying relevant provisions of its fishery law.

63. The Program Committee Member for the Philippines expressed the view that there are several management concepts being promoted by TD, *e.g.* community-based fisheries management, co-management, EAFM, and suggested that there should be coherent understanding of these concepts by the Member Countries.

64. On “Improving the Data Collection of the Commercially-Exploited Aquatic Species and Threatened Species,” the Program Committee Member for Malaysia supported the development of database on sharks in the region by MFRDMD, which should be shared among the Member Countries. The Program Committee Member for Viet Nam also suggested that MFRDMD should have a clear plan on how such database could be mobilized to support the Member Countries in their efforts to implement/develop the NPOA-Sharks.

65. With regards to the “Harmonization of Fishery Statistics in the Southeast Asian Region,” the Program Committee Member for Malaysia took note of the development of SEASOFIA 2017 and raised the concern on the difficulties faced by the country in obtaining statistical data on crocodile culture as this is under the responsibility of different national authority.

66. The Program Committee was informed that the SEAFDEC Secretariat has difficulties in compiling regional fishery statistics from the AMSs considering that the current statistical framework requires that data should be recorded at species or species group levels. In this regard, AMSs are encouraged to exert more efforts in order to report the necessary statistics at such levels. Furthermore, there is also a need to improve inland capture fisheries data collection as it is inadequate and thus, results in under-reporting of the data due to the nature of inland fisheries which are small-scale, scattered, and could not be recorded under formal mechanism.

67. While acknowledging the needs for improving statistics on inland fisheries, the Program Committee Member for Thailand expressed the view that GIS and remote sensing technologies could be mobilized to facilitate monitoring of resources and supporting inland fisheries management. She then requested TD to integrate the use of GIS and remote sensing technologies in the relevant activities of the project, and that the GIS expert of DOF of Thailand would cooperate with TD on this aspect. In response, the 39PCM recommended that the proposal of Thailand should be submitted to IFRDMD for consideration which could also be used in seeking support from appropriate donors for the implementation of the said activities.

(18) Comparative Studies for Management of Purse Seine Fisheries in the Southeast Asian Region

68. While noting the progress made by MFRDMD in the conduct of comparative study of purse seine fisheries, the Program Committee Member for Thailand expressed the concern that this project has been making use of data on CPUE as basis for management measures, *e.g.* establishing total allowable catch (TAC) and total allowable effort (TAE). However, since purse seines comprise different types and size categories, the study under this project should also take into consideration the strategies for reducing bycatch of juveniles of other commercial pelagic species. In this connection, the 39PCM was informed that the data used for the study is based only on production data of pelagic species, as was practiced in Japan, which include information on the mesh size, size of fish, fish composition, and other biological indicators but not for the development of strategies for reduction of juvenile fish bycatch.

69. While noting the progress of implementation of the project, the Program Committee Member for the Philippines cited that Philippines has been implementing various management measures including closed season for small-pelagic fisheries. Considering that the results of the assessment indicated positive impacts on the fisheries from the application of such closed season scheme, he suggested that this measure could also be included in the study of MFRDMD. Furthermore, since the Philippines is also in the process of establishing reference points for such management measure, the results of such study would be shared with MFRDMD in order that these could also be incorporated in the study.

(19) Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region

70. While expressing the view that the project seems to have unclear output, particularly the direction towards effective implementation and revision of NPOA-Sharks in the AMSs, the Program Committee Member for Indonesia reiterated that some guidebooks and scientific information on sharks species in the region are readily available from many literatures and related sources, which could be used as reference in the implementation of the project. In this regard, it was clarified that the difficulties actually lie in the identification of species of sharks and rays in actual situation although other information on such species

are already available. It is the aspect of species identification that needs to be improved in order to have better data and information on landing and utilization of sharks and rays in the region.

71. During the ensuing discussion, the Program Committee Member for Myanmar extended the appreciation of the DoF of Myanmar to MFRDMD for the implementation of the project in Myanmar especially in the collection of scientific information on species of sharks and rays that are listed under the CITES Appendices. She also expressed the willingness of Myanmar to continue collaborating with MFRDMD under this project in the future.

Program Thrust V: Addressing International Fisheries-related Issues from a Regional Perspective

(20) Assistance for Capacity Building in the Region to Address International Fish Trade-related Issues

72. The Representative from Brunei Darussalam expressed the appreciation to SEAFDEC for the implementation of the project and for using Brunei Darussalam as the pilot site in the implementation of the ASEAN Catch Documentation Scheme (ACDS) for Marine Capture Fisheries. She informed the Program Committee that Brunei Darussalam has already been listed as exporter to EU market for aquaculture products, of which the date of entry into force would be on 5 December 2016.

73. While supporting the extension of the project from 2017 to 2019, the Program Committee Member for Malaysia requested SEAFDEC to share the results from the visit and discussion with representatives of the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR), considering that Malaysia has been requested by CCAMLR to implement the catch documentation scheme of CCAMLR. In this regard, SEAFDEC informed the 39PCM that CCAMLR has raised this issue not only at the 48th Meeting of SEAFDEC Council but also at the 8th and 9th RPOA-IUU Coordinating Committee Meeting in Brunei Darussalam (in 2015) and Thailand (in 2016), respectively. In addition, the issue was also discussed during the CITES-COP 17, where it was mentioned that “Parties involved in the harvest and/or trade of toothfish are requested to cooperate with CCAMLR Catch Documentation Scheme.”

74. The Program Committee Member for Malaysia also emphasized on the need to conduct annual regional consultations to review and discuss the identified important international fisheries-related issues to be reflected by the Member Countries at relevant regional/international fora such as at COFi in order to safeguard the priorities and interests of the countries in the region. Considering that the latest consultation was convened in 2012, he therefore suggested that SEAFDEC should consider incorporating the results of the consultation into the project activities in 2017. He also raised some issues as potential subjects for discussion, such as the abandoned, lost or discarded fishing gear (ALDFG) and marking of fishing gears.

75. With regards to trade-related issues, the Program Committee Member for Malaysia emphasized that as the US would soon finalize the Rules of Fish and Fish Product Import Provisions under the US Marine Mammal Protection Act, which would be effective on 1 January 2017, SEAFDEC in collaboration with relevant organizations should therefore assist the AMSs in complying with the requirements of such Rules, before the full ban is enforced after the five-year exemption period. The Deputy Secretary-General of SEAFDEC also suggested that the project, which is funded by the JTF, would strengthen cooperation with other organizations and frameworks such as FAO, USAID and the SEAFDEC-Sweden Project as required, for the implementation of activities that address emerging issues encountered by the Member Countries.

76. The Program Committee Member for Myanmar informed the 39PCM that in order for Myanmar to comply with the requirements on scientific information, studies are necessary. Nevertheless, Myanmar would like to cooperate in relevant activities under the umbrella of SEAFDEC to make sure that its trade follows the CITES regulations.

(21) Strengthening SEAFDEC Network for Sustainable Fisheries

77. The Program Committee took note of the activities undertaken under the project on “Strengthening SEAFDEC Network for Sustainable Fisheries,” particularly in strengthening cooperation between SEAFDEC and the Member Countries through the Regional Fisheries Policy Network (RFPN), enhancing

the monitoring and evaluation of SEAFDEC programs and projects, and enhancing dissemination of the results from SEAFDEC initiatives to the public.

4.1.2 Special Projects

(22) Fisheries and Habitat Management, Climate Change and Social Well-being in Southeast Asia

78. The Program Committee Member for Indonesia commended SEAFDEC for the achievements made under the project in 2016, and requested SEAFDEC to incorporate in its future project activities the development of SOP for Inspectors to support the implementation of PSMA in Southeast Asia as the AMSs might have different procedures in the implementation of the PSMA. SEAFDEC was therefore asked to take into consideration the SOPs of other more advanced countries in the development of the SOP for Inspectors for the Southeast Asian region. In this connection, SEAFDEC agreed to incorporate such suggestion into the SEAFDEC work plan for 2017 by referring to the existing SOPs, *e.g.* those of US and Australia.

79. The Program Committee Member for Viet Nam commended SEAFDEC on the progress it has made in facilitating sub-regional cooperation. However, she expressed the view that the linkages and cooperation among the sub-regions in fisheries management which seemed to be lacking should be addressed. While also commending SEAFDEC for conducting stock assessment of species known to be potentially shared stocks among countries in the region, such as neritic tunas, mackerels, anchovies, blue swimming crabs, and others, as well as the study on relevant legislations that could serve as basis for management of transboundary fishery resources, she suggested that SEAFDEC should set its priority and come up with a joint management plan for specific species and sub-region in 2017. In this regard, SEAFDEC was of the view that development of such joint management plan in 2017 could focus on tonggol tuna and kawakawa, considering that scientific data on these species including reference points are already available and could be used as basis for development of management plan for the sub-regional areas. On blue swimming crab, the 39PCM was informed that Viet Nam has already developed good scientific data for this species, and that the country's experience on this aspect could also be shared with the other AMSs.

80. The Program Committee Member for Myanmar reiterated the importance of the activities that foster bilateral cooperation for combating IUU fishing, elimination of illegal fish trade, supporting transboundary management of fishery resources, and promotion of trade. She therefore requested SEAFDEC to support Myanmar in strengthening bilateral cooperation with Thailand on the management of transboundary fishery resources.

81. The Program Committee Member for Thailand expressed the appreciation to SEAFDEC for extending support that facilitate the establishment of cooperation dialogues among the Member Countries, which had been strengthened for combating IUU fishing in the region and enhancing capacity building of fisheries officers in several aspects of fisheries management. Thailand therefore looked forward to cooperating with SEAFDEC for the implementation of the project activities in the near future.

(23) USAID-SEAFDEC “Oceans and Fisheries Partnership”

82. The Program Committee took note of the progress of the activities under the USAID Project on Oceans and Fisheries Partnership (USAID Oceans) implemented in 2016 and the proposed plan of activities in 2017 focusing on two learning sites, *i.e.* Bitung in Indonesia and General Santos in the Philippines.

83. The Program Committee Member for Viet Nam recalled the discussion when the USAID Team visited Viet Nam on needs assessment of the USAID Project, and informed the 39PCM that Viet Nam is implementing two database systems for catch documentation including the integrated fishery database and online registration database for fishers to access and work online. In this connection, the Program Committee Member for Viet Nam requested the USAID Oceans to provide technical support for the improvement of their online database.

84. In addition, the Program Committee was informed that USAID/RDMA has been discussing with USAID Viet Nam to explore future collaboration under this project on bilateral basis. Taking into consideration the request of Viet Nam for technical assistance, the 39PCM was informed that the possibility of supporting the database program of Viet Nam would be discussed thoroughly by the USAID Oceans with Viet Nam.

85. The Program Committee Member for Malaysia inquired about the criteria for identification of project sites and budget allocation for activities in expansion sites in Malaysia and Thailand. He also requested USAID Oceans to provide clarification on the name of the Project Manager for Malaysia. The USAID Oceans provided clarification on the criteria for identification of the project site, however, for the budget allocation and project manager, the information would be provided during the USAID Oceans Meeting to be organized in 2017.

86. The representative from the Embassy of Sweden in Bangkok suggested that closer cooperation between the USAID Oceans and SEAFDEC-Sweden Project on gender, labor rights, and EAFM among others, should be explored to enhance the impacts of the activities and achieve the desired results.

87. The Program Committee Member for Viet Nam reiterated that the US National Oceanic and Atmospheric Administration (NOAA) has just issued electronic catch documentation, which would include shrimp documentation in the International Trade Data System (ITDS). She then sought clarification on whether the data on catch documentation systems (CDS) could be linked with the ITDS.

88. In response, the representative from USAID/RDMA informed the 39PCM that aside from the agreement with SEAFDEC, the USAID also has an agreement with NOAA under which NOAA would work on numerous issues in Southeast Asia including those on catch documentation and traceability system (CDTS). Moreover, NOAA has been closely collaborating with the USAID Oceans and would soon publish the required e-traceability to be integrated with the ITDS. This project would work hand-in-hand with the US which needs legality before its inclusion in the importation. Thus, the CDTS of the USAID Oceans could be integrated with the ACDS to support seafood exportation of AMSs to the US market. Linking data with ITDS would also assure custom's protection, and facilitate overseeing of seafood export to the US.

89. Furthermore, the Program Committee Member for Singapore sought clarification on how the e-ACDS interlinks with the USAID Ocean CDTS. In this regard, the 39PCM was reassured that efforts are being made to ensure the integration of both systems, *i.e.* SEAFDEC's ACDS and USAID Ocean's CDTS.

3.2 Departmental Programs

90. The Program Committee took note of the progress and achievements of AQD and TD in the implementation of their respective departmental programs in 2016-2017 (**Annex 6**).

3.2.1 Aquaculture Department

91. The Program Committee took note of the progress and achievements of the Departmental Programs of AQD, namely: 1) Quality Seed for Sustainable Aquaculture; 2) Healthy and Wholesome Aquaculture; 3) Maintaining Environmental Integrity through Responsible Aquaculture; 4) Adapting to Climate Change; and 5) Meeting Social and Economic Challenges in Aquaculture.

92. The Program Committee Member for Indonesia pointed out that as the projects' period of implementation is quite long, he suggested that AQD should have clear outputs and outcomes while the progress of the activities should be reported corresponding to each year to enable the audience to follow the progress of the activities.

93. With regard to Quality Seed for Sustainable Aquaculture, the Program Committee Member for Malaysia reiterated the intension of Malaysia to collaborate with AQD on research and development, through the country's national research institutes and relevant national agencies.

94. The Program Committee Member for Myanmar requested AQD to support Myanmar in the promotion of marine aquaculture technology in potential areas of Myanmar (*e.g.* training, adaptation of methodologies). In response, AQD mentioned that AQD had extended support to Myanmar for the establishment of its marine hatchery three years ago, although the request could be considered by AQD in the future.

3.2.2 Training Department

95. While taking note of the progress and achievements of the Departmental Programs of TD, namely: 1) Promotion and Strengthening of SEAFDEC Visibility and Image; 2) Tailor-made Training Programs; and 3) Improvement of Fisheries Technology and Reduction of the Impact from Fishing, the Program Committee provided their recommendations for the improvement of the said programs and activities.

96. The Program Committee Member for Malaysia congratulated TD for its achievements particularly on human capacity building. While emphasizing on the importance of information dissemination, he suggested that once new information is released by TD or when there are new information that would be of interest to the Member Countries, a notification should be sent to the Member Countries through the National Coordinators to facilitate access to such information.

97. The Program Committee Member for the Philippines informed the 39PCM that the Philippine Bureau of Fisheries and Aquatic Resources (BFAR) conducted a research activity on assessing the impact of light fishing on bycatch of juveniles in Philippine waters. He also informed the Program Committee that BFAR is preparing the technical guidelines on criteria for set net site survey protocol and selection criteria. He also requested for collaboration/technical support of TD and expressed the willingness to share the results of the research activity with TD and the other AMSs.

98. With regards to the activity on “Energy Audit for Trawlers in the Gulf of Thailand” supported by FAO, the Program Committee noted that TD has completed the 1st and 2nd phases of the project, and is in the process of extending the project for its 3rd phase. In this regard, the Program Committee Member for Indonesia requested to obtain the results of the project implemented in Thailand, and requested TD to also extend the activities in Indonesia, of which other types of fishing gear could be considered due to the ban on using trawl net in Indonesian waters. He emphasized that the results of the activity would be crucial for countries in the region to demonstrate to the global community that efforts are being made by the Southeast Asian countries to reduce the use of fuel in fishing activities.

99. In the ensuing discussion, the Program Committee Member for Indonesia also strongly recommended that the activity on energy audit should be extended to cover the other Member Countries. In this regard, TD was asked to develop the corresponding proposal to be able to seek funding support from various sources including the JTF to support the activities on energy optimization.

3.3 Other Programs

100. The Program Committee considered and endorsed the progress of implementation in 2016 and the corresponding plans for Other Programs (**Annex 7**), as follows:

(1) Coastal Area Capability Enhancements in Southeast Asia

101. The Program Committee noted the progress and results from the project on “Coastal Area Capability Enhancements in Southeast Asia,” supported by the Research Institute for Humanity and Nature (RIHN) of Japan, which would be concluded in 2017. In this connection, the Chief of MFRDMD expressed the willingness of MFRDMD to join in the implementation of some activities of this project, particularly on research and development on acoustic survey equipment and system appropriate for shallow waters.

(2) Application of Fish Passage Design Principles to Enhance Sustainability of Inland Fishery Resources in the Southeast Asian Region

102. The Program Committee took note of the progress of implementation of the project on “Application of Fish Passage Design Principles to Enhance Sustainability of Inland Fishery Resources in the Southeast Asian Region” supported by the Australian Centre for International Agricultural Research (ACIAR) with the aim of developing a model of fish passage to facilitate upstream migration of indigenous fish species. Although the original timeline of the project was planned to be completed in October 2016, ACIAR already approved the extension of the project until March 2017 to enable SEAFDEC to undertake more replicates of the scientific experiments.

IV. PIPELINE PROJECTS AND EMERGING NEEDS FOR PREPARATION OF FUTURE PROJECT PROPOSALS

(1) Enhancing Sustainable Utilization and Management Scheme of Tropical Anguillid Eel Resources in Southeast Asia

103. The Program Committee took note of the pipeline project on “Enhancing Sustainable Utilization and Management Scheme of Tropical Anguillid Eel Resources in Southeast Asia” (**Annex 8**), the proposal of which was developed for funding support from the Japan-ASEAN Integration Fund (JAIF). The Program Committee also noted that the proposal would be submitted to the ASEAN Secretariat in December 2016, and that the approval process would take approximately six months before the project could be put into implementation in 2017. Furthermore, the experiences that could be gained from the implementation of this project would be shared with all Member Countries after the completion of this project.

104. During the discussion, the Deputy Chief of IFRDMD reiterated that during the CITES-COP17 in 2016 the proposal of the EU to implement eel resource management was accepted until the next CITES-COP in 2019 which would discuss the listing of additional species under the CITES Appendices. It is therefore necessary for countries in the region to undertake activities that could demonstrate the actions they have carried out on the conservation and management of eel species.

105. The Program Committee Member for Indonesia also inquired about the relationship between this pipeline project with the existing project on “Enhancement of Sustainability of Catadromous Eel Resources in Southeast Asia” being implemented by IFRDMD with support from the JTF under the FCG/ASSP Mechanism. In this regard, it was clarified this pipeline project is expected to complement the existing JTF project in order to come up with better results and findings.

106. The Program Committee Member for Myanmar expressed the willingness of Myanmar to be involved in the activity in order that the country could come up with better scientific data on eel species in Myanmar. Considering that the project covers all AMSs, with field surveys to be conducted mainly in four countries, namely: Indonesia, Myanmar, Philippines, and Viet Nam, therefore the request of Myanmar could be accommodated.

107. The Program Committee Member for Viet Nam and Philippines also informed the Program Committee of their respective countries’ willingness to participate in this project.

108. In response to the query from the Program Committee Member for Indonesia on whether this project would be able to achieve its expected outputs within the planned two-year period, it was clarified that although the timeframe for project implementation has been proposed for two (2) years, the project duration could be extended if necessary. He also requested that the coordinator for management arrangement of this project for Indonesia should be changed from “*Dr. Satoshi Honda*” to “*Dr. Arif Wibowo*.”

109. After the discussion, the 39PCM noted the request of the AMSs for SEAFDEC to serve as the proponent of this proposed project considering the project-wide benefits to multiple AMSs and more effective project activities towards the wider target areas by SEAFDEC. Furthermore, it was also agreed

that once funding could be secured, the project should be implemented the soonest time possible and that the project should be placed under the ASEAN-SEAFDEC Strategic Partnership mechanism.

V. COOPERATION WITH DONORS, NON-MEMBER GOVERNMENT AND INTERNATIONAL/ REGIONAL ORGANIZATIONS

110. Representatives from regional and international organizations and agencies collaborating with SEAFDEC attending the 39PCM were invited to inform the Program Committee of their relevant fisheries programs and the potential areas of mutual cooperation with SEAFDEC.

111. The representative from FAO Regional Office for Asia and Pacific (FAO/RAP), *Dr. David Brown* thanked SEAFDEC on behalf of the Assistant Director General of FAO, for the invitation extended to FAO to attend the Program Committee Meeting. He informed the Program Committee that the blue sectors of fisheries and aquaculture have been making significant contributions to food and nutrition security and improved livelihoods of millions of people around the world. He appreciated the contribution made by SEAFDEC through real actions including strengthening regional cooperation and the significant work with ASEAN, especially on combating Illegal, Unreported and Unregulated (IUU) fishing and implementing the PSMA in the region; development of capacity for EAFM and specific training; and providing the Regional Facilitation Unit for the joint execution of the Strategies for Trawl fisheries Bycatch Management (REBYC II). He also expressed the hope that the collaboration between FAO and SEAFDEC could be strengthened in the coming years, considering that a number of projects would be implemented in the region that would require closer cooperation between SEAFDEC and FAO. He also mentioned that FAO is committed to support SEAFDEC and the Member Countries in their plans to address the issues under the new Sustainable Development Goals (SDGs), particularly on SDG 14 (Life Below Water: Conserve and sustainably use the oceans, seas and marine resources). His Statement appears as **Annex 9**.

112. The Director of the Prefectural Inland Fisheries Training Center of Gifu in Japan, *Mr. Mitsuo Mori* expressed the Center's gratitude to SEAFDEC for giving them the great opportunity to join this 39PCM. After introducing the activities of the Center which was established within the Research Institute for Fisheries and Aquatic Environments, and specializes on inland fisheries, he asked the cooperation of the AMSs in the implementation of the Center's activities. He highlighted that their organization was established with the objective of carrying out research and development of related technologies and promoting such technologies to various stakeholders. He cited that "Ayu of the Nagara River System," which links the aquatic environment, fishing resources and daily lives of the people, is the primary theme of the Center's training program module. He also expressed the hope that the AMSs would be able to join their training programs. His presentation appears as **Annex 10**.

113. In response, the Chief of IFRDMD expressed the hope that the collaboration between Gifu and SEAFDEC would be enhanced in the future. The IFRDMD Chief also extended appreciation to Gifu Prefectural Inland Fisheries Training Center for supporting the initiation of the collaboration by inviting IFRDMD staff to visit Gifu Prefecture.

114. The Representative from the Embassy of Sweden in Bangkok, Thailand, *Ms. Louise Herrmann* congratulated SEAFDEC and the Member Countries for their efforts as well as on the progress made and results achieved in 2016. She cited that the support of Sweden to SEAFDEC is in line with the new Swedish strategy which aims to address the integration of environment, climate change, human rights, and gender equality. She believed that SEAFDEC could strengthen this important regional work and generate a range of new opportunities for the region's fisheries and aquaculture sectors within the framework of the ASEAN. She also affirmed the desire of Sweden for SEAFDEC to take active role in the Sustainable Development Goal 14 (SDG 14) at the global level. Her Statement appears as **Annex 11**.

115. The Representative from the United States Agency for International Development/Regional Development Mission for Asia (USAID/RDMA), *Dr. Alfred Nakatsuma* thanked SEAFDEC, the Government of Indonesia, and the Member Countries for the opportunity to participate in this 39PCM. He congratulated SEAFDEC for the impressive outputs from its projects and activities, and stated that USAID learned from SEAFDEC and its Member Countries on the improvements and strengthened capability to implement the Oceans and Fisheries Partnership (USAID Oceans). He believed that the efforts of USAID

Oceans to develop a catch documentation and traceability system, as well as its consolidated effort to promote Port State Measures represent key elements to reduce IUU fishing and improve fisheries management. He congratulated and expressed gratitude to SEAFDEC for the progress being made together in these areas. He also reaffirmed that the U.S. Government's ongoing commitment and support to protect the Asia-Pacific region's marine biodiversity and combating IUU fishing will be continued to facilitate the engagement of the Department of State, NOAA, the Department of Interior and other US government counterparts towards this goal. He added that USAID would continue to seek ways to build on this partnership with SEAFDEC to promote its leadership and advance the priorities of the SEAFDEC Member Countries towards national and regional priorities. His statement appears as **Annex 12**.

VI. OTHER PROGRAM MANAGEMENT MATTERS

6.1 Monitoring and Evaluation of SEAFDEC Programs for 2016 and Onwards

116. The Program Committee took note of the summary of achievements of SEAFDEC based on the implementation of the projects it had implemented since 2013, classified according to Program Thrusts (**Annex 13**). Furthermore, the Program Committee was informed that the project activities had been categorized into research and development activities; training activities; information activities; policy development activities; collaborative programs; and others with the corresponding budget and the benefits to the countries. SEAFDEC will compile the information and achievements in an e-file, and subsequently save in CD-Rom for dissemination.

117. While expressing the appreciation to SEAFDEC for providing the summary of achievements to the Member Countries, the Program Committee for Viet Nam commented that in the matrix of achievements, outputs and activities appeared different. She suggested that SEAFDEC should consider modifying the matrix by adding another column which would indicate the rationale outputs and expectations of the activities. This way, the modified matrix would provide a better picture of the implementation of the projects and the corresponding achievements.

118. The Program Committee took note of the need to improve the M&E reporting system, and was also informed that the necessary modifications would be discussed during the forthcoming Department Chiefs Meeting. After improving the matrix showing the summary of achievements, SEAFDEC would circulate the results to the Member Countries for their information.

VII. OTHER MATTERS

7.1 Review of the Implementation of the 2011 ASEAN-SEAFDEC Resolution and Plan of Action

119. The Program Committee took note of the review conducted by the SEAFDEC Secretariat on the implementation of the 2011 ASEAN-SEAFDEC Resolution and Plan of Action by the AMSs (**Annex 14**). Considering that so far only seven countries have submitted their inputs to the said review, the remaining three countries were therefore requested to submit the necessary information as soon as possible, as the report on the review would be updated by the SEAFDEC Secretariat before its submission to the next SEAFDEC Council Meeting in 2017.

120. While expressing the appreciation to SEAFDEC for the efforts made in reviewing the implementation of the 2011 Resolution and Plan of Action, the Program Committee Member for Indonesia explained that Indonesia would accomplish the review form for submission to the SEAFDEC Secretariat soonest.

7.2 Results from High-Level Consultation on Regional Cooperation in Sustainable Fisheries Development Towards the ASEAN Economic Community: Combating IUU Fishing and Enhancing the Competitiveness of ASEAN Fish and Fishery Products

121. The Program Committee noted the results of the ASEAN-SEAFDEC High-level Consultation organized on 3 August 2016, especially the adoption of the ASEAN-SEAFDEC Joint Declaration on Regional Cooperation for Combating IUU Fishing and Enhancing the Competitiveness of ASEAN Fish and Fishery Products (**Annex 15**).

122. During the discussion, the Program Committee Member for Thailand expressed the appreciation to the Member Countries and SEAFDEC for their valued support during the adoption of the Joint Declaration. While citing that most issues under the commitment of the Joint Declaration are being addressed through the SEAFDEC programs, the Program Committee Member for Thailand also suggested that some programs should be strengthened to support the Member Countries in their efforts towards combating IUU fishing. SEAFDEC was therefore asked to promote the implementation of the provisions in the Joint Declaration, as the results could be used to advise and support the AMSs in the development and implementation of activities related to combating IUU fishing, *e.g.* management of fishing capacity to balance the fishing effort with availability of fishery resources.

123. The Program Committee Member for Indonesia requested SEAFDEC to develop regional work plan reflecting the issues under the 11 key actions in the Joint Declaration. Meanwhile, he also informed the Program Committee that the Joint Declaration has been addressed during the 28th-29th ASEAN Summits on 6-8 September 2016 in Vientiane, Lao PDR. During the Summit, the Heads of States/Governments of AMSs welcomed the achievements in strengthening the capacity of the countries to combat IUU fishing in the region. He added that the Joint Declaration was also addressed at the 38th Meeting of the ASEAN Ministry on Agriculture and Forestry (AMAF) on 6 October 2016 in Singapore, where the AMAF noted the Joint Declaration and encouraged the AMSs to intensify its implementation.

124. Furthermore, the Program Committee was informed that SEAFDEC is reviewing the achievements of its projects during the past few years which could provide linkage to support the implementation of activities in line with the 11 key actions in the Joint Declaration. The progress of such review would be presented to the 19th Meeting of FCG/ASSP.

7.3 SEASOFIA 2017

125. The Program Committee took note of the summary of the progress made by SEAFDEC on the preparation of the Southeast Asian State of Fisheries and Aquaculture (SEASOFIA) 2017 (**Annex 16**) and on the draft SEASOFIA 2017. In this connection, the Program Committee was informed that inputs requested from Member Countries' contributors to the SEASOFIA should be submitted to the SEAFDEC Secretariat before the end of December 2016 to facilitate the finalization and production processes.

7.4 Announcement of the SEAFDEC 50th Year Anniversary

126. The Program Committee took note of the Concept Proposal for the Special Event to commemorate the 50th Anniversary of SEAFDEC (**Annex 17**), tentatively scheduled on 15-16 November 2017 in Pattaya, Thailand. The Program Committee also noted that SEAFDEC proposed to conduct a High-level Consultation on Development of Common ASEAN Fisheries Policy (tentative title) as candidate event to be organized back-to-back with the anniversary event.

127. During the discussion, the Program Committee Member for Viet Nam expressed the view that in order to ensure the participation of high-level authorities of the Member Countries, the event should have clear expected outputs.

128. The Program Committee Member for Indonesia also shared his view that the 50th anniversary event should be an extra-ordinary affair. Furthermore, since the development of the theme on Development of Common Fisheries Policy is still ongoing and may not be agreed upon by all countries, he explained that the proposed theme might not be appropriate for this significant event.

129. The Program Committee Member for Singapore pointed out that it might not be a good idea to hold such discussions (*e.g.* on the Common Fisheries Policy) prior to the anniversary celebration, because if positive outcomes are not achieved, this might dampen the atmosphere of the celebration.

130. The SEAFDEC Deputy Secretary-General also commented that the conduct of the back-to-back events for the development of the ASEAN Common Fisheries Policy which possibly excludes Japan, may hamper the participation of Japan to the SEAFDEC 50th anniversary event. In this regard, he requested that such proposal should be reconsidered though he does not intend to block the adoption of the ASEAN Common Fisheries Policy under the ASEAN framework.

131. After thorough discussion, the Program Committee was of the view that the anniversary event to be organized in Pattaya, Thailand should be a 1-day event only that may comprise the following activities:

09.00-11.00 hrs. Special SEAFDEC Council Meeting

11.00-14.00 hrs. Lunch on-board the M.V. SEAFDEC

17.00-18.00 hrs. Anniversary celebration (including Remarks by Guest of Honor, Presentation of awards to those that provide significant support to SEAFDEC, and launching of publications)

18.00-21.00 hrs. Gala Dinner

132. With regards to the Special SEAFDEC Council Meeting, the Program Committee suggested that this should be aimed at adopting the future direction of SEAFDEC beyond its 50th year. In this connection, SEAFDEC was requested to draft a statement on future direction for consideration by the SEAFDEC Council at its next meeting in 2017 in order to facilitate fast adoption at the Special Council Meeting.

133. The Program Committee was informed that for the Lunch On-board the M.V. SEAFDEC, a maximum of only 50 guests could be accommodated onboard the vessel. In addition, the 39PCM noted that patrol boats would also accompany the M.V. SEAFDEC to assure the safety of the guests during the cruise.

134. The Program Committee recommended that SEAFDEC could proceed in exploring the possibility of inviting the Guest of Honor for the event, and that the SEAFDEC Council would be requested to consider identifying the external personalities and organizations that have provided significant support to SEAFDEC, to receive the award. Furthermore, in order that the 50th Anniversary commemoration would be memorable for SEAFDEC Departments and staff, the possibility of giving award to the most outstanding staff including former staff for their excellent contribution to SEAFDEC was also suggested. In this connection, the SEAFDEC Departments were asked to identify those that will be given the award which would be finally decided by the SEAFDEC Council.

135. The Program Committee also suggested that launching of SEASOFIA 2017 should be made at the Anniversary event, together with the publication on the 50th year of SEAFDEC. Furthermore, the Member Countries were also requested to assure the participation of high-level officials (*e.g.* at Ministerial/Council level) to attend the Anniversary event.

7.5 Concept Proposal Toward the Development of ASEAN Common Fisheries Policy

136. In response to the recommendations during the 38th AMAF encouraging the development of the “ASEAN Common Fisheries Policy”, SEAFDEC prepared a Concept Proposal Toward the Development of ASEAN Common Fisheries Policy (**Annex 18**) aimed at providing better understanding on the common fisheries policy based on the good practices of EU, and exploring the possibility and seeking directives of the AMSs on the development of the ASEAN Common Fisheries Policy.

137. During the discussion, SEAFDEC presented the common fisheries policy (CFP) of EU which is a set of rules for managing European fishing fleets and for conserving fish stocks. In addition, the EU-CFP is designed to manage a common resource, giving all European fishing fleets equal access to EU waters and fishing grounds, and allowing fishers to compete fairly. In this regard, SEAFDEC suggested that a special conference could be organized during the 50th Anniversary event to obtain clear directive on the development of CFP for the ASEAN.

138. The Program Committee Member for Malaysia expressed the view that the concept proposal on the ASEAN Common Fisheries Policy has not been discussed and reflected during the 38th Meeting of SOM-AMAF. Furthermore, he also indicated that the benefits of the Common Fisheries Policy of EU would be different from that of the ASEAN due to multi-species nature of tropical fisheries and the existence of several gaps in respective national laws and regulations in the region based on the Framework Study for Model Fisheries Legislation in Southeast Asia by the Australian National Centre for Ocean Resources and Security (ANCORS). He also commented that it is not urgent for the region to develop the Common Fisheries Policy since implementation of the existing Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020 is still ongoing. Meanwhile, the Program Committee Member for Indonesia also recognized that establishment of the CFP for ASEAN

which is on voluntary basis would be different from the CFP for EU which is mandatory. He also suggested that the Resolution & Plan of Action Toward 2020 should be used as a basis for the development of such ASEAN Common Fisheries Policy. While taking note of the aforementioned suggestions, the Program Committee agreed that this proposal should be discussed more thoroughly during the forthcoming SEAFDEC meetings as appropriate.

7.6 Follow-up Actions to the Directives Given at the 48th Meeting of the SEAFDEC Council in April 2016

139. While appreciating the short summary presented by SEAFDEC Secretariat on the progress of the follow-up actions on the recommendations of the 48th Meeting of SEAFDEC Council, the Program Committee Member for Indonesia suggested that the summary should also include the Agenda of the 48th Meeting of SEAFDEC Council in order to update the Council on how their recommendations had been addressed by SEAFDEC and the Member Countries.

140. In this respect, the Program Committee suggested that the Agenda Item on “Follow-up Actions to the Directives Given at the 48th Meeting of the SEAFDEC Council in April 2016” should be amended in the Agenda of this Program Committee Meeting. The Program Committee also noted that the said Agenda Item will also be discussed during the 19th Meeting of the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership on 1-2 December 2016.

VIII. CONCLUSIONS AND RECOMMENDATIONS OF THE THIRTY-NINTH MEETING OF THE PROGRAM COMMITTEE

8.1 Adoption of Report of the Program Committee Meeting

141. The Program Committee adopted the recommendations of its Thirty-ninth Meeting on 28-30 November 2016, which would be included in the Report of the Thirty-ninth Meeting of the Program Committee of SEAFDEC. The Program Committee also took note that the Report would be submitted to the 49th Meeting of SEAFDEC Council and to the ASEAN through the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP).

8.2 Date and Venue of the Fortieth Meeting of the Program Committee

142. In considering the date and venue of the Fortieth Meeting of the Program Committee, the Chief of Marine Fisheries Research Department (MFRD) informed the Program Committee that MFRD would host the Fortieth Meeting in Thailand. He also informed the Program Committee that MFRD would seek the guidance of the Secretariat in finalizing the schedule and related arrangements for the Meeting.

IX. CLOSING OF THE PROGRAM COMMITTEE MEETING

143. In his Closing Remarks, the Chairperson of the Program Committee thanked the Program Committee Members, representatives of the collaborating organizations, SEAFDEC Secretariat and Departments, as well as observers for their valuable inputs and recommendations on the projects and activities of SEAFDEC. He specifically expressed the appreciation to IFRDMD for hosting the Program Committee and MMAF for making excellent arrangements of the Meeting, as well as to the secretariat staff for their efforts in making the Meeting a success. He then declared the Program Committee Meeting closed. His Closing Address appears as **Annex 19**.

144. On behalf of the Program Committee, the Program Committee Member for Singapore also expressed the appreciation to SEAFDEC/IFRDMD and MMAF for the arrangements of the 39PCM. She also thanked the other Program Committee Members as well as organizations and donors for providing significant contributions to the success of SEAFDEC activities that make SEAFDEC as the technical arm of the ASEAN on fisheries development, being recognized as the international authority in fisheries.

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Assalamualaikum wr. wb., good morning and best wishes to all of us,

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Honorable Members of the SEAFDEC Program Committee,
Distinguished SEAFDEC Chief Departments, Deputy Chief Departments and Senior Officials,
Distinguished Representatives from our Collaborating Partners,
Ladies and Gentlemen,

Good morning and welcome to the Thirty-ninth Meeting of SEAFDEC Program Committee in this beautiful City of Yogyakarta. First of all, let us praise the Lord, the Almighty who has granted us the opportunity to be here today to attend our annual SEAFDEC Meeting, and off course it is my great pleasure to see you all again especially in my home town, my beloved city Yogyakarta.

I would like to apologize on behalf of the Secretary-General of the Ministry of Marine Affairs and Fisheries of the Republic of Indonesia, *Prof. Sjarief Widjaja* for not being able to be with us this morning due to other official commitments. He conveys his warmest regards to all of you.

Before we start this Meeting, I would like to thank all the people that already work hard for hosting this year's Meeting and for making the necessary arrangements to make our stay in this City comfortable and memorable.

In this good opportunity, I would also like to express my appreciation to all participants for attending this Meeting, especially to those who have made long journey to be here, I wish you all a very warm welcome to Indonesia.

Distinguished Delegates,

We are now already stepping into ASEAN Community together, and fisheries sector is one of the 12 priority sectors of ASEAN Economic Integration under the AEC. It is a fact stated by the FAO that fisheries has become an important source of food, nutrition, income and livelihoods. According to the latest State of World of Fisheries and Aquaculture (SOFIA) published in 2016, from 167.2 million tonnes of global fish production, 87.5% of them are utilized only for human consumption. The fisheries contribution of the ASEAN Member States are significant considering that almost half of the world fish production comes from this region.

I believe all the ASEAN Countries have prepared their fisheries sector readiness towards the AEC. We are looking forward to seeing our region develop more, not only in economic or trade sectors but also in fishery technology and sustainability in the ASEAN community establishment and SEAFDEC is the key regional organization that plays very significant role in fishery development in the region. We appreciate work's achievement and project has been done by SEAFDEC and we are all as the Member Countries will always give its upmost support to activities worked by SEAFDEC and pleased to join hand with SEAFDEC.

I do appreciate the way SEAFDEC in organizing and conducting activities, time by time it becomes more detail and harmonizes to each other. We aware that SEAFDEC with all the Member Countries supported by the partner organizations and donors have been working to assist the region improving its: food safety and food security; fisheries sustainability; international and Intra-regional trade; food security and food safety; habitat management and climate change issues. There so many works have been done, been doing and also the home works to do as well. Those are the reasons we are here now to discuss the programs of

SEAFDEC Departments in the next three days, and after that will be continued to Focus Consultative Group of ASEAN-SEAFDEC Strategic Partnership Meeting for another 2 days. That will be tiring for all of us, but I believe the spirit to improve our region together will be our strengths!

Delegates, Ladies and Gentlemen,

Last but not least, I hope that all of you will enjoy your short stay in Indonesia. Please find some time to see more of Yogyakarta, so that you can see for yourselves the way of life, the culture and aspirations of the various races that go to make up this multi-ethnic nation of ours. I hope that when you leave Yogyakarta, you will bring back with you many fond memories of your stay in this country.

As the host of this meeting, I hope that you will find all the arrangements made during your stay here a comfortable one. To the secretariat, I must thank and congratulate you for the successful organization of this Meeting.

I wish all of you a fruitful and rewarding deliberation.

Thank you.

Wabillahi taufik wal hidayah,

Wassalamu'alaikum Wr. Wb.

OPENING REMARKS

*By Dr. Kom Silapajarn
SEAFDEC Secretary-General*

Distinguished Members of the SEAFDEC Program Committee,
SEAFDEC Deputy Secretary-General and Advisor,
SEAFDEC Department Chiefs and Senior Officials,
Representatives from our Collaborating Partners,
Ladies and Gentlemen,

Before anything else, may I request for a minute of silence to enable us to pray for the eternal repose of *His Majesty King Bhumibol Adulyadej* who passed away on 13 October 2016. Thank you.

Good morning and welcome to the Thirty-ninth Meeting of SEAFDEC Program Committee in this a city on the Indonesian island of Java known for its traditional arts and cultural heritage of Yogyakarta. Before we start this Meeting, I would like to thank Inland Fishery Resources Development and Management Department (IFRDMD) and Ministry Marine Affairs and Fisheries of Indonesia for hosting this year's Meeting and for making the necessary arrangements to make our stay in this City comfortable and memorable.

Ladies and Gentlemen, to continue with this Meeting, please allow me to inform you about the sequence of our main discussion. As before, we would start with the Programs under the FCG/ASSP Mechanism followed by Departmental Programs and Other Programs. The Programs under the FCG/ASSP Mechanism have been grouped accordingly under the Program Thrusts of the SEAFDEC Program Framework adopted by the SEAFDEC Council in 2009. Moreover, review the results of program implementation for the year 2016 and endorse the proposed programs of activity for the year 2017 also forms part of the Agenda of this Meeting.

The Program Committee is encouraged to closely examine the various activities under the programs and to make comments on the progress of the implementation of the activities in terms of attaining the desired objectives and aims. As stipulated in its Terms of Reference, the SEAFDEC Program Committee is tasked to evaluate the programs and activities of SEAFDEC to make sure that dovetail towards addressing the needs of the Member Countries. On behalf of the SEAFDEC Secretariat and Departments, we would like to assure you that we would always welcome your recommends and suggestions for the improvement of our programs and activities to make these more appropriate to the requirements of the Member Countries. We also welcome the comments of our collaborating partners on our programs and activities as their insights could lead to stronger cooperation, prevent duplication of efforts, and maximize the benefits that our programs and activities could provide to the countries in the region.

As you may be already aware of, we have been closely following-up with the instructions of the SEAFDEC Council and making adjustments as necessary in our activities especially with respect to the efficient and effective management of the Center.

In this Meeting is to be followed by program/project presentation by the project leader/relevant staff on the results of implementation of programs of activity for the year 2016 and proposed program of activity for the year 2017 for scrutiny by the Committee. The presentations focus on main achievement of the project objective of the existing and/or new programs. The presentations also include results of their implementation on recommendations of the Program Committee at the 38th Meeting and directives given by the Council at the 48th Meeting.

All in all, the outputs of this Meeting together with your recommendations would be submitted to the forthcoming meeting of the SEAFDEC Council for consideration and approval, as well as to the ASEAN Sectoral Working Group on Fisheries or ASWGF_i as appropriate through the Nineteenth Meeting of the FCG/ASSP to be held back-to-back with this Meeting.

We are therefore asking for your utmost cooperation and active participation in the discussions. We want to make sure that we could come up with recommendations that would pave the way towards the sustainable development of fisheries in our region and enhance the role of fisheries in the unified ASEAN Economic Community which is already in the offing.

With that note, Ladies and Gentlemen, I now declare the Thirty-ninth Meeting of SEAFDEC Program Committee open.

Thank you very much and good day!

AGENDA

Agenda 1: Opening of the Meeting

Agenda 2: Adoption of Agenda and Arrangement of the Meeting

Agenda 3: Review of SEAFDEC Program Implementation for the Year 2016 and Proposed Programs for the Year 2017

3.1 Programs under the Fisheries Consultative Group of the ASEAN- SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism

3.1.1 Program Thrust I: Developing and Promoting Responsible Fisheries for Poverty Alleviation and Food Security

- Human Resources Development for Sustainable Fisheries
- Optimizing Energy Use/Improving Safety Onboard in Fishing Activities
- Promotion of Sustainable Fisheries Resources Enhancement Measures in Critical Habitats/Fishing Grounds in Southeast Asia
- Environment-friendly, Sustainable Utilization and Management of Fisheries and Aquaculture Resources
- Enhancement of Sustainability of Catadromous Eel Resources in Southeast Asia
- Promotion of Responsible Utilization of Inland Fisheries in Southeast Asia
- Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management

3.1.2 Program Thrust II: Enhancing Capacity and Competitiveness to Facilitate International and Intra-regional Trade

- Chemicals and Drug Residues in Fish and Fish Products in Southeast Asia – Biotoxins (ASP, AZA, and BTX) and Harmful Algal Blooms (HABs) in the ASEAN Region
- Cold Chain Management for Seafood
- Reinforcement and Optimization of Fish Health Management and the Effective Dissemination in the Southeast Asian Region

3.1.3 Program Thrust III: Improving Management Concepts and Approaches for Sustainable Fisheries

- Strategies for Trawl Fisheries By-catch Management
- Promotion of Countermeasures to Reduce IUU Fishing Activities
- Combating IUU Fishing in the Southeast Asian Region through Application of Catch Certification for Trading of Fish and Fishery Products
- Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand

3.1.4 Program Thrust IV: Providing Policy and Advisory Services for Planning and Executing Management of Fisheries

- Fisheries Resources Survey and Operational Plan for M.V. SEAFDEC 2
- Offshore Fisheries Resources Exploration in Southeast Asia
- Enhancing the Compilation and Utilization of Fishery Statistics and Information for Sustainable Development and Management of Fisheries in Southeast Asian Region
- Comparative Studies for Management of Purse Seine Fisheries in the Southeast Asian Region

- Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region

3.1.5 Program Thrust V: Addressing International Fisheries-related Issues from a Regional Perspective

- Assistance of Capacity Building in the Region to Address International Trade-related Issues
- Strengthening SEAFDEC Network for Sustainable Fisheries

3.1.6 Special Project

- Fisheries and Habitat Management, Climate Change and Social Well-being in Southeast Asia
- USAID-SEAFDEC “Oceans and Fisheries Partnership”

3.2 Departmental Programs

3.2.1 Aquaculture Department

- Quality Seed for Sustainable Aquaculture
- Healthy and Wholesome Aquaculture
- Maintaining Environmental Integrity through Responsible Aquaculture
- Adapting to Climate Change
- Meeting Socio-economic Challenges in Aquaculture

3.2.2 Training Department

- Promotion on Strengthening of SEAFDEC Visibility and Image
- Tailor-made Training Programs
- Improvement of Fisheries Technology and Reduction of the Impact from Fishing

3.3 Other Programs

- Coastal Area Capability Enhancements in Southeast Asia
- Application of Fish Passage Design Principles to Enhance Sustainability of Inland Fishery Resources in the Southeast Asian Region

Agenda 4: Pipeline Projects and Emerging Needs for Preparation of Future Project Proposals

4.1 Proposal to JAIF: Enhancing Sustainable Utilization and Management Scheme of Catadromous Tropical Eel Resources in Southeast Asia

Agenda 5: Cooperation with Donors, Non-member Government and International/Regional Organizations

Agenda 6: Other Program Management Matters

6.1 Monitoring and Evaluation of SEAFDEC Programs for 2016 and Onwards

Agenda 7: Other Matters

7.1 Reviews of the Implementation of the 2011 ASEAN-SEAFDEC Resolution and Plan of Action

7.2 Results from the High-level Consultation on Regional Cooperation in Sustainable Fisheries Development Towards the ASEAN Economic Community: Combating IUU Fishing and Enhancing Competitiveness of ASEAN Fish and Fishery Products

7.3 SEASOFIA 2017

7.4 Announcement of the SEAFDEC 50th Year Anniversary

7.5 Concept Proposal Toward the Development of Common ASEAN Fisheries Policy

7.6 Follow-up Actions to the Directive Given at the 48th of the SEAFDEC Council in April 2016

Agenda 8: Conclusion and Recommendations of the Thirty-ninth Meeting of the Program Committee

8.1 Adoption of the Report

8.2 Date and Venue of the Fortieth Meeting of the Program Committee

Agenda 9: Closing of the Program Committee Meeting

**PROJECTS UNDER THE FISHERIES CONSULTATIVE GROUP
OF THE ASEAN-SEAFDEC STRATEGIC PARTNERSHIP (FCG/ASSP) MECHANISM
FOR THE YEAR 2016-2017**

I. Existing Program

Program Thrust/Project Title	Lead Department	2016	2017	Appendix No.
Thrust I: Developing and Promoting Responsible Fisheries for Poverty Alleviation & Food Security				
Human Resource Development for Sustainable Fisheries	TD	Y	Y	1
Optimizing Energy Use/Improving Safety Onboard in Fishing Activities	TD	Y	Y	2
Promotion of Sustainable Fisheries Resources Enhancement Measures in Critical Habitats/Fishing Grounds in Southeast Asia	TD	Y	Y	3
Environment-friendly, Sustainable Utilization and Management of Fisheries and Aquaculture Resources	AQD	Y	Y	4
Enhancement of Sustainability of Catadromous Eel Resources in Southeast Asia	IFRDMD	Y	Y	5
Promotion of Responsible Utilization of Inland Fisheries in Southeast Asia	IFRDMD	Y	Y	6
Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management	MFRDMD	Y	Y	7
Thrust II: Enhancing Capacity & Competitiveness to Facilitate International and Intra-regional Trade				
Chemicals and Drug Residues in Fish and Fish Products in Southeast Asia – Biotoxins (ASP, AZA, and BTX) and Harmful Algal Blooms (HABs) in the ASEAN Region	MFRD	Y	Y	8
Cold Chain Management for Seafood	MFRD	Y	Y	9
Reinforcement and Optimization of Fish Health Management and the Effective Dissemination in the Southeast Asian Region	AQD	Y	Y	10
Thrust III: Improving Management Concepts and Approaches for Sustainable Fisheries				
Strategies for Trawl Fisheries By-catch Management	TD	Y	N	11
Promotion of Counter Measures to Reduce IUU fishing activities	TD	Y	Y	12
Combating IUU Fishing in the Southeast Asian Region through Application of Catch Certification for Trading of Fish and Fishery Products	MFRDMD	Y	Y	13
Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand	TD	Y	Y	14
Thrust IV: Providing Policy & Advisory Services for Planning & Executing Management of Fisheries				
Fisheries Resource Survey and Operational Plan for M.V. SEAFDEC 2	TD	Y	Y	15
Offshore Fisheries Resources Exploration in Southeast Asia	TD	Y	Y	16
Enhancing the Compilation and Utilization of Fishery Statistics and Information for Sustainable Development and Management of Fisheries in Southeast Asian Region	TD/SEC	Y	Y	17
Comparative Studies for Management of Purse Seine Fisheries in the Southeast Asian Region	MFRDMD	Y	Y	18
Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region	MFRDMD	Y	Y	19
Thrust V: Addressing International Fisheries Related Issues from a Regional Perspective				
Assistance of Capacity Building in the Region to Address International Fish Trade-related Issues	SEC	Y	Y	20
Strengthening SEAFDEC Network for Sustainable Fisheries	SEC	Y	Y	21

II. Special Projects

Program Thrust/ Project Title	Lead Department	Period	Appendix No.
Fisheries and Habitat Management, Climate Change and Social Well-being in Southeast Asia	SEC	2013-2017	22
USAID-SEAFDEC “Oceans and Fisheries Partnership”	SEC	2015-2019	23

Y = Program implemented during the year

N = Program not implemented during the year

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

		Project id: 0120130101	
Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP and Mechanism		
Project Title:	Human Resource Development for Sustainable Fisheries		
Program Thrust:	I	Total Duration:	2013 – 2019
Lead Department:	TD	Lead Country:	All AMSs
Donor/Sponsor:	JTF-6	Total Donor Budget:	USD 333,290
Project Partner:		Budget for 2017:	USD 45,300
Project Leader:	Mrs. Panitnard Taladon	Involved Country:	SEAFDEC Member Countries

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

Since 2013, TD has been conducted several regional training courses for Member Countries, especially under the task on sustainable fisheries development, in this stage of the middle age of the project, the project propose to do the follow up activities, this to ensure that Member Countries can make use of this HRD project through the gained knowledge and skills which is transferred through several regional training and national training courses that are support to Member Countries by the project.

The propose follow up activities will be carried out through the set of the intensive national capacity building at the pilot and learning site through the task in improving the income of fishers through the fisheries activities. These task can be carried out through the promotion to increase value of the total captured and culture fish, to develop high value fish species dealt, to develop processing methods in adding high value to the product and also to improve distributing channels of the capture and culture fish for the fishers.

There are several proposed pilot-learning sites from the regional E-EAFM and Fisheries Extension Methodologies training courses' participants from each country during the way forwards sessions which is one of the activity in each training course which are conducted by TD in the year 2014 and 2015, in this year of 2016, the project have reviewed on the needed of each proposed pilot for learning site, in focusing to improve the income of fishers through the fisheries activities, so that the year of 2016 and 2017, the human capacity building for improvement of income of fishers through the fisheries activities as a part of fisheries extension work is proposed to be implemented at a pilot-learning sites in Myanmar, the result and lesson learned of this will be used to share for adaption for other Member Countries in the following years .

At the pilot-learning sites, the process will be mainly implemented by the key national officers. SEAFDEC will play role as only supporter through the national key officer's capacity building program.

2. Background and Justification

In referring to the plan of action on Sustainable Fisheries for Food Security Towards 2020 which was adopted in ASEAN-SEAFDEC Conference Fish for the People 2020 "Adaptation to a Changing Environment" in Bangkok, Thailand during 13-17 June 2011emphazises; Strengthen the capacity of fisheries communities and the capability of fisheries related organizations, NGOs and the private sector to better implement necessary actions towards enabling the communities and local organizations to increase resilience, improve livelihoods, alleviate poverty, adopt alternative livelihoods in support of **achieving sustainable development**, and encourage the participation of women and youth groups in the process; So that the key element of this HRD proposal is to continue in strengthen capability of fishery officers of the Member Countries to implement sustainable fisheries management and development through the

application of the appropriate Monitoring Control and Surveillance (MCS) and the Ecosystem Approach to Fisheries Management (EAFM) as well as to strengthen knowledge, skill and techniques of the fishery officers for the fisheries information improvement as the basement of monitoring resources utilization such throughout the region.

TD took this challenge and has been conducted many training courses which focus for sustainable fisheries development. In this stage of mid-period of the project, TD would like to follow up and giving more specific support to each of the Member Country through in improving of income of fishers through the fisheries activities. Considering the importance of such follow-up and supporting activities, and to implement such activities more effectively and achieve better outcomes, SEAFDEC proposes to extend the project period for 2 years, until 2019.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

With the period of the 7 years of work under this project, it aims to build up and strengthen human capability especially fisheries officers of its Member Countries for sustainable fisheries development. There are several areas of training titles that the project already supported to the MCs such as the a) applicable of MCS activities for sustainable fisheries with taking consideration ecosystem approaches, b) the applicable cost effective fishery data collection, analysis and sharing systems and to c) ecosystem approaches to fisheries management and extension methodologies that aims to strengthen knowledge of the fishers of Member Countries on the importance of fisheries resource management for the sustainable fisheries through the use of training toolkits, promotion materials; posters, cartoon booklets, VCD and etc. However, with under the umbrella of sustainable fisheries development, not only the ecological, fishing activities and governance which need to be managed but as human is the key players in the sustainable fisheries development, so that the project try to focus more on the human well being aspect, especially to increase the fishers income through the adding value activities for their catches.

Objectives: strengthen knowledge and skills of the key national officers in dealing with the sustainable fisheries development in all aspects but focusing more on the **human well being in improving their income** through the adding value of the fishers' catches with the applicable and suitable methods.

Output: 1. pilot-learning site (s) of sustainable fisheries development in focusing on the improvement of incomes of fishers through the responsible fisheries activities, 2. Team of skilled key national officers to work on the pilot-learning site (s) as fisheries extension officers in promoting the adding value of the capture or culture fish in the suitable ways and methods.

Outcome: Fishers in the pilot-learning site will be improved their income through the responsible fisheries.

Objective	Outcomes	Outputs	Activities
Strengthen knowledge and skills of the key national officers in dealing with the sustainable fisheries development in all aspects but focusing more on the human well being in improving their income through the adding value of the fishers' catches with the applicable and suitable methods	Fishers in the pilot-learning site will be improved their income through the responsible fisheries.	1. pilot-learning site (s) of sustainable fisheries development in focusing on the improvement of incomes of fishers through the value adding of the fish caught from responsible fisheries activities, 2. Team of skilled key national officers to work on the pilot-learning site (s) as fisheries extension officers in promoting the adding value of the capture or culture fish in the suitable ways and methods	Specific and intensive human resource development and follow up activities on Sustainable Fisheries Management through the promotion of value adding methods for capture and culture fish in suitable and appropriate ways which targeting to improve the income of fishers through the responsible fishing activities.

3.1 Overall Scope/Description of Project

Activity	Description
Regional Human Resource Development on sustainable fisheries development	<p>- From 2013-2015, There are several regional training courses that have been conducted by SEAFDEC, these to full filled the needed from the MCs as well as to strengthen knowledge and skills of the fisheries officers in the MCs on sustainable fisheries management. However, under the umbrella of this task, SEAFDEC/TD conducted the training courses that list are as following:</p> <ul style="list-style-type: none"> • Applicable MCS activities with taking consideration of Ecosystem Approaches for sustainable fisheries • Essential EAFM and Extension Methodologies (2 courses) <p>- There were two participants from each country participated in each training course. In parallel with the regional training courses, SEAFDEC also supported MCs in conducting national training course which base on the need and request from MCs. The courses are conducted as tailor-made training program. Each of the training course program is designed base on the need and real situation of the country.</p>
Intensive Human Resource Development on Sustainable Fisheries Management and Follow up activities	<p>- In referring to the regional and national training courses that are conducted for MCs, in this stage TD will follow up on the applicable of the knowledge and skills that the ex-participants have gained from the project's training courses. The selection of the pilot and learning sites for the follow up activities will be carried out through the reviewing process from the fisheries management plans that are proposed by the ex-participants from each country in each year, then step by step of the working process for improvement of income of fishers through the fisheries activities will be implemented by the ex-participants as the key players in each country, SEAFDEC/TD will play role as the supporter. The follow up activities will be carried out as specific and intensive HRD programs and activities in focusing on the improvement of income of fishers through the promotion of responsible fisheries and value adding methods for capture and culture fish in suitable and appropriate ways.</p>
Production of promotion and training materials	The promotion materials including lesson learned of the project activities have been producing and distributing to the related sectors.
Project evaluation	At the last year period of the project (in 2019), the project evaluation will be carried out and the results/lesson learned from the project will be reported in the regional workshop, aside from that the topics on future training needed in the SEA will be also discussed as the HRD ways forwards.

3.2 Activity, Sub-activity and Proposed Budget for 2013-2019

Activity	Proposed Budget (USD)						
	2013	2014	2015	2016	2017	2018	2019
1. Follow up and onsite training activity of knowledge and experience gained from the previous Regional Training for the Trainer Course on Applicable MCS activities with taking consideration of Ecosystem Approaches for sustainable fisheries							
- Cambodia	15,500						
- Viet Nam	15,500						
2. Regional training for the trainer course on Improvement of Fisheries Information Collection in Coastal Small-scale and Inland Fisheries of the Southeast Asian Region	20,000						
3. Follow up and onsite training activity on Improvement of Fisheries							

Activity	Proposed Budget (USD)						
	2013	2014	2015	2016	2017	2018	2019
Information Collection in Coastal Small-scale and Inland Fisheries of the Southeast Asian Region							
- Viet Nam	12,000						
4. Regional Training Course on Essential EAFM and Extension Methodologies		36,340	35,000				
5. Development of training toolkit on fisheries extension methodologies			14,700				
6. Specific and intensive human resource development and follow up activities on Sustainable Fisheries Management through the promotion of value adding methods for capture and culture fish in suitable and appropriate ways				42,350	45,300	45,300	18,500
6.1 Review the output-proposed fisheries management plan from the regional/national training courses for pilot-learning site selection							
6.2 Initiative workshop with key persons for the project, visit to the selected project site and prioritize of the key stakeholders				10,000		7,000	
6.3 Workshop on key stakeholders engagement and investigate the real and current situation which lead to the low income of the fishers of the project sites				15,000		8,000	
6.4 Training –workshop on Base-line survey on fishers income and relevance data/information gathering (in collaboration with Socio-economic section)				15,000		8,000	
6.5 Training/workshop on development of the improvement of income 's fishers work plan					12,850	11,000	
6.6 Training course or study visit to Thailand or Japan on improvement of income of fishers through responsible fisheries activities and value adding on the fisheries products and to observe effective and appropriate methods in adding high value in fish products					13,500	11,000	
6.7 Follow up on the working progress of the project at the pilot-learning					6,400		8,000
6.8 Workshop on the activities result and reporting on the lesson learned which will be used for others pilot-learning sites in next following years of the project					12,250		10,500
7. Production of promotional and training materials	2,000	2,000	2,000	2,350	300	300	800
8. Evaluate of the HRD activities and find way forwards							26,000
	65,000	38,340	51,700	42,350	45,300	45,300	45,300

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION**1. Achievements of the Project Implementation for the Present Year 2016**

There are several proposed pilot-learning sites from the regional E-EAFM and Fisheries Extension Methodologies training courses' participants from each country during the way forwards session which is one of the activity in each training course which are conducted by TD in the year 2014 and 2015, in this year of 2016, the project have reviewed on the needed of each proposed pilot for learning site, in focusing to improve the income of fishers through the fisheries activities, so that the year of 2016 and 2017, the intensive and follow up activities for human capacity building for improvement of income of fishers through the fisheries activities as a part of fisheries extension work is proposed to be implemented at a pilot-learning sites in Myanmar, the result and lesson learned of this will be used to adapt for the next selected pilot-learning sites.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
1. Review the output-proposed fisheries management plan from the regional/national training courses for pilot-learning site selection	VI. Others	-	5	-	-

3. Achievements and Expected Outcome/Outputs of the Activity:

Planned activity	Expected outcome/output	Achievements
Review the output-proposed fisheries management plan from the regional/national training courses for pilot-learning site selection	Name of country for the pilot-learning site of the extension and follow up activities to improve the income of the fishers through the value adding of fish catches	Done with the result on the selected pilot-learning site

4. List of Completed Publications and Others

List of completed publications for the Year 2016	Type of media	Attached e-file
Compilation of the sustainable fisheries management plan which proposed by training courses' participants	Hard copies e-file folder	

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/ Views from Participants
	Due to the year of 2016, the main activity is to review the project output as well as to adjust and adapt the project work plan so that there are no training course conducted in the year 2016

6. Major Impacts/Issues

Training is known as an importance tool for human resource development, however, it might not enough to build up or strengthen knowledge/skill of the target learners, which only a training course, in order to make effective HRD, perhaps the intensive training campaign or leaning by doing activities might needed.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

Proposed Activity	Description of Proposed Activity	Proposed Budget (USD)
Activity 1: Initiative workshop with key persons for the pilot projects and learning sites and visit to the selected project sites	<ul style="list-style-type: none"> - Courtesy call to the DG of Myanmar and meet with the national coordinator as well as others key officers for the HRD project implementation at a pilot- learning site in Myanmar - Consultation and selection of the specific pilot-learning site - Visit and observation to the selected pilot-learning site and identify and prioritize the key stakeholders 	10,000*
Activity 2: Workshop on key stakeholders engagement and investigate the real and current situation which lead to the low income of the fishers of the project sites	Conduct a three days workshop to engage key stakeholders and discusses to identify and prioritize of the real issues in leading to the low income of the fishers in narrowing deep down to the root cause of the issues and screening others current situation for the management plan to improve the income for the fishers in adding value for their catches	15,000*
Activity 3: Training/workshop on Base-line survey on fishers income and relevance data/information collection (in collaboration with Socio-economic section)	The training/workshop will be conducted for 3 days this aim to introduce existing methods for base line survey on fishers income and others relevance data as well as discuss on the appropriate methods for the gathering data/information as base-line survey, key stakeholder are expected to do the base-line survey and gathering the existing data and information through the collaboration with sectors concern	15,000*
Activity 4: Training/workshop on development of the improvement of income 's fishers work plan	Conduct training/workshop to develop the management plan in targeting to improve the income for fishers through the value adding of their capture/culture. The plan will be developed in related to the specific issues which found out from the activities 3 of the pilot-learning site.	12,850
Activity 5: Training course or study visit to Thailand or Japan on improvement of income of fishers through responsible fisheries activities and value adding on the fisheries products and to observe effective and appropriate methods in adding high value in fish products	The training course will be conducted in Thailand; the key stakeholders will be invited for the course and study visit to observe the existing activities of Thailand in adding the value of fish catches which can be from capture or culture. or the key stakeholders will be invited to study visit and observe on the tips/techniques and methods for value adding of the catch	13,500
Activity 6: Follow up on the working progress of the project at the pilot-learning	SEAFDEC team visit to the pilot-learning site in Myanmar for monitoring and evaluation of the work implementation	6,400
Activity 7: Workshop on the activities result and reporting on the lesson learned which will be used for others pilot-learning sites in next following years of the project	Conduct a workshop to report the result of the project activities, monitoring and evaluation and discusses on the ways forwards of the lessons learned.	12,250

Remark: ** the activities will be implemented under the fiscal year of 2016

List of Actual Sub-activity	
1.	Initiative workshop with key persons for the pilot projects and learning sites and visit to the selected project sites
2.	Workshop on key stakeholders engagement and investigate the real and current situation which lead to the low income of the fishers of the project sites
3.	Training –workshop on Base-line survey on fishers income and relevance data/information collection (in collaboration with Socio-economic section)
4.	Training/workshop on development of the improvement of income ‘s fishers work plan
5.	Training course or study visit to Thailand or Japan on improvement of income of fishers through responsible fisheries activities and value adding on the fisheries products and to observe effective and appropriate methods in adding high value in fish products
6.	Follow up on the working progress of the project at the pilot-learning
7.	Workshop on the activities result and reporting on the lesson learned which will be used for others pilot-learning sites in next following years of the project

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 1: Initiative workshop with key persons for the project in Myanmar and visit to the selected project site	- agreement of this project from DG and key officers of Myanmar - names of persons or sectors to involve as key stakeholders and fisheries profile information of the selection pilot-learning site - community map of the selected pilot-learning site
Activity 2: Workshop on key stakeholders engagement and investigate the real and current situation which lead to the low income of the fishers of the project sites	- key stakeholders engagement - real and specific issues which lead to low income of the fishers
Activity 3: Training –workshop on Base-line survey on fishers income and relevance data/information collection (in collaboration with Socio-economic section)	- strengthen the knowledge and skills of the key officers and stakeholders on data/information gathering and base line survey - checklist of data/information needs –methods to be applied - a set of indicators check list for pilot-learning site monitoring and evaluation
Activity 4: Training/workshop on development of the improvement of income ‘s fishers work plan	- plan of the improvement income of fishers through the value adding in fish catch which are from responsible captures and cultures
Activity 5: Training course on improvement of fishers’ income through responsible fisheries activities and value adding on the fisheries products and study visit of the keys stakeholders of the pilot project to Thailand or Japan and observation on value adding in fish products	- strengthen knowledge, awareness and experience of the key officers and key stakeholders in methods, techniques to increase income of the fishers through the value adding concept
Activity 6: Follow up on the working progress of the project at the pilot-learning	- pre- result of the pilot project-learning site’s monitoring and evaluation
Activity 7: Workshop on the activities result and reporting on the lesson learned which will be used for others pilot-learning sites in next following years of the project	- a set of pilot project’s monitoring and evaluation result - a set of lesson learned - a set of way forwards

3. Schedule of Activity for the Year 2017

Proposed Activity	2016		2017											
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1: Initiative workshop with key persons for the project in Myanmar and visit to the selected project site														
Activity 2: Workshop on key stakeholders engagement and investigate the real and current situation which lead to the low income of the fishers of the project sites														
Activity 3: Training – workshop on Base-line survey on fishers income and relevance data/information collection (in collaboration with Socio-economic section)														
Activity 4: Training/workshop on development of the improvement of income 's fishers work plan														

Proposed Activity	2016		2017												
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Activity 5: Training course on improvement of fishers' income through responsible fisheries activities and value adding on the fisheries products and study visit of the keys stakeholders of the pilot project to Thailand or Japan and observation on value adding in fish															
Activity 6: Follow up on the working progress of the project at the pilot-learning															
Activity 7: Workshop on the activities result and reporting on the lesson learned which will be used for others pilot-learning sites in next following years of the project															

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

		Project id: 2013010102	
Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Optimizing Energy Use and Improving Safety in Fishing Activities		
Program Thrust:	I	Total Duration:	2013 - 2019
Lead Department:	TD	Lead Country:	Thailand
Donor/Sponsor:	JTF-6	Total Donor Budget:	USD 273,000
Project Partner:		Budget for 2017:	USD 32,000
Project Leader:	Fisheries Engineering Section of TD/CFTD (Mr. Suthipong Thanasansakorn)	Involved Country:	SEAFDEC Member Countries

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

In the Southeast Asian countries, the major concerns on fisher well-being are focus on the poverty and safety at sea. Human well-being of fishers has been degraded by the less concern on safety of fisher at sea. Less of budget, concern and appropriated regulation as well as effective monitoring process by responsible agencies are significant hindrance on the strengthen safety at sea for fishers in Southeast Asian Region.

In the capturing process, the fuel cost obviously takes up majority of operational cost and directly decrease income of fisherman. The major concerns on the use of energy include over-power of the main engine, heavy construction of wooden hull structure, less maintenance of the engine and machineries, and inappropriate fishing operations/practices. In the capturing process, the fuel cost takes up majority of operational cost, but we cannot find any alternative source of energy in near future. With reference to the global concern on the climate change that includes the reductions of greenhouse gases, either by reducing the source of pollutes. This project deals with fuel efficiency measures that require minimum modification of their existing equipment to optimize energy using for fishing operation. It is therefore, the main activities under the project include transferring appropriate ways to optimize the use of energy for the fishing vessels. It also includes adjustment/improvement of current practices of the vessels. Awareness building on the safety at sea for fisher includes the improvement of living and working conditions onboard to ensure that human well-being of fishers will be strengthened.

In this connection, this project aims at transferring appropriate and applicable technology and knowledge to fishers and fisheries officials in order to optimize energy use in fishing activities and improve safety at sea for fishing vessels especially on small scale fisheries.

2. Background and Justification

With regard to optimizing energy and safety at sea issues, the following paragraphs provide the reference to the ASEAN-SEAFDEC Resolution and Plan of Action 2020.

Resolution:

12 Support ASEAN efforts to promote low carbon development by minimizing the contribution of the fisheries sector to green-house gas emissions, with emphasis on promoting energy efficiency and use of alternative energy sources.

13 Improve the working conditions of people engaged in fisheries activities, and strengthen measures for safety of fishing vessels taking into consideration regional specificity

15 Increase the efficient use of the alternative energy and reduce the use of carbon fossil energy by using appropriate fishing gear and fishing boats designs in fishing operation.

Plan of Action – Fisheries Management:

20 Adjust existing programs to take into consideration the effects of climate change, focusing on the programs for (i) managing fisheries and habitats; (ii) reducing fishing capacity and combating Illegal, Unreported and Unregulated (IUU) fishing; (iii) strengthening local organizations; and (iv) promoting safety at sea and other priority areas. Develop indicators and reporting measures to assess how actions of the programs build resilience to climate change.

30 Strengthen efforts to address safety at sea, including considerations of working conditions and socio-economic development, and ensure that these considerations are addressed by all concerned authorities while improving monitoring and control of the status of conditions, especially on small fishing boats.

Considering on the need of SEAFDEC Member Countries, in particular Cambodia, Laos, Myanmar and Viet Nam to improvement on human well-being and safety at sea for small scale fishers are significant to develop human well-being. With that the importance of the continuous SEAFDEC activities on the issues of Optimizing energy and safety at sea, SEAFDEC proposes to extend the project period until 2019.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

8.3 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1:	Outcome 1: Enhancement of knowledge and experience of ship owners, fisheries extension officer, and other key stakeholders of ASEAN Member States	Output 1: Report of the training organized in ASEAN Member States Network for optimizing energy and safety at sea for small-scale fishing	Activity 1: Regional and national training on optimizing energy and safety at sea for fishing vessels
Objective 2: Research and development on improvement for good fishing operation/practices with optimizing energy used.	Outcome 2: Project planning in year 2017-2019	Output 2: Issues and planning process on the energy saving and safety at sea for develop conceptual framework and way forward to promote the optimizing energy and safety at sea in SEA region.	Activity 2: Regional meeting on current situation on energy saving and safety at sea, and way forward to promote/improve energy saving and safety at sea for SEA region.
	Outcome 2: Enhancement of the key stakeholders on international, regional, and national references for improvement of optimizing energy use and safety at sea for fishing vessels of ASEAN Member States	Output 2: Dissemination of the international guidelines on optimizing energy and safety at sea to the key stakeholders (national language of ASEAN Member States)	Activity 2: Information dissemination

3.2 Overall Scope/Description of Project

Activity	Description
<p>Activity 1: Regional and national training/workshop</p> <p>Sub-Activity 1.1 Training workshop on the optimizing energy and safety at sea for fishing vessels</p> <p>Sub-Activity 1.2 The on-site training or workshop on optimizing energy and safety at sea for fishing vessels</p>	<p>A series of activities to promote and transfer the optimization of energy use and safety at sea for fishing vessels has been carried out.</p> <p>The project has organized the regional training workshops, in collaboration with relevant agencies on optimizing energy use and safety at sea for small fishing vessels since year 2011. Project translated international guideline, national guidelines, and other relevant training materials to the national languages. Such training materials have been used for onsite training program to enhance awareness of fishers and fisheries officials (to further transfer the knowledge) for fuel efficiency and safety at sea for the fishing vessels.</p> <p>The on-site training or workshop will be organized to transfer the technical information and update situation of energy use in fishing operation as well as update on information of safety at sea for small fishing vessels to enhance human capacity on energy saving and safety in marine fisheries .</p> <p>In order to share and exchange the information and technology on energy saving and safety at sea, network of stakeholders in coastal provinces both countries level and regional will be strengthened.</p>
<p>Activity 2: Research and development on improvement for good fishing operation/practices with optimizing energy used.</p>	<p>This series of activity aim to apply appropriate techniques, use or adopt various technology in order to improve energy efficient utilization (energy saving) in fishing activities through the efficiency improvement of vessel designed, gears and equipment relate to fishing operation.</p>
<p>Activity 3: Information dissemination</p>	<p>Revision of the current handbook and promotional materials will be made. Moreover, major outputs from the implementation of project activities and their progress will be disseminated to the Member Countries and other relevant agencies through website, training and promotional materials, etc. The outputs from this activity could also be used as the regional reference for optimizing energy and safety at sea for fishing vessels in the Member Countries.</p>

3.3 Activity, Sub-activity and Proposed Budget for 2013-2019

(Unit: USD)

Activity	Sub-Activity	Y1 2013	Y2 2014	Y3 2015	Y4 2016	Y5 2017	Y6 2018	Y7 2019
Activity 1:	Sub-activity 1.1	31,000	30,000	31,000	25,175			28,000
	Sub-activity 1.2		30,000			25,000	20,000	
Activity 2:						3,000	8,000	
Activity 3:		5,000	5,000	5,000	4,825	4,000	4,000	4,000
	Sub-total	36,000	75,000	36,000	30,000	32,000	32,000	32,000

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the Present Year

On-site training program on optimizing energy and safety at sea for small fishing vessels was organized in Cambodia from 20 to 22 September to 2016 in Preh Sihanouk province, Kingdom of Cambodia. The training was carried out by resource persons from Fishery Engineering of SEAFDEC Training Department.

Network of stakeholders in coastal provinces of SEAFDEC Member Countries both countries level and regional has been strengthened. The advance technology on optimizing energy and safety at sea for small fishing vessels are able to distribute through the network.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1					
Sub-activity 1.1 Training on Optimizing Energy and Safety at Sea for Small Fishing Vessels in Cambodia, from 20 to 22 September 2016	II Training	30	5		17,000 (Estimated)
Activity 2					
Sub-activity 2.1 Information dissemination	III Information	100			5,000 (Estimated)

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 1		
Sub-activity 1.2 Training on Optimizing Energy and Safety at Sea for Small Fishing Vessels in Cambodia, 20 - 22 September 2016	1. Participants are able to transfer and utilize the knowledge and information on energy saving and safety at sea 2. Threats, issues and way forward for the promotion of energy saving and safety at sea 3. Network of stakeholders in coastal provinces	On-site training program on optimizing energy and safety at sea for small fishing vessels was organized in Cambodia from 29 September to 1 October 2015 in Preh Sihanouk province, Kingdom of Cambodia. The training was carried out by resource persons of the training and Fishery Engineering staffs of SEAFDEC/TD. Network of stakeholders in coastal provinces of SEAFDEC Member Countries both countries level and regional has been strengthened. The advance technology on optimizing energy and safety at sea for small fishing vessels are able to distribute through network.
Activity 3		
Sub-activity 3.1 Information dissemination	Sets of training materials were disseminated to target participants of the training. They are fisheries managers of the coastal provinces in their countries, fisheries officials from local and central offices, ship building owners, fisheries extension officers, and other key stakeholders	There were one hundred (100) translated optimizing energy and safety at sea for small fishing vessels guidelines copies published by SEAFDEC/TD. Sixty (60) sets have been disseminated during the onsite training in Cambodia. The remain copies could support the national program of Cambodia in related training of optimizing energy and safety at sea for small fishing vessels.

4. List of Completed Publications and Others

List of completed publications for the Year 2015	Type of media	Attached e-file
1. FAO guidelines on safety at sea for fishing vessels (translated into Cambodian languages)	Hard copies	
2. FRA guidelines on optimizing energy and safety at sea for fishing vessels	Hard copies	

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/Views from Participants
Activity 1 Regional and national training on optimizing energy and safety at sea for fishing vessels	
Sub-activity 1.1 Training on Optimizing Energy and Safety at Sea for Small Fishing Vessels in Cambodia, 20 - 22 Sept 16	The technical information and experiences from resource persons are useful in terms of how to practically utilize of fuel consumption using in fishing operation at the same time taking consideration on safety at sea. Because in current situation the fisher in Preah Sihanouk province Cambodia had spent a lot of fuel cost. There are believed after successes the training program, the knowledge and information had gained from the training course will help them to reduce fuel consumption and operation cost. Thereby the combination of literature review and demonstration especially basic engine daily check and engine maintenance included safety awareness are applicable and very useful.
Activity 2 Information dissemination	
Sub-activity 2.1 Information dissemination	Technical handbook had disseminated at the training in Cambodia. This book is useful guidelines in terms of saving energy for small-scale fishing vessels which are the majority of the fishing vessels in Cambodia.

6. Major Impacts/Issues

The major concerns on human well-being in fisheries are poverty and safety at sea. In the capturing process, the fuel cost obviously takes up majority of operational cost and directly decrease income of fisherman. The use of energy includes over-power of engine, low engine maintenance, inappropriate fishing boat design and fishing operations/practices possibly major impact to the fisher revenue.

Human well-being issues of fishers are also degraded by the safety of fisher at sea. Less of budget, concern and appropriated regulation or monitoring process by responsible agencies is significant hindrance to strengthen safety at sea for fishers in Southeast Asian Region. In order to address the issues of energy saving and safety at sea in Southeast Asia Region, Resolutions and Plan of Action adopted by the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 on June 2011, at Bangkok, Thailand, has provided the guidance for SEAFDEC's projects and activities.

With this regards, it is essential to promote appropriate energy utilization in order to reduce fuel consumption, lower carbon emission to the environment by minimizing the contribution of fisheries sector to green-house gas emission, with emphasis on promoting energy efficiency. In addition, the working conditions of fishers' onboard fishing vessels are considered poor and needed improving. It is, therefore, necessary to strengthen measures for safety of fishing vessels by taking into account regional/national specificity.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
Activity 1 Training and workshop		
Sub-activity 1.1 Regional training workshop on optimizing energy and safety at sea for small-scale fishing	There are not any proposed activities in year 2017 and 2018	
Sub-activity 1.2 On-site Training on Energy Saving and Safety at Sea for Small Fishing Vessel	<p>The 3-days On-site Training will conduct by using English and Cambodia languages, comprising of lecture, field observation that includes demonstration and practice. The participants will obtain basic and applicable knowledge on energy saving technology and safety at sea.</p> <p>Due to the fact that it is necessary to understand the current situation and technology concerning on reduction of fuel consumption and improve safety at sea in their respective country/area, national and local initiatives related to energy saving and safety at sea will be presented, and discussion on the major issues related to energy saving and safety at sea will be made during the training. In addition, special lecture and onboard demonstration on the use of equipment to measure the fuel consumption of fishing vessels will be carried out during training course. Threats, issues and way forward for the promotion of energy saving and safety at sea in capture fishery of Southeast Asia will be identified and report.</p> <p>Establishment on the network for optimizing energy and safety at sea for small-scale fishing in SEA will be developed during training course.</p>	25,000
Activity 2 Research and development on improvement for good fishing operation/practice with optimizing energy used.	<p>SEAFDEC/ TD will facilitate/cooperated with the fisher, fishery association or relevance organization/institute for gathering technical information included research and develops on appropriate fishing vessels design target for trawl and seine vessels.</p> <p>The suitable fishing vessel designed aims to improve good fishing practices, good living condition, energy saving and safety at sea and enhancing of fisher the technical information.</p>	3,000
Activity 3 Information dissemination	<p>Compilation and revision of the technical handbook and guideline on sampling gears and survey methodology for on optimizing energy and safety at sea to the key stakeholders (national language) was continued.</p> <p>Dissemination of the international guidelines on optimizing energy and safety at sea to the key stakeholders (national language)</p> <p>Publication 4,000 (printing, storage media, etc)</p>	4,000

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 1 Training workshop	Regional and national training on optimizing energy and safety at sea for fishing vessels
Sub-activity 1.1 On-site Training on Energy Saving and Safety at Sea for Small Fishing Vessel	<p>Activities will provide the knowledge and skill to fisheries officials and other key stakeholders for the existing methods and techniques in energy saving use, safety at sea in fishing activities. In addition awareness building on energy saving and safety at sea, as well as improvement of working condition onboard fishing vessels will be strengthened. SEAFDEC will support for the establishment of network of stakeholders in coastal provinces for sharing technical information of energy saving and safety at sea. Threats, issues and way forward for the promotion of energy saving and safety at sea in capture fishery of Southeast Asia will be identified.</p> <p>Network for optimizing energy in SEA will be conducted Regional training workshop on optimizing energy and safety at sea for small-scale fishing.</p>
Activity 2: Research and development on the improvement for good fishing operation/practice with optimizing energy used	Improve fishing vessel to the environmental friendly manner through optimizing energy. The research aim to use/reducing of fuel consumption and carbon emission of the investigate vessel by 15-20%. Useful technical information on fuel efficient will promote and disseminated to fishing fleet in Southeast Asian Countries. Improve fisher's income and fisheries resources.
Activity 3 Information dissemination	Major outputs from the implementation of project activities and their progress will be disseminated to the Member Countries and other relevant agencies through project's website, training and promotional materials, etc. The outputs from this activity could be used as the regional reference for optimizing energy and safety at sea for fishing vessels in the Member Countries. Revision of the current handbook and promotional materials used in On-site Training on Energy Saving and Safety at Sea for Small Fishing Vessel.

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1												
Sub-activity 1.1												
Sub-activity 1.2												
Activity 2												
Activity 3												

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

		Project id: 2013010103	
Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Promotion of Sustainable Fisheries Resources Enhancement Measures in Critical habitats/fishing grounds in Southeast Asia		
Program Thrust:	I	Total Duration:	2015-2019
Lead Department:	TD	Lead Country:	Thailand
Donor/Sponsor:	JTF-6	Total Donor Budget:	USD 258,260
Project Partner:	None	Budget for 2017:	USD 52,000
Project Leader:	Dr. Yuttana Theparoonrat	Involved Country:	SEAFDEC Member Countries

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

The project involves the identification of appropriate resource enhancement tools for the region in order to develop fisheries resource enhancement and habitat conservation measures/analysis and diagnosis of effectiveness of the measures and formulate strategies and guideline through the regional consultative meeting/workshop. Regional training programs on the theory and methodology of fisheries resource enhancement and habitat conservation measures will be conducted to build up capacity in ASEAN Member States for promote sustainable fisheries resources enhancement.

2. Background and Justification

Coastal waters of Southeast Asia are blessed with high productivity of fisheries resources because of rich ecosystems such as dense mangrove forests and seagrass beds sustained by rich effluence of nutrients from land, as well as extensive coral reefs with clean tropical sea environment. These areas are critical to a broad range of aquatic organisms during their life cycle from breeding, spawning, nursing and growing, hosting the feeding zones of aquatic species that are economically important, and serving as important source of recruitment of a wide diversity of fishery resources.

It is widely recognized that healthy marine environment is a prerequisite for sustainable marine fisheries production. Therefore, it is one of the most important responsibilities of fishery managers in the Southeast Asian Region to work for realization of good balance and relationship between human activity and coastal environment so that we can utilize marine fishery resources in a sustainable manner.

However, commercially important fishery resources in the region have declined due to many factors that include overfishing, illegal fishing, use of destructive fishing practices, and environmental degradation. Massive clearance of mangrove forests for aquaculture, urbanization, industrialization, wood fuel, timber and the like, could bring about large temporary economic benefits to certain groups of people or governments but in the end, the breeding, nursery and feeding areas of many aquatic species such as fishes, crustaceans, and mollusks might be destroyed and lost.

Furthermore, the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 “Fish for the People 2020: Adaptation to a Change Environment”, held in June 2011, adopted a resolution recommending that “*optimize the use of inshore waters through resources enhancement programs such as promoting the installation of artificial reefs and structures, encouraging coordinated and effective planning for coastal fisheries management programs, undertaking environmental impact assessment studies, restocking of commercially-important fish species, as appropriate, and give priority to human resources development for the implementation of such programs*”. Then, project on Promotion of

sustainable fisheries resources enhancement measures in critical habitats/fishing grounds in Southeast Asia is necessary for SEAFDEC Member Countries.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1: Information gathering on fisheries resources enhancement and habitat conservation measures in Southeast Asia	Outcome 1: Application and verification of various methodologies for quantitative assessment, monitoring and evaluation of the effectiveness of resources enhancement initiatives.	Output 1: Mapping of important critical fishing grounds and habitats and associated fish species.	Activity 1: Development on diagnoses of critical fishing grounds and evaluation by resources enhancement practices Sub-activity 1.1: Investigation/review of the status of critical habitats/fishing grounds in the Southeast Asian region Sub-activity 1.2: Information collection on suitable designs of resource enhancement practices including their evaluation and promotion Sub-activity 1.3: Workshop/Expert consultation on suitable measures for sustainable fisheries resource enhancement and habitat conservation
Objective 2: Human resources development for implementation of fisheries resources enhancement and habitat conservation measures	Outcome 2: Strengthen and developed of human capacity in fisheries resources enhancement and habitat conservation	Output 2: Regional training programs on fisheries resource enhancement and habitat conservation measures as well as technical transferring through the technical assistance in a pilot site implementation.	Activity 2: Technical assistance in pilot project sites and capacity building on rehabilitation of fisheries resources and habitats/fishing grounds. Sub-activity 2.1: Technical assistance in a pilot site for suitable designs of resource enhancement practices. Sub-activity 2.2: Technical assistance in pilot sites for diagnoses of fishing grounds and evaluation of fishery ecosystem management. Sub-activity 2.3: Capacity building on theory and methodology of fisheries resource enhancement and habitat conservation measures.
Objective 3: Disseminating and promoting fisheries resources enhancement and habitat conservation measures suitable for Southeast Asia;	Outcome 3: Rising awareness of resources users on the important of fisheries resources enhancement and habitat conservation	Output 3: Publication of the promotion materials on importance of fisheries resources enhancement and habitat conservation	Activity 3: Promotion and extension on rehabilitation of fisheries resources and habitat/ fishing grounds in ASEAN Region

3.2 Overall Scope/Description of Project

Activity	Description
Activity 1 Development on diagnoses of critical fishing grounds and evaluation by resources enhancement practices	Under this activity will composed of investigation of the existing basic information and research works in identifying the critical fishing grounds as well as spawning and nursery grounds known also as “Fishery <i>Refugia</i> ” for commercial fishes including bottom and pelagic species, will be conducted. Information collection would be conducted through deskwork and visit to the Member Countries. The results of the information gathering will be used for mapping and assessment by indices of the status of the critical fishing grounds in the region.

Activity	Description
	<p>This activity will also investigation of existing information and research works on the effective designs/models and methodologies for the resource enhancement tools/practices used in various fisheries habitat will be conducted. Information collection would be conducted through deskwork and designs/models experiment.</p> <p>This activity includes workshops as well as expert consultations to identify appropriate and effective resources enhancement tools and measures for fishery resources enhancement and habitats conservation and other related activities.</p>
<p>Activity 2 Technical assistance in pilot project sites and capacity building on rehabilitation of fisheries resources and habitats/fishing grounds</p>	<p>In this activity, selected onsite study and evaluation on enhancement practices including artificial reefs impact to fisheries resources and environment are conducted in selected pilot project site of Member Countries. The pilot site selection will be decided following the discussion at the project inception workshop.</p> <p>In order to develop strategies and actions in rehabilitating the critical fishing grounds as practical management measures, critical fishing grounds will be selected for diagnosing fishing grounds and monitoring the achievements of rehabilitation program in selected pilot sites such as seagrass beds for fisheries resources in Member Countries. The pilot site selection will be decided following the discussion at the project inception workshop.</p> <p>Also case studies on the selected priority important fisheries ecosystem identified and evaluated in cooperation with Member Countries, will be conducted including a case study by SEAFDEC on identification and evaluation of fisheries ecosystem in the fresh water reservoir in Member Countries.</p> <p>Capacity building on theory and methodology of fisheries resources and habitats/fishing grounds would be provided through a training course and study trip to transfer of assistance both in terms of technical and management aspects to Member Countries in order to enhance their capacities and awareness of fishery resources rehabilitation and habitats/fishing grounds practices.</p>
<p>Activity 3 Promotion and extension on rehabilitation of fisheries resources and habitat/ fishing grounds in ASEAN Region</p>	<p>Documentation of the best practices of the project implementation will be carry out, which can be used as inputs in the preparation of IEC (information, education and communication) materials for dissemination in the region.</p> <p>The regional seminar is primarily aimed at reviewing the impact of project and disseminating the modality of the project operation and resultant outcomes to other SEAFDEC Member Countries. The project activities and its outcomes during its 4.5 years' implementation are described in detail by the responsible parties. In addition, the impacts of the respective activity and expected follow-up actions after the termination of the project are also highlighted.</p>

3.3 Activity, Sub-activity and Proposed Budget for 2015-2019

(Unit: USD)

Activity	Sub-Activity	Y1 2015	Y2 2016	Y3 2017	Y4 2018	Y5 2019
Activity 1:	Sub-activity 1.1	0	0	5,360	5,360	0
	Sub-activity 1.2	0	1,500	2,780	2,780	2,500
	Sub-activity 1.3	0	0	10,640	0	0
Activity 2:	Sub-activity 2.1	9,500	8,000	4,360	4,360	4,360

Activity	Sub-Activity	Y1 2015	Y2 2016	Y3 2017	Y4 2018	Y5 2019
	Sub-activity 2.2	27,700	20,000	27,860	27,860	27,860
	Sub-activity 2.3	15,500	18,500	0	11,140	0
Activity 3	Sub-activity 3.1	1,000	560	1,000	500	2,000
	Sub-activity 3.2	0	0	0	0	15,280
	Sub-total	53,700	48,560	52,000	52,000	52,000

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the Present Year

Regional Inception workshop for JTF-6 program on the promotion of sustainable fisheries resources enhancement measures in critical habitats/fishing grounds in Southeast Asia.

Workshop adopted the following general recommendations, and country-specific recommendations.

- 1) The expected outcomes of the Project should be determined in the plan to identify specific activities, output indicators, and the required data and information to be used for regular monitoring and determination of the success of the Project, and adjustment of the plan if and when necessary;
- 2) Compilation of information and development of database that could be referred to by Member Countries; and
- 3) The adopted country-specific recommendations include the way forward and support required by the countries in sustaining their activities on resources enhancement and rehabilitation.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1: Development on diagnoses of critical fishing grounds and evaluation by resources enhancement practices					
Sub-activity 1.1: Investigation/review of the status of critical habitats/fishing grounds in the Southeast Asian region					
Sub-activity 1.2: Information collection on suitable designs of resource enhancement practices including their evaluation and promotion	I. Information		5		
Sub-activity 1.3: Workshop/Expert consultation on suitable measures for sustainable fisheries resource enhancement and habitat conservation					
Activity 2: Technical assistance in pilot project sites and capacity building on rehabilitation of fisheries resources and habitats/fishing grounds					
Sub-activity 2.1: Technical assistance in a pilot site for suitable designs of resource enhancement practices	To be implemented in 2016 and 2017				

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Sub-activity 2.2: Technical assistance in pilot sites for diagnoses of fishing grounds and evaluation of fishery ecosystem management	To be implemented in 2016 and 2017				
Activity 3: Promotion and extension on rehabilitation of fisheries resources and habitats/ fishing grounds in ASEAN Region					
Sub-activity 3.1: Information dissemination on rehabilitation of fisheries resources and habitats/fishing grounds for public awareness	I. Information	52	30	42	450

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 1: Development on diagnoses of critical fishing grounds and evaluation by resources enhancement practices	Outcome : Application and verification of various methodologies for quantitative assessment, monitoring and evaluation of the effectiveness of resources enhancement initiatives.	
Sub-activity 1.1: Investigation/review of the status of critical habitats/fishing grounds in the Southeast Asian region	Output : Mapping of important critical fishing grounds and habitats and associated fish species.	
Sub-activity 1.2: Information collection on suitable designs of resource enhancement practices including their evaluation and promotion		Information dissemination on “Strengthening fisheries resources rehabilitation measures to mitigate the impacts of IUU fishing” through SEAFDEC Fish for the People (Vol. 14 No. 2).
Sub-activity 1.3: Workshop/Expert consultation on suitable measures for sustainable fisheries resource enhancement and habitat conservation		
Activity 2: Technical assistance in pilot project sites and capacity building on rehabilitation of fisheries resources and habitats/fishing grounds	Outcome : Strengthen and developed of human capacity in fisheries resources enhancement and habitat conservation	Main part of activity 2 will be implemented in 2016 and 2017
Sub-activity 2.1: Technical assistance in a pilot site for suitable designs of resource enhancement practices	Output : Regional training programs on fisheries resource enhancement and habitat conservation measures as well as technical transferring through the technical assistance in a pilot site	<ul style="list-style-type: none"> - Further investigate for a new pilot site in Cambodia. - Stakeholders consultation on coastal fishery resources co-management and data collection.
Sub-activity 2.2: Technical assistance in pilot sites for diagnoses of fishing		<ul style="list-style-type: none"> - Follow up activities in 3 pilot sites of artificial reefs, sea grass-based, and freshwater reservoir

Planned activity	Expected outcome/output	Achievements
grounds and evaluation of fishery ecosystem management	implementation.	- Stakeholders consultation on improvement of previous management measure - Update data information and collection.
Sub-activity 2.3: Capacity building on theory and methodology of fisheries resource enhancement and habitat conservation measures		Postponed to 2018
Activity 3: Promotion and extension on rehabilitation of fisheries resources and habitats/ fishing grounds in ASEAN Region	Outcome : Rising awareness of resources users on the important of fisheries resources enhancement and habitat conservation	Publication distribution of Consolidating the strategies for fisheries resources enhancement in Southeast Asia “Proceedings of the Symposium on Strategy for Fisheries Resources Enhancement in the Southeast Asian Region”.
Sub-activity 3.1: Information dissemination on rehabilitation of fisheries resources and habitats/fishing grounds for public awareness	Output : Publication of the promotion materials on importance of fisheries resources enhancement and habitat conservation	
Sub-activity 3.2: End of project regional seminar		

4. List of Completed Publications and Others

List of completed publications for the Year 2016	Type of media	Attached e-file
1. Consolidating the strategies for fisheries resources enhancement in Southeast Asia	publication	
2. Strengthening fisheries resources rehabilitation measures to mitigate the impacts of IUU fishing, (Fish for the People)	publication	

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/ Views from Participants
Activity 1:	
Sub-activity 1.1:	Compilation of information and development of database that could be referred to by Member Countries
Sub-activity 1.2:	Mapping of important critical fishing grounds and habitats and associated fish species should be conducted taking into consideration various sources of information, e.g. indigenous knowledge of fishers, scientific researches, etc.
Activity 2:	Monitoring and evaluation of successes and failures of resources enhancement initiatives should be carried out based on intended objectives, e.g. whether for enhancing resources/stocks, attracting fish to increase production and incomes of fishers, protection from encroachment, etc.

6. Major Impacts/Issues

SEAFDEC, in collaboration with the Department of Fisheries (DoF) Thailand, the Local Government of Krabi Province and other relevant organizations, is working on the enhancement of doc conch shell resources in the Province. Further, SEAFDEC plans to expand such enhancement activities of this species to the other 5 provinces near the Krabi Province on Andaman sea of Thailand. The follow-up activities such as promotion on awareness building on doc conch shell conservation area in each provinces, utilization of marketable size of doc conch shell and sustainable shell collection methodology. Additional supported activities from local government for sustainable doc conch shell resources rehabilitation and utilization are being implemented.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
<p>Activity 1: Development on diagnoses of critical fishing grounds and evaluation by resources enhancement practices</p>	<p>Sub-Activity 1.1 Investigation/review of the status of critical fishing grounds in the Southeast Asian region</p> <p>Investigation of the existing basic information and research works in identifying the critical fishing grounds as well as spawning and nursery grounds known also as “Fishery <i>Refugia</i>” for commercial fishes including bottom and pelagic species, will be conducted.</p> <p>Information collection would be conducted through deskwork and visit to the Member Countries. The results of the information gathering will be used for mapping and assessment by indices of the status of the critical fishing grounds in the region.</p> <p>In addition, the pilot site selection would be decided following the discussion at the project inception workshop as the new pilot site should support/assist the existing project of Member Country. Since, SEAFDEC successfully implemented pilot project integrated coastal resources management approach in Sihanoukville, Cambodia in collaboration between SEAFDEC and the Fisheries Administration (FiA) Cambodia through JTF funding in year 2005 – 2009. Therefore, Cambodia would remarkable recommended for further investigation as a new pilot site.</p>	<p>5,360</p>
	<p>Sub-Activity 1.2 Information collections on suitable designs of resource enhancement practices including their evaluation and promotion</p> <p>Investigation of existing information and research works on the effective designs/models and methodologies for the resource enhancement tools/practices used in various fisheries habitat will be conducted. Information collections would be conducted through deskwork and designs/models experiment.</p> <p>Fish Enhancing Devices (FEDs) would be introduced in the area of Mae Rampheung Beach, Rayong Province to promote 3Ls concept (Local materials, Low cost and Low technology). FEDs could be a low cost alternative to the conventional ARs, while FEDs may effective enhancing for both pelagic and demersal fish species. Furthermore, FEDs could also protect fishing ground area for small-scale fishing community. FEDs installation process required less money and work load than ARs installation process. In addition, the point of interest for the site selection for FEDs in Rayong is SEAFDEC has strong linkage to the local communities for community-base management in Mae Rumpheung beach by set-net fishers’ group which is already established. The Traditional Fish Aggregating Devices</p>	<p>2,780</p>

Proposed Activity	Description of Proposed Activity	Proposed Budget
	(FADs) and FEDs efficiency will be compared, modified and applied.	
	<p>Sub-Activity 1.3 Workshop/Expert consultation on suitable measures for sustainable fisheries resource enhancement and habitat conservation</p> <p>This activity includes workshops as well as expert consultations to identify appropriate and effective resources enhancement tools and measures for fishery resources enhancement and habitats conservation.</p>	10,640
<p>Activity 2: Technical assistance led by pilot project sites and capacity building on rehabilitation of fisheries resources and habitats/fishing grounds</p>	<p>Sub-Activity 2.1 Technical assistance in a pilot site for suitable designs of resource enhancement practices</p> <p>In this activity, selected on-site study and evaluation on enhancement practices including Fish Enhancing Devices (FEDs) impact to fisheries resources and environment are going to conduct in the most appropriate area of Eastern province of the Gulf of Thailand.</p>	4,360
	<p>Sub-Activity 2.2 Technical assistance in pilot sites for diagnoses of fishing grounds and evaluation of fishery ecosystem management</p> <p>In order to develop strategies and actions in rehabilitating the critical fishing grounds as practical management measures, critical fishing grounds will be selected for diagnosing fishing grounds and monitoring the achievements of rehabilitation program in selected pilot sites such as seagrass beds for dog conch in Krabi province, Thailand.</p> <p>Also case studies on the selected priority important fisheries ecosystem identified and evaluated in cooperation with Member Countries, will be conducted including a case study by SEAFDEC on identification and evaluation of fisheries ecosystem in the fresh water reservoir in Nam Haum, Lao PDR.</p> <p>Capacity building on theory and methodology of fisheries resources and habitats/fishing grounds would be provided through a training course and study trip to transfer of assistance both in terms of technical and management aspects to Member Countries in order to enhance their capacities and awareness of fishery resources rehabilitation and habitats/fishing grounds practices. In addition, the pilot site selection will be decided following the discussion at the project inception workshop as the new pilot site should support the existing project of Member Country. Since, SEAFDEC successfully implemented pilot project integrated coastal resources management approach in Sihanoukville, Cambodia in collaboration between SEAFDEC and the Fisheries Administration (FiA) Cambodia through JTF funding in year 2005 – 2009. Therefore, Cambodia would remarkable recommended for further investigation as a new pilot site.</p>	27,860

Proposed Activity	Description of Proposed Activity	Proposed Budget
<u>Activity 3:</u> Promotion and extension on rehabilitation of fisheries resources and habitat/ fishing grounds in ASEAN Region	Sub-Activity 3.1 Information dissemination on rehabilitation of fisheries resources and habitats/fishing grounds for public awareness Documentation of the best practices of the project implementation will be carry out, which can be used as inputs in the preparation of IEC (information, education and communication) materials for dissemination in the region.	1,000
	Total	52,000

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 1	Mapping of important critical fishing grounds and habitats and associated fish species from various sources of information, <i>e.g.</i> indigenous knowledge of fishers, scientific researches, etc. Investigation of existing information and research works on the effective designs/models and methodologies for the resource enhancement tools/practices used in various fisheries habitat.
Sub-activity 1.1	Outcome: Application and verification of various methodologies for quantitative assessment, monitoring and evaluation of the effectiveness of resources enhancement initiatives. Output: Mapping of important critical fishing grounds and habitats and associated fish species. Stakeholders consultation meeting and discussion, knowledge and data information gathering. Site location/habitat selection, Resources species interested
Sub-activity 1.2	Stakeholders consultation meeting and discussion, knowledge and data information gathering Site location/habitat selection, Resources species interested
Activity 2	In order to develop strategies and actions in rehabilitating the critical fishing grounds as practical management measures, critical fishing grounds will be selected for diagnosing fishing grounds and monitoring the achievements of rehabilitation program in selected pilot sites for fisheries resources in Member Countries. Capacity building on theory and methodology of fisheries resources and habitats/fishing grounds would be provided through a training course and study trip to transfer of assistance both in terms of technical and management aspects to Member Countries in order to enhance their capacities and awareness of fishery resources rehabilitation and habitats/fishing grounds practices.
Sub-activity 2.1	Outcome: Strengthen and developed of human capacity in fisheries resources enhancement and habitat conservation Output: Regional training programs on fisheries resource enhancement and habitat conservation measures as well as technical transferring through the technical assistance in a pilot site implementation.

Proposed Activity	Expected Outcomes/Outputs of Activity
	- Suitable FEDs designs for fisheries resources enhancement activities in Rayong province through the local communities under the communities-base management for sustainable fisheries concept
Sub-activity 2.2	- Pilot site development through the monitoring, evaluation and consultation meeting. - Evaluation of the effectiveness of fisheries ecosystem management of previous pilot site projects and suitable adjustment. - Expansion on fisheries resources conservation concept to the close provinces.
Activity 3	Documentation of the best practices of the project implementation will be carried out.
Sub-activity 3.1	Outcome: Rising awareness of resources users on the important of fisheries resources enhancement and habitat conservation Output: Publication of the promotion materials on importance of fisheries resources enhancement and habitat conservation

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1												
Sub-activity 1.1												
Sub-activity 1.2												
Sub-activity 1.3												
Activity 2												
Sub-activity 2.1												
Sub-activity 2.2												
Activity 3												
Sub-activity 3.1												

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

		Project id: 2015030102	
Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Environment-friendly, Sustainable Utilization and Management of Fisheries and Aquaculture Resources		
Program Thrust:	I	Total Duration:	2015 - 2019
Lead Department:	AQD	Lead Country:	Philippines
Donor/Sponsor:	JTF-6	Total Donor Budget:	USD 356,200
Project Partner:	None	Budget for 2016:	USD 66,000
Project Leader:	Dr. Chihaya Nakayasu, AQD DC	Involved Country:	SEAFDEC Member Countries

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description:

This Project titled “Environment-friendly, Sustainable Utilization and Management of Fisheries and Aquaculture Resources” was proposed to:

- 1) Establish environment-friendly, responsible aquaculture technology
Nature-conscious culture technologies guaranteeing environment-friendliness.
 - Use of plant-origin feed ingredients that are available in the region will be explored in the development and/or refinement of aquafeed for cultured freshwater fish species such as tilapia
 - Ecosystem-based pond management strategies will be developed using shrimp, mud crab, milkfish *etc.* as the target culture species through aquasilviculture.
- 2) Promote community-based production and resource enhancement of high-value aquatic resources
 - Community-based integrated production of abalone *Haliotis asinina* and sea cucumber *Holothuria scabra* through culture, sea ranching and stock enhancement is proposed for low-income households who live in environments without electricity but with natural food for abalones and sea cucumbers. Seeds will be produced in small-scale solar-powered hatchery.
 - Development of technologies on appropriate transport and acclimation strategies of seahorses from the hatchery to the release site; to determine the appropriate size of seahorses for release as well as the appropriate time of release; and to develop appropriate monitoring strategies of the released seahorses.
- 3) Disseminate and demonstrate resource enhancement practices.
 - Extension and demonstration for the breeding, hatchery seed production, nutrition and health management in grouper, seabass, snapper *etc.* through training program.
 - Special training focusing on the culture of important fisheries commodities such as giant freshwater prawn, catfish, bighead carp.

2. Background and Justification

Among increasing demand for food due to rapid increase of world population, aquatic food production has been increasing steadily (FAO, 2012). However, capture production has attained the saturation levels and been stagnated since mid-1990s, and this shows that the importance of aquaculture is ever growing in these decades and in the future. In 2010, 47 % of the total production was supported by culture production. Nowadays, culture production in Asia accounts for 91.5 % of the world production. In 2010, four SEAFDEC Member Countries, which is, Indonesia, Viet Nam, Philippines, and Thailand, were included in the top ten countries in the world. Indeed, the remarkable increase in aquaculture was more pronounced

in the Southeast Asian region compared to the world as shown in the increase of culture production in 2010 compared to that in 2001, showing 3.52 versus 1.78 times, respectively.

On the other hand, the rapid growth in aquaculture also brought negative impacts into our region such as: degradation of the culture sites, destruction of sensitive ecosystems, decrease in bio-diversity, spread of diseases, social conflicts, etc. All of them hinder sustainability of the aquatic food production. Majority of the repercussions which affect not only stabilities of culture production but also stock levels of wild aquatic species, particularly, have been amplified by paucities of consideration on impact of intense anthropological pressures on natural environments and resources, which also preclude efforts towards food security and poverty alleviation in the region. These undesirable ramifications would not happen if the responsible utilization and management were correctly and appropriately practiced.

Among the countermeasures to address the environmental and social issues arising from fisheries and aquaculture practices, active approaches for establishment of environment-friendly culture technologies, promotion of community-based management of aquatic resources and replenishment of endangered species are becoming increasingly significant to secure the sustainable utilization and management of aquatic species in our region. So far, the Aquaculture Department of Southeast Asian Fisheries Development Centre (SEAFDEC/AQD) has acquired useful information and developed skills especially in the fields of feed development, culture technology with mangrove forests, and community-based management for aquatic species production under the regional program “Promotion of sustainable aquaculture and resource enhancement in Southeast Asia” funded by the Government of Japan Trust Fund-V (JTF5) in 2010-2014. However, the said activities should be further strengthened so that the sustainable utilization and management of aquatic resources will be accomplished in responsible manners in the Southeast Asian region. Varieties of endeavour to diminish or take away the negative factors are also required at once in such activities. On the other hand, approaches towards issues on the internationally over-exploited species are still primitive and should be firmly addressed. Particularly, to be correctly justified with the international trade regulations, we need to hurry to establish management protocols and technologies to secure the sustainable utilization under the appropriate conservation.

SEAFDEC has continuously been trying to contribute to food security and poverty alleviation. Environment-friendly, sustainable utilization and management of aquatic resources would be the just wholesome practices towards these goals.

Regional guidelines for responsible fisheries in Southeast Asia have pointed out the significance of promotion of research on the ecological and socioeconomic impact of aquaculture (SEAFDEC/AQD, 2005). Since aquatic resources and their environment exist beyond jurisdictions of local and national governments, regional approaches are inevitable for tackling the issues collaboratively among governments and states, locally or internationally.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1: To establish environment-friendly, responsible aquaculture technology	Outcome 1: Use of plant-origin feed ingredients that are available in the region for cultured freshwater fish species such as tilapia. Promoting the aquasilviculture of shrimp as an	Output 1: Exploration of plant-origin feed ingredients that are available in the region for cultured freshwater fish species such as tilapia. Establishment of ecosystem-based pond management strategies for	Activity 1: Establishment of environment-friendly, responsible aquaculture technology - The replacement of fishmeal as the main source of protein in feeds that will further improve production traits of tilapia. - Test of refined formulated diets in cages and pond culture systems using improved feeding management scheme - Determination of; 1) the time required for a mangrove habitat to remove nutrients (<i>i.e.</i> N, P) from shrimp farm effluents, 2) appropriate pond to mangrove area ratio that will efficiently remove nutrients from shrimp

Objective	Outcomes	Outputs	Activities
	ecosystem based management strategy	increased production in ASEAN Member States.	pond effluent, and 3) factors affecting mangrove efficiency to remove nutrients (<i>i.e.</i> surface area mangrove species, bark, leaf litter, etc.).
Objective 2: To promote community-based production and resource enhancement of high-value aquatic resources to secure the livelihood with avoiding rampant, illegal fishing and social conflicts.	Outcome 2: Promotion for the community-based production and resource enhancement of high-value aquatic resources	Output 2: Improvement of organizational, management and entrepreneurial skills of fisherfolks to sustain livelihoods from production, sea ranching and stock enhancement high-value aquatic products. Involvement of the community in the management of the natural resources by disseminating information and participating in the protection and conservation of the coral and sea grass areas which are the natural habitat of seahorses	Activity 2: Promote community-based production and resource enhancement of high-value aquatic resources <ul style="list-style-type: none"> - Community-based integrated production of abalone <i>Haliotis asinina</i> and sea cucumber <i>Holothuria scabra</i> through culture, sea ranching and stock enhancement is proposed for low-income households who live in environments without electricity but with natural food for abalones and sea cucumbers. - Production of seeds in small-scale solar-powered hatchery. - Development of technologies on appropriate transport and acclimation strategies of seahorses from the hatchery to the release site; to determine the appropriate size of seahorses for release as well as the appropriate time of release; and to develop appropriate monitoring strategies of the released seahorses.
Objective 3: To extend and demonstrate aquaculture technologies to Member Countries.	Outcome 2: Extending the technologies to rural Member Countries to hasten economic development in the region.	Output 3: Extension of technologies to rural Member Countries to hasten economic development in the region.	Activity 3: Technology and information transfer on resource enhancement practice through training <ul style="list-style-type: none"> - Extension and demonstration for the breeding, hatchery seed production, nutrition and health management in grouper, seabass, snapper <i>etc.</i> through training program. - Special training focusing on the culture of important fisheries commodities such as giant freshwater prawn, catfish, big head carp.

3.2 Overall Scope/Description of Project

Activity	Description
Activity 1: Establishment of environment-friendly, responsible aquaculture technology	
Sub-activity 1.1 Use of plant-based protein sources in tilapia feeds for improved production traits	Use of plant-origin feed ingredients that are available in the region will be explored in the development and/or refinement of aquafeed for cultured freshwater fish species such as tilapia. Activities are geared toward the replacement of fishmeal as the main source of protein in feeds that will further improve production traits of tilapia.
Sub-activity 1.2 Responsible aquaculture through aquasilviculture	Aquasilviculture as an ecosystem-based pond management strategy will be investigated. Micro-organisms present in the mangrove forest has the ability to transform nutrients to bioavailable form that can be eaten by microorganisms lower in the food web which in turn can serve as food to organisms higher in the food web like the crabs. This process of transformation also improves water quality. The ability of mangroves to improve water quality is affected by the mangrove to pond area ratio (MPR). This study aims to establish the duration for a mangrove habitat to

Activity	Description
	remove nutrients from shrimp pond including other factors that might affect its efficiency
Activity 2: Promotion of community-based production and resource enhancement of high-value aquatic resources	
Sub-activity 2.1 Community-based integrated production of abalone <i>Haliotis asinina</i> and sea cucumber <i>Holothuria scabra</i> through culture, sea ranching and stock enhancement	Sea cucumber or sandfish are detritus feeders in intertidal flats and reef areas that help aerate marine sediments and recycle nutrients necessary for maintaining marine ecosystems. Donkey ear abalones are gastropods that feed on encrusting algae and micro-particulates in coralline areas. Households in coastal and island communities earn income from selling these high-value export commodities. These species have become overexploited. Community-based integrated production of these species through culture, sea ranching and stock enhancement is proposed for low-income households who live in environments without electricity but with natural food for abalones and sea cucumbers. Thus, seeds will be produced in small-scale solar-powered hatchery. This project aims to maintain the health of the intertidal and reef environment through production systems that use hatchery-bred seeds produced from local broodstocks and grown with natural food while providing sustainable sources of income for coastal dwellers in remote island communities and improve governance of coastal resources in the Philippines and similar areas in Member Countries in Southeast Asia.
Sub-activity 2.2 Promotion of resource enhancement of seahorses	Seahorses, which are highly exploited for their high price, were among the first marine fishes of commercial importance to be listed in the International Union for Conservation of Nature (IUCN) and all seahorses (genus <i>Hippocampus</i>) are listed the Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES) Appendix II effective May 15, 2004. Seed production technology in seahorses is expected to provide the needed seed for the resource enhancement in the potential release sites. In addition, the baseline assessment of the seahorse natural stocks in the potential release site was conducted in JTF5. The project aims to develop appropriate transport and acclimation strategies of seahorses from the hatchery to the release site; to determine the appropriate size of seahorses for release as well as the appropriate time of release; and to develop appropriate monitoring strategies of the released seahorses
Activity 3: Technology extension and demonstration	
Sub-activity 3.1 Marine fish hatchery training program	Aquaculture of high-value marine finfish species continues to develop rapidly in Southeast Asia. This training program will extend and demonstrate the breeding, hatchery seed production, nutrition and health management in grouper, seabass, snapper etc.
Sub-activity 3.2 Rural aquaculture program	Training focusing on promotion of community-based freshwater aquaculture for remote rural areas of Southeast Asia will be organized by SEAFDEC/AQD under this sub-activity, which will promote capacity building for establishing appropriate aquaculture system applicable in remote rural area.
Activity 4: Publication	Manuals, posters, pamphlets and flyers describing disease prevention methods will be published and distributed.
Activity 5: Annual progress meeting and international workshop	
Sub-activity 5.1 Annual progress meeting	Annual meeting organized by SEAFDEC/AQD is held to review the project achievement. Evaluators will be invited to join the meeting to review/ evaluate the project achievements.
Sub-activity 5.2 International workshop	The workshop, not only receive participants from Member Countries, but also invite expert scientists as key note speakers to facilitate to spread and exchange brand-new information on fish health management between SEAFDEC and various institutions.
Activity 6: Coordination by Project Leader	The project leader coordinates and encourages the research, training and dissemination, and also facilitate information exchange not only between activities but also among Member Countries.

3.3 Activity, Sub-activity and Proposed Budget for 2015-2019

(Unit: USD)

Activity	Sub-Activity	Y1 2015	Y2 2016	Y3 2017	Y4 2018	Y5 2019
Activity 1: Establishment of environment-friendly, responsible aquaculture technology	Sub-activity 1.1 Use of plant-based protein sources in tilapia feeds for improved production traits	11,000	8,800	8,800	8,800	8,800
	Sub-activity 1.2 Responsible aquaculture through aquasilviculture	11,000	8,800	8,800	8,800	8,800
Activity 2: Promotion of community-based production and resource enhancement of high-value aquatic resources	Sub-activity 2.1 Community-based integrated production of abalone <i>Haliotis asinina</i> and sea cucumber <i>Holothuria scabra</i> through culture, sea ranching and stock enhancement	20,000	15,000	15,000	15,000	15,000
	Sub-activity 2.2 Promotion of resource enhancement of seahorses	11,000	8,800	8,800	8,800	8,800
Activity 3: Technology extension and demonstration	Sub-activity 3.1 Marine fish hatchery training program	8,000	7,500	7,500	7,500	7,500
	Sub-activity 3.2 Rural aquaculture program	9,000	8,500	8,500	8,500	8,500
Activity 4: Publication		0	0	0	0	5,000
Activity 5: Annual progress meeting and international workshop	Sub-activity 5.1 Annual progress meeting	5,000	4,000	4,000	4,000	4,000
	Sub-activity 5.2 International workshop	0	0	0	10,000	0
Activity 6:	Coordination by Project Leader	4,000	4,000	4,600	4,000	4,000
	Sub-Total Budget	79,000	65,400	66,000	75,400	70,400

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION**1. Achievements of the Project Implementation for the Present Year**

1) Evaluation on the nutritional value of selected locally available plant-origin feed ingredients and refinement of existing diet formulation on broodstock and grow-out stages of freshwater fish species, 2) Investigation on the culture of *P. monodon* with finfish inside pen in ponds with adjacent mangrove stocked with mud crab, 3) Improving fisheries governance and strategies for managing enhanced abalone and sandfish stocks and health of its habitat, 4) Establish the appropriate transport and acclimation strategies of seahorses from the hatchery to the release site to ensure optimum conditions for the survival of animals, and 5) Technology and information transfer on resource enhancement practice through training.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1 Establishment of environment-friendly, responsible aquaculture technology					
Sub-activity 1.1 Use of plant-based protein sources in tilapia feeds for improved production traits					
Sub-activity 1.2 Responsible aquaculture through aquasilviculture					
Activity 2 Promotion of community-based production and resource enhancement of high-value aquatic resources					
Sub-activity 2.1 Community-based integrated production of abalone <i>Haliotis asinina</i> and sea cucumber <i>Holothuria scabra</i> through culture, sea ranching and stock enhancement					
Sub-activity 2.2 Promotion of resource enhancement of seahorses					
Activity 3 Technology extension and demonstration					
Sub-activity 3.1 Marine fish hatchery training program	II. Training	3		2	7,500
Sub-activity 3.2 Rural aquaculture program	II. Training (conducted 22 Nov-1 Dec 2016)	Not applicable at the moment.		Not applicable at the moment.	8,500

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 1 Establishment of environment-friendly, responsible aquaculture technology		
Sub-activity 1.1 Use of plant-based protein sources in tilapia feeds for improved production traits	Evaluation on the nutritional value of selected locally available plant-origin feed ingredients and refinement of existing diet formulation on broodstock and grow-out stages of freshwater fish species	<p>The proponents shall also look for a service laboratory that caters for the analysis of ANFs.</p> <p>Enrichment studies of the remaining agricultural crop residues have been conducted. A total of 62 samples of both treated and untreated samples (with and without nutrient addition using ensiling and solid state fermentation using <i>Trichoderma harzianum</i>) have already been submitted for the analysis of proximate composition.</p> <p>An exploratory trial aimed at examining the protein quality of these agricultural wastes and by-products was conducted. Eight experimental diets were formulated to be isonitrogenous (28% crude protein) and isocaloric (~300 kcal/100 g diet). Feeding trial of tilapia broodstock in cages and tanks will be conducted in August 2016.</p>

Planned activity	Expected outcome/output	Achievements
Sub-activity 1.2 Responsible aquaculture through aquasilviculture	To determine the time required for a mangrove habitat to remove nutrients (<i>i.e.</i> N, P) from shrimp farm effluents.	A suitable experimental pond site has been selected. A Memorandum of Agreement between SEAFDEC and Leganes, Iloilo local government unit regarding the use of the ponds has been signed. The pond site is composed of 2 compartments. Pond 1 has dense growth of mangrove trees. Pond 2 is divided into 2 compartments, designated as pond 2a and pond 2b. Pond 2a will be used to culture shrimp intensively. Pond 2b has few mangrove trees. Effluents from shrimp cultured in Pond 2a will be drained into Pond 1 and Pond 2b. Ponds 1 and 2 have been rehabilitated and are being dried. Electrification is on the process.
Activity 2 Promotion of community-based production and resource enhancement of high-value aquatic resources		
Sub-activity 2.1 Community-based integrated production of abalone <i>Haliotis asinina</i> and sea cucumber <i>Holothuria scabra</i> through culture, sea ranching and stock enhancement	Improving fisheries governance and strategies for managing enhanced abalone and sandfish stocks and health of its habitat.	Abalone spawning was demonstrated to some members of the Molocaboc Sea Ranchers Association (MOSRA) in the demo-hatchery. During monthly sampling in the community-based resource enhancement (CBRE) site, there is increasing proportion (91-97%) of wild abalone recruits vs released tagged hatchery-bred counterparts. Abalone gleaned by other fisherfolks increased in areas outside the release site. Nursery rearing of 52 thousand pieces early juvenile sandfish in floating net cages recorded 20% mean survival, of which 15% grew to >3g-size and released in monitoring pens, of which 10.6% grew to >20g-size and released in open areas. Hence, CBRE replicate site is planned for new MOSRA members.
Sub-activity 2.2 Promotion of resource enhancement of seahorses	Development of appropriate transport and acclimation strategies of seahorses from the hatchery to the release site.	Trials on transport and acclimation strategies were conducted on three batches of juvenile seahorses. The optimum stocking density for seahorse juveniles is 3 individuals/L at 12 hours transport duration. The monthly monitoring of seahorses showed there was an increase in number of wild seahorses in this year. Fisherfolk organization members were trained on the proper handling of live seahorses and seahorse biology.
Activity 3 Technology extension and demonstration		
Sub-activity 3.1 Marine fish hatchery training program	To train participants to operate a fish hatchery by providing them with technical knowledge and skills on spawning and larval rearing of marine fishes.	The International Training Course on Marine Fish Hatchery was conducted in Tigbauan Main Station in July 2016. There were five (5) participants, three (3) were awarded GOJ-TF Training Fellowship Grants.

Planned activity	Expected outcome/output	Achievements
Sub-activity 3.2 Rural aquaculture program	Enhance participants' knowledge and skills on freshwater aquaculture technologies from broodstock development to seed production, nursery and grow-out phase.	A 10-day training course on "Community-Based Freshwater Aquaculture (CBFWA) for Remote Areas of Southeast Asia" will be conducted from November 22 to December 1, 2016 in Binangonan Freshwater Station, Binangonan, Rizal. Letters of invitation for prospective participants from SEAFDEC Member Countries have been sent out to their respective Country and National Coordinators. Preparations for the training are currently being done.

4. List of Completed Publications and Others

List of completed publications for the Year 2016	Type of media	Attached e-file
1. Salayo ND, Castel RJG, Barrido RT, Tormon DHM*, Azuma T*. 2016. Community-based stock enhancement of abalone, <i>Haliotis asinina</i> in Sagay marine reserve: Achievements, limitations and directions. <i>In</i> : Hajime K, Iwata T, Theparoonrat Y, Manajit N, Sulit VT (eds.). Consolidating the Strategies for Fishery Resources Enhancement in Southeast Asia. Proceedings of the Symposium on Strategy for Fisheries Resources Enhancement in the Southeast Asian Region, Pattaya, Thailand; 27-30 July 2015; Samutprakan, Thailand: Training Department, Southeast Asian Fisheries Development Center; pp. 131-135.	Printed conference proceedings	

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/ Views from Participants
Activity 1 Establishment of environment-friendly, responsible aquaculture technology	
Sub-activity 1.1 Use of plant-based protein sources in tilapia feeds for improved production traits	
Sub-activity 1.2 Responsible aquaculture through aquasilviculture	
Activity 2 Promotion of community-based production and resource enhancement of high-value aquatic resources	
Sub-activity 2.1 Community-based integrated production of abalone <i>Haliotis asinina</i> and sea cucumber <i>Holothuria scabra</i> through culture, sea ranching and stock enhancement	
Sub-activity 2.2 Promotion of resource enhancement of seahorses	
Activity 3 Technology extension and demonstration	

Planned activity	Evaluation/ Views from Participants
Sub-activity 3.1 Marine fish hatchery training program	Participants evaluated relevance of topics (5.0); technical knowledge learned (4.4); trainees confidence to do duties upon return (4.6); overall coordination of training activities (5.0), on a scale of one to five.
Sub-activity 3.2 Rural aquaculture program	Not applicable at the moment. To be conducted on November 22 to December 1, 2016.

6. Major Impacts/Issues

Activity 2.1 -After the construction of the demonstration hatchery facility in December 2015, spawning has been demonstrated to some fisherfolks whenever there are gravid abalones collected during monthly sampling. However, the spawning through hatching cannot be sustained yet as more materials are needed (*i.e.* microscope, tanks, natural food) and water source is yet to be completed.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
Activity 1 Establishment of environment-friendly, responsible aquaculture technology		
Sub-activity 1.1 Use of plant-based protein sources in tilapia feeds for improved production traits	Feeding trials to compare growth, reproductive performance, and fry production of tilapia broodstock fed graded levels (0%, 25% and 50%) of the identified agricultural waste in a 40% crude protein diet and reared simultaneously in tanks and lake-based cages shall be continued to complete a 12-month period. The production of protein enriched biomass from different agricultural wastes and by-products shall be carried out. Diet formulation and preparation using one or a combination of two or more agricultural wastes and by-products previously identified with enriched nutritional value shall be done in preparation for the growth trials of tilapia fingerlings.	8,800
Sub-activity 1.2 Responsible aquaculture through aquasilviculture	<i>P. monodon</i> will be cultured in an earthen pond; effluent from the culture pond will be drained into areas with and without mangroves. The time required for a mangrove habitat to remove nutrients (<i>i.e.</i> N, P) from shrimp farm effluents will be determined. The experiment will be replicated through time.	8,800
Activity 2 Promotion of community-based production and resource enhancement of high-value aquatic resources		
Sub-activity 2.1 Community-based integrated production of abalone, <i>Haliotis asinina</i> and sea cucumber, <i>Holothuria scabra</i> through culture, sea ranching and stock enhancement	Establish abalone & sandfish hatchery. Train fisherfolks in hatchery operations to produce seeds for grow-out, sea ranching and stock enhancement in Molocaboc & other replicate sites. Develop organizational, management & entrepreneurial skills of fishers to sustain livelihoods through processing & marketing of value-added abalone & sandfish products. Continue stakeholder consultations and information dissemination to sustain collaboration, economic benefits & responsible governance of enhanced resources.	15,000

Proposed Activity	Description of Proposed Activity	Proposed Budget
Sub-activity 2.2 Promotion of resource enhancement of seahorses	To promote resource enhancement of seahorses. Specific objectives: to determine the appropriate size-at-release of VIE-tagged seahorses; to determine the appropriate time of release; to determine growth and survival of the released seahorses; and to promote involvement of the community in the management of the natural resources.	8,800
Activity 3 Technology extension and demonstration		
Sub-activity 3.1 Marine fish hatchery training program	Intensification of aquaculture through seed production of high-value marine fish species continues to develop rapidly in Southeast Asia. This 37-days training program will extend and demonstrate the breeding, hatchery seed production, nutrition and health management in milkfish, grouper, Asian seabass, mangrove red snapper, rabbitfish and pompano	7500
Sub-activity 3.2 Rural aquaculture program	An important component to help alleviate poverty especially in rural areas is the conduct of community-based freshwater aquaculture. This 10-days training program focuses on seed production of freshwater species such as tilapia, bighead carp, catfish and freshwater prawn with the idea of enhancing fisherfolks capacity to establish freshwater aquaculture system applicable in remote rural areas of Southeast Asia.	8500
Activity 4: Publication	Publication	
Activity 5 Annual progress meeting and international workshop		
Sub-activity 5.1	Annual progress meeting	4,000
Sub-activity 5.2:	International workshop	
Activity 6	Coordination by Project Leader	4,600

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 1 Establishment of environment-friendly, responsible aquaculture technology	
Sub-activity 1.1 Use of plant-based protein sources in tilapia feeds for improved production traits	Information on the effect of the identified agricultural waste on growth, reproductive performance and fry production of tilapia broodstock reared in tanks and lake-based conditions determined.
Sub-activity 1.2 Responsible aquaculture through aquasilviculture	Data on the time required for a mangrove habitat to remove nutrients (<i>i.e.</i> N, P) from shrimp farm effluents.
Activity 2 Promotion of community-based production and resource enhancement of high-value aquatic resources	
Sub-activity 2.1 Community-based integrated production of abalone <i>Haliotis asinina</i> and sea cucumber <i>Holothuria scabra</i> through culture, sea ranching and stock enhancement	Operational hatchery with fisherfolks trained in breeding and nursery of abalone and sandfish. New stock enhancement replicate site in Molocaboc Diut. Value-added dried abalone produced and marketed by fisherfolks. Stronger and bigger fisherfolk organization.

Proposed Activity	Expected Outcomes/Outputs of Activity
Sub-activity 2.2 Promotion of resource enhancement of seahorses	Appropriate size-at-release of VIE-tagged seahorses determined; appropriate time of release determined; growth and survival of the released seahorses determined; and active and participatory involvement of the community in the management of the natural resources promoted
Activity 3 Technology extension and demonstration	
Sub-activity 3.1 Marine fish hatchery training program	Extending the technologies generated by SEAFDEC/AQD through hands-on training on seed production of marine fish species such as milkfish, Asian seabass, mangrove red snapper, rabbitfish and pompano for SEAFDEC and non-SEAFDEC Member Countries.
Sub-activity 3.2 Rural aquaculture program	Extending the technologies generated by SEAFDEC/AQD through hands-on training on the seed production of freshwater species such as tilapia, catfish, bighead carp and freshwater prawn to rural member and non-Member Countries to hasten economic development in Southeast Asia.

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1 Establishment of environment-friendly, responsible aquaculture technology												
Sub-activity 1.1 Use of plant-based protein sources in tilapia feeds for improved production traits												
Sub-activity 1.2 Responsible aquaculture through aquasilviculture												
Activity 2 Promotion of community-based production and resource enhancement of high-value aquatic resources												
Sub-activity 2.1 Community-based integrated production of abalone <i>Haliotis asinina</i> and sea cucumber <i>Holothuria scabra</i> through culture, sea ranching and stock enhancement												
Sub-activity 2.2 Promotion of resource enhancement of seahorses												
Activity 3 Technology extension and demonstration												
Sub-activity 3.1 Marine fish hatchery training program												
Sub-activity 3.2 Rural aquaculture program												

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

		Project id: 2015050101	
Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Enhancement of Sustainability of Catadromous Eel Resources in Southeast Asia		
Program Thrust:	I	Total Duration:	2015-2019
Lead Department:	IFRDMD	Lead Country:	Indonesia
Donor/Sponsor:	JTF-6	Total Donor Budget:	USD 210,000
Project Partner:	None	Budget for 2017:	USD 42,000
Project Leader:	Dr. Dina Muthmainnah	Involved Country:	All SEAFDEC Member Countries

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

This project is aimed at enhancing the sustainability of catadromous eel resources in Southeast Asia (hereinafter it is to be called “the region”). There are three main activities on the project. The first one is aimed at clear understanding on current situation of resources, fisheries and utilization of catadromous eels in the region. The second one is aimed at improving data collection and statistics of catadromous eel catch in ASEAN Member States (hereinafter referred to as “AMSs”). The third one is aimed at enhancing knowledge and capacity in AMSs for the conservation, management and sustainable utilization of catadromous eel resources.

In particular, lack of data and statistics on tropical eel species may bring negative impact to the fisheries sectors. Various kind of information about the tropical eels should be collected through a variety of sources, including the fishing activities (catch statistics), biological surveys and from the beneficiaries (traders, consumers and so on).

2. Background and Justification

With the rapid decline of temperate eels, the market value of tropical eels rises in recent years. Glass eel (juvenile of eel) capture fisheries in tropical zone increase dramatically. In order to avoid the over exploitation on glass eel, the Indonesian government issued the regulation to prohibit export of eel seeds less than 150 g from Indonesia’s territory. The similar policies to prohibit export of eel seeds are enforced in some other countries. Conservation and management policy issues on tropical eel resources for their sustainability become more important not only in Indonesia but also in the region. Therefore, the region needs a policy to balance between utilization and sustainability of tropical eel resources. At the same time, we should consider that we have just quite limited knowledge on tropical eel species in this region yet.

The main objectives of this project are to find out the current status of eel fisheries, to develop the data collection methods and statistical data on fisheries production, and to promote the management plans for conservation and sustainable use of tropical eel resources. The Goals of the project are construction of guidelines on conservation, management and sustainable utilization of catadromous eel resources in the region.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

Objectives	Outcomes	Outputs	Activities
Objective 1: Having clear understanding on present status of resources, fisheries and utilization of catadromous eels in the region	Outcome 1: Understanding the present status on catadromous eel resources in the region. It would be a valuable source for consideration of the conservation measures on tropical eel in the latter half of this project.	Output 1: - Grasping the present status of fisheries, commercial distribution and the trades of catadromous eel in the region.	Activity 1. Clear understanding on current situation of resources, fisheries and utilization Sharing and exchanging information on catadromous eels in the region among AMSs through a workshop focusing on its fisheries. Collecting the basic information* and data by surveying on eel fisheries for clear understanding on present status and intensity of eel fisheries including glass eel fishery. Finding out the present status of eel trade and market in AMSs through interviewing the stakeholders on commercial distribution and trade on tropical eels. <i>*Through the activities in the first 2 years of this project, it was revealed that both the information and data on eel fisheries have wide variety and additional options with areas and countries. To emphasize the core issues that should be investigated in this activity, we insert the adjective "basic" before "information" anew.</i>
Objective 2: Improving data collection and statistics of catadromous eel catch in AMSs	Outcome 2: Improving the method of data collection on eel fisheries in the region, with mutual understanding of the differences and similarities on eel fisheries at each AMSs.	Output 2: - Improving the species identification technique on genus <i>Anguilla</i> in the region. - Gathering continuous data on eel fisheries and trades in AMSs with accuracy.	Activity 2. Improvement of data collection and statistics on eel fisheries - Conducting studies on species identification based on DNA technology, including the training of handling genetic information. - Developing the basic methodologies* of data collection for catch/trade statistics on eel in AMSs.

Objectives	Outcomes	Outputs	Activities
		<ul style="list-style-type: none"> - Finding out the appropriate methods/measures to collect statistics on eel fishery in the region. 	<p><i>*Through the activities in 2016, it was revealed that the commodity chains and corresponding check points for gathering the information and data on eel catch have wide variety and additional options with target size, areas and countries. To emphasize the core issues that should be investigated in this activity, we insert the adjective “basic” before “methodologies” anew.</i></p> <p>Having a discussion how to develop data collection methodologies for eel statistics among AMSs.</p> <p><i>** In the original project document, holding a workshop for discussion and exchanging the idea among AMSs. To simplify the preparation tasks for holding the international meeting often and spending the budget for the other sub-activities, this activity is conducted by some business trip and discussion via internet. The summarization of the results of the objective 2 will be done in the final reviewing workshop held in 2019 as sub activity 3.3 together.</i></p>
<p>Objective 3:</p> <p>Enhancing knowledge and capacity of AMSs for conservation, management and sustainable utilization of catadromous eel resources</p>	<p>Outcome 3:</p> <p>Promoting the appropriate management of eel fisheries for the sustainable use of tropical eel resources in the region.</p>	<p>Output 3:</p> <ul style="list-style-type: none"> - Finding important causes and factors that wreak the negative impact on tropical eels then seeking the mitigating measures. - Constructing guidelines on eel fishery in the region. 	<p>Activity 3.</p> <p>Promotion of conservation, management and sustainable utilization</p> <p>Conducting researches in several waters in the region regarding the negative impact of environmental changes on catadromous eel resources and seeking measures for mitigation from the damages.</p> <p>Compiling all the results from the activities done under the project into the guidelines on conservation, management and sustainable utilization of catadromous eel resources in the region.</p>

Objectives	Outcomes	Outputs	Activities
		<ul style="list-style-type: none"> - Disseminating the results from this project and also proposing guidelines/policy recommendation on eel fisheries among AMSs. 	<p>Having a workshop for dissemination of the outcomes from this project and developing a policy recommendation on sustainable use of catadromous eel resources in the region. The summarization of the appropriate methods/measures to collect statistics on eel fishery in the region (Activity 2) will also be conducted in this workshop.</p>

3.2 Overall Scope/Description of Project

Activity	Description
<p>Activity 1 Clear understanding on current situation of resources, fisheries and utilization</p>	<ul style="list-style-type: none"> - Sharing and exchanging information on catadromous eels in the region among AMSs through a workshop focusing on its fisheries that participating. Although it was originally scheduled on latter half of 2015, it was postponed into April, 2016 considering the conveniences of the participants. (Sub-activity 1.1) - Collecting the basic information and data by surveying on eel fisheries in Indonesia, Philippine and Myanmar for clear understanding on present status and intensity of eel fisheries including glass eel fishery in the region. The surveys will be carried out during the years of 2015 to 2017. (Sub-activity 1.2) <p><i>*Through the activities in the first 2 years of this project, it was revealed that both the information and data on eel fisheries have wide variety and additional options with areas and countries. To emphasize the core issues that should be investigated in this activity, we insert the adjective “basic” before “information” anew.</i></p> <ul style="list-style-type: none"> - Finding out the present status of eel trade and market in AMSs through interviewing the stakeholders on commercial distribution and trade on tropical eels. The surveys will also be conducted during the years of 2015 to 2017 in AMSs. (Sub-activity 1.3)
<p>Activity 2 Improvement of data collection and statistics on eel fisheries</p>	<ul style="list-style-type: none"> - Conducting studies on species identification among the genus <i>Anguilla</i> in AMSs based on DNA technology. It includes the training of handling genetic information. This activity will be carried out during the years of 2015 to 2017. (Sub-activity 2.1) - Developing the basic methodologies of data collection for catch/trade statistics on eel in AMSs. The study on data collection methodologies will be conducted during the years of 2016 to 2017. (Sub-activity 2.2) <p><i>*Through the activities in 2016, it was revealed that the commodity chains and corresponding check points for gathering the information and data on eel catch have wide variety and additional options with target size, areas and countries. To emphasize the core issues that should be investigated in this activity, we insert the adjective “basic” before “methodologies” anew.</i></p> <p><i>** Plan of having a workshop for the discussion how to develop data collection methodologies for eel statistics among AMSs (originally planned as Sub-activity 2.3) are merged into the wrap-up workshop for dissemination of the outcomes from this project and developing a policy recommendation on sustainable use of catadromous eel resources in the region, held in 2019.</i></p>
<p>Activity 3 Promotion of conservation, management and sustainable utilization</p>	<ul style="list-style-type: none"> - Conducting researches in several waters in AMSs, regarding the negative impact of environmental changes on catadromous eel resources and seeking measures for mitigation from the damages. This activity will be carried out during the years of 2017 to 2019. (Sub-activity 3.1) - Compiling all the results from the activities done under the 4-year project into the guidelines on conservation, management and sustainable utilization of catadromous eel resources in the region. It will work on this

Activity	Description
	task in 2018. (Sub-activity 3.2) - Having a workshop for dissemination of the outcomes from this project and developing a policy recommendation on sustainable use of catadromous eel resources in the region at the end of the project (2019). (Sub-activity 3.3) The summarization of the appropriate methods/measures to collect statistics on eel fishery in the region (originally planned as Sub-activity 2.3) will also be conducted in this workshop.

3.3 Activity, Sub-activity and Proposed Budget for 2015-2019

(Unit: USD)

Activity	Sub-Activity	Y1 2015	Y2 2016	Y3 2017	Y4 2018	Y5 2019
Activity 1: Clear understanding on current situation of resources, fisheries and utilization	Sub-activity 1.1: Workshop to exchange information on catadromous eels in the region	18,000 (carry forward to 2016)				
	Sub-activity 1.2: Survey on trends of catadromous eel fisheries including glass eel catch	8,000	12,000	8,000		
	Sub-activity 1.3: Survey on commercial distribution/trade of catadromous eels including glass eel	8,000	9,000	8,000		
Activity 2: Improvement of data collection and statistics on eel fisheries	Sub-activity 2.1: Study on catadromous eel species identification by DNA technology	8,000	12,000	8,000		
	Sub-activity 2.2: Study on statistical data collection methodologies		9,000	8,000		
	Sub-activity 2.3 (cancelled): Workshop to develop statistical data collection methodologies (-> merged into Sub-activity 3.3)				<i>Merged into Sub-activity 3.3 (2019)</i>	
Activity 3: Promotion of conservation, management and sustainable utilization	Sub-activity 3.1: Study on elements negatively impacting catadromous eel resources and mitigating measures			10,000	10,000	8,000
	Sub-activity 3.2: Develop guidelines on conservation, management and sustainable utilization of catadromous eel resources				16,000	
	Sub-activity 3.3: Workshop to develop policy recommendation on the sustainability of catadromous eel resources in the region (incl. the summarization of the appropriate methods/measures to collect statistics on eel fishery in the region)					34,000
	Sub-Total	42,000	42,000	42,000	42,000	42,000

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION**1. Achievements of the Project Implementation for the Present Year**

In 2016, IFRDMD with SEAFDEC Secretariat (hereinafter referred to as “SEC”) and Aquaculture Department (hereinafter referred to as “AQD”) conducted the baseline study on glass eel and yellow eel exploitation in Indonesia and Myanmar. IFRDMD also conducted the international workshop on tropical catadromous eels and summarized the issues that should be tackled in near future as “Way Forward”. Through this workshop, IFRDMD found that the eel farming industry has been conducted in Viet Nam in commercial base.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1: Clear understanding on current situation of resources, fisheries and utilization					
Sub-activity 1.1: Workshop to exchange information on catadromous eels in the region (27-29, April, 2015)	I. Research	14	13	5	22,295 (18,000 of the cost had been used from budget forwarded from 2015)
Sub-activity 1.2: Survey on trends of catadromous eel fisheries including glass eel catch (18-21 January, 6-10 February, 19-21 June) *	I. Research	3	8	6	14,200**
Sub-activity 1.3: Survey on commercial distribution/trade of catadromous eels including glass eel (18-21 January, 6-10 February, 19-21 June)*	I. Research	3	8	6	14,200**
Activity 2: Improvement of data collection and statistics on eel fisheries					
Sub-activity 2.1: Study on catadromous eel species identification by DNA technology (January to December 2016)*	I. Research	3	8	6	4,305**
Sub-activity 2.2: Study on statistical data collection methodologies (January to December 2016)*	I. Research	3	8	6	5,000**

* Only the researches/activities those had been conducted till 22 Aug. are written.

** These figures contain the expected expenses till the end of 2016. Research activity done in Indonesia costs USD 3,500-, done in outside of Indonesia costs USD7,200-, in average. Sub-activities 1.2, 1.3 and part of 2.1, 2.2 were conducted in the same researches simultaneously.

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 1 Clear understanding on current situation of resources, fisheries and utilization		
Sub-activity 1.1 Workshop to exchange information on catadromous eels in the region	Mutual understanding of the present status of catadromous eel fisheries among AMSs.	<p>We held the international workshop in Apr. 2016 with participants from Indonesia, Malaysia, Myanmar, Philippines, Thailand and Viet Nam.</p> <p>Through this workshop, we summarized the report “Way forward for enhancing the sustainability of catadromous eels in Southeast Asia” to pick up the issues and required actions on catadromous eels in SEA region those were discussed in the workshop.</p> <p>The main subjects are as follows: improvement of data collection/statistics, increasing the survival rate of glass eels in culture condition, compilation of existing information/researches, unregulated trade and restocking/resource enhancement measures. This document is able to be downloaded from IFRDMD official web site.</p>
Sub-activity 1.2 Survey on trends of catadromous eel fisheries including glass eel catch	Understanding of the present status and recent trend of eel fisheries and eel resources in the region.	<p>We got information regarding the target species and stage of anguillid eels as seeds for eel culture in Indonesia and Myanmar.</p> <p>In Myanmar, the target species for eel fishery and eel culture is <i>Anguilla marmorata</i> and its yellow eel has been used for seeds for culture.</p> <p>In Indonesia, main target species of eel fishery and eel culture is <i>A. bicolor</i> bicolor and its glass eel, elver and yellow eel are used as seeds for eel culture. Since the rearing from glass eel to elver needs high-level skills and conditions, the eel farms that can start eel farming from glass eel are still limited.</p>
Sub-activity 1.3 Survey on commercial distribution/trade of catadromous eels including glass eel	Understanding the amount and route of trading of eel in AMSs.	<p>We got information regarding the target species and stage of anguillid eels as seeds for eel culture in Indonesia and Myanmar.</p> <p>In Myanmar, there is virtually only one eel farm and they rear anguillid eel (mainly <i>A. marmorata</i>) and Rice-paddy eel. Almost all the products are exported to China, especially just before the Chinese new year.</p> <p>In Indonesia, there are many eel farms in Java Is. with wide variety of their scale. Some large-scale eel farms funded by foreign company aims export of baked eel “Unagi-kabayaki” to East Asian countries. The other small and middle-scale eel farms ship their products to domestic market in Indonesia.</p>
Activity 2 Improvement of data collection and statistics on eel fisheries		
Sub-activity 2.1 Study on catadromous eel species identification by DNA technology	The establishment of the method of species identification on genus <i>Anguilla</i> by DNA analysis.	Many scientists have tackled species identification and species composition of anguillid eels using DNA technique. However, the results of their study have not coincided on the issue yet. We will continue preparation of the samples and materials for future analysis after the scientists in SEA who tackle with this issue would reach the agreeable method and interpretation of their analyses.

Planned activity	Expected outcome/output	Achievements
Sub-activity 2.2 Study on statistical data collection methodologies	Developing the methodologies of data collection for catch/trade statistics on tropical anguillid eels in AMSs.	Through our investigation on present status of data/information collection on eel fishery in Indonesia, we noticed that there are some official catch statistics on anguillid eels but many of them are quite fragmented and not accurate therefore unable to use these statistics into stock assessment of eel resources. We have started consultation with government officer how to improve the catch statistics on anguillid eels as soon as possible, in relation with the CITES issue. We have also started independent data collection program on anguillid eels. We have asked some eel collectors in Palabuhan Ratu and Bengkulu, Indonesia, to report daily catch and efforts on anguillid eel fishery.

4. List of Completed Publications and Others

List of completed publications for the Year 2016	Type of media	Attached e-file
1. Current status and problems of the catch statistics on anguillid eel fishery in Indonesia (<i>Mar. Res. Indonesia</i> . 41(1): 1-13. in printing)	Scientific paper	http://mrijournal.or.id/index.php/MRI/issue/view/17/showToc
2. Way forward for enhancing the sustainability of catadromous eels in Southeast Asia	Report (disclosed on official web site)	http://www.seafdec.or.id/
3. Submitted	Fish for the People	
4. Submitted	SEAFDEC-Newsletter	

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/ Views from Participants
Activity 1 Clear understanding on current situation of resources, fisheries and utilization	
Sub-activity 1.1: Workshop to exchange information on catadromous eels in the region	The participants at this Workshop: <ul style="list-style-type: none"> - Produced the Way Forward for Enhancing the Sustainability of Catadromous Eels in Southeast Asia by summarizing the issues of eels. - Supported for conducting study on market chain of catadromous eel originated from Southeast Asia; and improving regulation/monitoring on smuggling exportation of glass eels to prevent illegal trade and laundering of glass eels. - Recommended for IFRDMD to compile the existing information/researches from Southeast Asian countries. <p>IFRDMD will implement these issues with support from AQD and SEC. In addition, we have got the new information regarding the existence of eel farming industry in Viet Nam through this workshop. We would dispatch survey team from IFRDMD, AQD and SEC soon.</p> <p>Considering these results and achievements, we evaluated the holding this international workshop was quite valuable and succeeded.</p>
Sub-activity 1.2: Survey on trends of catadromous eel fisheries including glass eel catch	The result as not been evaluated by SEAFDEC Member Countries yet. We evaluated our results ourselves from this sub-activity as "good", in consideration with these results noted as follows: <ul style="list-style-type: none"> - We got the data and information regarding eel fishery in Indonesia and

Planned activity	Evaluation/ Views from Participants
	Myanmar, including target species, target stages/sizes, scale and amount of products, method of eel culture, and so on.
Sub-activity 1.3: Survey on commercial distribution/trade of catadromous eels including glass eel	The result has not been evaluated by SEAFDEC Member Countries yet. We evaluated our results ourselves from this sub-activity as “good”, in consideration with these result noted as follows: - Through the observations and interviews with fishers, fish collectors, small and large eel farms and the marketing channel, we got the information regarding the distribution and trade of eels in Indonesia and Myanmar.
Activity 2 Improvement of data collection and statistics on eel fisheries	
Sub-activity 2.1: Study on catadromous eel species identification by DNA technology	The result has not been evaluated by SEAFDEC Member Countries yet. We have not made much efforts on analysis, just collecting the samples/materials because of the confusion on the interpretation of the results of DNA-analyses among the eel scientists in SEA. After finishing the arguments among the specialists of Genetic information on their analyses and interpretation, we will resume the analysis. Therefore, we would like to put off the evaluation of this sub-activity this year. Since IFRDMD will seek the possibilities of collaborative study with Japanese scientists on this issue, through our dispatching staff to Japan on short-term training course, We will progress in this issue near future (year-end of 2016 and future).
Sub-activity 2.2: Study on statistical data collection methodologies	The result has not been evaluated by SEAFDEC Member Countries yet. We evaluated our result ourselves from this sub-activity as “so-so”, in consideration with these result noted as follows: - Collected official catch statistics on anguillid eels in Indonesia has been quite fragmented and contained many errors. It was not appropriate to use these data for scientific analysis in the present situation. We have tried to collect successive and correct data though; it is quite difficult because of no-responses from local governments and offices. - We have summarized the present status and problems on catch statistics on anguillid eels in Indonesia then presented in the international symposium and published as scientific paper. - IFRDMD developed annual data collection system via eel collector in Palabuhan Ratu and Bengkulu, Indonesia.

6. Major Impacts/Issues

1. Through the international workshop on eels, we have gathered, shared and summarized issues and our tasks as open document, “Way forward”.
2. We have started discussion with DoF Indonesia how to establish and improve the catch statistics on anguillid eels in Indonesia.
3. We got new findings regarding the existence of large-scale eel farming industry in Viet Nam.
4. We have summarized the present status and problems on catch statistics and commodity chain of anguillid eel in Indonesia into scientific paper.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
Activity 1 Clear understanding on current situation of resources, fisheries and utilization		
Sub-activity 1.2 Survey on trends of catadromous eel fisheries including glass eel catch	Collecting the information and data by surveying on eel fisheries in AMSs for clear understanding on present status and intensity of eel fisheries including glass eel fishery in the region. The surveys will be carried out during the years of 2015 to 2017.	8,000

Proposed Activity	Description of Proposed Activity	Proposed Budget
Sub-activity 1.3 Survey on commercial distribution/trade of catadromous eels including glass eel	Finding out the present status of eel trade and market in AMSs through interviewing the stakeholders on commercial distribution and trade on tropical eels. The surveys will also be conducted during the years of 2015 to 2017 in AMSs.	8,000
Activity 2. Improvement of data collection and statistics on eel fisheries		
Sub-activity 2.1 Study on catadromous eel species identification by DNA technology	Conducting studies on species identification among the genus <i>Anguilla</i> in AMSs, based on DNA technology. It includes the training of handling genetic information. This activity will be carried out during the years of 2015 to 2017.	8,000
Sub-activity 2.2 Study on statistical data collection methodologies	Developing the methodologies of data collection for catch/trade statistics on eel in AMSs. The study on data collection methodologies will be conducted during the years of 2016 to 2017.	8,000
Activity 3. Promotion of conservation, management and sustainable utilization		
Sub-activity 3.1 Study on elements negatively impacting catadromous eel resources and mitigating measures	Conducting researches in several waters in the region regarding the negative impact of environmental changes on catadromous eel resources and seeking measures for mitigation from the damages. This activity will be carried out during the years of 2017 to 2019.	10,000

*Since sub-activities 1.2, 1.3, 2.1, 2.2 and 3.1 will be conducted through the same research trips simultaneously in principle, all the contents of the estimates for travel costs at each sub-activity are set to be the same.

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 1. Clear understanding on current situation of resources, fisheries and utilization	
Sub-activity 1.2: Survey on trends of catadromous eel fisheries including glass eel catch	We can get the data on trend and intensity of eel fisheries in AMSs then make better understanding on current situation of eel resources. We will collect the latest status of anguillid eel fishery and eel culture in Viet Nam through the survey trip with AQD and SEC.
Sub-activity 1.3: Survey on commercial distribution/trade of catadromous eels including glass eel	We can get the data on commercial distribution and trade of tropical eels then make better understanding on utilization of eel resources. We will collect the latest status of commodity chain and usage of eel products in Viet Nam through the survey trip with AQD and SEC.
Activity 2. Improvement of data collection and statistics on eel fisheries	
Sub-activity 2.1: Study on catadromous eel species identification by DNA technology	We will follow the latest trend of species identification methods using DNA technology in SEA. We also seek the possibility to make new relationship and future collaborative studies with Japanese scientists through our information gathering, meeting/discussion in Japan when our staff would visit Japan as her short-term training course (in late 2016).
Sub-activity 2.2: Study on statistical data collection methodologies	We will complete the consecutive catch statistics on anguillid eels in Indonesia then analyze the trend of glass eel/yellow eel catch in Indonesia in recent years. We will also pick up the important factors/elements which should be added into the official catch statistics to improve the quality of statistics from our independent data collection through eel collectors. Through these activities, we will finalize the recommended format of catch statistics on anguillid eels that would be applicable for each SEAFDEC Member Country.
Activity 3. Promotion of conservation, management and sustainable utilization	
Sub-activity 3.1: Study on elements negatively impacting catadromous eel resources and mitigating	We will consider, list up and evaluate the various factors that would obstruct the migration of anguillid eels, such as artificial construction on stream, erosion, habitat degradation.

Proposed Activity	Expected Outcomes/Outputs of Activity
measures	We will also consider the effect and efficiency of restocking activities as one of the eel resources enhancement.

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1. Clear understanding on current situation of resources, fisheries and utilization												
Sub-activity 1.2: Survey on trends of catadromous eel fisheries including glass eel catch												
Sub-activity 1.3: Survey on commercial distribution/trade of catadromous eels including glass eel												
Activity 2. Improvement of data collection and statistics												
Sub-activity 2.1: Study on catadromous eel species identification by DNA technology												
Sub-activity 2.2: Study on statistical data collection methodologies												
Activity 3. Promotion of conservation, management and sustainable utilization												
Sub-activity 3.1: Study on elements negatively impacting catadromous eel resources and mitigating measures												

*Since sub-activities 1.2, 1.3, 2.1, 2.2 and 3.1 will be conducted through the same research trips simultaneously in principle, all the contents of the estimates for travel costs at each sub-activity are set to be the same.

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

		Project id: 2015050102	
Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Promotion of Responsible Utilization of Inland Fisheries in Southeast Asia		
Program Thrust:	I	Total Duration:	2015-2019
Lead Department:	IFRDMD	Lead Country:	Thailand
Donor/Sponsor:	JTF-6	Total Donor Budget:	USD 287,534
Project Partner:	None	Budget for 2017:	USD 46,649
Project Leader:	Ms. Sevi Sawestri	Involved Country:	All SEAFDEC Member Countries

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

This project is aimed at promoting and establishing the awareness for management of inland fisheries in Southeast Asia (hereinafter it is to be called “the region”).

There are three main activities on the project. The first one is aimed at reviewing activities and methodologies for promoting inland fisheries in ASEAN Member States (hereinafter referred to as “AMSs”). The second one is aimed at promoting effective inland fisheries management measures in AMSs. The third one is aimed at studying and developing habitat conservation/resources enhancement measures suitable for the region.

2. Background and Justification

Inland fishery is one of the important components of the economies in the region and its contributions in rural communities are particularly important in poverty alleviation, food security and nutritional well-being. The sustainability of inland capture fisheries much depends on the quality of aquatic habitats and ecosystems.

Taking account of these issues, we should consider that fishery is not the only sector that has interest on the inland water ecosystems and there are many sub-sectors, which are often overlooked by planners and policy makers though.

We point out two important factors for better management of inland fisheries in the region, one is the improvement of data collection and another is enhancement of the governance through the application of ecosystem approach to fisheries, as well as co-management.

This program is a way to establish and strengthen the regional networking for improving the fisheries management and the conservation of fisheries resources/environment in inland waters of the region.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1: Reviewing the activities and the methodologies for promoting inland fisheries in AMSs and find a way forward for sustainable development of inland fisheries	Outcome 1: Understanding the present status of inland fisheries in AMSs, as a basis of our consideration to find the way for sustainable development of inland fisheries in the region.	Output 1: - Grasping the present status of inland fisheries in the region. - Sharing the data, information and common understanding on inland fisheries in the region among AMSs.	Activity 1. Review of activities and methodologies for promotion of inland fisheries and find ways forward Gathering the data and information on present status of inland fisheries in AMSs by referring to literature, web sites, interviewing and field surveys. Holding a workshop and Forum Group Discussion (hereinafter referred to as “FGD”) for reviewing, sharing and exchanging the data and information among the fisheries experts, officers and stakeholders in AMSs.
Objective 2: Seeking and promoting the effective management measures on inland fisheries in AMSs	Outcome 2: Building up the skeleton of the framework for the management of inland fisheries in AMSs.	Output 2: - Understanding both present status and problems on the implementation of co-management and right-based fisheries managements in AMSs and seek solution through the discussion. - Finding appropriate indicators for an effective management of inland fisheries in AMSs. - Enhancing the capacity building on management of inland fisheries in AMSs.	Activity 2. Promotion of effective inland fisheries management measures Sharing, exchanging and analyzing the information on co-management and right-based fisheries management in AMSs through the seminars and FGDs among fisheries experts, officers and stakeholders. Holding a workshop to formulate guidelines to promote the use of practical and simple indicators for inland fisheries management framework. Opening regional training course(s) for the researchers and officers of AMSs to enhance capacity building on improving the management on inland fisheries.
Objective 3: Studying and developing habitat conservation and resource enhancement measures suitable for the region	Outcome 3: Establishing the comprehensive policies for the management of inland fisheries in the region with relationship with various sectors and stakeholders.	Output 3: - Seeking appropriate policies for developing habitat conservation and resources enhancement measures in AMSs, with capacity building for handling these issues.	Activity 3. Study of habitat conservation/resources enhancement measures Both surveying and capacity building on studying for the development of habitat conservation and for resources enhancement measures applicable to AMSs.

Objective	Outcomes	Outputs	Activities
		- Proposal and following discussions among the scientists, officers and the other stakeholders in AMSs for establishing the comprehensive policies for the management of inland fisheries in the region.	Holding a concluding workshop for establishing the comprehensive policies on inland fisheries management.

3.2 Overall Scope/Description of Project

Activity	Description
Activity 1. Review of activities and methodologies for promotion of inland fisheries and find ways forward	- Gathering the data and information on present status of inland fisheries in AMSs by referring to literature, web sites, interviewing and field surveys. (Sub-activity 1.1) - Holding a workshop and FGD for reviewing, sharing and exchanging the data and information among the fisheries experts, officers and stakeholders in AMSs. (Sub-activity 1.2)
Activity 2. Promotion of effective inland fisheries management measures	- Sharing, exchanging and analyzing the information on co-management and right-based fisheries management in AMSs through the seminars and FGDs among fisheries experts, governmental officers and stakeholders. (Sub-activity 2.1) - Holding a workshop to formulate guidelines to promote the use of practical and simple indicators for inland fisheries management framework. (Sub-activity 2.2) - Opening regional training course(s) for both the researchers and officers of AMSs to enhance capacity building on improving the management on inland fisheries. (Sub-activity 2.3)
Activity 3 Study of habitat conservation/resources enhancement measures	- Surveying and capacity building on studying for the development of habitat conservation and for resources enhancement measures applicable to AMSs.(Sub-activity 3.1) - Holding a concluding workshop for establishing the comprehensive policies on inland fisheries management at the end of this program. (Sub-activity 3.2)

3.3 Activity, Sub-activity and Proposed Budget for 2015-2019

(Unit: USD)

Activity	Sub-Activity	Y1 2015	Y2 2016	Y3 2017	Y4 2018	Y5 2019
Activity 1. Review of activities and methodologies for promotion of inland fisheries and find ways forward	Sub-activity 1.1: Information gathering for understanding the present status of inland fisheries in the region	5,000	25,000			
	Sub-activity 1.2: Holding a workshop to review activities and methodologies for promotion of inland fisheries and find ways forward	25,000 (carry forward to 2016)				
Activity 2. Promotion of effective inland fisheries management measures	Sub-activity 2.1: Studying on co-management and right-based fisheries management applicable to inland fisheries in the region	35,038 (carry forward to 2016)	20,771	20,649	25,000	20,000
	Sub-activity 2.2: Holding a workshop to develop guidelines for effective inland fisheries management in the region			26,000		

Activity	Sub-Activity	Y1 2015	Y2 2016	Y3 2017	Y4 2018	Y5 2019
	Sub-activity 2.3: Opening a regional training course for the improvement on management of inland fisheries				20,000	
Activity 3. Study of habitat conservation/resources enhancement measures	Sub-activity 3.1: Studying for development of habitat conservation/resources enhancement measures applicable to the region				20,038	
	Sub-activity 3.2: Holding a workshop to develop the policy recommendation on responsible inland fisheries resources utilization in the region					45,038
Sub-Total Budget		65,038	45,771	46,649	65,038	65,038

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the Present Year

IFRDMD have conducted one In-house Training seminar, two field surveys in Lao PDR and Cambodia, dispatching officers to the workshop on Fishway design, and hold the “International Workshop to Review Activities and Methodologies for Promotion on Inland Fishery”. IFRDMD also conducted information gathering through the literatures and internet as daily task.

Through the workshop, we have gathered various kind of valuable information regarding the present status and issues regarding inland fisheries and surrounding conditions in this region. However, IFRDMD keenly realized the defects on our activities on inland fishery issues especially the process and summarization of the information gathering and lack of basic knowledge regarding inland fisheries in this region. IFRDMD has to establish and improve our research system and abilities as soon as possible.

The workshop revealed the need to consideration who/which department(s) of SEAFDEC take responsibility on freshwater aquaculture in this region. IFRDMD understood that the freshwater aquaculture and culture-based fishery are closely related to the capture fishery and fishers’ livelihoods. Since IFRDMD has originally been established to handle and take responsibilities on inland “capture” fisheries, IFRDMD would like to discuss this issue with SEC and other departments of SEAFDEC.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1 Review of activities and methodologies for promotion of inland fisheries and find ways forward					
Sub-activity 1.1: Information gathering for understanding the present status of inland fisheries in the region (March 6-10, March 13-17, May16-21. Searching the literatures and the other information via internet has been conducted through the year)*	I. Research	16	9	42	38,905**
Sub-activity 1.2: Holding a workshop to review activities and methodologies for promotion of	I..Research	7	14	13	28,000 (25,000 of the cost had been

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
inland fisheries and find ways forward (8-10, August, 2016)					used from budget forwarded from 2015)
Activity 2. Promotion of effective inland fisheries management measures					
Sub-activity 2.1: Studying on co-management and right-based fisheries management applicable to inland fisheries in the region (January 26-28, March 13-17, May 16-21)*	I: Research	10	15	36	38,000** (35,038 of the cost had been used from budget forwarded from 2015)

* Only the researches/activities those had been conducted till 22 Aug. are written.

** These figures contain the expected expenses till the end of 2016. Research activity done in Indonesia costs USD 3,500-, done in outside of Indonesia costs USD 7,200-, in average. Sub-activities 1.1 and 2.1 were conducted in the same researches simultaneously.

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 1. Review of activities and methodologies for promotion of inland fisheries and find ways forward		
Sub-activity 1.1: Information gathering for understanding the present status of inland fisheries in the region	Grasping the present status of inland fisheries in the region.	The present status and various kind of information regarding inland fisheries and surrounding issues in Lao PDR and Cambodia are grasped through the field surveys. There are different types of inland waters and variety of management measures are applied at each condition. Inland fisheries in Lao PDR are conducted in various inland waters such as rivers, swamps, rice-paddies and so on. However, the collecting catch information and surveys are mainly conducted limitedly in reservoirs. In Cambodia, fishers have various fisheries activities and they change/adapt their fishing methods, places, and related activities with the season especially related the water levels. In the workshop on Fishway Design, the need to know how to make the fish pass model and how to regulate water during low water level were discussed. On daily activities, we collected the publication on inland fisheries especially in Southeast Asia, to improve the information.
Sub-activity 1.2: Holding a workshop to review activities and methodologies for promotion of inland fisheries and find ways forward	Sharing the data, information and common understanding on inland fisheries in the region among AMSs.	IFRDMD held a workshop on 8-10 August in Palembang, Indonesia, with participants from 8 DoF of AMSs and 9 scientists/specialists on inland fisheries in this region. The reports and presentation contained valuable information on inland fisheries and surrounding condition/background. IFRDMD is now summarizing and analyzing this information for extracting the important issues to reflect it to our project, especially for Sub-activity 2.1 and 2.2 in 2017.
Activity 2. Promotion of effective inland fisheries management measures		
Sub-activity 2.1 Studying on co-management and right-based fisheries	Understanding both present status and problems on the	We have conducted information gathering and field surveys in Lao PDR, Cambodia including the interviewing with MRC. In Lao PDR, fisheries

Planned activity	Expected outcome/output	Achievements
management applicable to inland fisheries in Southeast Asia	implementation of co-management and right-based fisheries managements in AMSs and seek solution through the discussion.	<p>committees have been established at each reservoir. They regulate their fisheries operations, dispute coordination and financial issues on fishermen's communities. However, the roles of the fisheries committees are still limited on basic issues and it seemed that it would be difficult to manage the fisheries resources by themselves (in one large-scale reservoir, fishers did not find effective measures against the decline of their target species).</p> <p>Inland fisheries in Cambodia vary their styles, activities and efforts, depending on the seasonal variation of water level. One of the other characteristics of inland fisheries in Cambodia is the relationship/conflicts with other sectors on usage of inland waters. Dialogues among Lower Mekong Basin countries has been conducted on mitigating transboundary impacts from water management projects, fishing activities and exotic species.</p> <p>We also conducted in-house training on co-management of inland fisheries in Indonesia with inviting Prof. Endi from RIFEC, Gov. Indonesia as lecturer.</p>

4. List of Completed Publications and Others

List of completed publications for the Year 2016	Type of media	Attached e-file
IFRDMD organizes In-house Training on Co-management in Inland Fisheries	SEAFDEC Newsletter, January-March 2016, Volume 39 No. 1.	

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/ Views from Participants
Activity 1. Review of activities and methodologies for promotion of inland fisheries and find ways forward	
Sub-activity 1.1: Information gathering for understanding the present status of inland fisheries in the region	Although we have conducted field surveys/observations among AMSs, the information that we collected and summarized contained many errors and lack of important information through the workshop. IFRDMD should consider the way how to survey in AMSs with more sense of urgency on our roles and duties. IFRDMD also need capacity building for our staffs themselves.
Sub-activity 1.2: Holding a workshop to review activities and methodologies for promotion of inland fisheries and find ways forward	Although IFRDMD gathered various kind of latest and valuable information regarding inland fisheries and surrounding issues at each Member Country, summarization of the workshop itself was really poor. It was caused by the insufficient studies on this issue and not enough preparation of the organizer of the workshop. This should be carefully reviewed by IFRDMD with supports from related departments of SEAFDEC.
Activity 2. Promotion of effective inland fisheries management measures	
Sub-activity 2.1: Studying on co-management and right-based fisheries management applicable to inland fisheries in the region	Same as the evaluation on Sub-activity 1.1, IFRDMD need the consideration how to conduct overseas surveys in AMSs with prior preparation, consideration of the appropriate methods/measures of information gathering in the field, summarizing the survey report precisely, and also capacity building for the staffs of IFRDMD in advance. Since there are many fields and countries where we should visit to investigate the present status of inland fisheries and surrounding conditions, IFRDMD rush up the establishment and improvement of our research system and abilities as soon as possible.

6. Major Impacts/Issues

1. Through the workshop on inland fisheries, we have gathered the information regarding present status and problems on inland fisheries in this region.
2. We have noticed the inland capture fisheries and freshwater aquaculture are inseparably linked closely considering the inland fisheries in this region. Since the responsible field of IFRDMD has been originally defined as “inland capture fishery”, IFRDMD would like to ask SEC and other brother departments of SEAFDEC to consider who/which department handle the freshwater aquaculture issued in this region.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
Activity 2. Promotion of effective inland fisheries management measures		
Sub-activity 2.1: Studying on co-management and right-based fisheries management applicable to inland fisheries in the region	Sharing, exchanging and analyzing the information on co-management and right-based fisheries management in AMSs through the seminars and FGDs among fisheries experts, governmental officers and stakeholders.	20,649
Sub-activity 2.2: Holding a workshop to develop guidelines for effective inland fisheries management in the region	Holding a workshop to formulate guidelines to promote the use of practical and simple indicators for inland fisheries management framework.	26,000

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 2. Promotion of effective inland fisheries management measures	
Sub-activity 2.1: Studying on co-management and right-based fisheries management applicable to inland fisheries in the region	Understanding both present status and problems on the implementation of co-management and right-based fisheries managements in AMSs and seek solution through the discussion. Picking up the prioritize areas and methods on co-management in this region based on the information gathered through the previous workshop.
Sub-activity 2.2: Holding a workshop to develop guidelines for effective inland fisheries management in the region	Finding appropriate indicators for an effective management of inland fisheries in AMSs through the information gathering and discussion in the international workshop.

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 2. Promotion of effective inland fisheries management measures												
Sub-activity 2.1: Study on co-management and right-based fisheries management applicable to inland fisheries in the region												
Sub-activity 2.2: Holding a workshop to develop guidelines for effective inland fisheries management in the region												

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

Project id: 2015040104			
Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management		
Program Thrust:	I	Total Duration:	2015 - 2017
Lead Department:	SEAFDEC/MFRDMD	Lead Country:	Malaysia
Donor/Sponsor:	IDB	Total Donor Budget:	USD 250,000
Project Partner:	Secretariat	Budget for 2017:	USD 125,000
Project Leader:	Ms. Mazalina Ali	Involved Country:	Brunei Darussalam, Indonesia and Malaysia

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

The coastal areas in the Southeast Asia provide the means of livelihood to the coastal dwellers, where hundred thousands of coastal families are directly engaged in fishing activities and coastal aquaculture including related activities such as fish processing, marketing, boat building, net making, etc. The fishers' over-dependence on the coastal fisheries resources has however, led to over-exploitation and degradation of the resources. The conflict on the multiple resource use also threatens the livelihood of coastal fishing communities. Moreover, the recent devastations caused by natural disasters hamper the vulnerability of these communities. Impacts of climate change also add complexity to the problems that they are encountering. Many fisher communities seem to be isolated and/or insufficient benefit from government services net systems that may exist in other areas of the country. In addition, the communities have to pay more for fuel, food and services, while the income from their products is an inverse. These problems brought about unsustainable use of fishery resources, by reason of the fisher communities have to continuously intensify their fishing efforts to maintain their livelihoods.

From the above afore mentioned introduction, this project which is funded by Islamic Development Bank aims to improve the socio-economic status of the coastal community through the community fisheries organization and governance. It is expected that the coastal resources utilized by the fishers could continue to sustain its function as the local livelihoods and source of food for the region's fishing communities. The target beneficiaries of this project are the Muslim communities in the region's coastal areas.

2. Background and Justification

The Southeast Asian region is home to the largest Muslim populations in the world (estimated to be about 240,000,000 in 2007), which is almost one-half (about 42%) of the region's total population (in 2007: 571,337,070) with Indonesia having the world's biggest Muslim population (88% of its total population of 225,000,000). Most of the Muslim communities are in coastal areas with fishing as an ethnic occupation. Since the region's coastal fisheries resources, once viewed as inexhaustible source of fish protein for human consumption have deteriorated, concerns have therefore increased for the protection and conservation of the coastal resources for sustainable livelihoods and food security of the coastal dwellers.

The ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium: "Fish for the People" (hereafter refers to "the Millennium Conference) held in Bangkok from 19 to 24 November 2001, recognized the importance of sustainable fisheries for food security and the livelihoods and well-being of the ASEAN people. The Conference was successfully concluded by the adoption of "*the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region*" by the fisheries related ministers and senior officials of ASEAN-SEAFDEC Member Countries as the regional common fisheries policy and priority actions.

Within the regional context, fisheries sector is being addressed among other priorities to accelerate the regional economic integration as spelt out in the **ASEAN Vientiane Plan of Action** as well as regional collaboration in promoting sustainable fisheries development through the ASEAN-SEAFDEC Fisheries Consultative Group Mechanism under the recently adopted **ASEAN-SEAFDEC Strategic Partnership Program (FCG/ASSP)**.

Most of the coastal fisheries communities in the ASEAN Region are characterized as small-scale fisheries. The production from small-scale fisheries contributes to national economic growth. Nevertheless, the endowment, potential, and resilience of the small-scale sub-sector have not been recognized and highlighted, while it is immensely contributed to resource utilization. This critical issue should also be addressed along line with the **ASEAN Socio-Cultural Community (2008-2015)** that the region's aspiration to lift the quality of life of its peoples through cooperative activities that are people-oriented and environmentally friendly geared towards the promotion of sustainable development.

In addition, the coastal dwellers are also prone to the drastic change of coastal environment. In December 2004, coastal communities in Indonesia, Thailand, Malaysia, and Myanmar had to suffer from the great loss of lives and assets due to the unprecedented scale of earth quake and Tsunami. Such large-scale natural disaster further aggravated their poverty status of the people in the areas. The coastal villages throughout the region are also facing hardships due to the impact from climate change such as sea level rise, increase of sea temperature, change of fish habitat and its ecosystem, natural hazards, etc.

Since the enhancing of coastal fisheries communities' resilience is involved with various cross cutting issues and required strong commitment and coordination from national government, organizations, local institutions, this project is therefore proposed in order to improve livelihoods of the Muslim coastal dwellers, who is the majority of coastal population, through community fisheries organization and governance in order that the coastal resources utilized by the fishers could continue to sustain its function as the source of food and provide means of livelihood for the region's fishing communities. The target beneficiaries of this project are the coastal Muslim communities in the IDB countries, namely: Brunei Darussalam, Indonesia and Malaysia.

(a) Problem Analysis

Fishing related coastal communities often demonstrate high levels of vulnerability, many small-scale fishing families are increasingly caught in a poverty trap. This situation could be reasoned from a variety of factors including dependence on dwindling coastal resources, unpredictable nature of fishing, high occupational risk, sensitivity to macro-economic changes, exposure to natural disasters, high competition from multi-resource users; and social, economic and political marginalization.

The growing domestic and international demand for fish and fish products has resulted in the excessive exploitation of aquatic resources in the region. The number of small fishermen keeps increasing; the size and number of coastal villages are becoming larger and larger. Whenever the fishery resources are threatened, it is definitely impact to the Muslim coastal communities where their livelihoods depend very much on coastal resources. The local income of coastal fishery communities and people involve in fisheries associated activities (*i.e.* fish processing, marketing, boat building, net making, etc.) are determined by coastal resources for a significant part of their livelihoods. The fishermen have to compete with both people and natural resources, the fishermen therefore continuously intensify their fishing efforts to maintain a status quo. This leads to the tragedy of resources utilization which the fishermen are driving resources down both in terms of quality and quantity; and they will be finally caught in a poverty trap.

Apart from the degradation of fishery resources, biophysical and socio-economic condition in the coastal zone is highly vulnerable to the impacts of climate change and natural such as erosion, cyclone, sea-level rise, increases in sea-surface temperature and unpredictable effects of climate change on the coastal environments changes (*i.e.* natural hazards, resources productivity, degradation of habitat and ecosystem, etc.). These climate change-related stresses could increase risk of coastal fisheries communities and effect to the development of fisheries more difficult in improving people livelihood and ensuring food security as well as addressing on fisheries management approach. These could bring about degeneration of economic well-being, risk in safety and efficiency of fishing operation, lost of fish caught, as well as implication on employment and vital source of protein for poor people. To assist the fisheries communities from these subsequence, there is a need to build up community resilience in coping with such cases.

Coastal dwellers are facing degradation of fishery resources, at risk of natural disaster, dealing with low standard of living and poverty. Many fisher communities are outside of any social safety net systems that may exist in other areas of the country. Thus, the need to strengthen community fisheries organization and capacity building for better development and management of the coastal resources to ensure sustainable livelihood of coastal communities, has become very urgent. It is indeed important that appropriate coastal resources management, alternative livelihoods as well as research and development for simple early warning system at local community level should be put in place.

This project aims to improve the socio-economic status of the coastal dwellers through community fisheries organization and governance in order to the coastal resources utilized by the fishermen could continue to sustain its function as the source of food for the region's fishing communities. The target beneficiaries of this project are the Muslim communities in the region's coastal areas.

(b) Regionality

As aforementioned the ASEAN region is home to the largest Muslim populations in the world, majority of occupation in the Muslim coastal communities is mostly characterized by small-scale fisheries and associated activities. It is noteworthy that the role of small-scale fisheries has contributed to the large amount of fisheries production within the fisheries sector. It is also recognized that fisheries play an important direct role in livelihoods, food security, national economic growth and foreign exchange earnings. The Member of ASEAN Countries, main exporters of fish products to the world market, is unquestionably count upon the production from coastal communities. Degradation of fishery resources, impacts of climate change, global economic crisis in 2008 and vulnerability of the coastal communities could bring about the retard of national economic growth and would be more difficult to strengthen regional economic integration by fisheries sector.

The ASEAN Member States should address the issue and build up firm foundation for coastal community through policies and institutions as well as local levels of governance of natural resources utilization to ensure effective co-management between the local government and the communities. The most of the projects have usually been implemented as national programs with appropriate national policy. However, if the program is appropriately focus on the issues and to facilitate exchange of experiences among the participating countries (regional approach) and to develop the common stand and concerns on the subjects may greatly promote the issues in the region.

(c) Participation

For the project implementation, high priority will be given to ASEAN IDB countries with the highest Muslim populations, such as Indonesia, Malaysia, and Brunei Darussalam (88%, 59% and 67% Muslim populations, respectively). Other Muslim communities in non IDB countries namely, the Philippines, Thailand and Cambodia will also benefited from the project implementation through technology transfer and dissemination of experiences learned by the three priority countries considering their respective problems and needs.

(d) Beneficiaries

The direct beneficiaries are the people in the eight selected coastal Muslim communities in ASEAN region. Communities will be selected based on criteria identified by the project. In order to support capacity building activities, approximately 160 fishers, 25 local fishery officers and other personnel working in support of fishery communalities will be involved in the project activities. On the other hand, experiences and lesson learn during the conduct of project activities and outcomes of the project implementation could be useful for strengthening of national policy in supporting coastal fisheries communities in respective ASEAN Member States.

(e) Relevant ASEAN-SEAFDEC Resolution, Policies and Plans of Action

This project are relevance to the ASEAN Community Blueprints *i.e.* Strengthening entrepreneurship skills for women, youth, elderly and persons with disabilities (A.6), Poverty alleviation (B.1), and Promoting the

sustainable use of coastal and marine environment (D.7), Promoting Sustainable Management of Natural Resources and Biodiversity (D.8).

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

The overall goal of the project is to improve the socio-economic status of the coastal dwellers and to promote sustainable utilization and management of the coastal resources. The specific objectives of the project are:

1. To enhance the capacity and capability of fishers and women in the fishing community to improve their social well-being and contribute to poverty alleviation; and
2. To build the capacity of the fishing communities to engage in sustainable livelihoods and improved coastal resource management

3.1 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1: To build the capacity of the fishing communities to engage in sustainable livelihoods and improved coastal resource management.	Outcome 1: Identification of the problems and needs of the community.	Output 1: One survey report.	Activity 1: Community Surveys and Needs Assessment
	Outcome 2: The community fisheries associations will be strengthened	Output 2: One capacity building workshop report per country.	Activity 2: Building and Strengthening of Fisheries Associations
Objective 2: To enhance the capacity and capability of fishers and women in the fishing community to improve their social well-being and contribute to poverty alleviation	Outcome 3: The communities reduced their vulnerability to natural disasters.	Output 3: One workshop report per country.	Activity 3: Capacity Building on Sustainable Livelihoods and Coastal Resource Management
Objective 3: To monitor and evaluate the progress of the project	Outcome 4: Final project evaluation report.	Output 4: a. 3 progress reports. b. Final project report.	Activity 4: Project Management and related Contingency

3.2 Overall Scope/Description of Project

Activity	Description
Activity 1: Community Surveys and Needs Assessment	The main objective of this activity is to establish baseline community information in order to formulate appropriate action plan and activities for sustainable management of the coastal resources and sustainable livelihoods in fisheries. Three basic sub-activities will be implemented, namely, (a) baseline survey on demographic, economic and other indicators; (b) special topic surveys <i>i.e.</i> fish markets, surveys on existing local organizations (types, numbers and activities), climate change/natural disasters impact assessment surveys; and data collection on the impact of the TA; (c) using the survey results, this activity will identify and prioritize community activities for technology transfer and human resource development. Expected deliverables from this activity are: (i) needs assessment and baseline survey report, (ii) special survey reports, (iii) semi-annual M&E (monitoring & evaluation) reports, and (iv) final evaluation report on coastal community resilience and outcomes of the Project. The Project inputs under this activity include support to SEAFDEC and local staff resources (travel expenses) and communication costs.

Activity	Description
<p>Activity 2: Building and Strengthening of Fisheries Associations</p>	<p>This activity is intended to strengthen the fishermen associations and fisheries institutions to engage in sustainable livelihoods and coastal resource management plans and include building the capacities of existing associations and facilitating the formation of new associations. The community fisheries associations will be capacitated to take a leading role in promoting community food security, developing job opportunities, engaging environment - friendly coastal management practices, and developing strategies for simple natural disasters early warning system. The activity will be implemented through a series of training sessions, workshops and consultative meetings focusing on the following: orientation for associations on organizational functions and responsibilities, capacity building for community leaders on leadership, advocacy and community management, participatory planning on resource management and sustainable livelihood, conflict management and improving women livelihoods. Under this activity, the TA will support travel expenses of SEAFDEC and local staff resources; and workshop and meeting logistics and related expenses.</p>
<p>Activity 3: Capacity Building on Sustainable Livelihoods and Coastal Resource Management</p>	<p>This objective of this activity is to protect and enhance the existing fishing related livelihoods and to promote alternative opportunities outside the fisheries sector. This will be achieved through facilitation of technology and knowhow transfer and adoption. This activity includes knowledge transfer and training on: (a) improving and diversifying fish production systems: coastal aquaculture, cage culture and shell culture; fish releasing, promotion of One-Village One Fisheries Product scheme; introducing higher productive fish; and improving efficiency in fishing, postharvest techniques and fish marketing; (b) enhancing community business ventures: facilitating formation of cooperative dry goods grocery stores, training on Islamic microfinance schemes and capacity building in financial and business management; (c) promoting alternative livelihoods: eco-tourism, sports fishing and women and youth alternative income generating ventures; and (d) improving governance and resource use practices: responsible fishing practices and enforcement of coastal resource management rules and regulations. In addition, this activity will also help the communities develop and adopt measures for mitigation to the impacts of climate change and building people's capacity to reduce their vulnerability to natural disasters. This sub-activity covers education on impacts of climate change, training on safety at sea for small-scale fishermen, development of simple early warning system, etc. As an input, the TA will support per diem and travel expenses of SEAFDEC and local staff resources conducting the trainings, logistics and related expenses and materials and supplies needed to install fish aggregating devices.</p>
<p>Activity 4: Project Management and related Contingency</p>	<p>This activity will be conducted at the end of the project whereby the three IDB countries and the three non IDB countries namely the Philippines, Thailand and Cambodia will be involved in a project evaluation workshop. The three IDB countries will present their project report based on experience and knowledge acquired during the implementation of the project. The three non IDB countries will benefit on technology transfer and dissemination of experiences learned by the three IDB countries considering their respective problems and needs. The final project evaluation report will be prepared by the SEAFDEC Officials from the SEAFDEC/Secretariat and SEAFDEC/MFRDMD.</p>

3.3 Activity, Sub-activity and Proposed Budget for 2015-2017

(Unit: USD)

Activity	Sub-Activity	Y1 2015	Y2 2016	Y3 2017
Activity 1. Community survey and needs assessment	Sub-activity 1.1: Inception meeting and workshop for project planning and preparation of community survey questionnaire.		18,700	
	Sub-activity 1.2: Baseline Survey and Need Assessment		15,000	
	Sub-activity 1.3: Identify and prioritize activities for capacity building		300	
Activity 2. Building and Strengthening of Fisheries Associations	Sub-activity 2.1: Training for fisheries associations		30,000	18,000
	Sub-activity 2.2: Capacity building for community leaders		30,000	18,000
	Sub-activity 2.3: Workshop to review the building and strengthening of fisheries associations and community leaders			14,000
Activity 3. Capacity Building of Coastal Communities on Sustainable Livelihoods and Resource Management	Sub-activity 3.1: Knowledge transfer and training on improving resource use practices		13,500	7,500
	Sub-activity 3.2: Knowledge transfer and training on enhancing community business ventures and promoting alternative livelihood		14,400	6,600
	Sub-activity 3.3: Workshop to review the capacity building of coastal communities			14,000
Activity 4. Project Evaluation and Reporting	Sub-activity 4.1: Report, administrative cost, office supplies			900
	Sub-activity 4.2: Project terminal workshop			33,000
	Sub-activity 4.3: Project evaluation and documentation			10,000
	Contingency			3,000
	Sub-Total Budget		125,000	125,000

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION**1. Achievements of the Project Implementation for the Present Year**

The first disbursement with amount USD125,000 have been received by SEAFDEC/MFRDMD in early March 2016. Brunei Darussalam, Indonesia and Malaysia already established the focal point and four (4) persons as project committee members also selected the communities *i.e.* Kg. Sungai Bunga and Kg. Serasa for Brunei Darussalam, Laikang Village for Indonesia and Tok Jembal Village for Malaysia. The Regional Technical Consultation on Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management was organized in Furama Hotel Kuala Lumpur, Malaysia from 16 – 19 May 2016. The meeting was attended by the four (4) representatives from each participated countries namely Brunei Darussalam, Indonesia and Malaysia, one (1) person from Islamic Development Bank (IDB), resource person from Universiti Putra Malaysia (UPM), an observer from German International Cooperation (GIZ) and the Chief, Special Departmental Coordinator and officials from SEAFDEC/MFRDMD. The meeting agreed that the fund will transferred by stages based on project progress and activities. The first stage fund (USD 6,100 for each country) has been transferred to Brunei Darussalam by their government account and Indonesia by SEAFDEC/IFRDMD's account. While, Malaysia will use SEAFDEC/MFRDMD's account. The need assessment questionnaire has been compiled, harmonized and sent to Brunei Darussalam, Indonesia and Malaysia. The survey has been conducted in the selected communities of each country using the harmonized questionnaire and the feedback was analyzed for training and courses arrangement. After that, each country will make a survey report and send to SEAFDEC/MFRDMD for compilation before sending to IDB. First quarter progress report from Brunei Darussalam, Indonesia and Malaysia was compiled and sent to IDB in August 2016.

The second stage fund (USD 29,300 for each country) will be transfer to Brunei Darussalam and Indonesia by end of September 2016.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1: Community survey and needs assessment					
Sub-activity 1.1: Inception meeting and workshop for project planning and preparation of community survey questionnaire.	VI. Others	12	8	3	18,700
Sub-activity 1.2: Baseline Survey and Need Assessment	VI. Others	20	1		15,000

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 1. Community survey and needs assessment		
Sub-activity 1.1: Inception meeting and workshop for project planning and preparation of community survey questionnaire.	Workshop for project planning and preparation of coastal community survey questionnaires for baseline and special topics	<p>Brunei Darussalam, Indonesia and Malaysia already sent the nomination letter for establishment of focal point and four (4) persons as project committee members and selection of the communities <i>i.e.</i> Kg. Sungai Bunga and Kg. Serasa for Brunei Darussalam, Laikang Village for Indonesia and Tok Jembal Village for Malaysia.</p> <p>MFRDMD has organized The Regional Technical Consultation on Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management in Furama Hotel Kuala Lumpur, Malaysia from 16 – 19 May 2016 for inception meeting, planning and preparation of baseline and special topics questionnaires for coastal community survey.</p> <p>The fund from the first reimbursement has been sent to Brunei Darussalam and Indonesia in two stages based on the progress of the project.</p>
Sub-activity 1.2: Baseline Survey and Need Assessment	Survey report	The need assessment questionnaire has been compiled, harmonized and sent to Brunei Darussalam, Indonesia and Malaysia for the survey. The survey has been conducted in the selected communities of Brunei Darussalam, Indonesia and Malaysia using the harmonized questionnaire. After that, each country will make a survey report and send to MFRDMD for compilation before sending to IDB.
Sub-activity 1.3: Identify and prioritize activities for capacity building	The prioritized list for capacity building	The feedback survey was analyzed for identification of training and courses needed by the communities.
Activity 2. Building and Strengthening of Fisheries Associations		
Sub-activity 2.1: Training for fisheries	The training program and report for fisheries	The list of training for the fisheries association has been identified based on the feedback of the

Planned activity	Expected outcome/output	Achievements
associations	association in the selected communities	questionnaire. Brunei Darussalam, Indonesia and Malaysia will make the preparation needed accordingly.
Sub-activity 2.2: Capacity building for community leaders	The capacity building program and report for the selected community leaders	The list of training for the community leaders has been identified based on the feedback of the questionnaire. Brunei Darussalam, Indonesia and Malaysia will make the preparation needed accordingly.
Activity 3:Capacity Building of Coastal Communities on Sustainable Livelihoods and Resource Management		
Sub-activity 3.1: Knowledge transfer and training on improving resource use practices	Knowledge transfer and training program and report for selected communities in Brunei Darussalam, Indonesia and Malaysia	The list of training for the coastal communities has been identified based on the feedback of the questionnaire. Brunei Darussalam, Indonesia and Malaysia will make the preparation needed accordingly.
Sub-activity 3.2: Knowledge transfer and training on enhancing community business ventures and promoting alternative livelihood	Knowledge transfer and training program and report for selected communities in Brunei Darussalam, Indonesia and Malaysia	The list of training for the coastal communities has been identified based on the feedback of the questionnaire. Brunei Darussalam, Indonesia and Malaysia will make the preparation needed accordingly.
Activity 4:Project Evaluation and Reporting		
Sub-activity 4.1: Report, administrative cost, office supplies	Compilation of progress report from Brunei Darussalam, Indonesia and Malaysia	First quarter progress report from Brunei Darussalam, Indonesia and Malaysia has been received, compiled and sent to IDB.

4. List of Completed Publications and Others

List of completed publications for the Year 2016	Type of media	Attached e-file
1. Progress report for PCM	Presentation	
2. Progress report ASWGF meeting	Technical report	
3. Progress report for SEAFDEC Newsletter	Technical report	
4. First quarter progress report for IDB	Technical report	

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/ Views from Participants
Activity 2:	
Sub-activity 2.1:	The training will be held starting October 2016 in selected communities of Brunei Darussalam, Indonesia and Malaysia.
Sub-activity 2.2:	The training will be held starting October 2016 in selected communities of Brunei Darussalam, Indonesia and Malaysia.
Activity 3:	
Sub-activity 3.1:	The training will be held starting October 2016 in selected communities of Brunei Darussalam, Indonesia and Malaysia.
Sub-activity 3.2:	The training will be held starting October 2016 in selected communities of Brunei Darussalam, Indonesia and Malaysia.
Activity 4:	
Sub-activity 4.2:	The terminal workshop will be conducted in October 2017.

6. Major Impacts/Issues

A relatively long time for the reimbursement from the date of signature of the TA has been led to the late start of this project. Lack of cooperation from few communities' members during the survey. Effective coordination of several government agencies and fishing community should be considered and enhanced.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
Activity 2:		
Sub-activity 2.1:	Training for fisheries associations in each selected communities	18,000
Sub-activity 2.2:	Capacity building for community leaders in each selected communities	18,000
Sub-activity 2.3:	Workshop to review the building and strengthening of fisheries associations and community leaders	14,000
Activity 3:		
Sub-activity 3.1:	Knowledge transfer and training on improving resource use practices for selected communities in Brunei Darussalam, Indonesia and Malaysia	7,500
Sub-activity 3.2:	Knowledge transfer and training on enhancing community business ventures and promoting alternative livelihood for selected communities in Brunei Darussalam, Indonesia and Malaysia	6,600
Sub-activity 3.3:	Workshop to review the capacity building of coastal communities	14,000
Activity 4:		
Sub-activity 4.1:	Report, administrative cost, office supplies	900
Sub-activity 4.2:	Project terminal workshop	33,000
Sub-activity 4.3:	Project evaluation and documentation	13,000

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 2:	
Sub-activity 2.1:	Training program and report for fisheries associations in each selected communities
Sub-activity 2.2:	Capacity building program and report for community leaders in each selected communities
Sub-activity 2.3:	Workshop report
Activity 3:	
Sub-activity 3.1:	Knowledge transfer and training program and report for selected communities in Brunei Darussalam, Indonesia and Malaysia
Sub-activity 3.2:	Knowledge transfer and training program and report for selected communities in Brunei Darussalam, Indonesia and Malaysia
Sub-activity 3.3:	Workshop report
Activity 4:	
Sub-activity 4.1:	Compilation of progress report from Brunei Darussalam, Indonesia and Malaysia
Sub-activity 4.2:	Project terminal workshop report
Sub-activity 4.3:	Project evaluation report

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 2:												
Sub-activity 2.1:												
Sub-activity 2.2:												
Sub-activity 2.3:												
Activity 3:												

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sub-activity 3.1:												
Sub-activity 3.2:												
Sub-activity 3.3:												
Activity 4:												
Sub-activity 4.1:												
Sub-activity 4.2:												
Sub-activity 4.3:												

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

			Project id: 0220130101
Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Chemicals and Drug Residues in Fish and Fish Products in Southeast Asia – Biotoxins (ASP, AZA and BTX) and Harmful Algal Blooms (HABs) in the ASEAN Region		
Program Thrust:	II	Total Duration:	2013-2019
Lead Department:	MFRD	Lead Country:	Singapore
Donor/Sponsor:	JTF-6	Total Donor Budget:	USD 271,988
Project Partner:	ASEAN-SEAFDEC Member Countries	Budget for 2017:	USD 40,748
Project Leader:	Calvin Lee Weiqiang, Scientist (PHTC, AVA)	Involved Country:	ASEAN-SEAFDEC Member Countries

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

Consumption of a variety of shellfish and fish which have been contaminated by marine biotoxins causes an increasing number of human intoxications and even deaths around the world. This project is an extension of the Japanese Trust Fund II project on Biotoxins Monitoring in ASEAN and aims to address the needs of Member Countries and continue with capability building in biotoxins analyses and monitoring, with the proposed focus on other biotoxins like Amnesic Shellfish Poisoning (ASP) toxin (Domoic Acid) and Azaspiracids (AZA). The project will also include a component on the identification of toxic Harmful Algal Blooms (HABs) species. This project would be implemented by Post-Harvest Technology Centre of the Agri-Food and Veterinary Authority of Singapore (PHTC/AVA) as SEAFDEC's Collaborating Center for MFRD programs, with participation from the ASEAN-SEAFDEC Member Countries. The key project activities comprises of a Regional Technical Consultation meeting, a Regional Training Course in Biotoxins Analyses and a biotoxins monitoring survey. In addition, there will also be a Regional Technical Consultation and Regional Training Course, which will be organized in collaboration with IOC (Intergovernmental Oceanographic Commission of the UNESCO) Sub-Commission for the Western Pacific (WESTPAC), for the identification of toxic HAB species. These project activities will culminate in a Technical Compilation publication and an End-of-Project meeting. It is envisaged that by the end of the project, Member Countries would have achieved the project's objectives of upgrading their laboratory capabilities and credibility testing for ASP, AZA and BTX biotoxins, establishing biotoxins monitoring programs for routine surveillance testing of fish and fisheries products, improving their knowledge and understanding on the levels of biotoxins occurrences and incidences in fish and fisheries products in the ASEAN region as well as of toxic HAB occurrences and incidences in the region, and enhancing their capabilities for the identification of toxic HAB species to ensure that fisheries products are safe for consumption. The expected outputs of this project are: a regional training course in AZA, ASP and BTX biotoxins analyses, a regional training course in identification of toxic HAB species, biotoxins monitoring surveys in Member Countries, and a Technical Compilation publication of the project.

2. Background and Justification

Marine biotoxins represent a significant and expanding threat to human health in many parts of the world. The impact is visible in terms of human poisoning or even death following the consumption of contaminated shellfish or fish, as well as mass killings of fish and shellfish, and the death of marine animals and birds.

The Codex Alimentarius Code of Practice for Fish and Fishery Products (CAC/RCP 52-2003) defined biotoxins as poisonous substances naturally present in fish and fishery products or accumulated by the animals feeding on toxin producing algae, or in the water containing toxins produced by such organisms.

Monitoring seafood for toxicity is essential to manage the risks. However, there are several limitations in monitoring for toxicity such as the variation in toxin content between individual shellfish, different detection and even extraction methods for the various toxins, requiring a decision which toxins one is testing for, and the frequency of sampling to ensure that toxicity does not rise to dangerous levels in temporal or spatial gap between sampling times or locations. Furthermore, the growing harvest of non-traditional shellfish (such as moon snails, whelks, barnacles, etc.) may increase human health problems and management responsibilities.

MFRD has conducted a project on biotoxins monitoring in ASEAN from 2009 to 2012 to increase the attention in expanding and improving initiatives to monitor, detect and share information on marine biotoxins in order to reduce the public health risks associated with the consumption of contaminate shellfish and fish. The project had covered training in analytical methods for Diarrhoetic Shellfish Poisoning (DSP) toxins, lipophilic toxins, Paralytic Shellfish Poisoning (PSP) toxins and Tetrodotoxin (TTX) and a monitoring survey on PSP toxin in ASEAN Member States Member Countries.

This project is an extension of the previous project to address the needs of Member Countries and continue with capability building in biotoxins analyses and monitoring, with the proposed focus on other biotoxins like Amnesic Shellfish Poisoning (ASP) toxin (Domoic Acid) and Azaspiracids (AZA). These 2 biotoxins were raised as part of the training needs by Member Countries during the RTC of the previous project in 2009. Brevetoxins (BTX) which causes Neurotoxic Shellfish Poisoning (NSP) is also recommended to be included in the new project as ASP, AZA and BTX, along with DSP and PSP, should be regulated according to CODEX for shellfish.

During the End-of-Project Seminar for the biotoxins monitoring project in 2012, Member Countries also pointed the importance of identify ingtoxic HAB species to complement existing biotoxins monitoring programs to ensure that fish and shellfish are not contaminated with toxic algae or their toxins. Member Countries suggested that MFRD consider conducting a project on toxic HABs to enhance regional capabilities for the identification of toxic HAB species. MFRD has taken up this suggestion by including a separate component on toxic HAB species identification within this project.

The key stakeholders/beneficiaries of this project are the relevant agencies in the fisheries department of the ASEAN-SEAFDEC Member Countries which are responsible for ensuring the safety of fish and shellfish for consumption and for monitoring and testing of fish and shellfish; the aquaculture farmers and harvesters of the fish and shellfish; as well as the consumers/buyers, international and domestic.

This project is in line with the following Resolution and Plan of Action as endorsed at the ASEAN-SEAFDEC Conference of 2011:

Resolution 21: Improve technologies and facilities to ensure fish quality assurance and safety management systems, taking into account the importance of traditional fishery products and food security requirements, and promote the development of fishery products as an alternative supplementary livelihood for fisheries communities.

Plan of Action D61: Strengthen fish quality and safety management systems that support the competitive position of ASEAN fish products on world markets, including moving towards ISO/IEC 17025 accreditation of national fish inspection laboratories, strengthening capacity and acknowledging the recognized national laboratories, risk analysis and equivalence agreement such as the Mutual Recognition Agreement (MRA) and promote the implementation of the quality and safety management systems among small and medium enterprises in the ASEAN region.

Plan of Action D63: Promote and conduct training programs and develop training materials to upgrade the technical skills and competencies of personnel in the public and private sectors on fisheries post-harvest technology and food safety management system.

This project is also in line with the SEAFDEC Program Thrust II on Enhancing Capacity and Competitiveness to Facilitate International and Intra-regional Trade.

Proposed Project Extension 2018-2019:

In 2016, Member Countries highlighted challenges faced in implementing the biotoxin monitoring surveys due to manpower and technical constraints. As a result, implementation of the survey in a few countries were delayed by a number of months such that the survey duration of one and half years could not be achieved by the end of 2016. As such, Member Countries requested to extend the biotoxin monitoring survey till the end of 2017 to enable them to complete their survey plans so that more results and data can be gathered for a better understanding of HAB occurrences.

During the Regional Training Course on Identification of HAB Species in the ASEAN Region in 2016, Member Countries highlighted the need for more training on specimen preservation and culturing techniques for identification and monitoring of HAB species. As such Member Countries requested that MFRD organize additional training courses on these topics to enhance the region's capabilities in managing toxic HAB incidences.

In view of all of the above, MFRD propose to extend the project for another two years *i.e.* 2018-2019, to enable Member Countries' requests for extension of the biotoxin monitoring survey period and additional regional training courses on HAB to be incorporated as additional activities in 2017-2018 while the project's final year's activities *i.e.* publication of a Technical Compilation and an End-of-Project Seminar will now be conducted in 2019.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1: To upgrade regional laboratory capabilities and credibility for testing of ASP, AZA and BTX biotoxins	Outcome 1: Enhanced laboratory capabilities and knowledge in the testing of ASP, AZA and BTX biotoxins	Regional training course in biotoxins (AZA, ASP and BTX) analyses	Organization and conduct of Regional Training Course in Biotoxins (AZA, ASP and BTX) Analyses, 2-6 June 2014, Singapore
Objective 2: To establish monitoring programs for ASP, AZA and BTX biotoxins in Member Countries for routine surveillance	Outcome 2: Establishment of monitoring programs for ASP, AZA and BTX biotoxins in Member Countries for routine surveillance	Biotoxin monitoring surveys in Member Countries	Organization and conduct of one and half-year Biotoxins Monitoring Survey in 2015-2016. Extended to end of 2017.
Objective 3: To improve knowledge and understanding on ASP, AZA and BTX biotoxins occurrences and incidences in fish	Outcome 3: Improved knowledge and understanding on ASP, AZA and BTX biotoxins occurrences and	Regional Technical Consultation	Organization and conduct of Regional Technical Consultation, 24-25 July 2013, Singapore
		Biotoxin monitoring surveys in Member Countries	Organization and conduct of one and half-year Biotoxins Monitoring Survey in 2015-2016. Extended to end of 2017.
		End-of-Project (EOP) Meeting	Organization and conduct of End-of-Project (EOP) Meeting in 3 rd qtr 2019

Objective	Outcomes	Outputs	Activities
and shellfish in the ASEAN region and facilitate information exchange among Member Countries	incidences in fish and shellfish in the ASEAN region	Technical Compilation	Preparation and publication of Technical Compilation in 2018/2019
Objective 4: To improve knowledge and understanding on toxic HAB occurrences and incidences in the ASEAN region	Outcome 4: Improved knowledge and understanding on toxic HAB occurrences and incidences in the ASEAN region	Regional Technical Consultation	Organization and conduct of Regional Technical Consultation in 3 rd qtr 2015
		End-of-Project (EOP) Meeting	Organization and conduct of End-of-Project (EOP) Meeting in 3 rd qtr 2019
		Technical Compilation	Preparation and publication of Technical Compilation in 2018/2019
Objective 5: To enhance regional capabilities for identification of toxic HAB species in Member Countries	Outcome 5: Enhanced capabilities for the identification of toxic HAB species in Member Countries	Regional Training Course on Identification of HAB Species in the ASEAN Region	Organization and conduct of Regional Training Course on Identification of HAB species in the ASEAN Region in 2 nd qtr 2016 (in collaboration with IOC-WESTPAC)
		Regional Training Course on Specimen Preservation and its Application in HAB Monitoring and Studies	Organization and conduct of Regional Training Course on Specimen Preservation and its Application in HAB Monitoring and Studies in 2 nd qtr 2017.
		Regional Training Course on Culturing for HAB Species Identification and Toxin Characterization	Organization and conduct of Regional Training Course on Culturing for HAB Species Identification and Toxin Characterization in 2 nd qtr 2018.

3.2 Overall Scope/Description of Project

Activity	Description
Activity 1. Regional Technical Consultation on Biotoxins (ASP, AZA and BTX) Monitoring in the ASEAN region (2 days)	This Regional Technical Consultation will be held in the first year of the project in the 2 nd quarter of 2013. It will discuss and plan for all project activities, identify the training needs in the individual Member Countries, determine the content of the training course, identify the venue and expert trainers for the training course, identify the key project leaders and the targeted biotoxins for the surveys in Member Countries.
Activity 2. Regional Training Course on Biotoxins (ASP, AZA and BTX) Analyses (5 days)	The second year (2014) will involve a Regional Training Course with hands-on practical sessions on biotoxins analyses. The proposed biotoxins for training include Amnesic Shellfish Poisoning (ASP) toxin, Azaspiracids (AZA) and Brevetoxin (BTX). The training course is to be conducted by invited expert trainers. Two participants from each Member Country will be invited. It is envisaged that after the training course, Member Countries would be in a better position to upgrade their laboratory capabilities and credibility in the testing of ASP, AZA and BTX biotoxins in fish and fish products and to assist them in establishing biotoxins monitoring programs in their own country.

Activity	Description
<p>Activity 3. Biotoxins Monitoring Survey (One and half-years)(Extended till end 2017)</p>	<p>After the training course, Member Countries are then encouraged to set up the methods learnt in the training course and use the methods for the survey. The survey will involve monitoring the biotoxins levels at identified site(s) over a period of one and half years at regular intervals during the third and fourth year (2015 and 2016) of the project. Biotoxins that were already covered in the training course in 2010 (for example Diarrhetic Shellfish Poisoning, DSP and lipophilic toxins, TTX) can also be included in the survey if Member Countries are interested. The survey aims to improve Member Countries' understanding on the level of ASP, AZA and BTX biotoxins occurrences and incidences in fish and fisheries products in the ASEAN region. Due to the extension of the project till the end of 2019 and Member Countries' request, the survey period will be extended till the end of 2017.</p>
<p>Activity 4. Regional Technical Consultation on Biotoxin-producing HAB species Identification (2 days)</p>	<p>A Regional Technical Consultation meeting (RTC) will be held in Singapore in 3rd quarter 2015 to initiate this component of the project and plan for all activities. All ASEAN Member States will be invited to the meeting and to participate in the activities. ASEAN-SEAFDEC Member Countries will present country reports on toxic HAB occurrences and incidences as well as the management of toxic HABs in their waters. A Key Project Leader (KPL) for each country will be appointed to be responsible for the project's activities in his or her country. The meeting will finalize the details of the training course to be conducted in 2016 and identify the necessary expert trainers and training needs in the region. The meeting will also initiate the process to establish a network or directory of responsible national authorities or HAB experts in the region.</p>
<p>Activity 5. Regional Training Course on Identification of HAB Species in the ASEAN Region (5 days)</p>	<p>This Regional Training Course will be conducted in Singapore in 2nd quarter 2016, in collaboration with IOC-WESTPAC. The training course will be conducted by invited expert trainers and it is envisaged that the methods for identifying toxic HAB species will be taught during the course. Two participants from each Member Country will be invited to attend this course. After the training course, Member Countries are recommended to apply what they have learnt to set up the appropriate methodologies in their own laboratories for identifying toxic HAB species.</p>
<p>Activity 6. Regional Training course on Specimen Preservation and its Application in HAB Monitoring and Studies (5days)</p>	<p>This Regional Training Course will be conducted in the 2nd quarter of 2017 in collaboration with the Institute of Ocean & Earth Science (IOES), University of Malaya (UM) at its Bachok Marine Research Station (BMRS) in Kelantan. The training course will include topics on specimen preservation methods and techniques, use of fluorescence and electron microscopy and flowcytometry. Two participants from each Member Country will be invited to attend this course. After the training course, Member Countries are recommended to apply what they have learnt to set up the appropriate methodologies in their own laboratories for monitoring of toxic HAB species.</p>
<p>Activity 7. Regional Training course on Culturing for HAB Species Identification and Toxin Characterization (5days)</p>	<p>This Regional Training Course will be conducted in the 2nd quarter of 2018, in collaboration with the Institute of Ocean & Earth Science (IOES), University of Malaya (UM) at its Bachok Marine Research Station (BMRS) in Kelantan. The training course will include topics on isolation, culturing and cell harvesting methods and techniques for morphology, molecular and toxin characterization of HAB species. Two participants from each Member Country will be invited to attend this course. After the training course, Member Countries are recommended to apply what they have learnt to set up the appropriate methodologies in their own laboratories for identifying toxic HAB species.</p>
<p>Activity 8. Technical Compilation (10-12 months)</p>	<p>The Technical Compilation of the project will be prepared from 2nd quarter of 2018 after biotoxin monitoring surveys in Member Countries have been completed and, results and reports submitted. It will be published in the project's final year in 2019. The Technical Compilation will comprise of the compilation of the biotoxins analytical methods and biotoxins monitoring survey reports of the Member Countries, the methodologies for</p>

Activity	Description
	the isolation, culturing, preservation, identification and monitoring of toxic HAB species from the three regional training courses, country reports on toxic HAB occurrences and incidences as well as the management of toxic HABs in Member Countries and, the list/directory of responsible national authorities and HAB experts in Member Countries.
Activity 9. End-of-Project (EOP) Meeting (2 days)	The End-of-Project (EOP) Meeting will be held in the 3 rd quarter of 2019. The EOP will present and discuss the reports and results of the biotoxins monitoring surveys conducted by Member Countries, country reports on HABs, discuss the challenges faced during the project implementation and plans for future projects or activities nationally and regionally, and finalize the Technical Compilation for publication.

3.3 Activity, Sub-activity and Proposed Budget for 2013-2019

(Unit: USD)

Activity	Sub-Activity	Y1 2013	Y2 2014	Y3 2015	Y4 2016	Y5 2017	Y6 2018	Y7 2019
Activity 1. Regional Technical Consultation on Biotoxins (ASP, AZA and BTX) Monitoring in the ASEAN region		35,500						
Activity 2. Regional Training Course on Biotoxins (ASP, AZA and BTX) Analyses			28,700					
Activity 3. Biotoxins Monitoring Survey (to be extended till end 2017)	Sub-activity 3.1: Setting up of Biotoxins Analyses Methodologies			10,000				
	Sub-activity 3.2: Implementation of Biotoxins Monitoring Survey			7,500	5,000	9,000		
Activity 4: Regional Technical Consultation on Toxic HAB species Identification				31,700				
Activity 5. Regional Training Course on Identification of HAB Species in the ASEAN Region					31,344			

Activity	Sub-Activity	Y1 2013	Y2 2014	Y3 2015	Y4 2016	Y5 2017	Y6 2018	Y7 2019
Activity 6. Regional Training Course on Specimen Preservation and its Application in HAB Monitoring and Studies						31,748		
Activity 7. Regional Training Course on Culturing for HAB Species Identification and Toxin Characterization							35,748	
Activity 8. Technical Compilation							5,000	3,000
Activity 9 End-of-Project (EOP) Meeting								37,748
	Sub-Total	35,500	28,700	49,200	36,344	40,748	40,748	40,748

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the Present Year

Biotoxin Monitoring Survey

Myanmar, Singapore and Thailand have conducted the survey according to their sampling plans and submitted the quarterly progress reports as required. Lao PDR, Philippines and Viet Nam have yet to submit any quarterly reports even though the surveys were supposed to have started in the respective countries. Brunei Darussalam, Indonesia and Malaysia had indicated they faced challenges in conducting the survey due to manpower and technical constraints and, have requested an extension of the survey period.

Regional Training Course on Identification of HAB species in the ASEAN Region

The course was successfully organized in Singapore on 18-22 July 2016 in collaboration with IOC-WESTPAC and included 3 Japanese and 2 regional experts who conducted the training. There were a total of 22 participants from the 10 ASEAN-SEAFDEC Member Countries. The training course programme included lectures and practical sessions as well as a field trip/sampling session.

The training course received positive feedback from the participants who indicated that the course was well conducted and beneficial to their work. As an additional output of the training course, the participants agreed to form a team headed by the Philippines and consisting of a representative from each ASEAN Member State to prepare 2 posters on red tide causing species and HAB species. Member Countries would provide photos of the species for the posters which would be distributed to the Member Countries for knowledge sharing.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 3. Biotoxins Monitoring Survey	I. Research and Development	10	0	0	5,000
Sub-activity 3.2:Implementation of Biotoxins Monitoring Survey					

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 5. Regional Training Course on Identification of HAB Species in the ASEAN Region	II. Training	22	0	0	52,036.08

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 3. Biotoxins Monitoring Survey	<ul style="list-style-type: none"> - Completion of the surveys carried out in at least 8 ASEAN-SEAFDEC Member Countries. - Submission of technical reports by Member Countries on the conduct and results of their monitoring surveys. 	<ul style="list-style-type: none"> - Surveys have been carried out in 9 Member Countries except Cambodia. - The results of the sampling and monitoring carried out during the survey have provided Member Countries with a better knowledge and understanding on ASP, AZA and BTX biotoxins occurrences and incidences in fish and shellfish in their country.
Activity 5. Regional Training Course on Identification of HAB Species in ASEAN Region	<ul style="list-style-type: none"> - Organization and conduct of the training course in 2nd quarter 2016 (in collaboration with IOC-WESTPAC). - Participation by at least 8 ASEAN-SEAFDEC Member Countries. - Enhanced capabilities for the identification of common HAB species in the region. 	<ul style="list-style-type: none"> - The training course was successfully organized and conducted on 18-22 July 2016 in collaboration with IOC-WESTPAC for 22 participants from all ten ASEAN-SEAFDEC Member Countries. - The training provided the participants with the basic knowledge and techniques for identification of common HAB species in the region as well as the sampling methods required.

4. List of Completed Publications and Others

List of completed publications for the Year 2016	Type of media	Attached e-file
Nil	-	-

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/ Views from Participants
Activity 5: Regional Training Course on Identification of HAB Species in the ASEAN Region	The general consensus among the participants was that the training course had met their expectations and was beneficial to their work. They were also satisfied with the organization and arrangements for the course. The participants indicated that they would like to have more training on specimen preservation methods and the use of fluorescence and electron microscopy for identification of HAB species.

6. Major Impacts/Issues

- The regional training course enhanced capabilities for the identification of common HAB species in the region and Member Countries also highlighted the need to conduct more training on the use of different techniques for identification of HAB species such as fluorescence and electron microscopy.
- No major issues in project implementation in 2016 except that some Member Countries have yet to submit quarterly progress reports for the biotoxin monitoring survey to date and have requested for an extension of survey period as they had started the monitoring late.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
Activity 3. Biotoxins Monitoring Survey	After the training course, Member Countries are then encouraged to set up the methods learnt in the training course and use the methods for the survey. The survey will involve monitoring the biotoxins levels at identified site(s) over a period of one and half years at regular intervals during the third and fourth year (2015 and 2016) of the project. Biotoxins that were already covered in the training course in 2010 (for example Diarrhetic Shellfish Poisoning, DSP and lipophilic toxins, TTX) can also be included in the survey if Member Countries are interested. The survey aims to improve Member Countries' understanding on the level of ASP, AZA and BTX biotoxins occurrences and incidences in fish and fisheries products in the ASEAN region. Due to the extension of the project till the end of 2019 and Member Countries' request, the survey period will be extended till the end of 2017.	9,000
Activity 6. Regional Training course on Specimen Preservation and its Application in HAB Monitoring and Studies (5days)	This Regional Training Course will be conducted in the 2 nd quarter of 2017 in collaboration with the Institute of Ocean & Earth Science (IOES), University of Malaya (UM) at its Bachok Marine Research Station (BMRS) in Kelantan. The training course will include topics on specimen preservation methods and techniques, use of fluorescence and electron microscopy and flowcytometry. Two participants from each Member Country will be invited to attend this course. After the training course, Member Countries are recommended to apply what they have learnt to set up the appropriate methodologies in their own laboratories for monitoring of toxic HAB species.	31,748

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 3. Biotoxins Monitoring Survey (1 year extension)	<ul style="list-style-type: none"> - Completion of the surveys carried out in at least 8 ASEAN-SEAFDEC Member Countries. - Submission of quarterly reports and technical reports by Member Countries on the conduct and results of their monitoring surveys.
Activity 6. Regional Training Course on Specimen Preservation and its Application in HAB Monitoring and Studies (5 days)	<ul style="list-style-type: none"> - Organization and conduct of the training course in 2ndquarter 2017. - Participation by at least 8 ASEAN-SEAFDEC Member Countries.

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 3. Biotoxins Monitoring Survey												
Activity 6. Regional Training Course on Specimen Preservation and its Application in HAB Monitoring and Studies (5 days)												

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

		Project id: 0220150102	
Program Categories:	Project under the ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title:	Cold Chain Management for Seafood		
Program Thrust:	II	Total Duration:	2015 - 2017
Lead Department:	MFRD	Lead Country:	Singapore
Donor/Sponsor:	Singapore	Total Donor Budget:	USD 136,120
Project Partner:	ASEAN-SEAFDEC Member Countries	Budget for 2017:	USD 48,440
Project Leader:	Tan Shing Yee, Scientist (PHTC, AVA)	Involved Country:	ASEAN-SEAFDEC Member Countries

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

Seafood is a perishable commodity that undergoes several chemical and biological changes immediately after capture. These changes deteriorate the quality and safety of seafood and are hastened by poor temperature control along the supply chain. Proper cold chain management and monitoring at every stage of the supply chain is a critical requirement to extend its shelf-life and ensure its freshness, safety and economic value along the supply chain. This project is funded by Singapore to upgrade the knowledge and technical capability in cold chain management for seafood in the ASEAN region. The objectives of the project are to assist in upgrading the regional seafood industry in cold chain management and technologies, as well as to develop generic guidelines on cold chain management for the ASEAN regional seafood industry. This project would be implemented by Post-Harvest Technology Centre of the Agri-Food and Veterinary Authority of Singapore (PHTC/AVA) as SEAFDEC's Collaborating Centre for MFRD Programs, with participation from the ASEAN-SEAFDEC Member Countries. The key project activities include a Project Inception and Planning Meeting, Workshop on Cold Chain Management for Seafood, Supply Chain/Cold Chain pilot trials in each Member Countries, followed by a Mid-term Evaluation and Progress Meeting. Each Member Country would use the results and data from the pilot trials, as well as technical knowledge gained from the workshop, to draft a section or sections of the generic guidelines on cold chain management for seafood for publication. The project would conclude with an End-of-Project Seminar. The expected outputs for this project are: a Workshop on Cold Chain Management for Seafood, a publication on generic guidelines on cold chain management for seafood and an End-of-Project Seminar.

2. Background and Justification

Seafood is an important commodity in many ASEAN Member States and serves as an important source of foreign exchange and food supply for these countries. There is an increasing demand for seafood as consumers around the world recognize their nutritional value. However, seafood is very perishable and several chemical and biological changes occur immediately after capture and/or harvest. The deterioration process of seafood quality by microbiological metabolism, oxidative reaction and enzymatic activity is accelerated by poor temperature control along the supply chain. Thus, good cold chain management is one of the most critical requirements to keep the seafood product fresh and safe, extend shelf life and to maintain its quality and economic value from catch to consumer.

Throughout the seafood supply chain, the seafood industry relies on proper cold chain to ensure the commercial viability of the seafood products. Modern technologies for seafood production at the aquaculture farms, seafood catch on the fishing vessels, pre-harvest considerations, post-harvest handling techniques, processing, packaging, storage, distribution and transportation modes, wholesale and retail

constitute integral parts of the seafood cold chain management process. Only proper management at every stage of this cold chain would enable the supply of fresh, quality, wholesome and safe seafood to consumers. This cold chain may take various forms including ice, refrigerated seawater, refrigerated compartments and cold stores. Low temperature conditions have to be supported by careful, hygienic handling practices during processing, storage and transportation to effectively reduce the spoilage of fish.

The implementation of cold chain for seafood in the ASEAN region involves a number of challenges. One of the major challenges is the lack of or limited integrated supply chains from farm to fork where each industry player regards itself as a separate entity and does not impose cold chain requirements on the next stage in the supply chain. However, any breakage in the cold chain would have cumulative effects on the final quality of the seafood. The great diversity of species combined with multiple international origins and production methods (fishing or farming) further complicate the cold chain requirements. Secondly, seafood and many other traditional fish products in the ASEAN region are largely handled by small and medium-sized establishments which lack appropriate facilities, technologies and knowledge in adopting cold chain practices. Lastly, cold chain management is still seen as non-mandatory in many countries; some cold chain guidelines may have been established but cannot be enforced as regulation.

Notwithstanding these challenges, there is substantial opportunity to create a platform for the ASEAN region to share knowledge, experiences and cost-effective technologies on the cold chain management for seafood. A set of general guidelines may be established to serve as a benchmark for Member Countries when developing their own national guidelines. Cold chain management of seafood should be promoted to safeguard consumer health and food security and to ensure the sustainability of the seafood industry.

The project is proposed based on the following Resolution and Plan of Action as endorsed at the ASEAN-SEAFDEC Conference of 2011:

Resolution 20: Optimize the utilization of catch from water to market by reducing post-harvest losses and waste to increase fish supply and improve economic returns through promotion of appropriate technologies and facilities along the supply chain.

Plan of Action D58: Introduce and provide support for the development and application of technologies that optimize the utilization of catch, reduce post-harvest losses, wastes and discards in commercial and small-scale fisheries and processing operations, through improved processing, facilities and infrastructure development, on-board and on-shore handling, storage, distribution and marketing of fish and fishery products.

Plan of Action D63: Promote and conduct training programs and develop training materials to upgrade the technical skills and competencies of personnel in the public and private sectors on fisheries post-harvest technology and food safety management system.

This project is also in line with the SEAFDEC Program Thrust II on Enhancing Capacity and Competitiveness to Facilitate International and Intra-regional Trade.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1: To assist in upgrading the regional seafood industry in cold chain management and technologies.	Outcome 1: Establishment and improvement of cold chain management and technologies in the regional seafood industry.	Output 1: Workshop on Cold Chain Management of Seafood. Output 2: Supply Chain/ Cold Chain Pilot Trials	Activity 1: Organization and conduct of Project Inception and Planning Meeting, 19 – 20 May 2015, Singapore. Activity 2: Organization and conduct of Workshop on Cold Chain Management for Seafood, 17 – 19 November 2015, Singapore.

Objective	Outcomes	Outputs	Activities
			<p>Activity 3: Organization and conduct of one-year Supply Chain/ Cold Chain pilot trials in participating Member Countries in 2016.</p> <p>Activity 4: Organization and conduct of Mid-term Evaluation and Progress Meeting in 1st qtr 2017.</p>
Objective 2: To develop generic guidelines on cold chain management for the seafood industry in the region.	Outcome 2: Development of generic guidelines on cold chain management for seafood.	Output 3: Generic guidelines on cold chain management for seafood.	Activity 5: Preparation and publication of Guidelines on Cold Chain Management for Seafood in 2017
		Output 4: End-of-Project Seminar	Activity 6: Organization and conduct of End-of-Project Seminar in 4 th qtr 2017

3.2 Overall Scope/Description of Project

Activity	Description
Activity 1. Project Inception and Planning Meeting	A 2-day Project Inception and Planning Meeting will be held in Singapore to discuss and plan for all project activities. Two participants each from Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam who are involved in the seafood industry will be invited to attend; one of whom should be from the private sector. The meeting will provide an opportunity for a better overview and understanding of the seafood cold chain resources and practices in these countries, and briefly assess the requirements/ deliverables for each project activity. The meeting will also identify the key project leader in each country and commercial co-operants, if any, for the project.
Activity 2. Workshop on Cold Chain Management for Seafood	<p>A Regional Workshop on Cold Chain Management for Seafood will be organized by MFRD and conducted in Singapore. MFRD proposes to engage an overseas expert in seafood cold chain management to be the resource speaker/trainer for this workshop. Two participants from each country will be invited to attend, one of whom should be from the private sector. The workshop will include lectures and hands-on practical on the best practices and technologies for seafood cold chain management, incorporating discussion of end-user and food safety specifications. Participants will learn the temperature logging techniques to monitor the cold chain from harvest to end-user/consumer, with measurement of product quality parameters (e.g. microbiological analyses, drip loss, quality index development, etc.). Participants will also be taught how to undertake supply chain monitoring within companies or with specific seafood groups, and develop performance indicators to evaluate the impacts of adopting proper cold chain practices in the seafood business. Good manufacturing and handling practices to ensure product safety and quality will also be emphasized in the course. Field visits to a few Singapore seafood companies may be arranged to understand the supply chain practices in Singapore's seafood industry.</p> <p>The workshop will also discuss to agree on the necessary steps and timelines to meet the project objective to develop a set of generic guidelines on cold chain management for the seafood industry in the region.</p>
Activity 3. Supply Chain/ Cold Chain Pilot Trials	Each participating Member Country will conduct pilot trials to implement cold chain management at either one stage of the seafood supply chain, or across the whole integrated supply chain. The performance of the cold

Activity	Description
	chain practices adoption will be evaluated with the defined criteria by the country. This activity will be conducted for a period of about one year. The results and data of the pilot trials will be useful when developing the generic guidelines on cold chain management for the seafood industry in the region.
Activity 4. Mid-term Evaluation and Progress Meeting	A 2-day Mid-term Evaluation and Progress Meeting will be held in Singapore at the end of the pilot trials to discuss and evaluate the results of the pilot trials and to discuss and plan for the subsequent project activities <i>i.e.</i> drafting of the generic guidelines on cold chain management for seafood and the End-of-Project Seminar. Two participants from each country will be invited to attend.
Activity 5. Preparation and Publication of Guidelines on Cold Chain Management for Seafood	Each country will draft a section or sections of the Guidelines on Cold Chain Management for Seafood. The various sections will be compiled and edited by MFRD which will then publish the Guidelines for distribution to ASEAN Member States.
Activity 6. End-of-Project Seminar	An End-of-Project Seminar will be organized in Singapore or another Member Country as agreed to share the results of the project among the Member Countries. Two participants from each Member Country will be invited to attend of which at least one should be from the private sector.

3.3 Activity, Sub-activity and Proposed Budget for 2015-2017

(Unit: USD)

Activity	Sub-Activity	Y1 2015	Y2 2016	Y3 2017
Activity 1. Project Inception and Planning Meeting		21,720		
Activity 2. Workshop on Cold Chain Management for		55,960		
Activity 3. Supply Chain/ Cold Chain Pilot Trials			10,000	
Activity 4. Mid-term Evaluation and Progress Meeting				21,720
Activity 5. Preparation and publication of Guidelines on Cold Chain Management for Seafood				5,000
Activity 6. End-of-Project Seminar				21,720
	Sub-Total	77,680	10,000	48,440

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the Present Year

Activity 3. Supply Chain/ Cold Chain Pilot Trials

All ASEAN-SEAFDEC Member Countries, except Brunei Darussalam, agreed to participate in the cold chain pilot trials. MFRD procured and distributed to the participating ASEAN-SEAFDEC Member Countries, except Viet Nam, button-type data loggers for the purpose of temperature monitoring in the cold chain pilot trials. Myanmar, Philippines and Singapore has begun the cold chain pilot trials and had submitted the first quarterly progress reports. Indonesia and Viet Nam had indicated that they will be starting their pilot trials in October 2016. The other participating countries are in the process of implementing the pilot trials. The results and data of the pilot trials will be a useful resource when developing the generic guidelines on cold chain management for the seafood industry in the region.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 3. Supply Chain/ Cold Chain Pilot Trials	I. Research and Development	At least 18 from 9 Member Countries	0	0	5,090

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 3. Supply Chain/ Cold Chain Pilot Trials	<ol style="list-style-type: none"> Implementation of pilot trials on cold chain management for key seafood commodities at targeted stages of the seafood supply chain. The results of the cold chain pilot trials and analysis before and after implementation of cold chain management on key seafood commodities. Development of quality indices for key seafood commodities. 	<ol style="list-style-type: none"> Myanmar, Philippines, and Singapore have begun implementation of pilot trials on cold chain management for their targeted seafood commodities. Myanmar, Philippines and Singapore have submitted the first quarterly report for the pilot trials. MFRD developed quality indices for four key seafood commodities in the ASEAN region, <i>i.e.</i> tiger prawn, seabass, tilapia and red grouper

4. List of Completed Publications and Others

List of completed publications for the Year 2016	Type of media	Attached e-file
Nil	-	-

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/ Views from Participants
Activity 3. Supply Chain/ Cold Chain Pilot Trials	Pilot trials still in progress.

6. Major Impacts/Issues

Activity 3. Supply chain/ Cold Chain Pilot Trials

The results and data from the cold chain pilot trials will assist Member Countries to rectify and improve the cold chain management and monitoring for their targeted seafood commodities.

The implementation of the pilot trials in Member Countries was delayed due to a number issues related to custom procedures and import of the button-type data loggers and its readers for the purpose of temperature monitoring and the need to purchase separate license codes for the data loggers from the US manufacturer.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
Activity 4. Mid-term Evaluation and Progress Meeting	A 2-day Mid-term Evaluation and Progress Meeting will be held in Singapore at the end of the pilot trials to discuss and evaluate the results of the pilot trials and to do discuss and plan for the subsequent project activities, <i>i.e.</i> drafting of the seafood cold chain management guidelines and the End-of-Project Seminar. Two participants from each country will be invited to attend.	21,720
Activity 5. Preparation and publication of Guidelines on Cold Chain Management for Seafood	Each country will draft a section or sections of the Seafood Cold Chain Management guidelines. The various sections will be compiled and edited by MFRD which will then publish the guidelines for distribution to ASEAN-SEAFDEC Member Countries.	5,000
Activity 6. End-of-Project Seminar	An End-of-Project Seminar will be organized in Singapore or another Member Country to share and discuss the results of the project and the draft seafood cold chain management guidelines among the Member Countries. Two participants from each country will be invited to attend of which at least one should be from the private sector.	21,720

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 4. Mid-term Evaluation and Progress Meeting	<ol style="list-style-type: none"> 1. Conduct of a 2-day meeting in Singapore to discuss the progress, challenges and issues face by participating Member Countries in the cold chain pilot trials 2. Details such as the schedule and responsible countries for the drafting of the generic guidelines on cold chain management for seafood to be discussed and finalized.
Activity 5. Preparation and publication of Guidelines on Cold Chain Management for Seafood	<ol style="list-style-type: none"> 1. Draft of generic guidelines on cold chain management for seafood in the ASEAN region to be prepared by Member Countries. 2. Compilation and publication of the generic guidelines on cold chain management for seafood in the ASEAN region
Activity 6. End-of-Project Seminar	<ol style="list-style-type: none"> 1. Conduct of a 2-day seminar in Singapore or another Member Country. 2. Draft of generic guidelines on cold chain management for seafood in the ASEAN region to be discussed and finalized for publication. 3. The results and data of the cold chain pilot trials and seafood cold chain management to be discussed and shared among the Member Countries.

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 4. Mid-term Evaluation and Progress Meeting												
Activity 5. Preparation and publication of Guidelines on Cold Chain Management for Seafood												
Activity 6. End-of-Project Seminar												

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

		Project id: 2015030101	
Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Reinforcement and Optimization of Fish Health Management and the Effective Dissemination in the Southeast Asian Region		
Program Thrust:	II	Total Duration:	2015 - 2019
Lead Department:	AQD	Lead Country:	Philippines
Donor/Sponsor:	JTF-6	Total Donor Budget:	USD 362,756
Project Partner:	None	Budget for 2016:	USD 67,000
Project Leader:	Dr. Chihaya Nakayasu, AQD DC	Involved Country:	SEAFDEC Member Countries

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

This Project titled “Reinforcement and Optimization of Fish Health Management and the Effective Dissemination” was proposed to:

1. **Develop and accelerate rapid and effective fish and shrimp health management**
Preventive management strategies will be established to maintain the disease-free status for cultured stocks. Technology for early detection of these devastating viruses will be developed using optimized practical molecular diagnostic tools.
2. **Enhance efficacy of vaccine treatment in tropical cultured species**
Vaccines for the viruses, VNN (viral nervous necrosis) and WSSV (white spot syndrome virus) have been developed. However, the efficacies of these treatments need further improvement. Technology of oral delivery of vaccine will be developed for the practical use in aquafarmers using carriers possessing immunomodulatory to enhance the overall immunogenicity of the vaccine.
3. **Establish protective measures against persistent and emerging parasitic diseases of tropical fish**
Avoidance of persistent and emerging parasitic diseases is of prime importance to secure sustainable production of food fish in the Southeast Asian Region. To avoid economic losses due to pressing problems attributed to parasitic infections in cultured fish, novel and practical prevention and control strategies will be established. Additionally, the species diversity of emerging parasites including their morphological characteristics and life cycle will be thoroughly investigated.
4. **Identify risk factors and develop protective measures against Early Mortality Syndrome (EMS)**
Based on the etiological agents together with identification of risk and protective factors, the protective measures will be developed against EMS. Guidelines to protect shrimp from EMS will be established.
5. **Extend & demonstrate technology to practitioners, officers, etc. of Member Countries**
Training programs will be implemented on specific topics based on the request from Member Countries, which necessitate the information dissemination on fish health management. In the first year, 2015, the 2-3 day course about EMS will be commenced in Myanmar.

2. Background and Justification

The Aquaculture Department of the Southeast Asian Fisheries Development Center (SEAFDEC/AQD) initiated the Fish Disease Projects funded by the Government of Japan in response to numerous requests from various sectors for intensified research on fish health-related problems arising in the Southeast Asian

region. Phase I (2000-2004) of the said projects focused on technologies to control diseases through timely and accurate recognition, sound diagnostic capabilities, and control measures for various diseases. Phase II (2005-2009) focused on disease surveillance activities based on the results of the earlier program. Thereafter, the importance of accelerating the delivery of information awareness among aquafarmers and the establishment of disease prevention methods emerged after reviewing the outcomes of the previous two project phases. To attain the above targets, Phase III (2010-2014) with the main topic “Accelerating awareness and capacity building in Southeast Asia” has focused on the greater dissemination of knowledge relevant to fish health management, especially to the SEAFDEC Member Countries whose capacities still need to be developed and improved. At the same time, innovative researches and technology development have been also implemented.

An integrated fish-health-care system expected to be established through the Phase III project aimed to ensure a holistic approach toward “healthy and wholesome” aquaculture practices enabling a stable supply of safe aquaculture products. The concept of the holistic approach was one of the six themes under Sustainable Aquaculture during the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium: “Fish for the People” that was held in Bangkok in November 2001, and later in June 2011.

In practice, irrespective of the correct direction of the approach; however, there are still high needs for information dissemination and technology transfer in the Member Countries, especially in lesser developing countries in terms of fish health management. In addition, serious issues relevant to the fish health management to be overcome have been often emerging, battering and disconcerting aqua farmers as shown in emerging diseases like Early Mortality Syndrome (EMS) hindering the wholesome development of aquaculture in our region. Realizing that the global market has become more stringent for exporting countries like Southeast Asian countries, it is highly recommended to effectively disseminate the useful information such as precaution of potential diseases outbreak and recommendation of appropriate fish health management to local government unit officers, aquafarmers, traders etc. promptly and appropriately. Urging better understanding on the risks, impacts and management problems related to diseases is very important because health management practices significantly affect product quality as well as quantity, and thus link with the economic stability for aquafarmers and fisheries community development.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1: To develop and accelerate rapid and effective fish and shrimp health management	Outcome 1: Development and acceleration of rapid and effective fish and shrimp health management.	Output 1: Establishment of the early and effective intervention strategies through strict monitoring of the health status on cultured shrimp and fish by the farmers.	Activity 1: Development and acceleration of rapid and effective fish and shrimp health management <ul style="list-style-type: none"> - Determination of threshold infection levels for WSSV, AHPND and VNN at different age/weight ranges - Development of optimized q-PCR protocols for the detection of AHPND
Objective 2: To enhance efficacy of vaccine treatment in tropical cultured species	Outcome 2: Enhancement of efficacy of vaccine treatment in tropical cultured species.	Output 2: Development of the practical method of delivering vaccine to fish with increased efficacy thereby preventing unwarranted outbreaks of VNN in hatcheries and	Activity 2: Enhancement of efficacy of vaccine treatment in tropical cultured species <ul style="list-style-type: none"> - Examination of the field efficacy of the formalin-inactivated NNV vaccine in high value marine fishes (groupers, sea bass, pompano [depending on availability]) in areas, <i>i.e.</i> locally and in SE Asian countries (through collaboration with private fish farmers), where there have been serious cases or outbreaks of VNN.

Objective	Outcomes	Outputs	Activities
		grow-out culture systems Development of the method of delivering vaccine to shrimp with increased efficacy and prevention of white spot disease by interfering with its replication in the host	<ul style="list-style-type: none"> - Evaluation of the efficacy of RNAi in protecting shrimp against WSSV infection - Development of delivery scheme using a combination of the antiviral treatments - Development of low-cost delivery method for the antiviral treatments: tank studies - Field Efficacy Evaluation of the combined antiviral treatment
Objective 3: To establish protective measures against persistent and emerging parasitic diseases of tropical fish	Outcome 3: Establishment of protective measures against zoonotic diseases of fish.	Output 3: Establishment of practical and efficient protocol for the prevention and control of persistent and emerging fish parasites	Activity 3: Establishment of protective measures against persistent and emerging parasitic diseases of tropical fish <ul style="list-style-type: none"> - Development of practical strategies that could be adopted by farmers to address the pressing problem on mass mortalities of net-caged and pond reared fishes attributed to persistent and emerging fish parasites
Objective 4: To identify risk factors and develop protective measures against Early Mortality Syndrome (EMS)/Acute Hepatopancreatic Necrotic Disease (AHPND)	Outcome 4: Development of protective measures against emerging diseases.	Output 4: Establishment of practical and effective methods for the prevention and control of EMS	Activity 4: Epidemiology of the Early Mortality Syndrome (EMS) <ul style="list-style-type: none"> - Development of the protective measures against EMS, based on the etiological agents together with identification of risk and protective factors. - Establishment of guidelines to protect shrimp from EMS.
Objective 5: To extend & demonstrate technology to practitioners, officers, etc. of Member Countries	Outcome5: Technology extension and demonstration to practitioners, officers, etc. of Member Countries through training courses.	Output5: Effective and functional development of fish health management and guarantee for the sustainable development of aquafood production together with the poverty alleviation in Southeast Asian countries.	Activity 5: Technology extension and demonstration <ul style="list-style-type: none"> - Implementation of training programs on specific topics based on the request from Member Countries, which necessitate the information dissemination on fish health management.

3.2 Overall Scope/Description of Project

Activity	Description
Activity 1: Development and acceleration of rapid and effective fish and shrimp health management	Viral and bacterial diseases have caused major constraints in marine finfish culture and shrimp farming in most Asian countries and in the world. With the occurrence of devastating fish viral diseases like Viral Nervous Necrosis (VNN) and Iridovirus in marine finfish, the establishment of preventive management strategies to maintain the disease-free status of fish stocks should be done. Likewise, the continued occurrence of White Spot Syndrome Virus (WSSV), Infectious Hypodermal Hematopoietic Necrosis

Activity	Description
	<p>Virus (IHHNV), Monodon baculovirus (MBV) and the emergence of Early Mortality Syndrome (EMS) necessitate the establishment of domesticated shrimp stocks that are free of these viral and bacterial pathogens.</p> <p>Early detection of these devastating pathogens is the most efficient response to be able to implement immediate and appropriate interventions for the control of the spread of infection. Prompt diagnosis will give fish and shrimp farmers better health management of their stocks which will in turn minimize the losses due to diseases. Molecular-based techniques such as the use of polymerase chain reaction (PCR), quantitative polymerase chain reaction (q-PCR) and loop mediated isothermal amplification (LAMP)-based detection methods will be considered. Development and optimization of conventional and quantitative polymerase chain reaction-based detection methods will enable farmers to strictly monitor health status so that early and effective intervention strategies can be implemented. Adoption and development of LAMP offers a cheaper, more rapid and convenient detection method for existing and emerging shrimp and fish pathogens. These developed and optimized practical molecular diagnostic tools will be primarily adopted in Fish Health Diagnostic Laboratories. (Locations: Philippines and other Member Countries concerned)</p>
<p>Activity 2: Enhancement of efficacy of vaccine treatment in tropical cultured species</p>	<p>Sub-activity 2.1: Enhancement of vaccine efficacy for the prevention of viral nervous necrosis in high value marine fish</p> <p>The objective of the study is to develop and adopt methods that would enhance the efficacy of the present NNV vaccines through the use of immunoadjuvants and other substances that promote the activation of antiviral responses in marine fish. Methods for vaccine production for NNV will be adopted from earlier (JTF5) studies. The efficacy of vaccine containing the immunoadjuvant(s) will be tested in fish through injection or via feed encapsulation and delivered orally through feeding. Fish will be experimentally challenged with NNV after booster vaccination, as established previously. Efficacy of the vaccines will be evaluated based on relative percent survival (RPS). The expected output from the study is a practical method of delivering vaccine to fish with increased efficacy thereby preventing unwarranted outbreaks of VNN in hatcheries and grow-out culture systems. (Location: Philippines and other Member Countries concerned)</p> <p>Sub-activity 2.2: Application of adjuvants, carriers and RNAi technology to enhance the antiviral immune response of shrimp to WSSV</p> <p>The objective of the study is to develop and adopt methods to enhance the efficacy of present vaccines for shrimp and other antiviral approaches such as RNAi. Similar to above, methods for vaccine production for WSSV will be adopted from JTF5 studies. The delivery vehicle will be based on the results of the previous vaccination study in shrimp. In addition, recent trends utilizing RNAi as an antiviral strategy in shrimp culture will be adopted. After the shrimp have been subjected to these antiviral treatments, the shrimp will be experimentally challenged based on established procedures. Efficacy of the vaccines/RNAi treatment will be evaluated based on RPS. The expected output from the study is a method of delivering vaccine to shrimp with increased efficacy and prevention of white spot disease by interfering with its replication in the host. (Location: Philippines and other Member Countries concerned)</p>
<p>Activity 3: Establishment of protective measures against persistent and emerging parasitic diseases of tropical fish</p>	<p>The primary goal of this study is to develop practical strategies that could be adopted by farmers to address the pressing problem on mass mortalities of net-caged and pond reared fishes attributed to persistent and emerging fish parasites. The efficacy of new anti-parasitic agents in consonance with good aquaculture practices will be examined. In addition, the species</p>

Activity	Description
	diversity, morphology and life cycle, and epidemiology of emerging parasites in both marine and freshwater fishes will be investigated. Once pertinent data are generated, prevention and control measures against these parasites could be instituted.
Activity 4: Epidemiology of the Early Mortality Syndrome (EMS) /Acute Hepatopancreatic Necrotic Disease (AHPND)	Early Mortality Syndrome (EMS) otherwise known as Acute Hepatopancreatic Necrosis Syndrome (AHPNS) is an emerging disease affecting most Southeast Asian Countries whose putative disease-causing agent has been confirmed recently to be <i>Vibrio parahaemolyticus</i> . This study will try to develop protective measures based on the etiological agents together with identification of risk factors and protective factors. Visit to farms with (EMS/AHPNS) outbreaks (Thailand, Viet Nam, and Indonesia) will be undertaken to collect samples and other farm data. Samples of EMS/AHPNS –“infected” shrimp will be analyzed using histopathological techniques. Measures to exclude the pathogen from the farm, good management practices, good nutrition, and proper handling of the fish to prevent unnecessary stress to the animals will be formulated. From these broad measures, specific protocols to prevent the outbreak of this disease will be developed in cooperation with farmers and hatchery operators. Expected output of the study will be specific recommendations and guidelines to protect shrimp from EMS/AHPNS. (Location: Member Countries concerned)
Activity 5: Technology extension and demonstration	To make the fish health management effective and functional and to guarantee the sustainable development of aqua food production together with the poverty alleviation in our region, the efforts to extend and demonstrate the technologies obtained in this project to Member Countries are very significant. Not only the knowledge and technologies are delivered but a follow-up survey is also implemented to facilitate the dissemination so that information will effectively reach to aqua-farmers, fish health managers, LGU officers, etc. (Location: Member Countries concerned)
Activity 6: Publication	Manuals, posters, pamphlets and flyers describing disease prevention methods will be published and distributed.
Activity 7: Annual progress meeting and international workshop	<p>Sub-activity 7.1: Annual progress meeting</p> <p>Annual meeting organized by SEAFDEC/AQD is held to review the project achievement. Evaluators will be invited to join the meeting to review/evaluate the project achievements.</p> <p>Sub-activity 7.2: International workshop</p> <p>The workshop, not only receive participants from Member Countries, but also invite expert scientists as key note speakers to facilitate to spread and exchange brand-new information on fish health management between SEAFDEC and various institutions.</p>
Activity 8: Coordination by the project leader	The project leader coordinates and encourages the research, training and dissemination, and also facilitate information exchange not only between activities but also among Member Countries.

3.3 Activity, Sub-activity and Proposed Budget for 2015-2019

(Unit: USD)

Activity	Sub-Activity	Y1 2015	Y2 2016	Y3 2017	Y4 2018	Y5 2019
Activity 1: Development and acceleration of rapid and effective fish and shrimp health management		11,000	8,800	8,800	8,800	8,800

Activity	Sub-Activity	Y1 2015	Y2 2016	Y3 2017	Y4 2018	Y5 2019
Activity 2: Enhancement of efficacy of vaccine treatment in tropical cultured species	Sub-activity 2.1: Enhancement of vaccine efficacy for the prevention of viral nervous necrosis in high value marine fish	11,000	8,800	8,800	8,800	8,800
	Sub-activity 2.2: Application of adjuvants, carriers and RNAi technology to enhance the antiviral immune response of shrimp to WSSV	11,000	8,800	8,800	8,800	8,800
Activity 3: Establishment of protective measures against persistent and emerging parasitic diseases of tropical fish		11,000	8,800	8,800	8,800	8,800
Activity 4: Epidemiology of the Early Mortality Syndrome (EMS) /Acute Hepatopancreatic Necrotic Disease (AHPND)		11,000	8,800	8,800	8,800	8,800
Activity 5: Technology extension and demonstration		15,000	14,000	14,000	14,000	14,000
Activity 6: Publication						5,000
Activity 7: Annual progress meeting and international workshop	Sub-activity 7.1: Annual progress meeting	5,000	4,000	4,000	4,000	4,000
	Sub-activity 7.2 : International workshop					10,000
Activity 8: Coordination by the project leader		6,438	4,159	5,000	5,000	4,159
	Sub-Total Budget	81,438	66,159	67,000	67,000	81,159

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the Present Year

1) Preliminary run of q-PCR was conducted and the standard curve was determined for verifying and correlating the threshold infection levels, 2) Examination of the field efficacy of the formalin-inactivated NNV vaccine previously developed in JTF5, 3) *In vivo* evaluation of the dsRNA efficacy in protecting shrimp against WSSV, 4) Preliminary acute toxicity bioassays to determine the median lethal concentration (LC50) of garlic extract to grouper, 5) Identification of factors affecting the efficiency of

the greenwater system (siganid) against EMS/AHPND bacteria, 6) Assessment of training needs for capacity building of SEAFDEC Member Countries.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1. Development and acceleration of rapid and effective fish and shrimp health management					
Activity 2. Enhancement of efficacy of vaccine treatment in tropical cultured species					
Sub-activity 2.1 Enhancement of vaccine efficacy for the prevention of viral nervous necrosis in high value marine fish					
Sub-activity 2.2 Application of adjuvants, carriers and RNAi technology to enhance the antiviral immune response of shrimp to WSSV					
Activity 3. Establishment of protective measures against persistent and emerging parasitic diseases of tropical fish					
Activity 4. Epidemiology of the Early Mortality Syndrome (EMS)/ Acute Hepatopancreatic Necrotic Disease (AHPND)					
Activity 5. Technology extension and demonstration	II. Training (Not applicable at the moment)				14,000

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 1. Development and acceleration of rapid and effective fish and shrimp health management	Determination of threshold infection levels for WSSV, AHPND and VNN at different age/weight ranges	A preliminary experiment was done to determine the infection threshold level. Healthy shrimps were fed with WSSV positive shrimp tissue at different feeding rate. Dead shrimps were collected for PCR analysis. Preliminary run of q-PCR was conducted and the standard curve was determined for verifying and correlating the threshold infection levels.
Activity 2. Enhancement of efficacy of vaccine treatment in tropical cultured species		
Sub-activity 2.1 Enhancement of vaccine efficacy for the prevention of viral nervous necrosis in high value marine fish	Evaluation for the Field efficacy of formalin-inactivated NNV vaccine previously developed in GOJ-TF5	The Philippine strain of NNV (OSGBF1E) with a pre-inactivation titer of 10^9 TCID ₅₀ / ml was used in the vaccination experiment. There was no significant difference in growth between control (non-vaccinated) and vaccinated group on Day 120 of the experiment. Blood samples were collected from each group for determination of the NNV-neutralizing antibody titers in the sera of both vaccinated and unvaccinated fish.

Planned activity	Expected outcome/output	Achievements
Sub-activity 2.2 Application of adjuvants, carriers and RNAi technology to enhance the antiviral immune response of shrimp to WSSV	To evaluate the efficacy of dsRNA treatments in protecting shrimp against WSSV	dsRNA was produced using a low-cost <i>in vivo</i> bacterially expressed dsRNA production method. The dsRNA efficacy was tested <i>in vivo</i> . Results indicate an initial protection from WSSV infection until the 5 days post challenge. However, all shrimp eventually reached 100% mortality. Several experiments are planned to address the issues.
Activity 3. Establishment of protective measures against persistent and emerging parasitic diseases of tropical fish	To compare the haematological parameters in healthy and monogenean infected to develop index for fish health monitoring. To evaluate the efficacy of garlic extract applied as a therapeutic immersion treatment for monogenean in grouper.	Collection and analysis of blood parameters of healthy and monogenean infected grouper, <i>E. coioides</i> are ongoing. Preliminary acute toxicity bioassays to determine the 96 h LC50 value of garlic extract were carried out in static systems. The results showed that the median lethal concentration (LC50) of garlic extract to grouper for 24, 48, 72 and 96 h of exposure are 6.24, 5.94, 5.15 and 3.63 ml/L respectively.
Activity 4 Epidemiology of the Early Mortality Syndrome (EMS)/ Acute Hepatopancreatic Necrotic Disease (AHPND)	To investigate efficacy of siganid against AHPND. To investigate factors affecting the efficiency of the greenwater system (siganid) against AHPND.	Preliminary studies were done to determine efficacy of siganid against AHPND using <i>P. monodon</i> DOC 150. Mortalities observed in all treatments including the control were not significantly different ($P > 0.05$). Older <i>P. monodon</i> , \geq DOC 130, may not be susceptible to VP_{AHPND} . Bacterial isolation was done on the mucus and feces of siganid. All 6 isolated bacteria and the mucus per se did not have antimicrobial activity against VP_{AHPND} . However, antimicrobial activity was observed in the feces.
Activity 5. Technology extension and demonstration	Assessment of training needs for capacity building of SEAFDEC Member Countries	A follow-up training course on bacteriology (isolation, characterization, and bioassay) has been planned to be conducted in October 2016. The training will be participated by fish health officers and faculty & graduate students of Myanmar University. As part of the guided research, a proposal submitted by the fish health staff will be reviewed and submitted to the Department of Fisheries, Myanmar for possible funding. A specialized training course and guided research will be conducted in Cambodia during the last quarter of 2016.

4. List of Completed Publications and Others

List of completed publications for the Year 2016	Type of media	Attached e-file
Nil	-	-

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/ Views from Participants
Activity 1 Development and acceleration of rapid and effective fish and shrimp health management	
Activity 2 Enhancement of efficacy of vaccine treatment in tropical cultured species	
Sub-activity 2.1 Enhancement of vaccine efficacy for the prevention of viral nervous necrosis in high value marine fish	
Sub-activity 2.2 Application of adjuvants, carriers and RNAi technology to enhance the antiviral immune response of shrimp to WSSV	
Activity 3 Establishment of protective measures against persistent and emerging parasitic diseases of tropical fish	
Activity 4 Epidemiology of the Early Mortality Syndrome (EMS)/ Acute Hepatopancreatic Necrotic Disease (AHPND)	
Activity 5 Technology extension and demonstration	Not applicable at the moment; to be conducted in December 2016

6. Major Impacts/Issues

Implementation of project activities and sub-activities was delayed due to delayed submission of complete proposals to SEAFDEC/AQD in the first year of JTF6.

Research on diagnosis for Acute Hepatopancreatic Necrotic Disease (AHPND) has been conducted in Japan; hence, the plan for some project activities may be revised slightly.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
Activity 1. Development and acceleration of rapid and effective fish and shrimp health management	Development and optimization of conventional and quantitative polymerase chain reaction-based detection method	8,800
Activity 2. Enhancement of efficacy of vaccine treatment in tropical cultured species		
Sub-activity 2.1 Enhancement of vaccine efficacy for the prevention of viral nervous necrosis in high value marine fish	Field trial of the formalin-inactivated NNV vaccine in pompano reared in floating net cages will be repeated in 2017 in Igang Marine Station. Field trial of the formalin-inactivated NNV vaccine in other pond-reared marine fish spp. (e.g. groupers, sea bass) will be carried out in Dumangas Brackish Water Station. The formalin-inactivated NNV vaccine with immunoadjuvant will be	8,800

Proposed Activity	Description of Proposed Activity	Proposed Budget
	developed and field tested.	
Sub-activity 2.2 Application of adjuvants, carriers and RNAi technology to enhance the antiviral immune response of shrimp to WSSV	The efficacy of injected VP28 dsRNA was determined in 2016. In 2017, methods to deliver VP28 dsRNA and VP28 vaccine such as use of microparticles will be developed. Oral delivery of feed containing microparticle-entrapped dsRNA and vaccine, or antiviral-containing inactivated bacteria will be evaluated in tank trials.	8,800
Activity 3. Establishment of protective measures against persistent and emerging parasitic diseases of tropical fish	Efficacy of orally administered garlic extract (<i>Allium sativum</i>) against <i>Pseudorhabdosynochus lantauensis</i> , gill monogenean in orange-spotted grouper (<i>Epinephelus coioides</i>) different levels of fresh garlic extracts will be incorporated in grouper diet to evaluate their effects on parasite percentage efficacy, mean intensity and hematological parameters in monogenean- infected and non- infected groupers.	8,800
Activity 4. Epidemiology of the Early Mortality Syndrome (EMS)/ Acute Hepatopancreatic Necrotic Disease (AHPND)	Efficiency of seabass greenwater in simulated tank experiments will be elucidated. Factors affecting the efficiency of seabass will investigate. Preliminary experiments to determine the effect of green mussel on VP _{AHPND} will be done. (budget – 10,000) Protocols for the detection of VP _{AHPND} and EHP by qPCR will be established (budget- 12,000)	8,800
Activity 5. Technology extension and demonstration	Because significant mortalities of freshwater fish species due to parasitic and bacterial diseases have been a persistent problem in Lao PDR, a 5-day specialized training course on fish parasitology and bacteriology will be conducted in 2017. The training aims to enhance the knowledge and skills of the Fish Health personnel, hence, the training will focus on updates (theory) on parasitic and bacterial diseases of freshwater fish species. In addition, emphasis on hands-on exercises will be targeted as such will be necessary in the conduct of accurate disease diagnosis. A workshop on research proposal preparation will be also conducted.	14,000
Activity 6: Publication	Publication	
Activity 7		
Sub-activity 7.1:	Annual progress meeting	4,000
Sub-activity 7.2 :	International workshop	
Activity 8	Coordination by the project leader	5,000

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 1. Development and acceleration of rapid and effective fish and shrimp health management	<ol style="list-style-type: none"> 1. Determination of threshold infection levels for WSSV and AHPND at different age/weight ranges. <ol style="list-style-type: none"> 1.1 Artificial infection experiment 1.2 Determination of viral loads to determine infection levels 2. Production of Recombinant Protein for AHPND <ol style="list-style-type: none"> 2.1 Determination of the target sequence and the host 2.2 Perform codon-optimization based on host 2.3 Synthesis of the coding region and clone into chosen vector 2.4 Assessment of protein expression and optimization of expression conditions 2.5 Scale-up to express the protein 2.6 Protein purification and identification 2.7 Protein Characterization 2.8 Determination of differential level of production of Toxins A and B

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 2. Enhancement of efficacy of vaccine treatment in tropical cultured species	
Sub-activity 2.1 Enhancement of vaccine efficacy for the prevention of viral nervous necrosis in high value marine fish	The efficacy of the formalin-inactivated NNV vaccine, <i>i.e.</i> in terms of immunogenicity and conferment of protection, in pompano and other marine fish species such as sea bass and grouper elucidated in conjunction with the kinetics of NNV-neutralizing antibody titers in the sera of vaccinated and unvaccinated fish collected at scheduled intervals post- vaccination. The relative percent survival of the vaccinated and unvaccinated fish determined at the termination of the experiment. NNV titers in the brains and kidneys of surviving and dead fish in both vaccinated and unvaccinated fish examined. Formalin-inactivated NNV vaccine with immune-adjuvant developed and field tested.
Sub-activity 2.2 Application of adjuvants, carriers and RNAi technology to enhance the antiviral immune response of shrimp to WSSV	1. Low-cost delivery for application of dsRNA developed. 2. Method for feed-delivered combined antivirals (dsRNA and VP28) developed 3. Tank trials using low-cost delivery protocols conducted
Activity 3. Establishment of protective measures against persistent and emerging parasitic diseases of tropical fish	1. Infection experiments to determine conditions for susceptibility or resistance and disease transmission cycle. 2. Hematological profile of monogenean-infected and non-infected fish established. 3. Established protocols for the prevention of unwarrant
Activity 4. Epidemiology of the Early Mortality Syndrome (EMS)/ Acute Hepatopancreatic Necrotic Disease (AHPND)	Efficiency of seabass greenwater is elucidated. Identified factors affecting the efficiency of seabass against VP _{AHPND} . Preliminary data on the effect of green mussel on VP _{AHPND} . QPCR protocols for the detection of VP _{AHPND} and EHP by qPCR are established.
Activity 5. Technology extension and demonstration	Persistent parasitic and bacterial diseases affecting economically important fish species in Lao PDR correctly examined and identified by Fish Health personnel. Accurate diagnosis of the parasitic and bacterial disease problem correctly carried out using standard procedures by the Fish Health personnel. Practical and economically sound disease prevention and control strategies appropriate for the identified problem effectively implemented. Basic research on fish parasitology carried out by fish health personnel and research outputs published in refereed journals.

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1. Development and acceleration of rapid and effective fish and shrimp health management												
Activity 2. Enhancement of efficacy of vaccine treatment in tropical cultured species												
Sub-activity 2.1 Enhancement of vaccine efficacy for the prevention of viral nervous necrosis in high value marine fish												
Sub-activity 2.2 Application of adjuvants, carriers and RNAi technology to enhance the antiviral												

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
immune response of shrimp to WSSV												
Activity 3. Establishment of protective measures against persistent and emerging parasitic diseases of tropical fish												
Activity 4. Epidemiology of the Early Mortality Syndrome (EMS)/ Acute Hepatopancreatic Necrotic Disease (AHPND)												
Activity 5. Technology extension and demonstration												

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

		Project id: 0120130104	
Program Categories:	Programs under the ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title:	Strategies for Trawl Fisheries By-catch Management (REBYC-II CTI GCP/RAS/269/GFF)		
Program Thrust:	III	Total Duration:	4 years (2012 to 2016)
Lead Department:	TD	Lead Country:	Viet Nam
Donor/Sponsor:	GEF	Total Donor Budget:	USD 3,000,000
Project Partner:	FAO	Budget for 2016:	USD 178,379
Project Leader:	Secretary-General of SEAFDEC as a Steering Committee Members	Involved Country:	Indonesia, Papua New Guinea, Philippine, Thailand and Viet Nam

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

Building on the successes of the REBYC phase-I, during year 2002-2008, FAO/UNEP/GEF project “Reduction of Environmental Impact from Tropical Shrimp Trawling through the Introduction of By-catch Reduction Technologies and Change of Management (REBYC)”, it had a relatively strong focus on technology and the development of selective gear. While the Project Strategies for Trawl Fisheries By-catch Management (REBYC-II CTI) generated significant results, the experience showed that more was needed to successfully address the complex issues related to bycatch reduction. Gear modifications are important but they are not always the most appropriate tool or they may need to be combined with other management measures. This is particularly the case in multi-species trawl fisheries of the type found in Southeast Asia and the Pacific region where overall management is weak and bycatch is largely utilized and considered part of the total catch. Gear modification solutions also need supporting by appropriate legal and incentive frameworks to become effective. Moreover, the socioeconomic drivers behind bycatch and livelihoods and poverty context need to be understood and considered. While initially this holistic approach may be more costly and require more efforts, it is cost-effective in the longer-term because of the sustainability of the results.

2. Background and Justification

Building on the lessons and experiences from REBYC Phase I and following the “International Guidelines on Bycatch Management and Reduction of Discards”, the REBYC-II CTI project is contributing to the sustainable use of fisheries resources and healthier marine ecosystems in the Coral Triangle and Southeast Asia waters, by reducing bycatch, discards and the impact from trawl fisheries on the environment. The Project will run for four years, having become operational in November 2011, with activities commencing in April 2012.

The REBYC-II CTI Project is executed by the technical execution partner, The Southeast Asian Fisheries Development Center (SEAFDEC), based in Thailand, and the governments of the participating countries Indonesia, Papua New Guinea, Philippines, Thailand and Viet Nam, in partnership with national, regional and international organizations and the private sector. The Project includes participation from a wide range of stakeholders, comprising national and regional policy makers, fishing and fishmeal industry and NGOs. SEAFDEC hosts the Regional Facilitation Unit (RFU) at its Training Department in Samut Prakan, to which the FAO Project Regional Coordinator is attached. The RFU is responsible for overall technical and administrative support and for delivery of the regional outputs.

The project is structured around four interrelated components:

1. The Policy, legal and institutional frameworks component works towards the establishment of national or area specific trawl fisheries bycatch management plans and building institutional capacity for their implementation. The need for adequate legislation and regulations to support the implementation of improved management measures has been addressed.
2. The Resource management and fishing operations component is leading to the adoption of more selective fishing gear and fishing practices, and provides a basis for implementing the zoning of fishing areas and developing spatial-temporal closure management measures, as well as generating data on the number of vessels and making recommendations for fishing effort and capacity management. Results from this component are informing regional bycatch policy/strategy and the national and/or area specific trawl fisheries bycatch management plans.
3. The Information management and communication component includes bycatch data collection (at landing sites and onboard vessels), the mapping of fishing grounds, establishment of socio-economic monitoring procedures, and means for communicating bycatch data and information, including a project website and information, education and communication through IEC materials.
4. The Awareness and knowledge component seeks to raise awareness of and knowledge on, trawl fisheries bycatch management issues and how they relate to sustainability, and what measures can make trawl fishing more responsible. Under this component, private sector/fishers, policy makers, fisheries managers, officials, extension officers and NGOs attend training and workshops to enhance their knowledge of best management practices and responsible fisheries.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

Outcomes	Outputs	Activity	Key Performance Indicators
Trawl fishery policy and management reforms based on the APFIC Trawl Fisheries Guidelines and Ecosystem approach to fisheries management (EAFM)	Project management and planning and adopted national work plans for 2014-2015 and potential	Activity 1: Provision of technical and administrative support to the REBYC-II CTI partner countries.	1. Countries Project Country project progress reports 2. New Letter of Agreement (LoA) and Term of Agreement (ToA) 3. Consultant Term of Reference 4. BTO reports from field visits
	Strategies for the project implementation for the remaining project period.	Activity 2: Facilitation of the 4 th Project Steering Committee Meeting	Report on the 4 th Project Steering Committee Meeting
		Activity 3: Support to the organization of the Final Evaluation	Records of liaison between SEAFDEC RFU and FAO Final Evaluation team.
	Human resource capacity in the participating countries for the sustainable management of their coastal fisheries, including trawl fisheries.	Activity 4: Organization of the Regional Workshops 1. Trawl Fisheries Socioeconomic 2. Final Project Report 3. Project Lesson Learn workshop 4. Promotion on Ecosystem Approaches for Fisheries Management LEADs	1. Workshop materials and reports on 1.1. Practical Workshop on Ecosystem Approaches for Fisheries Management 1.2. Project Monitoring and Evaluation 1.3. Material of the EAFM LEADs 2. Letter of Agreement and Term of Agreement and Work plans for Year 2016

Outcomes	Outputs	Activity	Key Performance Indicators
		5. Regional meeting on Trawl Fisheries Management in Southeast Asia 6. EAFM LEADs Writeshop for Material Finalization	
		Activity 5: Training and capacity building on 1. Essential Ecosystem Approaches for Fisheries Management (EAFM) LEADs Consultation for Municipal Heads of Philippines 2. EAFM LEADs Consultation for Viet Nam 3. Socio economic surveys and trawl bycatch information collection.	Training Course materials Training course reports.
	Coordination among trawl fisheries stakeholder through awareness and knowledge building on trawl fisheries bycatch management and their related to sustainability in trawl fisheries	Activity 7: Engagement with Government, NGOs and private sector organizations on the Regional Southeast Asia Trawl Fisheries Roundtable Meeting	Minutes of roundtable meetings
		Activity 8: Maintenance the Project website and produce the communication materials.	Website operational

3.2 Overall Scope/Description of Project

Activity	Description
1. Provision of technical and administrative support to the REBYC-II CTI partner countries.	This will continue to be the core function of the RFU, and will involve coordination of agreed activities and the collation of outputs at the country level. The RFU will support the participating countries in the implementation of national activities through facilitating the exchange of experiences and the provision of advice to address technical as well as institutional issues. The lessons from the national level activities will be consolidated and packaged for Project use and for dissemination to third parties. Where necessary, SEAFDEC RFU staff will carry out visits to the various national project sites.
2. Convening six (6) Regional Workshops 1) Trawl Fisheries Socioeconomic 2) Final Project Report 3) Project Lesson Learn workshop 4) Promotion on Ecosystem Approaches for Fisheries Management LEADs 5) Regional meeting on	Regional Workshops (4) These will include; 1. Ecosystem Approach to Fisheries management will promote the EAFM being championed by FAO/BOBLME to key trainers and technical staff in SEAFDEC. Finalization on the material to promote EAFM for Leader Executives and Decision Makers (LEADs) will be finalized by relevant organization e.g. FAO, NOAA, SEAFDEC and IMA. 2. Trawl Fisheries Socioeconomic Workshop will explore the issue of fisheries economic in trawl fisheries of the participating countries. The workshop will update the study in each individual country with a view to developing recommendations. 3. Project will promote the achievement experience in each Participating Countries through the sharing of lessons learned during the implementation of the REBYC-II CTI project, with stakeholders interested in trawl fisheries in SE

Activity	Description
Trawl Fisheries Management in Southeast Asia 6) EAFM LEADs Writeshop for Material Finalization	Asia. The Development on a collaborative action plan for future support to trawl by-catch reduction and spatial and temporal coastal planning work will be explore during the Regional meeting on Trawl Fisheries Management in Southeast Asia.
3. Facilitation of the 4 th Project Steering Committee Meeting	The SEAFDEC RFU will work with partner organizations in the host country, to facilitate the Project Steering Committee (PSC) Meeting. The RFU will be responsible for all documentation relating to the event. This event may be combined with a regional workshop to save participant travel costs.
4. Support to the organisation of the Final Evaluation	SEAFDEC RFU will not be responsible for this event but will play an important supporting role, in terms of arranging logistics, etc. As with 4. above, this event may be combined with a regional workshop, (most likely to be the 2014-15 Work plan Workshop, to save participant travel costs
5. Maintenance of the Project website and development of communication materials	SEAFDEC will continue to develop and maintain the project website on which relevant information will be regularly published, including project documents, reports, tool kits/methodologies and news items. This will include some reorganisation of the site to streamline access to information on the site.
6. Capacity building to Participating Countries of Project REBYC-II CTI on; 1) EAFM LEADs Consultation for Municipal Heads of Philippines 2) EAFM LEADs Consultation for Viet Nam 3) Training for Port-In and Port-Out (PIPO) Officers of Thailand on Specific Detail of Fisheries Management	SEAFDEC will provide technical support to participating Countries of Project REBYC-II CTI. 1. Consultation meeting on EAFM LEADs. This consultation based on the material of EAFM for Leader Executives and Decision Makers that coordinating edit by relevant organization <i>e.g.</i> FAO, NOAA, SEAFDEC and IMA/UK. 2. Training for Port-In and Port-Out (PIPO) Officers of Thailand on Specific Detail of Fisheries Management will provide a through grounding in fishing technologies which will be benefit for less experience, junior fishing technologist fisheries extension officer and fishing operators. Trainees will be basically guided through the entire process of fishing technology, <i>i.e.</i> Status of marine fishery of Thailand, Classification of fishing gear, fishing gear design and construction, fishing operation. Emphasis will be placed on how participant understand on classification and fishing gear and its fundamental design and construction. The course will also address the introduction on Principle of Principle of Ecosystem Approach to Fisheries Management (EAFM)
7. Engagement with Government, NGOs and private sector organisation on the Regional Southeast Asia Trawl Fisheries Roundtable Meeting	Through participation in the fishmeal round table discussions and other public/private fora, SEAFDEC staff will promote the work of SEAFDEC and the REBYC-II CTI Project and actively look for opportunities to cooperate with government organisations, the private sector and NGOs. This could include technical and information support to Fishery Improvement Projects (FIP) and other certification schemes being implemented by other organisations.

3.3 Activity, Sub-activity and Proposed Budget for 2013-2017

(Unit: USD)

Activity	Sub-Activity	Y1 2013	Y2 2014	Y3 2015	Y4 2016	Y5 2017
Activity 1: Provision of technical and administrative support to the REBYC-II CTI partner countries.		13,700	20,700	38,000	23,000	
Activity 2: Convening Regional Workshops	1. Trawl Fisheries Socioeconomic 2. Final Project Report 3. Project Lesson Learn workshop	52,000*	77,000	60,000	66,495	

Activity	Sub-Activity	Y1 2013	Y2 2014	Y3 2015	Y4 2016	Y5 2017
	4. Promotion on Ecosystem Approaches for Fisheries Management LEADs 5. Regional meeting on Trawl Fisheries Management in Southeast Asia 6. EAFM LEADs Writeshop for Material Finalization					
Activity 3: Facilitation of the 4 th Project Steering Committee Meeting		17,500	13,000	16,000	16,000	
Activity 4: Support to the organisation of the Final Evaluation						
Activity 5 Maintenance of the Project website and development of communication materials		8,000	8,400	16,800	7,800	-
Activity 6 Capacity building to participating Countries of Project REBYC-II CTI	1. EAFM LEADs Consultation for Municipal Heads of Philippines 2. EAFM LEADs Consultation for Viet Nam 3. Training for Port-In and Port-Out (PIPO) Officers of Thailand on Specific Detail of Fisheries Management	37,000*	64,000		35,084	
Activity 7 Engagement with Government, NGOs and private sector organizations	Regional Southeast Asia Trawl Fisheries Roundtable Meeting				30,000	
	Sub-Total	168,200	190,600	131,800	178,379	

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the Present Year

Project has achievement to apply EAFM in trawl fisheries as well as strengthen on the interaction between trawling and other fishing activity with various stakeholder. Project also emphasized the socioeconomic in trawl fisheries as a major part of trawl fisheries management plan under the human wellbeing and governance component. To strengthen on ecological wellbeing, project supported Member Countries with the fishing gear experiment and zoning management. In addition the promotion, awareness building on trawl fisheries management issues and how they relate to sustainability, and what measures that are available to make fishing more responsible is an important part. Private sector/fishers, policy makers,

fisheries managers, officials, extension officers and NGOs has provide training and workshops to enhance their knowledge on best management practices and responsible trawl fisheries. As well as IEC material should be develop as a part of management

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity (1)	Type of activity	Number of Participants			Total Budget Spent (USD)
		MCs	SEAFDEC	Others	
Activity 1 Provision of technical and administrative support to the REBYC-II CTI partner countries	VI				66,495
Activity 2 Convening six (6) Regional Workshops					
1. Trawl Fisheries Socioeconomic	I	10	4	0	
2. Final Project Report	VI	10	2	4	
3. Project Lesson Learn workshop	IV	16	4	3	
4. Promotion on Ecosystem Approaches for Fisheries Management LEADs	IV	10	4	3	
5. Regional meeting on Trawl Fisheries Management in Southeast Asia	IV	16	6	4	
6. EAFM LEADs Writeshop for Material Finalization	IV	0	8	3	
Activity 3. Facilitation of the 4 th Project Steering Committee Meeting	VI	10	4	6	
Activity 4. Support to the organisation of the Final Evaluation	IV				
Activity 5. Maintenance of the Project website and development of communication materials	VI				7,800
Activity 6. Capacity building to participating Countries of Project REBYC-II CTI	II				
1. EAFM LEADs Consultation for Municipal Heads of Philippines	II	50	4	1	13,700
2. EAFM LEADs Consultation for Viet Nam	II	18	4	1	10,340
3. Training for Port-In and Port-Out (PIPO) Officers of Thailand on Specific Detail of Fisheries Management	II	40	5	0	11,078
Activity 7. Engagement with Government, NGOs and private sector organizations on the Regional Southeast Asia Trawl Fisheries Roundtable Meeting	IV	20	6	8	30,000

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 1. Provision of technical and administrative support to the REBYC-II CTI partner countries	Complete the support for Participating Countries	Member Courtiers completely carried out activities under the Project
Activity 2. Convening six (6) Regional Workshops	Report on the Trawl Fisheries Socio- economic, Lesson Learn workshop, material of EAFM LEAD, and Regional meeting on	<ul style="list-style-type: none"> - Information on the current national policy of trawl fisheries management including problem and future direction; - Case studies and good practices of trawl fisheries management in REBYC-II CTI

Planned activity	Expected outcome/output	Achievements
	Trawl Fisheries Management in Southeast Asia	Participating Countries; - Recommendations for trawl fisheries management in Southeast Asian; and - Summary future project(s) on developing sustainable trawl fisheries in South East Asia
Activity 3 Facilitation of the 4 th Project Steering Committee Meeting	Report of the 4 th Project Steering Committee Meeting	- Review and assess overall progress achieved during the life of the project; - Discuss actions taken by the Project in response to the 3 rd PSC meeting conclusions and recommendations; - Review and assess the current financial position of the Project and planned expenditure forecast; - Review and approve any final project activities proposed; and - Agree the arrangements for the Lessons Learned Workshop and The Final Project Evaluation
Activity 4. Support to the organization of the Final Evaluation	Final evaluation Report	Draft Final evaluation submitted to Lead Technical Officer at FAO Head-Quarter office at Rome, Italy
Activity 5. Maintenance of the Project website and development of communication materials	Project website and communication materials	Project website and communication materials
Activity 6. Capacity building to participating Countries of Project REBYC-II CTI	Introduce the EAFM and LEAD toolkit and to test the developed LEAD material and provide fishing technology as basic information for fisheries management	Fisheries staffs of Department of Fisheries Viet Nam and Executive and Decision maker for Samar Sea Fisheries Management Plan understood the concept of trawl fisheries management by using EAFM. PIPO staffs of Department of Fisheries Thailand obtain fishing technology knowledge as basic information for fisheries management of Thailand.
Activity 7. Engagement with Government, NGOs and private sector organizations on the Regional Southeast Asia Trawl Fisheries Roundtable Meeting	Sharing overall lessons learned from implementation of the REBYC-II CTI project to Private sector and Awareness building of Regional trawl fisheries management for the private sector	- Policy recommendations for trawl fisheries management in Southeast Asia; - Case studies and good practices of trawl fisheries management in REBYC-II CTI Participating Countries; and - Comments and recommendation from private sectors NGO and certified bodies in trawl fisheries management

4. List of Completed Publications and Others

List of completed publications for the Year 2016	Type of media	Attached e-file
1. EAFM Brochure	http://www.eafmlearn.org	
2. EAFM flyers (2 format)	http://www.eafmlearn.org	
3. EAFM 1 & 2 minute conversation scripts	http://www.eafmlearn.org	
4. Hot news EAFM	http://www.eafmlearn.org	
5. Selling points for EAFM	http://www.eafmlearn.org	
6. Conversations the What and Why of EAFM in simple English	http://www.eafmlearn.org	
7. Conversations EAFM FAQ	http://www.eafmlearn.org	
8. Animation Governance Frameworks	http://www.eafmlearn.org	
9. Animation Policy Trade-offs	http://www.eafmlearn.org	
10. EAFM Videos (3 Version)	http://www.eafmlearn.org	

List of completed publications for the Year 2016	Type of media	Attached e-file
11. EAFM visuals for posters	http://www.eafmlearn.org	
12. EAFM LEADs What & Why PowerPoint Presentation (2 Version)	http://www.eafmlearn.org	
13. EAFM LEADs High Level Consultations – 1-hour, 2-hour, half-day, 1-days Consultation Outline, Session plan, and Agenda	http://www.eafmlearn.org	
14. EAFM LEADs reference material	http://www.eafmlearn.org	
15. EAFM LEADs toolkit booklet	http://www.eafmlearn.org	
16. Key word in EAFM in local language of Bahasa, English, Laos, , Khmer, Tagalog, Thai, and Viet Nam	http://www.eafmlearn.org	
17. Report on Trawl Fisheries Socioeconomic	Hard copy	
18. Report on Lesson Learn workshop	Hard copy	
19. Report on the 4 th Project Steering Committee Meeting	Hard copy	
20. Regional Southeast Asia Trawl Fisheries Roundtable Meeting	Hard copy	

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/ Views from Participants
Activity 1. Provision of technical and administrative support to the REBYC-II CTI partner countries	Technical support to Participating Countries had been well support however they request FAO to improve faster financial process.
Activity 2. Convening six (6) Regional Workshops 1. Trawl Fisheries Socioeconomic 2. Final Project Report 3. Project Lesson Learn workshop 4. Promotion on Ecosystem Approaches for Fisheries Management LEADs 5. Regional meeting on Trawl Fisheries Management in Southeast Asia 6. EAFM LEADs Writeshop for Material Finalization	Participant from 5 Participating Countries improved their knowledge on the related topic of training and workshop. The promotion on EAFM LEADs has excellent result to improve material to sensitize Leaders Executives and Decision makers in fisheries. Participating Countries fully cooperate and willing to test the consultation package in their countries. So that after the improvement in September 2016, three (3) EAFM LEADs consultation had organized in Viet Nam (1) and Philippines (2). Participants satisfied on all consultations and request to the project provide the EAFM training course and EAFM LEADs in their countries under SEAFDEC supporting. The result of activities supports in formulating management plan of all Participating Countries of REBYC-II CTI. Philippine has already formulated Samar Sea Fisheries Management Plan (SSFMP).
Activity 6. Capacity building to participating Countries of Project REBYC-II CTI 1. EAFM LEADs Consultation for Municipal Heads of Philippines 2. EAFM LEADs Consultation for Viet Nam 3. Training for Port-In and Port-Out (PIPO) Officers of Thailand on Specific Detail of Fisheries Management	Viet Nam is another country where management plan has formulated entitled Trawl Fisheries Management Plan in Kien Giang province (PTFMP). Thailand has announced on the new regulation on codend mesh size, 4 cm. This regulation is consistent with the project result on fishing gear modification and area base management by using co-management approach in Trat province that the approach is part of EAFM. With the promotion on EAFM in trawl fisheries, Papua New Guinea is now improving Gulf of Papua Prawn Fisheries Management Plan by using EAFM Principle. Study on socioeconomic in of Papua New Guinea fisheries will apply to the plan in order to fulfill the human wellbeing part of Gulf of Papua Prawn Fisheries Management Plan.

6. Major Impacts/Issues

Since year 2002, SEAFDEC in coordination with FAO and Member Countries has collaborative implemented the Project Reduction of Environmental Impact from Tropical Shrimp Trawling through the Introduction of Bycatch Reduction Technologies and Change of Management or REBYC. Project aimed to 1) promote reduction of capture of immature/ juvenile fishes of commercial species; 2) reduce the harvest of other unwanted bycatch fish and non-fish species *e.g.* turtle, shark, marine mammal, and 3) To improve national capacities for the management of the shrimp-trawler fisheries and increased cooperation

among countries at the regional and global levels. Even though the project has major output as selective devices *e.g.* Turtle Excluded Device TED, juvenile and trash Excluded Device as well as awareness building on responsible trawl fisheries, the acceptance by trawl fisher in Southeast Asia has limited regarding to incentive of bycatch as part of income for trawl fishers. Issues of trawl fisheries in Southeast Asia region includes multi-species fisheries resources found, various types, scale and design of trawlers has been modified by local trawl fishers. One of the significant issues to made the management less effective is bycatch from trawl fishing is largely utilized and considered part of the total catch.

From these lesson learn, fishing gear and practices modification solutions are not fully effective. It needs to be supported by appropriate legal and incentive frameworks. Concept of trawl fisheries management should be developed by holistic approach. Establishment fisheries management plans and building institutional capacity for the implementation management plan should be top priority. Adequate legislation and regulations to support the implementation of improved management measures with good governance manner should be strengthened. Trawl fisheries management policy/strategy should be developed in consistent with the international instruments *e.g.* the FAO Code of Conduct for Responsible Fisheries, IPOA IUU, the Ecosystem Approach to Fisheries (EAF), etc.

To apply EAF in Trawl fisheries management, principles of Ecosystem Approach to Fisheries Management (EAFM) need to focus in context of trawl fisheries and interaction with other fishing activity and other stakeholder. Stakeholder engagement has been significant hindrance to indentify and prioritize in issues under the human wellbeing, ecological wellbeing, and governance component. Issues in trawl fisheries need to consider in holistic view, rather than focus on fisheries resource only. Management actions need to develop for solving the identified issues. It may concern on gear related, area-based management, and data collection on number of vessels, fishing effort and capacity and incentive packages to promote more responsible trawl fishing. Integration of these management actions/tools will results a good regional bycatch policy/strategy and the national and/or area specific trawl fisheries by-catch management plans.

Promotion, awareness building on trawl fisheries management issues and how they relate to sustainability, and what measures that are available to make fishing more responsible is an important part. Private sector/fishers, policy makers, fisheries managers, officials, extension officers and NGOs should be offered training and workshops to enhance their knowledge on best management practices and responsible trawl fisheries. As well as IEC material should be develop as a part of management

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

			Project id: 0120130105
Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Promotion of Countermeasures to Reduce IUU Fishing Activities		
Program Thrust:	III	Total Duration:	2013 - 2019
Lead Department:	TD	Lead Country:	Malaysia
Donor/Sponsor:	JTF-6	Total Donor Budget:	USD 241,474
Project Partner:	None	Budget for 2017:	USD 31,458
Project Leader:	ITRDH/TD	Involved Country:	SEAFDEC Member Countries

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

In every country in the Southeast Asian Region, efforts are now focusing on the promotion of sustainable fisheries management and countermeasures against IUU fishing. The recognition on the importance of fishing management schemes such as fishing license, boats registration and etc. as effective measures to promote sustainable use and the long-term conservation of marine living resources has been increasing in the region. Following the direction of Resolution and Plan of Action, the SEAFDEC Training Department (TD) has been implementing the project titled “Promotion of Countermeasures to reduce IUU Fishing”, to enhance collaboration of SEAFDEC Member Countries in reducing IUU fishing in the region. This project consists of: 1) Promotion and development of the regional fishing vessels record (RFVR); 2) Strengthening of Port State Measures and other surveillance measures in the region; and 3) Promotion of Information Material.

2. Background and Justification

Illegal, Unreported and Unregulated (IUU) fishing can take place in all capture fisheries. Efforts to conserve and manage fish stocks are undermined by IUU fishing, which can lead to the collapse of fisheries or can seriously impair efforts to rebuild fish stocks that have already been depleted. This may result in the loss of both short- and long-term social and economic opportunities and could have negative impacts on food security.

The Plan of Action on Sustainable Fisheries for Food Security Towards 2020 which was adopted in ASEAN-SEAFDEC Conference Fish for the People 2020 “Adaptation to a Changing Environment” in Bangkok, Thailand during 13-17 June 2011 emphasizes on: 1) strengthening regional and national policy and legislation to implement measures and activities to combat IUU fishing, including the development and implementation of national plans of action to combat IUU fishing, and promoting the awareness and understanding of international and regional instruments and agreements through information dissemination campaigns, 2) establishing and strengthening regional and sub-regional coordination on fisheries management and efforts to combat IUU fishing including the development of regional/sub-regional Monitoring, Control and Surveillance (MCS) networks, 3) facilitating consultative dialogue among fisheries legal officers to share, at the sub-regional/regional level, perspectives of the respective legal and regulatory framework in terms of developing MCS-networks and to take action to combat IUU fishing, and 4) building up capacity among Member Countries, including functions for regional and sub-regional cooperation, to effectively meet the requirements of port state measures and flag state responsibilities.

Following the direction of Resolution and Plan of Action, the SEAFDEC Training Department (TD) has been implementing the project titled “Promotion of Countermeasures to reduce IUU Fishing” in

coordination and cooperation with SEAFDEC Member Countries to reduce IUU fishing activities in the region.

This project was originally planned to be implemented from 2013 to 2017. However, in the SEAFDEC activities in the project since 2013, including the regional fishing vessels record (RFVR) and Port State Measures, it has become clearer that an extension of the project period will provide more benefits to SEAFDEC Member Countries in terms of combating IUU, including by updating RFVR Database and strengthening capacity building on PSM implementation. Moreover, these activities were raised up in the high level meeting such as SEAFDEC Council Meeting, FCG-ASSP, SOM, and ASEAN Meeting, where it was agreed that all activities are important as tools to reduce IUU fishing. Thus it has been proposed in this project document to extend the period by 2 years, until 2019.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1: Improving Counter measures to reduce IUU fishing	Outcome 1: Coordination, cooperation and application of countermeasure to reduce IUU fishing activities by Member Countries	Output 1: Regional Fishing Vessel Record database in the region	Activity 1: Promotion and development of the regional fishing vessels record (RFVR)
Objective 2: Strengthening awareness building and common understanding on counter measures to reduce IUU fishing		Output 2: Countries awareness building and common understanding of Port State Measure activities as a tool to reduce IUU fishing	Activity 2: Strengthening of Port State Measures and other surveillance measures in the region Activity 3: Production of information materials

3.2 Overall Scope/Description of Project

Activity	Description
1. Promotion of Regional Fishing Vessels Record (RFVR)	<p><i>Sub-activity 1.1: Development and management of RFVR Database</i> Follow up the approval of the Regional Fishing Vessels Record (RFVR) activity by the SEAFDEC Council at its 45th Meeting in 2013. The database of regional vessels record of 24 meters in length and over has been designed and developed in collaboration with SEAFDEC Member Countries. The database will use as tool to combat IUU fishing in the region.</p> <p><i>Sub-activity 1.2: Technical workshop on RFVR database development and management</i> The technical workshop will be organized. The selected/ nominated person who are involved in/and responsible for this activity. The selected relevant Member Country will be invited to participate in the workshop/ TD staffs who conduct in this database will visit each country to discuss and consult for development and management on database of RFVR of 24 meters in length and over.</p> <p><i>Sub-activity 1.3: Technical assistant on using of RFVR Database</i> The technical assistance on using of RFVR database and existing mechanism in SEAFDEC Member Countries will be conducted. The output will support and strengthen system of fishing license and vessel registration for Member Countries to reduce IUU fishing.</p>
2. Strengthening of Port State Measures and other surveillance	<p><i>Sub-activity 2.1: Providing technical assistant on PSMs facilities and existing mechanism in SEAFDEC Member Countries</i> The technical assistance on PSMs facilities and existing mechanism in SEAFDEC</p>

Activity	Description
measures in the region	Member Countries will be conducted. The output information will be used to prepare and organize on-site training and workshop on strengthen of PSMs and other surveillance measures to reduce IUU fishing in collaboration with SEAFDEC Member Countries. <i>Sub-activity 2.2: Facilitating implementation of PSM in the Southeast Asian Region</i> In this activity, regional consultations to discuss and facilitating implementation of PSM in the region will be organized in collaboration with SEAFDEC Secretariat.
3. Production of information materials	Production on information and promotional materials such as VDO, poster, report and <i>etc.</i> related to counter measures to IUU fisheries activities will be carried out during the implementation of the project activities and disseminated to the SEAFDEC Member Countries and worldwide.

3.3 Activity, Sub-activity and Proposed Budget for 2013-2019

(Unit: USD)

Activity	Sub-Activity	Y1 2013	Y2 2014	Y3 2015	Y4 2016	Y5 2017	Y6 2018	Y7 2019
Activity 1. Promotion of Regional Fishing Vessels Record (RFVR)	Sub-activity 1.1: Development and management of RFVR Database							
	Sub-activity 1.2: Technical workshop on RFVR database development and management	20,000	17,000	31,280		11,000		15,000
	Sub-activity 1.3: Technical assistant on using of RFVR Database			3,520	10,000	4,458	15,458	14,458
Activity 2. Strengthening of Port State Measures and other surveillance measures in the region	Sub-activity 2.1: Providing technical assistant on PSMs facilities and existing mechanism in SEAFDEC Member Countries	23,000	9,000					
	Sub-activity 2.2: Facilitating implementation of PSM in the Southeast Asian Region		10,400		18,400	15,000	15,000	
Activity 3 .Production of information materials		2,000	500	1,000	1,000	1,000	1,000	2,000
	Sub-Total	45,000	36,900	35,800	29,400	31,458	31,458	31,458

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the Present Year

- Updating and collaboration of AMSs on RFVR 24 meters in length and over. Strategies and way forward for Asian Member States and SEAFDEC to prevent, deter and eliminate IUU fishing through utilization of RFVR
- Identified issues for harmonization to support and regional cooperation on the implementation of PSM in the region

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1. Promotion of Regional Fishing Vessels Record (RFVR)					
Sub-Activity 1.1: Monitoring and updating of RFVR database 24 meters in length and over					
Sub-Activity 1.2: Regional consultation on RFVR database development and management					
Sub-activity 1.3: Technical assistant on using of RFVR Database	IV. Policy Development		3		2,395
Activity 2. Strengthening of Port State Measures and other surveillance measures in the region					
Sub-activity 2.1: Providing technical assistant on PSMs facilities and existing mechanism in SEAFDEC Member Countries					
Sub-Activity 2.2: Facilitating implementation of PSM in the Southeast Asian Region	Policy	15	23	5	7,932
	<i>Remark: This no. of participants and actual budget exclude activities of PSM workshop which will be organized in November 2016</i>				
Activity 3. Production of information materials	Information	183	20	97	789

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 1. Promotion of Regional Fishing Vessels Record (RFVR)		
Sub-Activity 1.1: Monitoring and updating of RFVR database 24 meters in length and over	Regional Fishing Vessel Record database in the region	Updating of information on the RFVR Database
Sub-activity 1.3: Technical assistant on using of RFVR Database	Regional Fishing Vessel Record database in the region	Facilitation and supporting Cambodia to development database on fishing license and vessel registration.
Activity 2. Strengthening of Port State Measures and other surveillance measures in the region		
Sub-Activity 2.2: Facilitating implementation of PSM in the Southeast Asian Region	Awareness building of countermeasures as a tool to reduce IUU fishing in the region	Identified issues for harmonization to support and regional cooperation on the implementation of PSM in the region
Activity 3. Production of information materials	Awareness building of countermeasures as a tool to reduce IUU fishing in the region	The report of the Experts Meeting on Regional Cooperation to Support the Implementation of Port State Measures in Southeast Asian Region

4. List of Completed Publications and Others

List of completed publications for the Year 2016	Type of media	Attached e-file
The report of the Experts Meeting on Regional Cooperation to Support the Implementation of Port State Measures in Southeast Asian Region	Hardcopy and softcopy	http://www.seafdec.or.th/home/index.php/publications/send/8-td-publications/575-expert-meeting-psm

5. Major Impacts/Issues

As a result of the Experts Meeting on Regional Cooperation to Support the Implementation of Port State Measures in Southeast Asian Region held in February 2016 came up with identified issues for harmonization to support and regional cooperation on the implementation of PSM in the region for the future. Moreover, the annual updating of information on the RFVR Database has been done when the information is submitted to TD.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
Activity 1: Promotion of Regional Fishing Vessels Record (RFVR)		
Sub-activity 1.1: Development and management of RFVR Database	The communication with National Focal Point from concern Member Countries will be conducted for updating the information of the RFVR Database	
Sub-activity 1.2: Technical workshop on RFVR database development and management	The Meeting on mid-evaluation of implementation on RFVR 24 meters in length and over and initiative on RFVR below 24 meters will be organized to strengthen RFVR strategy and way forward for future activities.	11,000
Sub-activity 1.3: Technical assistant on using of RFVR Database	The technical assistance on using of RFVR database will be conducted depend on the problem and request from each concern Member Countries through monitoring real usage of RFVR Database in collaboration with NFP and RFPN	4,458
Activity 2: Strengthening of Port State Measures and other surveillance measures in the region	(Additional technical workshop would be held as necessary)	
Sub-activity 2.1: Providing technical assistant on PSMs facilities and existing mechanism in SEAFDEC Member Countries		
Sub-activity 2.2: Facilitating implementation of PSM in the Southeast Asian Region	The Regional Training on PSM implementation in Southeast Asia will be organized in collaboration with SEAFDEC/SEC and partner. The training aims to capacity building of staff concern (<i>Indonesia, Malaysia, Myanmar, Philippines, Thailand and Viet Nam</i>) through support the implementation on PSM for their country.	15,000
Activity 3: Production of information materials	Production on information and promotional materials such as poster, guidebook on usage of RFVR in each case and <i>etc.</i> will be created disseminated to the SEAFDEC Member Countries and worldwide.	1,000

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 1: Promotion of Regional Fishing Vessels Record (RFVR)	
Sub-activity 1.1: Development and management of RFVR Database	Updating and improving data and information
Sub-activity 1.2: Technical assistant on using of RFVR Database	Regionally-concerted countermeasures to reduce IUU fishing through practical utilization and monitoring the usage of the RFVR Database
Activity 2: Strengthening of Port State Measures and other surveillance measures in the region	
Sub-activity 2.1: Providing technical assistant on PSMs facilities and existing mechanism in SEAFDEC Member Countries	Regional cooperation to support implementation on PSM in the region
Sub-activity 2.2: Facilitating implementation of PSM in the Southeast Asian Region	Cooperation and capacity building staff concern of target Member Countries on PSM implementation in the region
Activity 3: Production of information materials	Countries awareness building and common understanding of countermeasures to reduce IUU fishing in the region

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1: Promotion of Regional Fishing Vessels Record (RFVR)												
Sub-activity 1.1: Development and management of RFVR Database												
Sub-activity 1.2: Technical workshop on RFVR database development and management												
Sub-activity 1.3: Technical assistant on using of RFVR Database												
Activity 2: Strengthening of Port State Measures and other surveillance measures in the region												
Sub-activity 2.1: Providing technical assistant on PSMs facilities and existing mechanism in SEAFDEC Member Countries												
Sub-activity 2.2: Facilitating implementation of PSM in the Southeast Asian Region												
Activity 3: Production of information materials												

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

			Project id: 2013040101
Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Combating IUU Fishing in the Southeast Asian Region through Application of Catch Certification for Trading of Fish and Fishery Products		
Program Thrust:	III	Total Duration:	2013 - 2019
Lead Department:	MFRDMD	Lead Country:	Malaysia
Donor/Sponsor:	JTF-6	Total Donor Budget:	USD 178,877
Project Partner:	TD, Secretariat	Budget for 2016:	USD 27,331
Project Leader:	Abdul Razak Latun	Involved Country:	SEAFDEC Member Countries

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

Illegal, unreported and unregulated (IUU) fishing was identified as the biggest threat to the sustainable development of fisheries and aquaculture in the Asia-Pacific region (29th Session of APFIC). To combat IUU fishing, countries are asked to take actions among others to adopt on sub-regional cooperation in preventing, deterring and eliminating IUU fishing in the region. In response to this, the issue on management of fishing capacity and combating IUU fishing has been seriously addressed by ASEAN, SEAFDEC and the RPOA initiative to combat IUU fishing, as well as in the “Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020” adopted by the Ministers and Senior Officials during the ASEAN-SEAFDEC Conference in 2011. In addition to the afore-mentioned regional initiatives, there have been emerging trade-related measures and requirements aiming to combat IUU fishing and enhance responsible fishing practices, among which is the European Council Regulation (EC) No. 1005/2008. Therefore, it is urgently needed for Southeast Asian Countries to strengthen measures to exclude IUU origin fish and fishery products from the supply chain. In this regard, this program is aiming at formulation and dissemination of the “ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain” and establishment of an ASEAN Catch Documentation Scheme (CDS). The guidelines and ASEAN CDS will serve as tools for Southeast Asian countries to combat IUU fisheries through controlling and monitoring trade of fish and fisheries products and help Southeast Asian countries to comply with IUU related trade measures.

2. Background and Justification

Most countries in the Southeast Asian region have developed their respective regulations based on EC Regulation 1005/2008. Therefore, it is possible for the countries to support the efforts to use trade measures to combat IUU fishing within the region. Countries should ensure the primary responsibility of flag state and counter measures to combat IUU fishing

The project involves identification of existing trade practices/mechanisms in small-scale fishery and of associated problems in compliance with the EC Regulation No.1005/2008 for large-scale capture fishery in the region through core expert meetings. The information gathered will be analyzed and comparison among countries will provide a possible catch documentation system for combating IUU fishing in the Southeast Asian region with possible expansion and/or modification of the regulation for international trade in fish and fishery products within the region.

This project corresponds to #8 of the Resolution at the ASEAN-SEAFDEC Conference in 2011: Foster cooperation among ASEAN Member States and with international and regional organizations in combating IUU fishing. This project also corresponds to #67 of the Plan of Action at the conference:

Strengthen cooperation among Member Countries to implement international standards with regards to trading on fish and fishery products within the ASEAN region.

After SEAFDEC/MFRDMD published “ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain” in 2015 in cooperation with MCs, SEAFDEC/TD and SEAFDEC/SEC, Member Countries requires MFRDMD to assist them implementing the Guidelines into possible actions. Considering the importance of this project in combating IUU, especially in relation to trading fish and fish products in the region, SEAFDEC proposes to expand its project period to 2019.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1: To provide suggestions for Member Countries to strengthen cooperation in combating IUU fishing	Outcome 1: Strengthen cooperation among Member Countries in combating IUU fishing	Output 1: The ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain	Activity 1 Meetings for Effective Program Implementation 1.1 Core Expert Meeting 1.2 Terminal Core Expert Meeting
Objective 2: To study existing fishing and trading practices in small-scale fishery in the region to combat IUU fishing.	Outcome 2: Understanding of existing fishing and trading practices in small-scale fishery to combat IUU fishing	Output 2: Identification of existing practices in small-scale fishery to combat IUU fishing	Activity 2 To study existing fishing and trading practices in small-scale fishery & problems in compliance with the EC Regulation 1005/2008 in large-scale fishery 2.1 Identification of existing practices/ mechanisms and associated problems 2.2 Consideration of possible solutions to the problems
Objective 3: To assist the establishment of a possible catch documentation scheme for capture fisheries to ensure only non-IUU/legal fish and fishery products are traded in the region	Outcome 3: Non-IUU/legal fish and fishery products are traded by using ASEAN catch documentation system	Output 3: Establishment and dissemination of ASEAN catch documentation system	Activity 3 Establishment and dissemination of a possible catch documentation scheme in the region

3.2 Overall Scope/Description of Project

Activity	Description
Activity 1. Meetings for Effective Program Implementation	Core Expert Meetings will be held for effective program implementation. The meetings were held in 2013, 2015 to discuss on formulation and dissemination of the “ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain” and establishment of an ASEAN Catch Documentation Scheme (CDS). Terminal Meeting of the project will be held in 2019.
Activity 2. To study existing fishing and trading practices in small-scale fishery & problems in compliance with the EC Regulation 1005/2008 in large-scale	MFRDMD will study existing fishing and trading practices in small-scale fishery & problems in compliance with the EC Regulation 1005/2008 in large-scale fishery.

fishery	MFRDMD will formulate and disseminate "ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain" under the ASEAN framework. MFRDMD will assist SEAFDEC Member Countries for implementation of the Guidelines.
Activity 3. Establishment and dissemination of a possible catch documentation scheme in the region	MFRDMD will facilitate establishment and dissemination of a possible catch documentation scheme which is applicable in ASEAN region.

3.3 Activity, Sub-activity and Proposed Budget for 2013-2019

(Unit: USD)

Activity	Sub-Activity	Y1 2013	Y2 2014	Y3 2015	Y4 2016	Y5 2017	Y6 2018	Y7 2019
Activity 1: Meetings for Effective Program Implementation	Sub-activity 1.1 Core Expert Meetings	32,604		32,604		24,999		
	Sub-activity 1.2 Terminal Core Expert Meeting							27,331
Activity 2: To study existing fishing and trading practices in small- scale fishery & problems in compliance with the EC Regulation 1005/2008 in large- scale fishery	Sub-activity 2.1: Identification of existing practices/ mechanisms and associated problems	396	8,000					
	Sub-activity 2.2: Consideration of possible solutions to the problems		10,000	196	4,884	2,332	27,331	
Activity 3: Establishment and dissemination of a possible catch documentation scheme in the region	Sub-activity 3.1: Establishment and dissemination of a catch documentation scheme for ASEAN countries			200	8,000			
Sub-Total		33,000	18,000	33,000	12,884	27,331	27,331	27,331

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the Present Year

“Regional Technical Consultation on Promotion of ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain” was held from 7-9 March 2016 in Kuala Lumpur, Malaysia to clarify current status and issues in preventing trade of IUU fishing related products in each Member Country in reference to the statements in the Guidelines. The meeting report will be published.

MFRDMD visited Cambodia, Indonesia, Myanmar and Thailand for information gathering activity on implementation of the “ASEAN guidelines for preventing the entry of fish and fishery products from IUU fishing activities into the supply chain.” MFRDMD also plans to visit Lao PDR and Viet Nam for the same activities.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1					
Sub-activity 1.1: Core Expert Meetings	Policy Development	11	8 MFRDMD, 2 TD		22,000
Activity 2					
Sub-activity 2.2: Consideration of possible solutions to the problems	Information	13 Cambodia	3MFRDMD		17,450
		Indonesia	3MFRDMD		
		Myanmar	3MFRDMD		
		Thailand	3MFRDMD		
		Lao PDR	3MFRDMD		In Sep/Oct
		Viet Nam	3MFRDMD		
Activity 3					
Sub-activity 3.1: Establishment and dissemination of a catch documentation scheme for ASEAN countries	Policy Development				

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 1		
Sub-activity 1.1: Core Expert Meetings	The Core Expert Meeting for the establishment of the ASEAN catch documentation scheme	“Regional Technical Consultation on Promotion of ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain” was held from 7-9 March 2016 in Kuala Lumpur, Malaysia to clarify current status and issues in preventing trade of IUU fishing related products in each Member Country in reference to the statements in the Guidelines. The meeting report will be published.
Activity 2		
Sub-activity 2.2: Consideration of possible solutions to the problems	Finalization and dissemination of the ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain.	MFRDMD visited Cambodia, Indonesia, Myanmar and Thailand for information gathering activity on implementation of the “ASEAN guidelines for preventing the entry of fish and fishery products from IUU fishing activities into the supply chain”. MFRDMD also plans to visit Lao PDR and Viet Nam for the same activities.
Activity 3		
Sub-activity 3.1: Establishment and dissemination of a catch documentation scheme for ASEAN countries	Establishment and dissemination of a catch documentation scheme for ASEAN countries	In cooperation with SEAFDEC/Secretariat, MFRDMD facilitated the discussion with Member Countries for a catch documentation system in the region.

4. List of Completed Publications and Others

List of completed publications for the Year 2015	Type of media	Attached e-file
Report on "Regional Technical Consultation on Promotion of ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain"	Hard and soft copies	

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/ Views from Participants
Activity 1	
Sub-activity 1.1 Core Expert Meetings	"Regional Technical Consultation on Promotion of ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain" was held from 7-9 March 2016 in Kuala Lumpur, Malaysia to clarify current status and issues in preventing trade of IUU fishing related products in each Member Country in reference to the statements in the Guidelines.
Activity 2	
Sub-activity 2.2 Consideration of possible solutions to the problem	MFRDMD visited Cambodia, Indonesia, Myanmar and Thailand for information gathering activity on implementation of the "ASEAN guidelines for preventing the entry of fish and fishery products from IUU fishing activities into the supply chain." MFRDMD also plans to visit Lao PDR and Viet Nam for the same activities.

6. Major Impacts/Issues

Effective coordination of several related programs in relation with combating IUU Fisheries in the ASEAN region should be considered.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
Activity 1		
Sub-activity 1.1 Core Expert Meeting	MFRDMD will invite experts from Member Countries to organize Core Expert Meeting in 3Q 2017. The meeting will share information on lessons and learns in implementing the "ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain" in each Member Countries.	24,999
Activity 2		
Sub-activity 2.2: Consideration of possible solutions to the problems	MFRDMD will consult with MCs on possible solutions associated with implementation of the "ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain" in each SEAFDEC Member Countries	2,332

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 1	
Sub-activity 1.1 Core Expert Meeting	Information on lessons and learns in implementing the "ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain" in each Member Countries will be shared among Member Countries.
Activity 2	
Sub-activity 2.2:	Some solutions in the implementation of the "ASEAN Guidelines for Preventing

Proposed Activity	Expected Outcomes/Outputs of Activity
Consideration of possible solutions to the problems	the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain" in each SEAFDEC Member Country will be suggested.

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1												
Sub-activity 1.1												
Activity 2												
Sub-activity 2.2:												

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

		Project id: 0120160109	
Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand		
Program Thrust:	III	Total Duration:	2016-2020
Lead Department:	TD	Lead Country:	Cambodia, Indonesia, Malaysia, Philippines, Thailand and Viet Nam
Donor/Sponsor:	Global Environment Facility	Total Donor Budget:	USD 3,000,000
Project Partner:	United Nations Environment Programme	Budget for 2017:	USD 692,500
Project Leader:	Christopher Paterson	Involved Country:	Cambodia, Indonesia, Malaysia, Philippines, Thailand and Viet Nam

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

The longer-term goals of this project are to contribute to:

- Improved integration of habitat and biodiversity conservation considerations in the management of fisheries in the South China Sea and Gulf of Thailand;
- Improved national management of the threats to fish stock and critical habitat linkages within fisheries *refugia*; and,
- Enhanced uptake of good practice in integrating fisheries management and biodiversity conservation in the design and implementation of regional and national fisheries management systems.

The medium-term objectives align with those of the fisheries component of the Strategic Action Programme for South China Sea which is to:

- Build the resilience of Southeast Asian fisheries to the effects of high and increasing levels of fishing effort;
- Improve the understanding among stakeholders, including fisherfolk, scientists, policy-makers, and fisheries managers, of ecosystem and fishery linkages as a basis for integrated fisheries and ecosystem/habitat management; and
- Build the capacity of fisheries departments/ministries to engage in meaningful dialogue with the environment sector regarding the improvement of fisheries and management of interactions between fisheries and critical marine habitats.

This specific project objective is '*to operate and expand the network of fisheries refugia in the South China Sea and Gulf of Thailand for the improved management of fisheries and critical marine habitats linkages in order to achieve the medium and longer-term goals of the fisheries component of the Strategic Action Programme for the South China Sea*', including:

- By 2020, to have established a regional system of a minimum of fourteen refugia for the management of priority transboundary, fish stocks and endangered species; and
- By 2020, to have prepared and implemented fisheries management systems in the identified priority refugia based on and consistent with, the ASEAN-SEAFDEC Regional Guidelines for Responsible Fisheries in Southeast Asia.

2. Background and Justification

The South China Sea is a global centre of shallow water marine biological diversity that supports significant fisheries that are important to the food security and export income of Southeast Asian countries. These fisheries are characterized by high levels of fishing effort from the small-scale sector. Accordingly, all inshore waters of the South China Sea basin are subject to intense fishing pressure. This situation of high small-scale fishing pressure and declining fisheries resources has contributed to the adoption of unsustainable fishing methods to maintain catch and increase incomes in the short-term. Although action aimed at reducing the rate of loss of coastal habitats has been implemented by countries bordering the South China Sea, the decadal rate of loss of such habitats remains high, *e.g.*, seagrass beds (30 percent), mangroves (16 percent), and coral reefs (16 percent). This continued decline in the total area of habitats critical to the life cycles of most aquatic species, combined with the high levels of coastal community dependence on fish, has raised serious concerns for the long-term sustainability of small-scale fisheries in the region. With fish production being intrinsically linked to the quality and area of habitats and the heightened dependence of coastal communities on fish, a need exists to improve the integration of fish habitat considerations and fisheries management in the region. This project entitled “Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand” has been developed to meet this need via implementation of the fisheries component of the Strategic Action Programme for the South China Sea. Key anticipated results include: establishment of operational management at 14 priority fisheries *refugia*; strengthened enabling environments for the formal designation and operational management of *refugia*; enhanced national uptake of best practices in integrating fisheries management and biodiversity conservation; and strengthened cross-sectorial coordination for integrated fisheries and environmental management. The project aligns with the intergovernmentally approved guidelines for the establishment of fisheries *refugia* that constitute part of the ASEAN-SEAFDEC Regional Guidelines for Responsible Fisheries in Southeast Asia as well as recent regional policy guidance promoting the development of projects and initiatives aimed at ensuring more ecosystem-based approaches to fisheries management in the Southeast Asia region.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1: Reduced stress on fish stocks and coastal habitats via improved national management of key anthropogenic threats to fisheries and critical habitat linkages in the South China Sea and Gulf of Thailand	Outcome 1: Effective management of key threats to 14 fisheries <i>refugia</i> sites [269,500 ha], including ~50 percent reduction in fishing pressure within sites at times critical to the life-cycles of fished species of transboundary significance	Output 1: Adopted management plans	Activity 1: Identification and management of fisheries and critical habitat linkages at priority fisheries <i>refugia</i> in the South China Sea

Objective	Outcomes	Outputs	Activities
<p>Objective 2: Increased institutional capacity in the 6 participating countries for the designation and operational management of fisheries <i>refugia</i> via the transformation of enabling environments and the generation of knowledge for planning</p>	<p>Outcome 2: National and regional policy, legal and planning frameworks for demarcating boundaries and managing fisheries <i>refugia</i>, resulting in, inter alia, a 20 percent increase in small-scale fishing vessels using fishing gear and practices designed to safeguard fish stock and critical habitat linkages at priority sites</p>	<p>Output 2: Endorsed policies and plans Regular reports of meetings of national and regional project management bodies Reports of independent mid-term and terminal project evaluations</p>	<p>Activity 2: Improving the management of critical habitats for fish stocks of transboundary significance via national and regional actions to strengthen the enabling environment and knowledge-base for fisheries <i>refugia</i> management in the South China Sea</p>
<p>Objective 3: Strengthened knowledge management and information sharing and access for enhanced uptake of good practice in integrating fisheries management and biodiversity conservation in the design and implementation of fisheries and environmental management systems, including Marine Spatial Planning</p>	<p>Outcome 3: National and regional systems for knowledge management and sharing, including the development of indicator sets and standardized statistics to guide the replication, scaling-up and mainstreaming of good practices in the use of fisheries <i>refugia</i> as a spatial planning tool</p>	<p>Output 3: Routine communications on progress and lessons learned prepared and shared Annual results reports published and disseminated National and regional web portals for knowledge management and information exchange accessible online</p>	<p>Activity 3: Information Management and Dissemination in support of national and regional-level implementation of the fisheries <i>refugia</i> concept in the South China Sea</p>
<p>Objective 4: Cost-effective and efficient coordination of national and regional level cooperation for integrated fisheries and environmental management</p>	<p>Outcome 4: Effective multi-lateral and intergovernmental communication and joint decision-making, including the use of a consensual knowledge-base in planning ecologically and cost-effective management actions</p>	<p>Output 4: Regular reports of meetings of national and regional project management bodies Reports of independent mid-term and terminal project evaluations</p>	<p>Activity 4: National cooperation and coordination for integrated fish stock and critical habitat management in the South China Sea</p>

3.2 Overall Scope/Description of Project

Activity	Description
Activity 1. Identification and management of fisheries and critical habitat linkages at priority fisheries <i>refugia</i> in the South China Sea	Includes: Developing fisheries and coastal habitat information and data collection programs for 14 priority fisheries <i>refugia</i> sites; Facilitating agreement among stakeholders on the boundaries of fisheries <i>refugia</i> at 14 priority fisheries <i>refugia</i> sites; Developing Community-Based Management Plans for sites; Establishing operational management for 14 priority fisheries <i>refugia</i> sites; and Strengthening civil society and community organization participation in the management of 14 fisheries <i>refugia</i> sites.
Activity 2. Improving the management of critical habitats for fish stocks of transboundary significance via national and regional actions to strengthen the enabling environment and knowledge-base for fisheries <i>refugia</i> management in the South China Sea	Includes: Enhancing policy guidance for improved management of the effects of fishing on critical habitats in the 6 participating countries; Defining the policy and legal basis for formal designation and establishment of fisheries <i>refugia</i> in the 6 participating countries; Development of national guidelines on the establishment and operation of fisheries <i>refugia</i> and reflected in an updated regional <i>refugia</i> action plan; Reforming national and regional policy, legal and planning frameworks for demarcating boundaries and managing <i>refugia</i> ; Enhancing access to information relating to status and trends in fish stocks and their habitats in waters of the SCS marine basin; Improving national and regional-level management and sharing of information and data on fish early life history in the waters of the SCS; Enhancing access to information relating to the locations and status of coastal habitats and management areas in the SCS; Strengthening the information base for the planning, monitoring and evaluation of management at 14 priority fisheries <i>refugia</i> sites; Improving basin-wide understanding of linkages between ocean circulation patterns, nutrient/chlorophyll concentrations, and sources and sinks of fish larvae in the South China Sea; and Generation of regionally and locally appropriate best practices generated to address the effects of trawl and push net fishing on seagrass habitat, and the capture of juveniles, pre-recruits and fish in spawning condition.
Activity 3. Information management and dissemination in support of national and regional-level implementation of the fisheries <i>refugia</i> concept in the South China Sea	Includes: Enhancing uptake of best practices in integrating fisheries management and biodiversity conservation in the 6 participating countries; Improving community acceptance of area based approaches to marine management in the 6 participating countries; Capture and sharing of knowledge generated and experiences from establishing and operating fisheries <i>refugia</i> ; Developing information and education campaigns for small-scale fisherfolk on the links between fisheries, habitats and biodiversity coordinated regionally through a Regional Education and Awareness Centre; and Development of standardized methods for collection and analysis of information and data for use in assessing impacts of <i>refugia</i> and design appropriate indicators for the longer-term operation of the regional system of fisheries <i>refugia</i> .
Activity 4. National cooperation and coordination for integrated fish stock and critical habitat management in the South China Sea	Includes: Strengthening cross-sectorial coordination in the establishment and operation of fisheries <i>refugia</i> in the participating countries; Harnessing national scientific and technical expertise and knowledge to inform policy, legal and institutional reforms for fisheries <i>refugia</i> ; Catalyzing local community action via establishment and operation of site-based management boards at 14 priority <i>refugia</i> sites; Coordination of regional and national-level activities and reporting requirements of UNEP and GEF; and Regional cooperation in the establishment and operation of a regional system of fisheries <i>refugia</i> .

3.3 Activity, Sub-activity and Proposed Budget for 2017-2020

(Unit: USD)

Activity	Sub-Activity	Y1 2017	Y2 2018	Y3 2019	Y4 2020
Activity 1	Sub-activity 1.1: Identification and management of fisheries and critical habitat linkages at priority fisheries <i>refugia</i> in the South China Sea	230,100	174,100	194,800	155,900
Activity 2	Sub-activity 2.1: Improving the management of critical habitats for fish stocks of transboundary significance via national and regional actions to strengthen the enabling environment and knowledge-base for fisheries <i>refugia</i> management in the South China Sea	129,000	299,000	247,000	71,000
Activity 3	Sub-activity 3.1: Information Management and Dissemination in support of national and regional-level implementation of the fisheries <i>refugia</i> concept in the South China Sea	50,400	88,400	100,900	59,900
Activity 4	Sub-activity 4.1: National cooperation and coordination for integrated fish stock and critical habitat management in the South China Sea	283,000	312,500	272,500	331,500
Sub-Total Budget		692,500	874,000	815,200	618,300

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the Present Year

Newly endorsed project. Activities have focused on internalizing the UNEP/GEF project within the SEAFDEC system and establishing a project coordination office at the SEAFDEC Training Department.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
Activity 1		
Sub-activity 1.1	Identification and management of fisheries and critical habitat linkages at priority fisheries <i>refugia</i> in the South China Sea	230,100
Activity 2		
Sub-activity 2.1	Improving the management of critical habitats for fish stocks of transboundary significance via national and regional actions to strengthen the enabling environment and knowledge-base for fisheries <i>refugia</i> management in the South China Sea	129,000
Activity 3		
Sub-activity 3.1	Information Management and Dissemination in support of national and regional-level implementation of the fisheries <i>refugia</i> concept in the South China Sea	50,400
Activity 4		
Sub-activity 4.1	National cooperation and coordination for integrated fish stock and critical habitat management in the South China Sea	283,000

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 1	
Sub-activity 1.1	Fisheries <i>refugia</i> profile reports, including GIS maps and site characterisations, published for 14 priority sites
Activity 2	
Sub-activity 2.1	Published national reviews & recommendations for reforms of national, provincial and municipal regulations/ordinances for responsible fishing practices at priority <i>refugia</i> ; and Characterisations for 14 <i>refugia</i> sites accessible online
Activity 3	
Sub-activity 3.1	Awareness materials published online, and online national web portals on fisheries <i>refugia</i>
Activity 4	
Sub-activity 4.1	NFRC Terms of Reference and biannual meeting reports (joint management decisions and participant lists); and NTSC Terms of Reference and quarterly meeting reports (scientific and technical advice and participants lists)

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1												
Sub-activity 1.1												
Activity 2												
Sub-activity 2.1												
Activity 3												
Sub-activity 3.1												
Activity 4												
Sub-activity 4.1												

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

			Project id: 2013010107
Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Fisheries Resource Survey and Operational Plan for M.V. SEAFDEC 2		
Program Thrust:	IV	Total Duration:	Since 2004
Lead Department:	TD	Lead Country:	All AMSs
Donor/Sponsor:	Requesting country/agency	Total Donor Budget:	
Project Partner:		Budget for 2016:	
Project Leader:	Document is prepared by Capture Fisheries Technology Division	Involved Country:	SEAFDEDC Member Countries

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

To fulfill the needs of the Member Countries, region, sub-regional initiatives on research survey for fisheries resources stock status in their specific areas, the outputs from the survey include cruise report of the survey, technical documents related to fisheries resource stock status, and other specific requirements. It is expected that the results from the survey could facilitate the establishment and implementation of comprehensive policy for sustainable management and development of capture fisheries.

To accomplish the activities as mentioned above, TD works in close collaboration with the Member Countries and other significant partners at national, sub-regional, and regional levels. M.V. SEAFDEC 2 focuses on three major specific areas: (i) fisheries research and training; (ii) oceanographic survey; and (iii) onboard navigation and marine engineering training. Over the years, the M.V. SEAFDEC 2 has been used for the survey of the fisheries resources in EEZs of the Member Countries. The vessel will also be used to implement the training programs.

2. Background and Justification

In 2002, the Government of Japan approved the construction of a fishery research and training vessel – M.V. SEAFDEC 2 for conducting fishery resource and oceanographic surveys and training in coastal ASEAN waters, along with procurement of the requisite fishing gear, fishing machinery, and survey equipment. Subsequently, the construction of a research vessel, M.V. SEAFDEC 2, was completed in 2003. Since 2004, research survey on fisheries stock, exploration of fisheries resources, testing of sampling gears, fishery oceanography, and other activities related to marine capture fisheries were conducted by M.V. SEAFDEC 2 in collaboration with the Member Countries. In a broader sense, the achievement of M.V. SEAFDEC 2 includes strengthened technical cooperation for effective fisheries and environmental management in the ASEAN region through the enhancement of research capability.

Due to increased operational cost for using M.V. SEAFDEC 2 that mainly caused by increased fuel price, the 40th Meeting of SEAFDEC Council (2009) agreed that the country that requests to use M.V. SEAFDEC 2 should be responsible for the cost incurred by the vessel. Since 2010, the modified cost-sharing policy was therefore applied that fuel consumption of the vessel for the entire duration of the research/survey including cruising to and back to the requesting country will be responsible by the requested country(s).

At the 45th Meeting of the Council of SEAFDEC (2013), SEAFDEC/TD proposed some revisions of the Guidelines on the cost sharing policy for operation of the M.V. SEAFDEC 2. The result was that sharing of data collected from the cruise survey using M.V. SEAFDEC 2 should be finalized at the planning meeting

prior to the cruise survey between the requesting country and SEAFDEC. Such basic data will be kept confidential and to be used only for the SEAFDEC regional database and for future regional analysis.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1:	Outcome 1: Marine fisheries management of Malaysia	Output 1: A set of scientific data from marine fisheries resources survey for marine fisheries management of Malaysia	Activity 1: Malaysian Demersal Resources Survey off East Coast of Peninsular Malaysia
		Output 2: Human resource capacity building on Human resource capacity building on fishing operation	

3.2 Overall Scope/Description of Project

Activity	Description
Activity 1 Malaysian Demersal Resources Survey off East Coast of Peninsular Malaysia	M.V. SEAFDEC 2 Cruise No.53-2/2016 scheduled from 5 May to 9 July 2016. This cruise survey has objective for carry out national fisheries resource survey of Malaysia. The scope of the survey activities included the following: 1. Demersal species sampling: bottom otter board trawl 160 operations 2. Oceanographic survey using the Integrated Conductivity-Temperature and Depth (ICTD) attached with other sensors, includes pH, Dissolve Oxygen, Fluorescence, etc. 3. On the job training for fisheries resource survey of Malaysia researcher.

3.3 Activity, Sub-activity and Proposed Budget for 2013-2017

(Unit: USD)

Activity	Sub-Activity	Y1 2013	Y2 2014	Y3 2015	Y4 2016	Y5 2017	Y1 2018	Y2 2019
Activity 1:	Sub-activity 1.1	Cost sharing scheme						
	Sub-activity 1.2							

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the Present Year

Cruise survey of M.V. SEAFDEC 2 was conducted in collaboration with the participating countries. Course sharing policy was applied that fuel consumption of the vessel for the entire duration of the research/survey including cruising to and back to the requesting country will be responsible by the requested country (s). In single country, Malaysia, cost of operation had been applied from Malaysia governments.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1	I, V	52	8		

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 1 Malaysian Demersal Resources Survey off East Coast of Peninsular Malaysia	1. Report on the Consultation Meeting on Cruise Arrangement for Proposed Operation by M.V. SEAFDEC 2 Operation in the waters of Malaysia 2. Cruise Report on the Demersal Resources Survey Using M.V. SEAFDEC 2 in the EEZ Waters of the East Coast of Peninsular Malaysia	Overall result from three survey sub-trips were one hundred and fifty five (155) trawl fishing operations and fifty one (51) oceanographic survey stations using CTD, Water sampling, Smith-McIntyre Grab (Sediment sampling), total lipid & fatty acid sampling, petroleum hydro-carbon sampling, Temperature Depth Sensor (TD), and current indicator etc.

4. List of Completed Publications and Others

List of completed publications for the Year 2016	Type of media	Attached e-file
1. Summary Report of the Cruise Arrangement on the National Research Survey by M.V. SEAFDEC2 in Malaysia Waters, from 5 May to 9 July 2016	Hard copy	
2. Draft Cruise report on the National Research Survey by M.V. SEAFDEC2 in Malaysia Waters, from 5 May to 9 July 2016	Hard copy	

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/ Views from Participants
Activity 1 Malaysian Demersal Resources Survey off East Coast of Peninsular Malaysia	M.V. SEAFDEC 2 Cruise No.53-2/2016 is the National Demersal Research Survey of the East Coast of Peninsular Malaysia. Responsible agency is Fisheries Research Institute (FRI), Department of Fisheries (DOF) through a survey (demersal resources survey) using research vessel and bottom trawl as the sampling gear. The survey intend to obtain the current biomass of the fish stock as well as their potentials (Maximum Sustainable Yield, MSY) for the formulation of proper management plans of the resources and its demersal trawl fisheries. The survey activities were includes 1) Demersal species sampling by using bottom otter board trawl 160 operations, 2) Fifty-one (51) Oceanographic survey stations had completely conducted survey by using CTD, Vandorn bottle sampler, benthic macro-invertebrate community are collected by Smith-Mcintyre Grab.

6. Major Impacts/Issues

The results from the cruise survey of M.V. SEAFDEC 2 in Malaysian Waters are base line information to understand the present fisheries resource situation. Marine environment has also been monitored through oceanographic survey. The result for surveys will be consolidated with relevant information in order to formulate appropriated fisheries management for demersal resources in Malaysian Waters.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
Activity 1 Improvement and upgrade of M.V. SEAFDEC 2	Since M.V. SEAFDEC 2 grant aid by Japanese government in year 2004, M.V. SEAFDEC has been utilized to strengthen technical cooperation in Southeast Asian Region through research and training activities. In order to smoothly and safety support to Member Countries Japanese Government kindly consider to	

Proposed Activity	Description of Proposed Activity	Proposed Budget
	support budget through Japan International Cooperation Agency (JICA) on recondition vessel, life span extension and safety improvement. M.V. SEAFDEC 2 will be dry dockling and Life span extension and safety improvement in year 2017	
Activity 2 National survey on fisheries stock assessment survey for SEAFDEC Member Countries	Waiting for the update plan from the 39 th Program Committee Meeting	

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 1 Improvement and upgrade of M.V. SEAFDEC 2	M.V. SEAFDEC 2 will be improve and re-conditioned with modern deck machineries, main engine, navigation and communication equipment, fishing electronic devices and refrigeration system.
Activity 2 National survey on fisheries stock assessment survey for SEAFDEC Member Countries	Cruise report on National survey on fisheries stock assessment survey for SEAFDEC Member Countries

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

			Project id: 2013010107
Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Offshore Fisheries Resources Exploration in Southeast Asia		
Program Thrust:	IV	Total Duration:	2013 - 2019
Lead Department:	TD	Lead Country:	Viet Nam
Donor/Sponsor:	JTF-6	Total Donor Budget:	USD 265,800
Project Partner:	None	Budget for 2017:	USD 48,000
Project Leader:	Mr. Isara Chanrachkij	Involved Country:	

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

Currently, attempts of countries in the Southeast Asia have initiated to expand their fishing activities in the offshore areas in their respective EEZ where fisheries resources are still under-utilized as for the alternative fisheries resources. Over the years, SEAFDEC/TD has also initiated and provided technical supports to the Member Countries on the exploration of fishery resources in their EEZ through various programs of activities. During the past few years, TD organized a number of technical meetings, workshops and trainings related to fisheries resource exploration. The outputs from such activities could be referred to as references to facilitate development of the offshore fishery resources in the EEZ of the Member Countries.

Main activities under this project include training activities and technical supports from TD on offshore fisheries resources exploration in EEZ of the Member Countries through human resources capacity building programs including sea trial, and cruise survey of the Member Countries using M.V. SEAFDEC 2 and other research vessels. The project will also facilitate collaboration research survey in the area where fisheries resources, especially tuna resources such as yellowfin and skipjack, has being shared among the countries in Southeast Asia.

2. Background and Justification

Over the past few years, a number of countries in the region have increased their interest to promote the exploration of offshore fisheries resources to reduce the pressure of over-exploited fisheries resources in near shore areas in their EEZ, at the same time to find alternative source of fisheries resources. This is in line with the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Regional Towards 2020, as mentioned in the Plan of Action # 18 "Investigate the potential of under-utilized fisheries resources and promote their exploitation in a precautionary manner based upon analysis of the best available scientific information". In this connection, this project will provide technical support to the Member Countries in exploring the under-utilized fisheries resources including offshore areas in their respective EEZ waters.

In this connection, SEAFDEC in close collaboration with the Member Countries has supported exploration of fishery/living resources in the EEZ of the countries in SEA. The overall aims of this project are to encourage Member Countries to collect the information on the offshore fishery resources in terms of research and training facilities using M.V. SEAFDEC 2, and to build human resources capacity for offshore fishery resources exploration.

Concerning on the issues on delay of data analysis on tuna research work as well as the preparation on development of the Project concern on fish handling at sea, SEAFDEC proposes to extend the project period to year 2019.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1: Organization of the Regional Offshore Fisheries Research Resource Exploration	Outcome 1:	Output 1: A set of scientific data for policy consideration on management and sustainable utilization of oceanic tuna in Sulu and Sulawesi Seas A set of SOPs for assessing the status of tuna resources in region or sub-region waters in Southeast Asia	Activity 1: Technical meetings on the results of the tuna fisheries resources survey in Sulu and Sulawesi seas. Progress of the tuna research work as well as the future improvement of the project activities including land-based and the 2nd cruise survey of M.V. SEAFDEC 2 will also be discussed at the meeting. Activity 2: Regional (or Sub-regional) consultation to establish research survey for offshore fisheries resources in Southeast Asia Waters by utilization of M.V. SEAFDEC 2 Activity 3: Supporting technical staff(s) of SEAFDEC/TD participate the cruise survey and participate to the technical meetings of sub-regional study/research on offshore fisheries resources survey.
Objective 2: Developing for Improving Fish Handling at Sea	Outcome 2: Utilization of fisheries resources through improvement of post-harvest fish handling at sea onboard fishing vessels	Output 2: Report of the regional training course on post-harvest Way forward to improve fish handling onboard in Southeast Asia Region	Activity 1: Organize the regional training course on improvement of post-harvest fish handling at sea (onboard M.V. SEAFDEC 2, back-to-back with the cruise survey of M.V. SEAFDEC 2 at the Member Country) Expert meeting on the improvement of post-harvest fish handling at sea onboard fishing vessels
Objective 3: Strengthening quality research survey on offshore fisheries resources, and promote value addition to marine fisheries products in Southeast Asian Region	Outcome 3: Quality Research survey on offshore fisheries resources and appropriate improvement of post-harvest fish handling	Output 3: Sampling gear used for fisheries resources survey and/or Promote the materials of the improve Fisheries Research Resource Exploration and package(s) of technical handbooks and training reports on improvement of post-harvest fish handling	Activity : Modification of the offshore sampling gears and technical project publications

3.2 Overall Scope/Description of Project

Activity	Description
Activity 1 Technical meetings on the results of the tuna fisheries resources survey in Sulu and Sulawesi seas.	Technical meetings on the results of the tuna fisheries resources survey in Sulu and Sulawesi seas. As planned through a series of the technical meetings on tuna research in Sulu and Sulawesi Seas, preliminary results of M.V. SEAFDEC 2 cruise survey on tuna resources in Sulu and Sulawesi Seas will be presented in 2017.

Activity	Description
Activity 2: Technical consultation and discussion to plan and prepare offshore fisheries resources research survey in Southeast Asia Waters by utilization of M.V. SEAFDEC 2 or other national research vessel	Supporting SEAFDEC technical staffs to conduct the consultation visit on planning of offshore fisheries resources research survey in Southeast Asia Waters by using of M.V. SEAFDEC 2 or other national research vessel
Activity 3 Technical Support of SEAFDEC Staffs to the Cruise Survey and the meetings/ workshop/symposium	Supporting technical staff(s) of SEAFDEC/TD participate the cruise survey and the meetings/workshop/symposium to promote result of project Offshore Fisheries Resources Exploration in Southeast Asia
Activity 4 Organize the Regional activities (Training/ Workshop/Meeting) on the improvement of the fish handling at sea and study on the assessment of post harvest loss in Southeast Asia	Regional activities (Training/Workshop/Meeting) on the improvement of the fish handling at sea aim to identify problem of the post-harvest fish handling both onshore and onboard fishing vessel of SEAFDEC Member Countries and seek for the recommendation on future improvement of post-harvest fish handling both onshore and onboard fishing vessel. Activities include research study to assess post harvest fish loss in Southeast Asia Region
Activity 5 Modification of the offshore sampling gears and technical project publications	<p>In order to strengthen research survey on offshore fisheries resources, in particular, the tuna resource research survey in Sulu and Sulawesi Seas, continuation on modification of sampling gear used with M.V. SEAFDEC 2 cruise survey will be carried out. A number of sampling gears will be redesigned.</p> <p>In order to promote value addition to marine fisheries products in Southeast Asian Region, promotional materials including with package(s) of technical handbooks and training reports on improvement of post-harvest fish handling will be disseminated through the project website. Project also conducts the compilation and revision of the technical handbook or guideline of SOP on sampling gears and survey methodology for offshore fisheries resources exploration. These publication will be disseminated both by documents and website</p>

3.3 Activity, Sub-activity and Proposed Budget for 2013-2019 (Unit: USD)

Activity	Sub-Activity	Y1 2013	Y2 2014	Y3 2015	Y4 2016	Y5 2017	Y1 2018	Y2 2019
Activity 1:	Sub-activity 1.1			15,000	12,000	20,000	12,000	
Activity 2:	Sub-activity 2.1					2,000	2,000	2,000
Activity 3	Sub-activity 3.1		4,000	4,000	5,000	5,000	5,000	5,000
Activity 4:	Sub-activity 4.1		45,900	15,900	16,000	15,000	15,000	20,000
	Sub-activity 4.2					2,000	2,000	
Activity 5	Sub-activity 5.1		4,000	4,000	5,000	4,000	4,000	20,000
Total			53,900	38,900	38,000	48,000	40,000	47,000

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the Present Year

Project has objective to provide technical support the process of implementation on the collaborative research activity on tuna stock assessment in Sulu and Sulawesi seas based on the sequence of the activities planned/adjusted by the working groups as agreed at the Sulu and Sulawesi seas meeting in 2014.

In the year 2015, Working Groups Meeting and Technical Meeting on Joint Program on Tuna Research in Sulu and Sulawesi Seas from 10 to 11 February 2015, at Secretariat office of SEAFDEC, Bangkok,

Thailand, was organized in collaboration between project implementing partners, *i.e.* SEAFDEC/SEC, MFRDMD, TD, and Participating Countries. Results of meeting are the progress report of survey activities implemented by the IMP-Countries on data collected at the selected landing sites. Historical data of tuna landing has reported to Tuna stock assessment expert, *Dr. Tsutomu Nishida*. He also provided suggestion to prepare further historical data and initiate the communication with stock assessment working.

In order to follow up the agreement of Working Groups Meeting and Technical Meeting on Joint Program on Tuna Research in Sulu and Sulawesi Seas conducted from 10-11 February 2015, SEAFDEC in collaboration IMP-Countries convened had organized the Second Working Groups Meeting Joint Program on Tuna Research in Sulu and Sulawesi Seas at Davao City, the Philippines, from 25 to 27 August 2015.

The outputs of meeting are progress of project implementation on the study of Stock assessment; tuna spawning ground; tuna genetic; and Fish Aggregating Devices (FADs). Drafted technical document of tuna stock assessment by using historical data in Sulu and Sulawesi Seas were presented by *Dr. Tsutomu Nishida*. SEAFDEC/TD presented cruise report of M.V. SEAFDEC 2 on the second joint research survey on tuna research in Sulu and Sulawesi Seas. Meeting finalized the possible future activities for implementation of Joint Program on Tuna Research in Sulu and Sulawesi Seas. Follow up activities is the Report to the PCM (Program Committee Meeting) on Nov.23-25, 2015 in Manila, the Philippines and Council Meeting, April 2016, Viet Nam. Meeting also agrees to convene the Writeshop to summarize research studies, tentatively in August 2016 at Indonesia. However with the delay on progress of data analysis *i.e.* nutrient, DNA, larvae identification and fisheries resources abundance by using scientific echo sounder. The Writeshop will be delay to early of January 2017.

Project has supported the human resource development on the fisheries resources survey in Southeast Asia Waters. SEAFDEC in collaboration with National Fisheries University-Japan (NFU) and Fisheries Administration of Cambodia will conduct the fisheries Joint Research and Training Cruise in the Area Under Jurisdiction of Cambodian Waters for 2016 by Training Ship Koyo Maru, in November 2016. Seven (7) trainees from Fisheries Administrative of Cambodia and three (3) SEAFDEC/TD researchers participated with cruise survey. Scientific reports will be written and distributed to the public in year 2019.

In parallel with the promotion on sustainable resources utilization, JTF has being supported the responsible practices on fish handling technology at sea since 2013. The Regional Training Course on Fish Handling Techniques Applicable to Various Fishing Operations in Southeast Asia organized by Training Department of SEAFDEC, from 22 to 26 August 2016, at Samut Prakan, Thailand. Regional training course has extended the appropriate environmental friendly fish handling tools and simple techniques applicable to maintain quality of the catch. Awareness building on the reduction of post-harvest losses for fisheries and promote food safety and minimize post-harvest losses in catching, storing and transportation process of the fish, had also major part of regional training course.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1: Technical meetings on the results of the tuna fisheries resources survey in Sulu and Sulawesi seas.	V	20	6		15,000 (waiting)
Activity 2: Technical consultation and discussion to plan and prepare offshore fisheries resources research survey in Southeast Asia Waters by utilization of M.V. SEAFDEC 2 or other national research vessel	V				None in year 2016
Activity 3: Technical Support of TD to the	II	7	3		5,000 (Activity will

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Cruise Survey					be conducted in November 2016)
Activity 4: Organize the Regional activities (Training/ Workshop/Meeting) on the improvement of the fish handling at sea	IV	26	5		15,000 (Approximate)
Activity 5: Modification of the offshore sampling gears and technical project publications			4		2,000

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 1 Technical meetings on the results of the tuna fisheries resources survey in Sulu and Sulawesi seas.	<ul style="list-style-type: none"> - Drafted the Final project report on the tuna fisheries resources survey in Sulu and Sulawesi Sea - Agreed future activities of joint research program on tuna research in SSS 	<ul style="list-style-type: none"> - Data collection on Tuna from three (3) SSS Member Countries for study on stock - Scientific coordination between countries around Sulu Sulawesi Seas (SSSs). - Support the tuna management plan in SSSs - Plan of the Joint Program on Tuna Research in Sulu and Sulawesi Seas after year 2017
Activity 2 Technical consultation and discussion to plan and prepare offshore fisheries resources research survey in Southeast Asia Waters by utilization of M.V. SEAFDEC 2 or other national research vessel	<ul style="list-style-type: none"> - Cruise plan M.V. SEAFDEC 2 in year 2017 	<ul style="list-style-type: none"> - Agree cruise plan M.V. SEAFDEC 2 in year 2017 with SEAFDEC Member Countries under the cost sharing scheme
Activity 3 Technical Support of TD to the Cruise Survey	<ul style="list-style-type: none"> - Trainees from Fisheries Administrative of Cambodia and SEAFDEC/TD participated with cruise survey 	Seven (5) trainees from Fisheries Administrative of Cambodia and three (3) SEAFDEC/TD researchers participated with cruise survey Training Ship Koyo Maru, in November 2016.
Activity 4 Organize the Regional activities (Training/ Workshop/Meeting) on the improvement of the fish handling at sea	<ul style="list-style-type: none"> - Participants expected to enhance knowledge and practical skills on reduction of post-harvest losses which will help reinforce extension and promotion activities in their respective countries 	<ul style="list-style-type: none"> - Twenty six (26) participants enhance knowledge and practical skills on reduction of post-harvest losses - Strategies/ways forward to improve fish handling in assigned coastal and offshore fisheries cases in Southeast Asia
Activity 5 Modification of the offshore sampling gears and technical project publications	<ul style="list-style-type: none"> - Technical document of tuna stock assessment in Sulu and Sulawesi Seas - Training package on the fish handling technique applicable to various fishing operation in Southeast Asia 	<ul style="list-style-type: none"> - Technical document of Stock assessments of yellowfin tuna (<i>Thunnus albacares</i>), bigeye tuna (<i>Thunnus obesus</i>) and skipjack tuna (<i>Katsuwonus pelamis</i>) in Sulu and Sulawesi Seas by ASPIC* - Cruise report on the second tuna research survey in SSSs using M.V. SEAFDEC 2 from 20 March to 13 May 2015 (Pre SW Monsoon) - Cruise report on the first tuna research survey in SSSs using M.V. SEAFDEC 2 from 17 October to 8 December 2015 (Post

Planned activity	Expected outcome/output	Achievements
		SW Monsoon) - A set of SOPs for assessing the status of tuna resources in region or sub-region waters in Southeast Asia

4. List of Completed Publications and Others

List of completed publications for the Year 2016	Type of media	Attached e-file
1. Report (internal used only) Stock assessments of yellowfin tuna (<i>Thunnus albacares</i>), bigeye tuna (<i>Thunnus obesus</i>) and skipjack tuna (<i>Katsuwonus pelamis</i>) in Sulu	Hard copy	
2. Draft SOPs for assessing the status of tuna resources in region or sub-region waters in Southeast Asia	Hard copy	

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/ Views from Participants
Activity 1	Due to the delay of data analysis, Writeshop will be postponed to early of January 2017
Activity 2	There are not any activities in year 2016
Activity 3	His Excellency-Eng Cheasan, kindly address the appreciated for all support for the survey activity and wished that the survey could gain knowledge, interesting findings as well as enhancing the capacity of Cambodian researchers through fisheries resources survey.
Activity 4	<ul style="list-style-type: none"> - Overall subjects of training course is good contents - Participants were satisfied with class session and field trip but 30% of comments are requested more field trip - Training period for 5 days is good but few of participants requested for 10-15 days training period - Training facilities and accommodation is good
Activity 5	Trainee of training course and participant of meeting express their appreciation to SEAFDEC on the support of publication and dissemination all document to Member Countries.

6. Major Impacts/Issues

Tuna is significantly important not only import-exports value, but also domestic consumptions in a number of Member Countries of SEAFDEC. Similar initiatives on tuna or other pelagic species which the stock is sharing among the countries are needed in the future for strengthening cooperation among the countries concerned as well as to build the capacity of human resources for assessment of status of such important species.

The project has issues on the delay of analysis of samples both water samples, juvenile/larvae. Oceanographic data on the nutrient analysis is delay regarding to the malfunction of Auto Analyzer. Training Department as Coordinator need to strengthened following up the progress of each topic of research in SSSs.

Training course on the Regional training course on fish handling technique applicable to various fishing operation in Southeast Asia has a language problem among the participants. Some participant request for more practical session and field trips (few vessels). They also request to flexible schedule. They however evaluated that the training well function on facilitation, resource persons, coordination among course, lectures & practices, training documents and methods, teamwork. They also evaluated that training provide appropriate knowledge for their works and countries

PART III: PROPOSED ACTIVITIES FOR YEAR 2017
1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
Activity 1 Technical meetings on the results of the tuna fisheries resources survey in Sulu and Sulawesi seas.	Project meetings on the tuna fisheries resources survey in Sulu and Sulawesi seas. Training course on the Productivity and Susceptibility Analysis to identify to Determine Stock Vulnerability in Southeast Asia Waters will be conducted in collaborated with MFRDMD and SEAFDEC Member Countries during the third quarter of year 2017. Result of technical meeting will include with the identification on the area(s)/country(s) that will be pilot site (s) to study on the Productivity and Susceptibility Analysis in year 2018 and 2019.	20,000
Activity 2: Technical consultation and discussion to plan and prepare offshore fisheries resources research survey in Southeast Asia Waters by utilization of M.V. SEAFDEC 2 or other national research vessel	Supporting SEAFDEC technical staffs to conduct the consultation visit on planning of offshore fisheries resources research survey in Southeast Asia Waters by using of M.V. SEAFDEC 2 will be conducted on the first quarter of year 2017	2,000
Activity 3 Technical Support of TD to the Cruise Survey	Supporting technical staff(s) of SEAFDEC/TD to participates the cruise survey and participate to the technical meetings of sub-regional study/research on offshore fisheries resources survey. Plan of the marine fisheries resource survey by M.V. SEAFDEC 2 in Viet Nam Waters possible to conduct in the last quarter of year 2017	5,000
Activity 4 Organize the Regional activities (Training/ Workshop/Meeting) on the improvement of the fish handling at sea	Regional activities (Training/ Workshop/ Meeting) on the improvement of the fish handling at sea aim to identify problem of the post-harvest fish handling both onshore and onboard fishing vessel of SEAFDEC Member Countries and seek for the recommendation on future improvement of post-harvest fish handling both onshore and onboard fishing vessel. (15,000 USD) Activity is planning in August 2017. Follow up activities plan to conclude from the regional training/workshop. In addition, project will support the human resources development of post harvesting technology in less harvest developing countries. Activity includes the research to assess post harvest fish loss in Southeast Asia Region (2,000 USD)	17,000
Activity 5 Modification of the offshore sampling gears and technical project publications	In order to strengthen quality research survey on offshore fisheries resources, Sampling gears will be redesigned and modified using with cruise survey of M.V. SEAFDEC 2 for research survey in Viet Nam Waters, during the second quarter of year 2017. In order to promote value addition to marine fisheries products in Southeast Asian Region, promotional materials including with package(s) of technical handbooks and training reports on improvement of	4,000

Proposed Activity	Description of Proposed Activity	Proposed Budget
	post-harvest fish handling will be disseminated through the project website and during Regional activities (Training/ Workshop/Meeting) on the improvement of the fish handling at sea in August 2017.	

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 1 Technical meetings on the results of the tuna fisheries resources survey in Sulu and Sulawesi seas	- Final report on the result on Joint Program on Tuna Research in Sulu and Sulawesi Seas (Priority 1)
Activity 2 Technical consultation and discussion to establish and prepare the research survey for offshore fisheries resources in Southeast Asia Waters by utilization of M.V. SEAFDEC2 and other national research vessel	- Support survey plan development, monitor and evaluation progress of fisheries resource survey in SEA countries - Technical staffs of TD participate the international symposium to promote result of project Offshore Fisheries Resources Exploration in Southeast Asia
Activity 3 Technical Support of TD to the Cruise Survey Joint Research and Training Cruise in Southeast Asia Waters by utilization of M.V. SEAFDEC 2 and other national research vessel	- Technical staffs of TD and Member Countries join the cruise survey, e.g. M.V. SEAFDEC 2, T.V. Koyo Maru, and Other National Research Vessel - Technical staffs of TD participate the international symposium to promote result of project Offshore Fisheries Resources Exploration in Southeast Asia
Activity 4 Regional activities (Training/ Workshop/Meeting) on the improvement of the fish handling at sea	- Human resource development on the reduction of post-harvest losses which will help reinforce extension and promotion activities in their respective countries and identification and quantification the root cause of losses of the fish handling at sea and the identify and implement loss reduction measure
Activity 5 Modification of the offshore sampling gears and technical project publications	- Compilation and revision of the technical handbook and guideline on sampling gears and survey methodology for offshore fisheries resources exploration was continued - Modification for offshore sampling gears of SEAFDEC research vessels, M.V. SEAFDEC, M.V. SEAFDEC 2 and M.V. Plalung - Publication and dissemination of the new/revised handbook of offshore sampling gears

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1												
Activity 2												
Activity 3												
Activity 4												
Activity 5												

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

			Project id: 2013010108
Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Enhancing the Compilation and Utilization of Fishery Statistics and Information for Sustainable Development and Management of Fisheries in Southeast Asian Region: Facilitating Fisheries Activity Information Gathering through Introduction of Community-based Resources Management/Co-management		
Program Thrust:	IV	Total Duration:	2013-2019
Lead Department:	TD	Lead Country:	Viet Nam
Donor/Sponsor:	JTF-6	Total Donor Budget:	USD 347,400
Project Partner:	None	Budget for 2017:	USD 42,800
Project Leader:	CSFDH/TD	Involved Country:	-

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

The project would be further carried out support Member Countries by review the problems and constraints in fisheries data collection in coastal small-scale and inland fisheries at national level, and identify the key issues in fisheries data collection that should be addressed by the countries through the regional workshop. The project will be supporting Member Countries by training on site “Facilitating Fisheries Information Gathering Through Introduction of Community-based Resources Management/Co-management”. This training course addressed the concept of Community-based Resources Management/Co-management for Provincial officers of Member Countries. As well Project will be monitoring and additional support by assisted fisheries officers of Member Countries to practice in collecting and analysing information from fisheries community for policy formulation, also to design coastal and inland fishery management plans by selected the appropriate participatory mechanism of CBRM/Co-management approach, that suit the local condition.

2. Background and Justification

In the Southeast Asian region, coastal and inland fisheries are other areas where the available fishery statistic, are recognized to be under-reported due to the nature of fisheries as being multi-species and involving large number of small-scale fishers. It is therefore also necessary to improve data and information collection methodology, acknowledged the concept and theoretical framework of fisheries management, *e.g.* by involving local communities, local officers, *etc.* In order that, the data could better reflect the importance of coastal and inland fisheries, and could be used as a basis for planning and management of fisheries. Furthermore, the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 “Fish for the People 2020: Adaptation to a Change Environment”, held in June 2011, adopted a resolution recommending that: *1) Adopt co-management at all levels and with all relevant stakeholders in the process of planning and policy formulation for management, conservation and rehabilitation of habitats and protective geographical features, as well as policy formulation on the use and management of natural and human resources to ensure that climate change responses are integrated into fisheries policy frameworks. 2) Enhance and promote the participation of local communities, fisheries associations and other stakeholders in fisheries management and co-management. In addition, communities should take part in fisheries and stock assessments by providing data, local ecological knowledge, and status of the stocks.* Then, project on Enhancing the Compilation and Utilization of Fishery Statistics and Information for Sustainable Development and Management of Fisheries in Southeast Asian Region: *Facilitating fisheries activity information gathering through introduction of Community-based Resources Management/Co-management* is necessary for SEAFDEC Member Countries. Despite the importance of this project, it so far has been conducted in a limited pilot sites implementation. In addition, some follow-up activities and more pilot site are preferable after conducting

on-site trainings in order for the project to be more effective. Taking these points into account, SEAFDEC proposes the extension of the project period by 2 years, until 2019.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcomes, Outputs and Activities of the project

Objectives	Outcomes	Outputs	Activities
Objective 1: Improve compilation of fisheries and socio-economic information on coastal small-scale and inland fisheries in the Southeast Asia.	Outcome 1: (1) Reviewing the problems of fisheries data collection in coastal small-scale and inland fisheries at national, (2) identifying the key issues of fisheries data collection, and (3) sharing the lessons learned from effective ways of data collection among the SEAFDEC Member Countries.	Output 1: Discussing and exchanging information/opinions and cultivating understanding on the way forward for promotion of fisheries information gathering.	Activity 1: Regional Workshop on Improvement of Fisheries Information Collection in Coastal Small-scale and Inland Fisheries of the Southeast Asian Region.
Objective 2: Support Member Countries to introduce applicable practice of CBRM/Co-management	Outcome 2: Increased the number of local officers and fishers who cultivate understanding on introducing skills for establishment of CBRM/Co-management.	Output 2: (1) Provide knowledge and experience on practical approach on CBRM/Co-management to fisheries officer (2) Practical in competence in planning and implementing the applicable coastal/inland fishery management plans.	Activity 2: Strengthening training on site to introduce the appropriate participatory mechanism of CBRM/Co-management, including the methodology on gathering fisheries activity information
Objective 3: Facilitate better understanding and knowledge on status and condition of coastal small-scale and inland fisheries at national and local level.	Outcome 3: Fisheries management through CBRM/Co-management approach strengthened the information dissemination of results of practical models and survey for Member Country	Output 3: Discussion and Developing practical models of CBRM/Co-management of coastal small-scale and inland fisheries with Member Country.	Activity 3: Monitoring and Facilitating 3.1 Monitoring and additional support for Member Countries activities of facilitating CBRM/Co-management and gathering fisheries activity information 3.2 Study (Base-line survey) on appropriate activities sustainable for CBRM/Co-management in fisheries community.

3.2 Overall Scope/Description of Project

Activity	Description
1. Regional Workshop on Improvement of Fisheries Information Collection in Coastal Small-scale and Inland Fisheries of the Southeast Asian Region	Resolution problems and constraints of fisheries data collection in coastal small-scale and inland fisheries from the workshop will be utilized to identify the key issues that should be addressed by the countries. This could be achieved by fostering the lessons learned in terms of the methodologies and

Activity	Description
	exchanging experiences in effective fisheries data collection. It was also envisaged that such effort could be adapted in the setting up of fisheries census with a future goal of improving fisheries data collection.
2. Strengthening training on site to introduce the appropriate participatory mechanism of CBRM/Co-management including the methodology on gathering fisheries activity information	Training On Trainers (TOTs) courses are conducted in selected countries. The TOTs is aiming at: Providing clear and detailed concept and methodology on CBRM/Co-management; Cultivation understanding on tools for data and information collection in coastal and inland fishing communities; and Introducing skills for establishment of organizations in the fishing communities to implement CBRM/Co-management. As well including practical planning and implementing the applicable coastal/inland fishery management plans.
3. Monitoring and facilitating 3.1 Monitoring and additional support for Member Countries activities of facilitating CBRM/Co-management and gathering fisheries activity information	Member Country will select pilot site which promoted CBRM/Co-management approach, and SEAFDEC will assist fisheries officers of Member Countries in collecting and analysing information from fisheries community for policy formulation, also in designing coastal and inland fishery management plans through participatory mechanism of CBRM/Co-management approach, that suit the local condition.
3.2 Study (Base-line survey) on appropriate activities sustainable for CBRM/Co-management in fisheries community of Member Country.	SEAFDEC assists Member Countries in promoting CBRM/Co-management and building the capacity of the fisheries community.

3.3 Activity, Sub-activity and Proposed Budget for 2013-2019

Activity	Sub-Activity	Y1 2013	Y2 2014	Y3 2015	Y4 2016	Y5 2017	Y5 2018	Y5 2019
Activity 1. Regional Workshop on Improvement of Fisheries Information Collection in Coastal Small-scale and Inland Fisheries of the Southeast Asian Region		18,000				20,000		20,000
Activity 2. Strengthening training on site to introduce the appropriate participatory mechanism of CBFM including the methodology on gathering fisheries activity information		34,000	70,000	40,000	27,000		20,000	
Activity 3. Monitoring and facilitating	Sub-Activity 3.1 Monitoring and additional support for Member Countries activities of facilitating				7,000			

Activity	Sub-Activity	Y1 2013	Y2 2014	Y3 2015	Y4 2016	Y5 2017	Y5 2018	Y5 2019
	CBRM/Co-management and gathering fisheries activity information							
	Sub-Activity 3.2 Study on appropriate activities sustainable for CBFM in fisheries community in Southeast Asia.			17,000	6,000	22,800	22,800	22,800
	Sub-total	52,000	70,000	57,000	40,000	42,800	42,800	42,800

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the Year 2016

There have been many attempts in SEAFDEC's Member Countries to implement pilot projects through CBRM/Co-management to deal with their particular situation. In 2016, SEAFDEC/TD provided Training on Trainers (TOTs) in Viet Nam and Lao PDR, and Follow-up activities in Cambodia and Thailand. These activities have assisted fisheries officers introduce CBRM/Co-management with knowledge of fisheries management to community fisheries by themselves. Also these activities have assisted to design coastal and inland fishery management plans under the appropriate participatory mechanism of co-management approach, that suit to the local condition.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-Activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 2. 1. TOTs (Training on Trainers) on Data analysis and Extension to promote CBRM/Co-management in Viet Nam, 15-17 June 2016, Danang City, Viet Nam	II. Training	34	4	2 Resource persons (Fisheries Research and Education Agency, Japan and JICA of Viet Nam)	12,500
2. TOTs on Facilitating Fisheries Information Gathering through Introduction of CBRM/Co-management: Effective Implementation CBRM/Co-management in Lao PDR, 19-22 September 2016, Vientiane, Lao PDR	II. Training	30	6 (one RFPN of Lao PDR)	1 Resource person from JICA of Viet Nam	14,500
Activity 3. 1. Monitoring and evaluation CBRM/Co-management Project in Nam Oon Dam, 15-19 May 2016, Nam Oon Dam, Sakon Nakhon Province.	I. Research	150	5	0	3,500
2. Monitoring and evaluation Co-management approach in Chong Khneas Commune, Siem Reap, Cambodia, 21-22 July 2016	I. Research	20	4 (one RFPN of Cambodia)	1 Resource person from JICA of Viet Nam	4,500

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected Outcome/Outputs	Achievement
Activity 2 1)TOTs (Training on Trainers) on Data analysis and Extension to promote CBRM/Co-management in Viet Nam, 15-17 June 2016, Danang City, Viet Nam	Extended and introduced the concepts and methodologies on CBRM and Co-management in the region	34 local officers have knowledge of utilization data to formulate the fisheries resources management plan and implementation as well as introduce the extension strategy and components to promote CBRM/Co-management in Viet Nam.
2) TOTs on Facilitating Fisheries Information Gathering through Introduction of CBRM/Co-management: Effective Implementation CBRM/Co-management in Lao PDR, 19-22 September 2016, Vientiane, Lao PDR		25 local officers from central part of Lao PDR have better understanding on the leading role in practicing and transferring knowledge on Co-management for Inland Fisheries Community.
Activity 3 1)Monitoring and evaluation CBRM/Co-management project in Nam Oon Dam, 15-19 May 2016, Nam Oon Dam, Sakon Nakhon Province.	Fisheries management through CBRM/Co-management approach strengthened the information dissemination of results of practical models and survey for Member Country	50 Volunteer Fishers around Nam Oon Dam, Sakon Nakhon Province and 10 local officers have better understand on CBRM/Co-management, by install the sign buoy for conservation zone. More than 100 Fishers attend the traditional ceremony on destined fish with local officers.
2) Monitoring and evaluation CBRM/Co-management approach in Chong Khneas Commune, Siem Reap, Cambodia, 21-22 July 2016		1. The Implementation plan 2016 have improved and take action by Chong Khneas Commune 2. Implementation Plan 2017 created by Chong Khneas Commune with knowledge on CBRM and Co-management.

4. List of completed publications and others

List of completed publications for the Year 2015	Type of media	Attached e-file
1. Report on TOTs on Data Analysis and Extension to promote Co-management in Viet Nam, 15-17 June 2016, Danang City, Viet Nam	PDF	-
2. Report on Monitoring and evaluation CBRM/Co-management project in Nam Oon Dam, 15-19 May 2016, Nam Oon Dam, Sakon Nakhon Province.	PDF	-
3. Report on Monitoring and evaluation CBRM/Co-management approach in Chong Khneas Commune, Siem Reap, Cambodia, 21-22 July 2016	PDF	-
4. Report on TOTs on Facilitating Fisheries Information Gathering through Introduction of Co-management and CBFM: Effective Implementation Co-management and CBFM in Lao PDR, 19-22 September 2016, Vangvieng City, Lao PDR	PDF	-

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/ Views from Participants
Activity 2 Strengthening training on site to introduce the appropriate participatory mechanism of CBRM/Co-management including the methodology on gathering fisheries activity information	
Activity 3 Monitoring and facilitating	

6. Major Impacts/Issues

1. In case of TOTs (Training on Trainers), some countries have requested more than one TOTs in their countries with different issues and different area. Firstly, project plan to ask Member Country only one TOTs. The reason from Lao PDR, said that, they need to arrange TOTs at whole country (Northern, Central and Southern part). The reason from Viet Nam, said that, they need to arrange TOTs with different issues in each part of country.
2. In case of MOT (Mobile on-site Training), Project plan to arrange MOT, after TOT in each country, and this training will be organized by Member Country, SEAFDEC's staffs will be facilitator. But some country difficult to organize MOT, because they need more knowledge and practical experiences to organize MOT by themselves, so this reason, project have cancel MOT in 2015.
3. In case of Monitoring and facilitation, the key problems are human resources and financial support to keep monitoring and facilitating the implementation plan
4. Almost CBRM/Co-management project site of SEAFDEC Member Country are Inland Fisheries.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

Proposed Activity	Description of Proposed Activity	Proposed Budget
Activity 1: Regional Seminar on Improvement CBRM/Co-management approach in Coastal Small-scale and Inland Fisheries of the Southeast Asian Region	Resolution problems and constraints of promotion CBRM/Co-management in coastal small-scale and inland fisheries from the seminar will be utilized to identify the key issues that should be addressed by the countries. This could be achieved by fostering the lessons learned in terms of the methodologies and exchanging experiences. Total participants are 36 (invited one participant/MC)	20,000
Activity 3: Monitoring and facilitating	<u>Lao PDR</u> One pilot site will be selected to be implementing/ promoting CBRM/Co-management with baseline survey	7,400
	<u>Cambodia</u> SEAFDEC and FiA Cambodia plan to monitoring and evaluation CBRM/Co-management project in Chong Khneas Commune, Siem Reap Province, Cambodia	7,400
	<u>Thailand</u> The first trip: SEAFDEC and DOF Thailand plan to monitoring and evaluation on closed season measurement in Nam Oon Dam, Sakon Nakhon Province, by continue to collecting scientific data on total catch and species at before, in time and after close season: - To monitor closed season measurement in Nam Oon Dam - To support fish processing activity The second trip: - To identify key success and the way forward to improve and adapt the project for more successful and for lesson learn to other project through opinion and level of participation survey Other activities such as local workshops and meetings would be held in the 3 countries as necessary	8,000
	Total	42,800

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 1 Regional Seminar on Improvement CBRM/Co-management approach in Coastal Small-scale and Inland Fisheries of the Southeast Asian Region	1. Reviewing the situation on promotion CBRM/Co-management in coastal small-scale and inland fisheries, 2. Identify the key issues on implementation CBRM/Co management project, and 3. Sharing the lessons learned from effective ways on promoting CBRM/Co-management among the SEAFDEC Member Countries.
Activity 3 Monitoring and evaluation on appropriate activities to be sustainable for CBRM/Co-management in fisheries community in Lao PDR, Cambodia and Thailand	Development pilot site with monitoring, evaluation, and consultation between fisheries officers and fisheries community

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1. Regional Seminar on Improvement CBRM/Co-management approach in Coastal Small-scale and Inland Fisheries of the Southeast Asian Region												
Activity 3. Monitoring and evaluation on appropriate activities to be sustainable for CBRM/Co-management in Lao PDR, Cambodia and Thailand												

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

		Project id: 0120130108	
Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Enhancing Compilation and Utilization of Fishery Statistics and Information for Sustainable Development and Management of Fisheries in Southeast Asian Region: Improving the Data Collection of the Commercially-exploited Aquatic Species and Threaten Species		
Program Thrust:	IV	Total Duration:	2013 - 2019
Lead Department:	TD in collaboration with MFRDMD	Lead Country:	Thailand
Donor/Sponsor:	JTF-6	Total Donor Budget:	USD 230,474
Project Partner:	Training Department	Budget for 2016:	USD 40,474
Project Leader:	Mr. Sukchai Arnupapboon	Involved Country:	SEAFDEC Member Countries

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

In order to address fisheries international related issues, this program aims to enhance capability of fishery sectors in compiling and utilizing fishery statistics and information. The focus of the project is given to improve data collection for the commercially exploited aquatic and threaten species: sharks.

Generally, primary goals of collecting fishery statistic are to obtain the information to manage fisheries. Trend and status of commercially aquatic species provides useful and important information for fishery management. This information can come from various sources, including the monitoring of the fishing activities (*e.g.* landing, catch and effort data), biological surveys, and information from resource users. Poor capture fishery statistics in Southeast Asian Countries has led to difficulty in managing sustainably their coastal and marine fisheries resources. In particular to the species listed by CITES that will impact to the fisheries sectors of the countries in the region.

In 2013, the project activities focus on improvement of data and information collection for commercially exploited aquatic species of sharks. This is to follow-up the outputs from the series of events, including the technical meetings in Thailand in 2011 and 2012 organized by TD, and the regional training course on sharks species identification organized by MFRDMD in early 2012. The outputs from these showed that information on sharks stock status in Southeast Asian Countries has yet reliable. The dearth of information on stock structure, abundance, life history, and reproductive capacity of major marine and freshwater sharks species treat sharks as a separate statistical data. Moreover, insufficient policy and financial support on research and management of sharks is commonly the key issues in the region. This project aims at continuing the support the Member Countries to improve quality and timeliness of data/information on sharks.

2. Background and Justification

In 2013, the project activities focus on improvement of data and information collection for commercially exploited aquatic species of sharks. This is to follow-up the output from a series of events, including the technical meetings in Thailand in 2011 and 2012 organized by TD, and the regional training course on shark species identification organized by MFRDMD in early 2012. The outputs from these showed that information on shark stock status in Southeast Asian Countries was not yet reliable. Because of lack of information on stock structure, abundance, life history, and reproductive capacity, in general, species by species statistics of sharks is lacking in Southeast Asian Countries. Moreover, insufficient policy and financial support on research and management of sharks is common key issues in the region This project

aims at continuing the support the Member Countries to improve quality and timeliness of data/information on sharks.

In 2014, the project activities emphasized on alleviating problem of shark data collection by improving capacity of species identification through organizing regional workshops for ASEAN Member States. The aim of the meeting is training to trainer, who is able to pass knowledge from workshops to their local shark landing operators. Shark data landing at pilot sites of the some SEAFDEC Member Countries was initiated in August 2014 under technical support by monitor from SEAFDEC and MFRDMD.

In 2015, the project organized the Regional Technical Meeting on Shark and Ray Data Collection and Project Planning Year 2015-2016, in order to compile and analyze shark data as regional level. Output of the meeting will be reported as regional shark data. Participating Countries of the project have agreed on the format and template for shark and ray data collection work plans of Participating Countries in year 2015-2016. Standard Operational Procedure (SOP) of shark and ray data collection will be developed and verify by Participating Countries. With financial support from the Government of Japan (through the SEAFDEC Secretariat and MFRDMD) and the European Union (EU) through the CITES Secretariat, the one-year SEAFDEC-EU Regional Project on Sharks and Rays Data Collection implemented from 2015 to 2016 in seven ASEAN Member States, namely: Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Thailand, and Viet Nam. Sharks Data Collection in Southeast. Major output of project is to improve human resources capacity of ASEAN Member States on data collection and identifying the species of sharks and rays for better management and enforcement of the necessary management measures.

SEAFDEC propose to extend the project period until 2019. Experience and lesson learn from the one-year shark and ray data collection concluded that few SEAFDEC Member Countries *e.g.* Cambodia, Myanmar, and Viet Nam still need more technical support on the human resources capacity on shark data collection and shark identification into species level. Regional shark network through appropriate online platform also needs establishing in parallel with the regional shark database development. In Member Countries that NPOA-Shark has not yet formulated, project would facilitate the planning process for drafting the NPOA-Shark within the proposed project period.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1:	Outcome 1: Capacity of the countries to identify shark up to species level	Output 1: Work plan for data collection at the selected sites in the participating countries	Activity 1: Human resource development programs through the project of improvement of sharks data collection in Southeast Asia
Objective 2:	Outcome 2: 1. Sets of the recommendation for improving management of shark fisheries in participating countries 2. Effective implementation of the NPOA-sharks in the participating countries	Output 2: 1. Regional shark network; 2. Shark database; and 3. Draft NPOA-Shark in Participating Countries	Activity 2: 1. Sharks Data Collection in Southeast Phase 2. Project monitoring process in the less developing countries of shark data collection 3. Strengthen the regional shark network 4. Shark database development and management for supporting management measure 5. Facilitation and technical assisting to draft NPOA-Shark for MCs where NPOA-Shark has not been formulated yet
Objective 3:	Outcome 3: Management of shark fisheries in participating countries	Output 3: 1. National and Regional report on shark data collection 2. Regional analysis of the shark landing in the	Activity 3: Information dissemination

Objective	Outcomes	Outputs	Activities
		Participating Countries 3. SOP of shark and ray data collection and field guides on sharks and rays species identification	

3.2 Overall Scope/Description of Project

Activity	Description
<p>Activity 1 Human resource Development Programs</p> <p>Sub-activity 1.1 Technical Consultation Meeting on improvement of Shark Data Collection and Stock Assessment Model</p> <p>Sub-activity 1.2 Training Workshop on data collection for fishing effort and using stock assessment model</p>	<p>Since year 2011, project activities have focused on improvement of data and information collection for commercially exploited aquatic species of sharks. Series of regional meeting and training courses organized in collaboration between SEAFDEC/TD and MFRDMD to improve human resource capacity in data collection and identification.</p> <p>During the year 2017-2018, in order to follow up the activity of shark data collection conduct in collaboration with EU and CITES secretariat, the project will organize the Technical Meeting on the Stock Assessment Model of Shark in Southeast Asia. Shark experts in Southeast Asia and Japan will provide recommendation on appropriated stock assessment model on shark data collection. The participating countries will update their report of shark data collection to support the study on the Stock Assessment Model of Shark in Southeast Asia. All countries can share experience and hindrance of data collection in this meeting to improve data collection in SEA.</p> <p>Refer to the Technical Consultation Meeting on the Stock Assessment Model of Shark, SEAFDEC/TD and MFRDMD will organize training workshop on Data Collection for the Study of Stock Assessment Model. National focal point on shark data collection of SEAFDEC Member Countries with the technical supports from resource persons of TD in collaboration with MFRDMD will be invited to Training Workshop. Member Countries will report comprehensive summary about shark data collection and practice on the application of stock assessment. Moreover, capacity building within countries will be also encouraged where appropriate.</p> <p>In year 2019, SEAFDEC will conduct project end meeting to conclude the project output and identify way forward to improve shark data collection in Southeast Asia</p>
<p>Activity 2 Data collection</p> <p>Sub-activity 2.1 Data Collection</p> <p>Sub-activity 2.2 Monitoring of data collection</p>	<p>To ensure that the implementation of shark landing data is systematically collected at the selected landing sites, SEAFDEC/TD and MFRDMD will technically support to Member Countries from January - December 2017.</p> <p>In order to strengthen on accuracy of data collection and identification, resource persons from MFRDMD and Expert group in Southeast Asia will monitor and transfer knowledge on shark species identification, especially on the species listed by CITES to enumerators of Project Participating Countries.</p>
<p>Activity 3 Information dissemination</p> <p>Sub-activity 3.1 Information dissemination</p> <p>Sub-activity 3.2 Participate to Relevant Regional and International Forum</p>	<p>Reports/publications of the regional shark data collection will be disseminated to provide the information to manage shark fisheries. Reports will be reference for SEAFDEC Departments, Member Countries, fisheries-related agencies and organizations as well as the general public.</p> <p>In order to support management on the utilization of sharks, SEAFDEC/TD will collaborate with SEAFDEC/MFRDMD will establish database system to support fisheries manager.</p> <p>This activity has also been collaborated with other relevant initiatives, organizations, and partners, in particular to the issues related to sharks data collection. In this connection, the activity includes participation of staffs in the</p>

Activity	Description
	regional and international meeting or forums, <i>e.g.</i> WCPFC, IOTC, CITES and etc, to monitor on the current issues that significant information to sustainable utilization of sharks

3.3 Activity, Sub-activity and Proposed Budget for 2013-2019)

(Unit: USD)

Activity	Sub-Activity	Y1 2013	Y2 2014	Y3 2015	Y4 2016	Y5 2017	Y6 2018	Y7 2019
Activity 1:	Sub-activity 1.1	27,000	27,000	27,000	22,000	30,000		28,000
	Sub-activity 1.2						28,000	
Activity 2:	Sub-activity 2.1					2,000	2,000	
	Sub-activity 2.2	4,000	4,000	4,000	4,000	5,474	-	2,000
Activity 3	Sub-activity 3.1	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	Sub-activity 3.2					2,000	1,000	1,000
Total		32,000	32,000	32,000	30,000	40,474	32,000	32,000

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the Present Year

The major achievement of Project implementation in year 2015-2016 is the activities of the one-year Regional Project on Sharks and Rays Data Collection. The activities had been implemented in seven ASEAN Member States, namely: Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Thailand, and Viet Nam. Sharks Data Collection in Southeast. Project have been finished compiling information on shark data collection in Southeast Asia, undertaking national workshops and training sessions on sharks identification for enumerators, recording of landing data at species level, validation of data, mid-term evaluation, and final meeting to review the national and regional reports.

Data collection at selected landing sites had been completed and project end meeting was organized in September 2016. All information is collected based on the Standard Operational Procedures (SOP) on Sharks Data Collection developed through the project implementation to ensure that recording and analysis are standardized at the regional level.

Compiled and published results from one-year data collection in Southeast Asia (total catch and landing of sharks at landing sites; new record of sharks species in the participating countries, etc.). Taxonomic information of sharks and rays caught in the Southeast Asian region. Trained enumerators making correct and valid identification of species at landing sites during data collection activities. Compiled information and utilization of sharks and rays. Translated field guides on sharks and rays species identification in Vietnamese and Cambodian languages. After one year data collection SOP on Sharks Data Collection will also been finalized and published in order to disseminate to all countries of the ASEAN as regional reference. It is possible to translate into local language.

Regional network of shark scientist and researcher has been developed since project started in 2013. The online communication to sharing information is well implemented.

National activities in recording sharks and rays landing by local enumerators could be expanded to cover the whole countries participating in the project. Finally, data from AMSs on sharks and rays landing up to species level could be included in the compilation of data for the Fishery Statistical Bulletin of Southeast Asia and possible to use for shark population and stock assessment study. SEAFDEC will also sustain the communication and network of shark data collection in SEA region and expand to other SEAFDEC Member Countries.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1. Human resource development programs		28	12	2	
Activity 2. Data collection		30	7		
Activity 3. Information dissemination		58	12		

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 1 Human resource development programs		
Sub-activity 1.1 National workshops and onsite trainings on shark species identification for local enumerators in seven (7) participating countries	Certify local enumerators	<ol style="list-style-type: none"> 1. Well trained enumerators making correct and valid identification of species at landing sites during data collection activities. Compiled information and utilization of sharks and rays. 2. Verify the Standard Operational Procedure (SOP) of shark and ray data collection
Activity 2 Data collection		
Sub-activity 2.1 Data collection	Set of data collected on shark landing at the selected sites	<ol style="list-style-type: none"> 1. One-year data collection in Southeast Asia (Total catch and landing of sharks at landing sites) 2. New record of sharks species in the participating countries, etc.) 3. Taxonomic information of sharks and rays caught in the Southeast Asian region. 4. Compiled information and utilization of sharks and rays. 5. Translated field guides on sharks and rays species identification in Vietnamese and Cambodian languages. 6. Updating the preliminary study on “non-detriment findings” or NDFs in Malaysia and Indonesia
Sub-activity 2.1 Monitoring of data collection 1. Onsite trainings on shark species identification for local enumerators in each participating countries organized and certified 2. Mid-term Sharks Data Collection Project Meeting was conducted from 21 to 23 June 2016, Cholburi Thailand 3. Project-End-Meeting on Sharks Data Collection in Southeast Asia was conducted 16-18 August 2016, Metro Manila, Philippines	Certify and improve quality of data collection	<ol style="list-style-type: none"> 1. Seven national data sets had been validated by the regional experts 2. Local enumerators were monitor and validate their capacity on the identification of species at landing sites during data collection activities. 3. Compiled information and utilization of sharks and rays.
Activity 3 Information dissemination		
Sub-activity 3.1 Information dissemination	1. SOP on Sharks Data Collection will also been finalized and published in order to disseminate to all countries of the	<ol style="list-style-type: none"> 1. SOP on Sharks Data Collection will also been finalized and published in order to disseminate to all countries of the ASEAN. 2. Translated field guides on sharks and rays species identification in Viet Nam and Cambodia languages. 3. Reports on Sharks Data Collection in Southeast

Planned activity	Expected outcome/output	Achievements
	ASEAN. 2. Report on the Sharks Data Collection in Southeast Asia	Asia will finalized and published as regional reference of sharks in Southeast Asia Region 4. SEAFDEC staff participate in Consultation meeting on the CITES COP 17

4. List of Completed Publications and Others

List of completed publications for the Year 2016	Type of media	Attached e-file
1. Report on the Mid-term Sharks Data Collection Project Meeting 21 to 23 June 2016, Cholburi Thailand	Hard copy	To be compile in report of Project-End-Meeting
2. Report on the Project-End-Meeting on Sharks Data Collection in Southeast Asia 16-18 August 2016, Metro Manila, Philippines	Hard copy	To be uploaded on SEAFDEC Website
3. Translated field guides on sharks and rays species identification in Vietnamese and Cambodia languages	Hard copy	
4. National report of seven participating countries	Hard copies	

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/ Views from Participants
Activity 1 Human resource development programs	
Sub-activity 1.1 National workshops and onsite trainings on shark species identification for local enumerators in seven (7) participating countries	With guidance from project advisors, Project Participating Countries can conduct systematically data collection and identify the major shark landing sites after trained from National Workshop and Onsite training. All Participating Countries accepted the Standard Operational Procedure (SOP) of shark and ray data collection developed by regional shark experts. Where the national work plan for data collection on shark landing will be well developed and implemented, the trial considerations on the issues to be solved in developing NDFs will be carried out.
Activity 2 Data collection	
Sub-activity 2.1 Data collection	Human resource capacity of the shark data collection of Participating Countries in Southeast Asian region has been well developed for identifying shark up to species level.
Sub-activity 2.2 Monitoring of data collection	Resource persons from MFRDMD and Expert group in Southeast Asia could transfer knowledge on shark species identification, especially on the species listed by CITES to all enumerator of Project Participating Countries.
Activity 3 Information dissemination	
Sub-activity 3.1 Information dissemination	Drafted Standard Operational Procedure (SOP) of shark and ray data collection has been verified by regional experts and Participating Counties of Shark Data Collection in Southeast Asia Reports of Regional and National Meeting on shark data collection will be published and disseminated to other Member Countries and relevant organizations

6. Major Impacts/Issues

Shark data collection in Southeast Asia is one of the major hindrances for the formulation of national shark fisheries management. Few countries in SEA move forward and update their data collection regularly. In the countries that lack of national budget support, shark data collection is not national priority. Support from the project present the data collection could be done by local enumerators. However, the data verification and information sharing between regional experts have been required for

accurate data collection. The supporting to less developing shark data collection in Southeast Asia should also be continued in order to ensure capacity of human resource on shark data collection will be developed and sustained.

At this stage, all participating countries of the project has minimum one year data set in major shark landing site (s) Shark database should start developing in order to support the study of stock assessment and information for fisheries management. In countries that moving forward shark data collection, quality of shark data to assess shark stocks from participating countries would be clarified and reported. The appropriate shark stock assessment model for the Southeast Asian region should be studies in parallel with the capacity building on the use of the appropriate shark stock assessment model for the Southeast Asian.

Based on the Project-End-Meeting on Sharks Data Collection in Southeast Asia, the Meeting agreed that: (1) SEAFDEC should continue supporting the human resource development on shark and ray species identification; (2) conduct of genetic analysis for stock validation should be continued; (3) species recording should be continued and enhanced; (4) data on CPUE should be checked and validated in order to summarize the one-year data compiled; and (5) collection of data on total fishing effort should also be included in the SOPs. In addition, regional expert suggested in the meeting that a proposal could be submitted to EU-CITES for the compilation of information on trade and marketing of sharks and rays. Moreover, the countries should continue to provide their respective data on fishing effort for the CPUE analysis and stock assessment of sharks and rays under the next project.

Concern on the shark fisheries management, some countries in Southeast Asia has not formulated the NPOA Shark yet. Result of the project can be supported and taken into consideration as base line data. However, there are no socioeconomic data collected to support the NPOA shark of these countries. Study on socioeconomic of shark and market related topics are necessary to apply for appropriate shark fisheries management in the future.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
Activity 1 Human resource development programs		
Sub-activity 1.1	Technical Meeting on determining the appropriate model for assessment of shark stocks based on existing data from Southeast Asian countries:	30,000
Activity 2 Data collection		
Sub-activity 2.1 Data Collection	Shark data collection at the selected landing sites (<i>e.g.</i> catch and some biological data as discussed during the meeting in 2014) of Cambodia will be continued implemented from January - December 2017.	2,000
Sub-activity 2.2 Monitoring of data collection	Project will provide the supports for shark experts or project staff to monitor shark data collection at the pilot sites landing in Cambodia, and Myanmar. Three technical visit on the pilot site (3 trips/year)	5,474
Activity 3 Information dissemination		
Sub-activity 3.1 Information dissemination	Develop the shark database system Material (hardware or software) of the development of database system 1000 USD	1,000
Sub-activity 3.2 Participate to Relevant Regional and International Forum	In order to monitor on the current issues that significant to sustainable utilization of sharks, responsible researcher of SEAFDEC will participate the regional / international forums <i>e.g.</i> WCPFC, IOTC and etc.	2,000

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 1 Human resource development programs	
Sub-activity 1.1 Technical Consultation Meeting on improvement of Shark Data Collection and Stock Assessment Model	Appropriate stock assessment model for study on the abundance of shark in Southeast Asia Waters and and capacity building of researchers for stock assessment.
Activity 2 Data collection	
Sub-activity 2.1 Data Collection	Set/Verified data collection of shark landing at the selected sites in Cambodia
Sub-activity 2.2 Monitoring of data collection	Capacity building of Cambodia researchers for shark identification.
Activity 3 Information dissemination	
Sub-activity 3.1 Information dissemination	Shark database in the southeast Asia region / Repository shark information that has previously been difficult to analyze
Sub-activity 3.2 Participate to Relevant Regional and International Forum	Report on the regional or global interest in current issues that significant to sustainable utilization of sharks presented in Meeting on Sharks and Rays Data Collection and Preparation for the CITES CoP17

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1												
Sub-activity 1.1												
Sub-activity 1.2												
Activity 2												
Activity 3												
Sub-activity 3.1												
Sub-activity 3.2												

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

			Project id: 01201308
Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Enhancing the Compilation and Utilization of Fishery Statistics and Information for Sustainable Development and Management of Fisheries in Southeast Asian Region: Activity 3. Harmonization of Fishery Statistics in the Southeast Asian Region		
Program Thrust:	IV	Total Duration:	2013 - 2017
Lead Department:	TD/Secretariat	Lead Country:	Viet Nam
Donor/Sponsor:	JTF-6	Total Donor Budget:	USD 29,840 (5-year)
Project Partner:	-	Budget for 2017:	USD 5,700
Project Leader:	Nualanong Tongdee	Involved Country:	AMSs

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

The primary goals of collecting regional fishery statistic are to obtain the information that could provide better understanding of fishery resources at regional level, and serve as a basis for policy planning and management for sustainable fisheries. Activities would be carried out under this project to enhance understanding of Member Countries on regional fishery statistics framework, and support reporting of their respective national statistics in accordance with the framework. In addition, the project would also be enhanced to provide platform for utilization of regional fishery statistics and other data and information as a basis for sustainable utilization of fishery resources in the region.

2. Background and Justification

SEAFDEC has been undertaking initiatives in collating fishery statistics from countries bordering the South China Sea Areas since 1978, and starting from 2008 onwards, the framework for compilation of statistics data was changed to cover countries in the Southeast Asian region. The new regional statistics framework was endorsed by the SEAFDEC Council during its 40th Meeting, and subsequently at the 16th Meeting of the ASEAN Sectoral Working Group on Fisheries in 2008. Nevertheless, fishery Statistics collected by different countries in the region are at the different levels, depending on the capacity, resources allocation and policy in data collection. Although effort has been exerted to harmonize the compilation of statistics at the regional level based on the regional statistics framework, there are still disparities of data from different countries. Besides, SEAFDEC Departments have been undertaking several programs/projects to enhance data collection from countries, which is envisaged to result in better statistics and data collection. The eventual goal is still to obtain better official statistics in order to come up with long-term data that could provide better pictures on status and trends of fisheries for the region as a whole.

This project is therefore proposed to continue supporting the reporting of statistics by the ASEAN Member States in line with the new fishery statistics framework, and enhancing the capacity of countries in reporting of their national statistics for regional compilation. In addition, the project would also provide platform for improving the utilization of fishery statistics, integrating with other forms of data and information to generate better understanding of fishery resources.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities:

3.1 Objectives, Outcome and Output of the Project

Objectives	Outcomes	Outputs	Activity
Objective 1: To improve compilation of fishery statistics from countries in the region	Outcome 1: Improved understanding of Southeast Asian countries on harmonized requirements for compilation of regional statistics	Output 1: Strengthened coordination between SEAFDEC and Member Countries and relevant organizations on statistics-related matters	Activity 1: Coordination of work and participation in the relevant Consultations/ Meetings
	Outcome 2: More reliable and complete statistics data submitted from Southeast Asian countries	Output 2: Improved reporting of statistics by the ASEAN Member States in line with the harmonized framework for fishery statistics of Southeast Asia	Activity 2: Preparation/dissemination of materials to support the collection/reporting of statistics from Member Countries
Objective 2: To improve information on status and trends of fisheries and aquaculture of the region	Outcome 3: Improved understanding on status of fisheries in the region	Output 3: Enhanced utilization regional fishery statistics and other data and information to provide understanding on fisheries	Activity 3: Production of publication on Southeast Asian State of Fisheries and Aquaculture

3.2 Overall Scope/Description of Project

Activity	Description
Activity 1: Coordination of work and participation in the Consultations/Meetings of relevant projects	Coordination/communication with Member Countries, and officer in charge in FAO for compilation of statistics, to clarify the submission of statistics based on the regional statistics framework.
Activity 2: Preparation/dissemination of materials to support the collection/reporting of statistics from Member Countries	Preparation/dissemination of publications/materials that enhance better understanding of countries on the regional framework for fishery statistics, to facilitate submission of national statistics accordingly.
Activity 3: Production of publication on Southeast Asian State of Fisheries and Aquaculture	Production/dissemination of the publication on Southeast Asian State of Fisheries and Aquaculture, which include information on status and trends of fisheries, important fisheries-related issues, etc., which should provide basis for management for sustainable fisheries.

3.3 Activity, Sub-activity and Proposed Budget for 2013-2017

(Unit: USD)

Activity	Y1 2013	Y2 2014	Y3 2015	Y4 2016	Y5 2017
Activity 1: Coordination of work and participation in the Consultations/Meetings of relevant projects	1,500	1,500	1,700		
Activity 2: Preparation/dissemination of materials to support the collection/reporting of statistics	5,500	4,240			
Activity 3: Production of publication on Southeast Asian State of Fisheries and Aquaculture (SEASOFIA)			4,000	5,700	5,700

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION**1. Achievements of the Project Implementation for the Present Year**

In 2016, SEAFDEC continued coordination with Member Countries and relevant organizations to support submission of national statistics for regional/international compilation. The structure of content of SEASOFIA which was discussed during the 38th Program Committee Meeting in 2015, was used as a basis for preparation of inputs from the respective SEAFDEC Departments. During the 17th SEAFDEC Information Staff Program (ISP) Meeting on 25-27 October 2016, the draft inputs were discussed among SEAFDEC, and this would be tabled for discussion/consideration at the SEAFDEC Program Committee at its 39th Meeting in 2016.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity (1)	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1: Coordination of work and participation in the Consultations/ Meetings of relevant projects	VI. Other				
Activity 2: Preparation/dissemination of materials to support the collection/reporting of statistics	III. Information				
Activity 3: Preparation of publication on Southeast Asian State of Fisheries and Aquaculture (SEASOFIA)					
3.1 Development of inputs for SEASOFIA by respective Departments	III. Information				
3.2 Discussion on the draft SEASOFIA (at 17 th ISP Meeting)	III. Information		5		5,550 (Estimated)

3. Achievements and Expected Outcome/Outputs of the Activity

Planned Activity	Expected Outcome/Output	Achievement
Activity 3: Preparation of publication on Southeast Asian State of Fisheries and Aquaculture (SEASOFIA)		
3.1 Development of inputs for SEASOFIA by respective Departments	Draft inputs from SEAFDEC Departments	Inputs were developed by the respective SEAFDEC Departments (including SEAFDEC Secretariat) and submitted to the Secretariat.
3.2 Discussion on the draft SEASOFIA (at 17 th ISP Meeting)	Comment on draft SEASOFIA, for revision and submission to the PCM	(to be discussed at 17 th ISP Meeting, 25-27 October 2016)

4. List of Completed Publications and Others

List of completed publications for the Year 2016	Type of media	Attached e-file
-	-	-

5. Major Impacts/Issues

- More reliable and complete statistics data could be submitted from Southeast Asian countries. Nevertheless, the provision of statistics from respective countries is depended on the capacity of the respective country. Nevertheless, availability of statistics data depended on countries that provide data. Data sometimes are available from other sources (e.g. other Departments or) or in national languages, resulting in difficulties for consolidation.

- Concerned officers of SEAFDEC are encouraged to make use of findings from project implementation and other sources of information to generate information on status and trends of fisheries and aquaculture to serve as basis to support sustainable management of fisheries. Although it is expected that inputs for issues covered by SEASOFIA could be provided by the respective SEAFDEC Departments, but some difficulties were found, *e.g.* unavailability of inputs on some issues, *e.g.* post-harvest industry of the Southeast Asian region. This matter should be further discussed at the next PCM.
- Concerned officers of SEAFDEC are encouraged to make use of findings from project implementation and other sources of information to generate information on status and trends of fisheries and aquaculture to serve as basis to support sustainable management of fisheries.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Sub-Activity	Description of Proposed Activity/Outputs	Proposed Budget
Activity 1: Coordination of work and participation in the Consultations/Meetings of relevant projects	SEAFDEC will continue coordination/ communication with Member Countries, and officer in charge in FAO for compilation of statistics, to clarify the submission of statistics based on the regional statistics framework. A regional consultation among ASEAN Network on Fishery Statistics is also planned to be held in 2017.	
Activity 3: Production of publication on Southeast Asian State of Fisheries and Aquaculture: Preparation of outline 3.1 Publishing of SEASOFIA 2017	Based on inputs from SEAFDEC Departments which is subject to discussion at the PCM, the final publication of SEASOFIA is expected to be published in early 2017.	5,700

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 1: Coordination of work and participation in the Consultations/Meetings of relevant projects	Strengthening coordination/communication with Member Countries, and officer in charge in FAO for compilation of statistics, to clarify the submission of statistics based on the regional statistics framework.
Activity 3: Production of publication on Southeast Asian State of Fisheries and Aquaculture: Preparation of outline 3.2 Publishing of SEASOFIA 2017	The final publication on Southeast Asian State of Fisheries and Aquaculture is expected to be published and made available for the 49 th SEAFDEC Council Meeting.

3. Schedule of Activity for the Year 2017

Activity	J	F	M	A	M	J	J	A	S	O	N	D
Activity 1: Coordination of work and participation in the Consultations/Meetings of relevant projects	(As and when necessary)											
Activity 3: Production of publication on Southeast Asian State of Fisheries and Aquaculture 3.3 Preparation layout and publishing of SEASOFIA												

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

			Project id: 2013040102
Program Categories:	Project under the ASEAN-SEAFDEC FCG /ASSP Mechanism		
Project Title:	Comparative Studies for Management of Purse Seine Fisheries in the Southeast Asian Region		
Program Thrust:	IV	Total Duration:	2013 - 2019
Lead Department:	MFRDMD	Lead Country:	Philippines
Donor/Sponsor:	JTF-6	Total Donor Budget:	USD 308,804
Project Partner:	TD, Secretariat	Budget for 2016:	USD 33,933
Project Leader:	Raja Bidin bin Raja Hassan	Involved Country:	Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Thailand and Viet Nam

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

The project involves compilation and comparison of annual and/or monthly CPUE where data are available for the last three decades in the region, comparison purse seine fisheries management systems/measures including TAC systems and other management measures in the world, the genetic study of a commercially important pelagic species, and construction of management strategies for sustainable purse seine fisheries in the Southeast Asian region. Since catch-effort statistics are available in Malaysia and Thailand and CPUE is an indirect measurement of abundance of a target species in fisheries, MFRDMD will make its first attempt to examine the trend of resource level using CPUE for the last three decades. At the same time, MFRDMD will review and compare purse seine fishery management systems including TAC systems and other management measures in the world to examine which management system/measure is applicable for management of small pelagic fishery in the region. Moreover, the genetic study intends to verify the extent of connectivity of commercially important pelagic species targeted by purse seine fisheries, and provide with scientific background for concerted management actions of SEAFDEC Member Countries for shared stocks of small pelagic species. At the end of the project, MFRDMD will review available information including stock levels, and MFRDMD and Member Countries will examine management strategies for sustainable purse seine fisheries in the region.

2. Background and Justification

Small pelagic fishes such as Indian mackerels, scads and sardinella are very important in the Southeast Asian region. In 2010, more than 800,000 MT of *Rastrelliger* spp., 700,000 MT of *Decapterus* spp. and 800,000 MT of *Sardinella* spp. were captured in the region. Besides food resources, capture fisheries targeting these fishes are of fundamental importance to this region in terms of employment and livelihood of fishers. Purse seine is one of the major fishing gears to catch those small pelagic fishes. However, management of purse seine fisheries is still neglected because information of stocks and biological characteristics are lacking. For sustainable use of these resources, formulation of a management plan is required. Therefore, we need to develop the best way to assess the size and state of the stocks for accurate TAC allocation and to find the most applicable TAC system for the purse seine fisheries in the region. Considering the likeliness of these stocks shared by countries bordering with the same ecosystems both in the Andaman Sea and the South China Sea, effective management of shared stocks requires management measures to be taken for the whole coverage area that is beyond national waters.

This program corresponds to #10 of Resolution at the ASEAN-SEAFDEC conference in 2011 (Strengthen knowledge/science-based development and management of fisheries through enhancing the national

capacity in the collection and sharing of fisheries data and information) and #22 of Plan of Action (Establish and strengthen regional and sub-regional coordination on fisheries management and efforts to combat IUU fishing including the development of regional/sub-regional Monitoring, Control and Surveillance (MCS) networks)

Considering the importance of this project in comparative studies for management of purse seine fisheries, especially having several options for management strategy of purse seine fisheries in the region, SEAFDEC proposes to expand its project period to 2019.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1: To compile and compare annual and/or monthly catch per unit effort (CPUE) data for the last three decades in Malaysia and Thailand where historical catch-effort statistics had been collected by SEAFDEC and to interpret the trend of resources in the region	Outcome 1: Purse seine CPUE data in Malaysia and Thailand are utilized to interpret the trend of resources in the region	Output 1: Purse seine CPUE data in Malaysia and Thailand are compiled	Activity 1: Comparative Studies for CPUE and TAC 1.1 Case studies for CPUE in the Southeast Asian region
Objective 2: To assess which unit of effort is most appropriate for Malaysia, Thailand and other Member Countries and to examine other indicators for stock assessment	Outcome 2: Suitable indicators for purse seine management in the region are examined	Output 2: Purse seine CPUE and other indicators in Member Countries are compared and assessed	Activity 1: Comparative Studies for CPUE and TAC 1.2 Suitable CPUE and other indicators for resource levels in Member Countries
Objective 3: To compare existing management systems/measures of purse seine fishery including total allowable catch (TAC) systems in the world to examine which management system/measure is applicable for management of purse seine fishery in the region	Outcome 3: Understanding of TAC systems and the other management measures for purse seine in the region is improved.	Output 3: TAC systems and the other management measures in the world for purse seine are compared	Activity 1: Comparative Studies for CPUE and TAC 1.3 Comparison of TAC systems in the world (including other management measures)
Objective 4: To compare genetic structures of commercially important small pelagic species in the region by studying one species of the commercially important sardines	Outcome 4: Understanding of fish stock structures in the region is improved	Output 4: New genetic data on a pelagic fish species is compiled and analyzed	Activity 2. Genetic Data Collection and Analysis 2.1 Equipment preparation for genetic study 2.2 Sample collection 2.3 Genetic study 2.4 Data compilation and analysis

Objective	Outcomes	Outputs	Activities
Objective 5: To propose management strategies for sustainable purse seine fisheries in the Southeast Asian region based on available data	Outcome 5: Management strategies for sustainable purse seine fisheries in the region based on available data are improved.	Output 5: Core Expert Meeting/Workshop is held for effective program implementation	Activity 3. Meetings for Effective Program Implementation 3.1 Core Expert Meeting/Workshop
		Output 6: Recommendation for management of purse seine fisheries in the region is reported.	Activity 4. Recommendation for Purse Seine Fisheries Management in the Southeast Asian region 4.1 Recommendation for fisheries Management 4.2 Preparation and publishing of terminal report

3.2 Overall Scope/Description of Project

Activity	Description
Activity 1. Comparative Studies for CPUE and TAC	As a case study, annual and/or monthly catch per unit effort (CPUE) data will be compiled for the last three decades in Malaysia and Thailand where historical catch-effort statistics had been collected by SEAFDEC. These data will be compared and utilized to interpret the trend of pelagic resources in the region. By using the compiled CPUE data and the other indicators, the most appropriate indicators to assess resource levels for purse seine fishery in the region will be examined. Existing management systems/measures in the world for purse seine fishery including total allowable catch (TAC) systems will be compared to examine which management system/measure is applicable for management of purse seine fishery in the region
Activity 2. Genetic Data Collection and Analysis	Genetic structures of commercially important small pelagic species targeted by purse seine fishery in the region will be studied. One species of the commercially important sardines will be selected. New genetic data on a pelagic fish species is compiled and analyzed to consider appropriate management of purse seine fishery in the region.
Activity 3. Meetings for Effective Program Implementation	Core Expert Meetings will be held for effective program implementation. The meetings which are planned in 2014, 2016, 2017, and 2018 will discuss on the planning and progress of Activity 1-2 and draft recommendations for sustainable purse seine fisheries in the Southeast Asian region based on available data.
Activity 4. Recommendation for Purse Seine Fisheries Management in the Southeast Asian region	By using the information obtained in Activity 1-3, a terminal report will be published and recommendation will be made available for sustainable purse seine fisheries in the Southeast Asian region based on available information.

3.3 Activity, Sub-activity and Proposed Budget for 2015-2019

(Unit: USD)

Activity	Sub-Activity	Y1 2013	Y2 2014	Y3 2015	Y4 2016	Y5 2017	Y6 2018	Y7 2019
Activity 1: Comparative Studies for CPUE and TAC	Sub-activity 1.1 Case studies for CPUE in the Southeast Asian region	20,000	5,000					

Activity	Sub-Activity	Y1 2013	Y2 2014	Y3 2015	Y4 2016	Y5 2017	Y6 2018	Y7 2019
	Sub-activity 1.2 Suitable CPUE and other indicators for resource levels in Member Countries			10,000	6,500			
	Sub-activity 1.3 Comparison of TAC systems in the world (including other management measures)	25,000	5,000	10,000	6,500	7,933	8,933	
Activity 2: Genetic Data Collection and Analysis	Sub-activity 2.1: Equipment preparation for genetic study	15,000						
	Sub-activity 2.2: Sample collection		8,000	5,000				
	Sub-activity 2.3: Genetic study		9,866	15,972	9,773			
	Sub-activity 2.4: Data compilation and analysis					5,000		
Activity 3: Meetings for Effective Program Implementation	Sub-activity 3.1: Core Expert Meeting/Workshop		30,394		25,000	21,000	25,000	
Activity 4 Recommendation for Purse Seine Fisheries Management in the Southeast Asian region	Sub-activity 4.1: Recommendation for fisheries Management							3,933
	Sub-activity 4.2: Preparation and publishing of terminal report							30,000
	Sub-Total	60,000	58,260	40,972	47,773	33,933	33,933	33,933

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the Present Year

MFRDMD collected updated information on purse seine fisheries from Member Countries and continuously examined the data for regional synthesis of purse seine fisheries in the region to suggest possible suitable stock indicator and management systems in the Member Countries. MFRDMD conducted internal Workshop in Tok Bali, Malaysia on 6-7 January 2016 to discuss regional synthesis of purse seine fisheries information. Also, MFRDMD will invite Member Countries to participate in regional Workshop in Dec 2016 to conduct case studies with available information and some application of catch and fishing effort to develop management strategies for purse seine fisheries in the region.

“Core Expert Meeting on Comparative Studies for Management of Purse Seine Fisheries in the Southeast Asian Region” was held on 9-11 August 2016 in Kuala Lumpur, Malaysia. The meeting was attended by the representatives from Cambodia, Indonesia, Malaysia, the Philippines, Thailand, Viet Nam and an observer from Lao PDR; as well as resource persons from Japan and Malaysia. The meeting shared the latest information about landings and CPUEs of purse seine fisheries in the region, make comparison in application of TAC, TAE and other management options and its data requirement, and understanding the population structure for *Amblygaster sirm*. A meeting report and regional synthesis of purse seine information will be published before March 2017.

Genetic samples from spotted sardinella (*Amblygaster sirm*) collected by participating Member Countries were analyzed and the preliminary result based on four sampling locations (namely Muara; Brunei

Kuantan, Kudat; Malaysia, and Songkhla, Thailand) found that *Amblygaster sirm* in South China Sea is a single evolutionary unit and therefore can be regarded as a single conservation unit for the management of sustainable fisheries.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1					
Sub-activity 1.2: Suitable CPUE and other indicators for resource levels in Member Countries	Information		4 MFRDMD		4,000
Sub-activity 1.3: Comparison of TAC systems in the world	Information	8	5 MFRDMD		3,000
Activity 2					
Sub-activity 2.3: Genetic study	Research		2 MFRDMD		5,000
Activity 3					
Sub-activity 3.1: Core Expert Meeting/Workshop	Information	15	8 MFRDMD, 1 TD, 1 SEC	2	27,000

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 1		
Sub-activity 1.2: Suitable CPUE and other indicators for resource levels in Member Countries	Suitable stock indicators in the selected Member Countries based on data analysis for the last five years.	MFRDMD collected updated information on purse seine fisheries from Member Countries and continuously examined the data for regional synthesis of purse seine fisheries in the region to suggest possible suitable stock indicator and management systems in the Member Countries.
Sub-activity 1.3: Comparison of TAC systems in the world	Comparison of TAC systems and management measures for purse seine fishery	MFRDMD conducted internal Workshop in Tok Bali, Malaysia on 6-7 January 2016 to discuss regional synthesis of purse seine fisheries information. Also, MFRDMD will invite Member Countries to organize Workshop in Dec 2016 to study on case studies and some application of catch and fishing effort management strategies for purse seine fisheries in the region.
Activity 2		
Sub-activity 2.3: Genetic study	Preliminary genetic analysis of spotted sardinella (<i>Amblygaster sirm</i>).	Genetic samples from spotted sardinella (<i>Amblygaster sirm</i>) collected by participating Member Countries were analyzed and the preliminary result based on four sampling locations (namely Muara; Brunei Kuantan, Kudat; Malaysia, and Songkla, Thailand) was presented during the Core Expert Meeting. The results found that <i>Amblygaster sirm</i> in South China Sea is a single evolutionary unit and therefore can be regarded as a single conservation unit for the management of sustainable fisheries.
Activity 3		
Sub-activity 3.1: Core Expert Meeting/Workshop		“Core Expert Meeting on Comparative Studies for Management of Purse Seine Fisheries in the Southeast Asian Region” was held on 9-11 August 2016 in Kuala Lumpur, Malaysia. The meeting was attended by the

Planned activity	Expected outcome/output	Achievements
		representatives from Cambodia, Indonesia, Malaysia, Philippines, Thailand, Viet Nam and an observer from Lao PDR; as well as resource persons from Japan and Malaysia to share the latest information about landings and CPUEs of purse seine fisheries in the region, make comparison on application of TAC, TAE and other management options as well as its data requirement, and understanding the population structure for <i>Amblygaster sirm</i> . A meeting report and regional synthesis of purse seine information will be published before March 2017.

4. List of Completed Publications and Others

List of completed publications for the Year 2015	Type of media	Attached e-file
1. Meeting report for “Core Expert Meeting on Comparative Studies for Management of Purse Seine Fisheries in the Southeast Asian Region”	Print, pdf	
2. Current status of pelagic fisheries in the southeast Asian region	Fish for the people	

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/ Views from Participants
Activity 2	
Sub-activity 2.2	MFRDMD will invite Member Countries to participate in a regional workshop in Dec 2016 and conduct a case study with available information. This workshop also will make use catch and fishing effort information to develop management strategies for purse seine fisheries in the region.

6. Major Impacts/Issues

For regional synthesis of purse seine fisheries information, Member Countries are requested to submit the updated data within the agreed time frame. For genetic study of *Amblygaster sirm*, there are several difficulties including bureaucratic procedures and legislations to bring samples from countries to MFRDMD, which makes regional genetic studies difficult. Some samples sent from Member Countries were misidentified, showing some Member Countries has still have difficulties in species identification of small pelagic species.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
Activity 1		
Sub-activity 1.3 Comparison of TAC systems in the world (including other management measures)	SEAFDEC/MFRDMD will continue synthesizing regional information of purse seine fisheries as well as comparing different management systems for purse seine fisheries to suggest applicable management systems for pelagic fishery resources in the region. MFRDMD will also convene a workshop to share the above information for better understanding of possible purse seine fisheries management systems in the region.	7,933
Activity 2		
Sub-activity 2.4: Data compilation and analysis	SEAFDEC/MFRDMD will complete genetic analyses to study stock structure of <i>Amblygaster sirm</i> in the Southeast Asian region. The results will be presented	5,000

Proposed Activity	Description of Proposed Activity	Proposed Budget
	during the Core Expert Meeting in 2017.	
Activity 3		
Sub-activity 3.1 Core Expert Meeting/Workshop	MFRDMD will organized a Core Expert Meeting to further discuss and update on the current status of purse seine fisheries in the South China Sea and Andaman Sea as well as the result of genetic study of the small pelagic fish. Representatives from each participating Member Countries will be invited to attend the CEM. Several possible options for management systems of purse seine fisheries in the region and Member Countries will be discussed.	21,000

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 1	
Sub-activity 1.3 Comparison of TAC systems in the world (including other management measures)	Information of regional purse seine fisheries will be synthesized and updated. Several management systems for purse seine fisheries will be compared to examine applicable management options for small pelagic fishery resources in the region.
Activity 2	
Sub-activity 2.4: Data compilation and analysis (genetic)	Stock structure of shared small pelagic fish targeted by purse seine fisheries in the region will be updated.
Activity 3	
Sub-activity 3.1 Core Expert Meeting/Workshop	MCs will share synthesized information of regional purse seine fisheries. MCs will also update information on management systems for purse seine fisheries to examine applicable management measure of small pelagic fishery resources in the region.

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1												
Sub-activity 1.3 Comparison of TAC systems in the world (including other management measures)												
Activity 2												
Sub-activity 2.4 Data compilation and analysis												
Activity 3												
Sub-activity 3.1 Core Expert Meeting/Workshop												

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

Project id: 2015040103			
Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region		
Program Thrust:	IV	Total Duration:	2015 - 2019
Lead Department:	MFRDMD	Lead Country:	Malaysia
Donor/Sponsor:	JTF-6	Total Donor Budget:	USD 203,553
Project Partner:	TD, Secretariat	Budget for 2017:	USD 36,268
Project Leader:	Dr. Ahmad Ali	Involved Country:	Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Thailand, and Viet Nam

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

Recently, on a regional level the pressure to list commercially captured shark and ray species on CITES is growing. Therefore, governments need to collect data on these species and to prepare management plans when needed. Identification of elasmobranchs (sharks & rays) species is fundamental of data collection and law enforcement related to CITES. Expertise on identification and biological data collection on sharks and rays in the region needs to be strengthened. In addition, information on utilization of by-catch sharks and rays will be collected and compiled in order to enhance understanding on the importance of sharks and rays in the Southeast Asian region and necessity of fisheries management measures.

2. Background and Justification

About 126 thousand tons of sharks and rays were captured in 2009 in Southeast Asia. High demands for shark fin in Asia raise a concern about shark populations. In 1998, FAO proposed International Plan of Action for the Conservation and Management of Sharks (IPOA-SHARKS) corresponds to increase of shark catch. SEAFDEC conducted the basic study of sharks in the ASEAN region in 2003-2004. Species composition and landing were available for one year at major ports in Brunei, Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Thailand and Viet Nam. Because of workshops on taxonomy and identification of sharks and rays by SEAFDEC in 2012 and 2014 and publications of three field guidebooks in 2012, 2013 and 2014, data collection on sharks and rays in the region is improving. However, fisheries data in sharks and rays are still insufficient in many Member Countries. On a regional level the pressure to list commercially important and valuable marine species on CITES is growing. Therefore, governments need to collect data on these species and to prepare management plans. Identification of elasmobranch species is fundamental of biological data collection. Expertise on identification and biological data collection on sharks and rays in the region need to be strengthened. Recognition of fully utilized by-catch sharks and rays by a socio-economic study is necessary in the region. Information on utilization of by-catch sharks and rays will improve fishery management in the region.

These activities correspond to 2011 Resolution (No. 10: Strengthen knowledge/science-based development and management of fisheries through enhancing the national capacity in the collection and sharing of fisheries data and information) and Plan of Action (No.4: Enhance regional fishery information systems and mechanisms to facilitate sharing, exchange and compilation of statistics and information that are required at the sub-regional and regional level and apply, where appropriate, regionally standardized definitions and classifications for statistical data to facilitate regional compilation, analysis and data exchange; No. 76: Increase participation and involvement of Member Countries in international fora and

technical committees such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); Codex Alimentarius Commission; Food and Agriculture Organization of the United Nations (FAO); Office International des Epizooties (OIE); Regional Fisheries Bodies (RFBs); and World Trade Organization (WTO); and promote ASEAN interest, recognizing that fisheries policies of relevance to the ASEAN region are increasingly discussed and agreed upon at the global level.) at the ASEAN-SEAFDEC Conference.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1: To train technical officers in the participating Member Countries to be able to collect taxonomic and biological data on sharks and rays in their countries	Outcome 1: Improved landing data collection on sharks and rays	Output 1: Taxonomic information of sharks and rays in the region	Activity 1: Identification of Sharks and Rays in the Southeast Asian Region 1.1 On-site training and data collection in the region 1.2 Workshops on identification of sharks and rays and Core Expert Meeting on Sharks Data Collection in the region
Objective 2: To obtain/summarize genetic information for shark and ray species identification in the region by DNA bar-coding	Outcome 2: Improved customs inspection	Output 2: Genetic information for sharks and rays species identification in the region has been obtained/summarized by DNA bar-coding.	Activity 1: Identification of Sharks and Rays in the Southeast Asian Region 1.3 Identification of shark and ray species by DNA bar-coding
Objective 3: To collect information on utilization of sharks and rays in the region for proper fishery management and sustainable utilization	Outcome 3: Improved fishery management on sharks and rays	Output 3: socio-economic information of sharks and rays in the region	Activity 2 :Utilization of By-catch Sharks and Rays

3.2 Overall Scope/Description of Project

Activity	Description
Activity 1 Identification of Sharks and Rays in the Southeast Asian Region	MFRDMD will assist Member Countries to strengthen expertise on identification and biological data collection on sharks and rays in the region through on-site trainings and workshops. Also, MFRDMD will obtain and compile genetic information for shark and ray species identification in the region by DNA bar-coding.
Activity 2 Utilization of By-catch Sharks and Rays	MFRDMD will visit Member Countries and collect and compile information on utilization of sharks and rays in order to enhance understanding of the importance of sharks and rays in the Southeast Asian region and necessity of fisheries management measures. MFRDMD will hold Core Expert Meetings to summarize the information.

3.3 Activity, Sub-activity and Proposed Budget for 2015-2019

(Unit: USD)

Activity	Sub-Activity	Y1 2015	Y2 2016	Y3 2017	Y4 2018	Y5 2019
Activity 1. Identification of Sharks and Rays in the Southeast Asian Region	Sub-activity 1.1 On-site training in the region	18,400		8,430		
	Sub-activity 1.2 Workshops on identification of sharks and rays in the region		25,909	9,905		33,792
	Sub-activity 1.3: Identification of shark and ray species by DNA bar- coding	18,900	10,000	13,500	10,000	10,000
Activity 2. Utilization of By- catch Sharks and Rays	Sub-activity 2.1: County visits	6,492		4,433		
	Sub-activity 2.2: Summarization and publication				5,666	
	Sub-activity 2.3: Core Expert Meeting				28,126	
Sub-Total		43,792	35,909	36,268	43,792	43,792

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the Present Year

SEAFDEC/MFRDMD in collaboration with TD and the SECRETARIAT jointly organized “Training on Elasmobranch Taxonomy” in Vung Tau, Viet Nam from 23 to 27 May 2016. During the training, a total of 25 new species records for Viet Nam (14 sharks, 7 rays, 4 skate) were recognized. SEAFDEC/MFRDMD has assisted Viet Nam for six months data collection of landing and biological information as well as DNA sampling for further strengthening their ability of sharks and rays information collection in Viet Nam. SEAFDEC/MFRDMD in collaboration with TD will convene Workshops in Cambodia, Myanmar and Viet Nam in October/November for compilation and verification of the biological and landing data in the countries. Also, information will be collected on socio-economy, marketing and trade of sharks and rays.

MFRDMD and SEAFDEC Member Countries collected genetic samples of sharks and rays to conduct bar-coding research which is progressing in the world. MFRDMD visited and collected specimens from Malaysia (Pahang, Terengganu, Perak, Sabah and Sarawak). The total of 21 species of sharks (95 specimens) and 32 species of rays (122 specimens) has been identified. Samples collected from Vung Tau, Viet Nam is currently analyzed.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1 Identification of Sharks and Rays in the Southeast Asian Region					
Sub-activity 1.1: On-site training in the region	Training	18 (Viet Nam)	4 MFRDMD, 1 TD, 1 SEC	1	14,000

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Sub-activity 1.2 Workshops on identification of sharks and rays in the region	Training	8 (Cambodia)	2 MFRDMD, 2 TD		in October
	Training	8 (Myanmar)	2 MFRDMD, 2 TD		in October
	Training	8 (Viet Nam)	2 MFRDMD, 2 TD		in October
Sub-activity 1.3: Identification of shark and ray species by DNA bar-coding	Research		2 MFRDMD		8,000

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 1		
Sub-activity 1.1: On-site training in the region	Trained staffs are able to make the right and valid identification of species at landing site during data collection activities.	SEAFDEC/MFRDMD in collaboration with TD and the SECRETARIAT jointly organized “Training on Elasmobranch Taxonomy” in Vung Tau, Viet Nam from 23 to 27 May 2016. During the training, a total of 25 new species records for Viet Nam (14 sharks, 7 rays, 4 skate) were recognized. SEAFDEC/MFRDMD has assisted Viet Nam for six months data collection of landing and biological information as well as DNA sampling for further strengthening their ability of sharks and rays information collection in Viet Nam.
Sub-activity 1.2 Workshops on identification of sharks and rays in the region	Member Countries will come up with complied and verified landing/ biological data of sharks and rays as well as socio-economy, marketing and trade of sharks and rays.	SEAFDEC/MFRDMD in collaboration with TD will convene Workshops in Cambodia, Myanmar and Viet Nam in October/November for compilation and verification of the biological and landing data in the countries. Also, information will be collected on socio-economy, marketing and trade of sharks and rays.
Sub-activity 1.3: Identification of shark and ray species by DNA bar-coding	Genetic information for sharks and rays species identification in the region has been obtained/summarized by DNA bar-coding	MFRDMD and SEAFDEC Member Countries collected genetic samples of sharks and rays to conduct bar-coding research which is progressing in the world. MFRDMD visited and collected specimens from Malaysia (Pahang, Terengganu, Perak, Sabah and Sarawak). The total of 21 species of sharks (95 specimens) and 32 species of rays (122 specimens) has been identified. Samples collected from Vung Tau, Viet Nam is currently analyzed.

4. List of Completed Publications and Others

List of completed publications for the Year 2015	Type of media	Attached e-file
Nil		

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/ Views from Participants
Activity 1	
Sub-activity 1.1	On-site trainings were held in Vung Tau, Viet Nam from 23 to 27 May 2016. Eighteen participants from all over the country including enumerators, researchers and officers in charge attended the training. While updating and

Planned activity	Evaluation/ Views from Participants
	refreshing their expertise to identify elasmobranch species, a total of 25 new species records for Viet Nam (14 sharks, 7 rays, 4 skate) were recognized.

6. Major Impacts/Issues

The check list of sharks and rays species in the participating Member Countries are updated including 15 new record found in Viet Nam. Workshops for compilation and verification of the biological and landing data will be convened in Cambodia, Myanmar and Viet Nam in October/November. Also, information will be collected on socio-economy, marketing and trade of sharks and rays. All planned activities will be completed as proposed.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
Activity 1		
Sub-activity 1.1: On-site training in the region	On-site training will be held to strengthen human capacity of participating Member Countries on the identification of common and CITES listed sharks and rays. Samples obtained and kept in the designated sampling sites will be used.	8,430
Sub-activity 1.2 Workshop on identification of sharks and rays and data collection in the region	Workshop will be held to assist and to improve skills for Member Countries on the identification of common and CITES-related sharks and rays found in this region. Participants will also discuss on the biological information and catch data of shark and rays for sustainable utilization of these species.	9,905
Sub-activity 1.3 Identification of shark and ray species by DNA bar-coding	Biological information, catch data and tissue sample from sharks and rays will be collected at selected landing sites in participating Member Countries. Sample will be analyzed at MFRDMD DNA laboratory for bar-coding. The results will be presented during the Workshop.	13,500
Activity 2:		
Sub-activity 2.1: Utilization of By-catch Sharks and Rays	Information on socio-economy, marketing and trade of sharks and rays will be collected in the participating Member Countries.	4,433

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 1	
Sub-activity 1.1: On-site training in the region	Capacity of Member Countries on species identification and biological/ landing data collection for sharks and rays will be increased through on-site training.
Sub-activity 1.2 Workshop on identification of sharks and rays and data collection in the region	Expertise on species identification of sharks and rays in Member Countries will be increased through Workshops on identification of sharks and rays in the region.
Sub-activity 1.3 Identification of shark and ray species by DNA bar-coding	Additional bar-coding analyses for sharks and rays in the region will be conducted and will be updated.
Activity 2	
Sub-activity 2.1: Utilization of By-catch Sharks and Rays	MFRDMD will visit Member Countries and collect and compile information on utilization of sharks and rays in order to enhance understanding of the importance of sharks and rays in the Southeast Asian region and necessity of fisheries management measures.

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1												
Sub-activity 1.1: On-site training in the region												
Sub-activity 1.2 Workshop on identification of sharks and rays and data collection in the region												
Sub-activity 1.3 Identification of shark and ray species by DNA bar- coding												
Activity 2												
Sub-activity 2.1: Utilization of By-catch Sharks and Rays												

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

Project id: 06201301

Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Assistance for Capacity Building in the Region to Address International Fish Trade-related Issues		
Program Thrust:	V	Total Duration:	2013 - 2019
Lead Department:	Secretariat	Lead Country:	Thailand
Donor/Sponsor:	JTF-6	Total Donor Budget:	Estimated USD 737,875
Project Partner:	None	Budget for 2017:	USD 73,476
Project Leader:	Somboon Siriraksophon, PPC	Involved Country:	All SEAFDEC Members

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

Recognizing the issues on trade in fish and fish products are greatly discussed and driven by international market and by various organizations, which rarely involve from fisheries authorities and sometimes lack of contribution to sustainable fisheries development and management aspects. A number of international instruments have been agreed or enforced by international organizations could determine impacts on sustainable development of fisheries in the Southeast Asian region, particularly developing countries where most of fisheries contribution come from small-scale fisheries sub-sector. In accordance to this, it is important to not only reconcile the international driven issues with the promotion on sustainable fisheries development, but more active evaluate the regional impact and addressing the regional concerns to the international fora are also needed.

2. Background and Justification

Since 1990s, SEAFDEC has monitored the potential international issues on fish and fish products and provided regional consultative forum to the ASEAN-SEAFDEC Member Countries, through this mechanism SEAFDEC provides fisheries authority of Member Countries with necessary information of the trade related issues and environment related task on international concerns such as the issues under UN General Assembly, WTO, FAO and CITES as well as large group of importer like EC and USA. Through the technical consultation, the results of regional discussions and conclusion were analyzed and came up with recommendation for national/regional action plan as well as the regional common/coordinated position to safeguard the interests of ASEAN-SEAFDEC Member Countries at the global fora. Therefore, it is crucial that SEAFDEC should keep monitoring the emerging international fish trade-related issues as well as environment-related task and fisheries-related issues, meanwhile it is also need to provide support to Member Countries through appropriate channels in order to reflect the regional collaborative efforts in managing fisheries and assist the Member Countries in developing regional common/coordinated positions, as well as push forward integration of views from fisheries agencies into those international instruments.

This project supports the 2011 ASEAN-SEAFDEC RES. No. 19. "Support the competitiveness of the ASEAN fish trade through the development of procedures and programs that would certify, validate or otherwise indicate the origin of fish to reflect the need for traceability, sustainable fishing practices and food safety, in accordance with international and national requirements"

Recognizing the importance of continuous monitoring and responding to the issue of the international trade of fish and fish products, including CDS and CITES, it is proposed to extend the project period by 2 years, until 2019.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1:	Outcome 1: ASEAN Member States have increased their understanding and knowledge on the impact from the International Fish Trade-related issues, such as CITES-related issues, driven from market measures, IUU fishing, etc.	Output 1: Increased the capacity of ASEAN Member States to address the regional interest and common positions that link to the international fish trade-related issues,	Activity 1: Monitoring & Enhancing the Capacity on International Fish Trade-related Issues
Objective 2:	Outcome 2: Increasing the cooperation among ASEAN-SEAFDEC Member Countries to protect their fisheries and aquaculture development through the development of regional common/ coordinated positions on the international fish trade-related issues.	Output 2: Adopted/ agreed on ASEAN-SEAFDEC common position and/or coordinated position and regional policy recommendation on international fish trade-related issues	Activity 2: Developing the Regional Recommendations, Common/ Coordinated Positions as well as regional fishery policy recommendations
		Output 3: Increased awareness to fisheries sector and promote the regional common/ coordinated positions	Activity 3: Building the awareness and disseminating from the Project outputs

3.2 Overall Scope/Description of Project

Activity	Description
Activity 1: Monitoring & Enhancing the Capacity on International Fish Trade-related Issues	With the aims to monitor the updated information from the international fora concerning the issues on Commercially-exploited Aquatic Species related to CITES, IUU fishing, Traceability system for capture fisheries (Catch Certification Scheme and Catch Documentation Scheme), and By-catch issues particularly marine mammal by-catch. The activity also aims to enhance the capacity and knowledge among the ASEAN-SEAFDEC Member Countries on the current movement of the international fish trade-related issues, and to encourage country's participation to the fora. In order to meet the objectives, the in-depth study on specific subjects is conducted under this activity. Updated information and current situation on the issues from the international events will be shared to all SEAFDEC Member Countries for their consideration and information.
Activity 2: Developing the Regional Recommendations, Common/ Coordinated Positions as well as regional fishery policy recommendations	This is the key activity of the project, SEAFDEC will provide platform for Regional Consultation Meeting or even Senior Official Meeting (if required) in order to discuss and consider the international fish trade related issues in which may impacts to the development of fisheries and aquaculture in the Southeast Asian Region. The outputs from the RTC are the regional interest to be address at the International fora such as the draft of Regional Policy Recommendation, the ASEAN-SEAFDEC Coordinated Position and ASEAN Common Position. This draft would be further submission to the SEAFDEC Council director for endorsement and also submission to ASEAN for Common Position.
Activity 3: Building the awareness and disseminating from the Project outputs	Dissemination and promotion of the outputs from the project such as regional policy recommendations, ASEAN-SEAFDEC Coordination Positions and ASEAN Common Position to the public within and outside the Region.

3.3 Activity, Sub-activity and Proposed Budget for 2013-2019

(Unit: USD)

Activity	Sub-Activity	Y1 2013*	Y2 2014	Y3 2015	Y4 2016*	Y5 2017	Y6 2018	Y7 2019*
Activity 1	Sub-activity 1.1 Review the status of int'l fish trade-related issues	700	000	0	1,000	3,500	3,500	1,000
	Sub-activity 1.2 Coordinate with other regional and international organizations	15,000	19,000	4,090	32,370	12,500	12,500	32,370
Activity 2	Sub-activity 2.1: Provide platform to develop Common/ coordinated position and policy recommendation	60,000	119,000	104,113	96,100	53,476	53,476	96,100
Activity 3	Sub-activity 3.1: Publicize the results within and outside the region	1,300	1,000	780	2,000	4,000	4,000	2,000
Sub-Total		80,000	139,000	108,983	131,470	73,476	73,476	131,470

Remark: * CITES Meeting on the year of 2013, 2016 and 2019

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the Present Year

The key achievements of the project implementation for the year 2016 are as follows:

- 1) Policy Recommendations by the Stakeholders Consultation on the 3rd draft of the ASEAN Catch Documentation Scheme and the Info-graphic on Usages of ACDS in Various Scenarios of Trading of Fish and Fishery Products in ASEAN Region.
- 2) Agreed Pilot Country (Brunei Darussalam) for development and testing of the e-ACDS by the 48th SEAFDEC Council.
- 3) The endorsement of the Regional Plan of Action for Managing the Fishing Capacity (RPOA-Capacity) by the 48th SEAFDEC Council and later by the 24th ASEAN Sectoral Working Group on Fisheries (ASWGF).
- 4) Adopted of the ASEAN-SEAFDEC Countries' Positions on Inclusion of the Commercially - exploited Aquatic Species (CEAS) to be address at the CITES Appendix at CoP-17. In addition, now under the process of endorsement for the ASEAN Common Position through the process mechanism of 24ASWGF, SOM-AMAF by August of 2016.
- 5) The results of ACDS and RPOA-Capacity (in cooperation with Sweden Project) are ones of the key management tools to support under the ASEAN-SEAFDEC Joint Declaration on Regional Cooperation for Combating IUU Fishing and Enhancing the Competitiveness of ASEAN fish and fishery products.

2. Information of Present Year Activity Including Involved Stakeholders (2016)

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1: Monitoring & Enhancing the Capacity on International Fish Trade-related Issues					
Sub-activity 1.1 Review the status of int'l fish trade-related issues					
1.1.1 Develop an Executive Report on Addressing International Fisheries Related Issues (2015-16)	IV. Policy	-	1	-	-
1.1.2 Meeting with FIA and her stakeholders on the Combating IUU Fishing, held on 29-30 January 2016	IV. Policy	15	3	0	1,000

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
at Sihanoukville province					
Sub-activity 1.2: Coordinate with other regional and international organizations					
1.2.1 Consultation visit to CCAMLR on the CDS and Cooperation on Combating IUU fishing between AMSs and CCAMLR held on 18-23 January 2016 at CCAMLR, Australia	V. Collaborative Program		3	3	4,300
1.2.2 Conducting the Stakeholders consultation on sustainable fisheries development towards the ASEAN economic community: 1-2 March 2016 (In cooperation with SEAFDEC-Sweden Project)	IV. Policy	40	17	10	23,900
1.2.3 Participation to the 5 th Global Fisheries Enforcement Training Workshop held on 7-11 March 2016, Auckland, Australia hosted by IMCS.	III. Information	10	2	300	2,960
1.2.4 Participation to the FAO/Info-Fish meeting on National and Regional good practices in seafood traceability in ASIA, 22-24 March 2016 in KOCHI, India.	III. Information	12	2	25	360
1.2.5 Attend the 12 th Meeting of the AEG-CITES on 24-25 March 2016, Siem Reap, Cambodia	IV. Policy	20	1	0	850
Activity 2: Developing the Regional Recommendations, Common/ Coordinated Positions as well as Regional Fishery Policy Recommendations					
Sub-activity 2.1: Provide platform to develop Common/ coordinated position and policy recommendation					
2.1.1 Conducted the Expert Meeting on Commercially-exploited Aquatic Species (16-17 May 2016) in Bangkok, Thailand	IV. Policy	24	14	4	30,600
2.1.2 Conducted the Regional Consultation for development of the ASEAN-SEAFDEC Common Position on the proposed listing of CEAS into the CITES Appendices (19-20 May 2016), in Bangkok, Thailand.	IV. Policy	0	7	0	16,000
2.1.3 Conducting the workshop and facilitate the coordination with all ASEAN-SEAFDEC Member Countries at the CITES CoP17, held from 24 September – 5 October 2016 at Johannesburg, South Africa.	IV. Policy	25	4	400	49,500
Activity 3: Building the awareness and disseminating from the Project outputs					
Sub-activity 3.1: Publicize the results within and outside the region					

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 1: Monitoring & Enhancing the Capacity on International Fish Trade-related Issues		
Sub-activity 1.1.1: Reviews and Development of an Executive Report on Addressing International Fisheries Related Issues (2015-16)	Executive Report on Addressing International Fisheries Related Issues (2015-16)	- The Executive Report on Addressing International Fisheries Related Issues (2015-16) was address at the 24ASWGF _i for consideration and endorsement, in which there are many management tools are linked.
Sub-activity 1.1.2: Meeting with FIA and her stakeholders on the Combating IUU Fishing, held on 29-30 January 2016 at Sihanoukvill province	Awareness building on flag state responsibility to Combating IUU fishing and work plan for developing the NPOA-IUU	- FiA Officers understand the concept of combating IUU Fishing, and create a work plan for further development and implementation of the NPOA-IUU Fishing under the extra fund support EU.
Sub-activity 1.2.1 Consultation visit to CCAMLR on the CDS and Cooperation on Combating IUU fishing between AMSs and CCAMLR held on 18-23 January 2016 at CCAMLR, Australia	Lessons learned from the CCAMLR' s Catch Documentation Scheme, and Built the awareness of AMSs on compliance with CCAMLR CDS for Toothfish	- Apply the CCAMLR' CDS particularly the usage of database modules to support the development of CDS; - Introduction of the CCAMLR' CDS at the 48 th SEAFDEC Council with aims to seek cooperation from AMSs for compliance the CCAMLR CDS.
Sub-activity 1.2.2 Conducting the Stakeholders consultation on sustainable fisheries development towards the ASEAN economic community: 1-2 March 2016 (In cooperation with SEAFDEC-Sweden Project)	Recommendations on the Practical Steps Towards the Issues for Combating IUU Fishing and Enhancing the Competitiveness of ASEAN Fish and Fishery Products	- All relevant stakeholders such as government officers, fishing industry, processors, civil-society organization, regional and international organizations understand the SEAFDEC initiatives toward combating IUU fishing in the ASEAN region; - Future collaboration to support the implementation of the management tools to combat IUU fishing.
Sub-activity 1.2.3 Participation to the 5 th Global Fisheries Enforcement Training Workshop held on 7-11 March 2016, Auckland, New Zealand, hosted by IMCS	Promoted the ASEAN Cooperation towards combating IUU fishing at 5 th GFETW; Lessons learned from the workshop on good practices of MCS	- More than 500 managers/experts from the world understand the SEAFDEC initiatives particular on regional cooperation towards combating IUU fishing framework; - Enhance the SEAFDEC's visibility
Sub-Activity 1.2.4 Participated to the FAO/ Info-Fish Meeting on national and regional good practices in seafood traceability in Asia, held on 22-24 March 2016 in KOCHI, India.	Shared the ASEAN Catch Documentation Scheme/concept to the South Asia Countries;	- SEAFDEC introduced the ACDS framework that aims to enhance the seafood traceability in ASEAN region to the meeting; while contributed the recommendations/information for further development of the good practices in seafood traceability in ASIA.
Sub-activity 1.2.5 Attended the 12 th Meeting of the AEG-CITES on 24-25 March 2016, Siem Reap, Cambodia	Updated CITES –related information for further actions on developing and addressing the Common positions at the CoP17.	- SEAFDEC updated the CITES CoP17 - related commercially-exploited aquatic species (CEAS) information to the 12AEG-CITES; - SEAFDEC also informed the 12AEG-CITES on the work plan for developing the ASEAN Common Positions.
Activity 2: Developing the Regional Recommendations, Common/ Coordinated Positions as well as regional fishery policy recommendations		
Sub-activity 2.1.1 Conducted the Expert Meeting on Commercially-	Recommendations from the SEAFDEC Experts Meeting on	- The proposed CEAS by COP-17 was introduced and reviewed by experts from the SEAFDEC Member Countries;

Planned activity	Expected outcome/output	Achievements
exploited Aquatic Species (CEAS) held on 16-17 May 2016) in Bangkok, Thailand	Proposed Inclusion of the Commercially-exploited Aquatic Species (CEAS) to the CITES Appendix at CoP-17	- The recommendations from the meetings were concluded and to be raised at the Regional Consultation Meeting.
Sub-activity 2.1.2 Conducted Regional Consultation for development of the ASEAN-SEAFDEC Common Position on the proposed listing of CEAS into the CITES Appendices (19-20 May 2016), in Bangkok, Thailand.	The Country's Position on the proposed CEAS by COP-17 as well as the country's views on each proposal to be addressed at the 48 th Council Meeting for consideration and adoption; ASEAN-SEAFDEC Common Positions on Inclusion of the Commercially - exploited Aquatic Species (CEAS) to the CITES Appendix	- ASEAN-SEAFDEC Member Countries adopted her country positions as suggested by the Regional Consultations at the 48 CM held in April 2016; - The results from the 48CM was addressed to the 24 ASWGFi and SOM-AMAF for endorsement of the ASEAN Common Position on the proposed listing of CEAS into the CITES Appendices. - At the SOM-AMAF held in August 2016, Thailand as a ASEAN lead country of this matter will propose for consideration and endorsement.
Sub-activity 2.1.3 Conducting the workshop and facilitate the coordination with all ASEAN-SEAFDEC Member Countries at the CITES CoP17, held from 24 September – 5 October 2016 at Johannesburg, South Africa.	Effective coordination among ASEAN-SEAFDEC MCs on the voice to support the ASEAN Common Position at the CITES CoP-17.	- Will be updated later after activities were done.
Activity 3: Building the awareness and disseminating from the Project outputs		
Sub-activity 3.1: Publicize the results to regional and international forum	(will be updated)	(will be updated)

4. List of Completed Publications and Others

List of completed publications for the Year 2015	Type of media	Attached e-file
1) Executive Report on Addressing International Fisheries Related Issues (2015-16)	Paper (PDF)	
2) Recommendations on the Practical Steps Towards the Issues for Combating IUU Fishing and Enhancing the Competitiveness of ASEAN Fish and Fishery Products	Paper (PDF)	
3) Regional Cooperation Toward Combating IUU Fishing in Southeast Asian Region	PPT (PDF)	
4) Recommendations from the SEAFDEC Experts Meeting on Proposed Inclusion of the Commercially-exploited Aquatic Species (CEAS) to the CITES Appendix at CoP-17	Paper (PDF)	
5) ASEAN-SEAFDEC Common Positions on Inclusion of the Commercially - exploited Aquatic Species (CEAS) to the CITES Appendix at CoP-17 (As of 27 May 2016)	Paper (PDF)	

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/ Views from Participants
Activity 1	Not appropriate
Activity 2	Not appropriate
Activity 3	Not appropriate

6. Major Impacts/Issues

One of the big challenges is on the development of e-ACDS of all supply chains with aims to increase the traceability of marine capture fisheries in which impacts to all stakeholders/traders and fisheries industry that have to cooperate in implementing. In addition, establishment of the Secretariat for management of overall E-CDS system is still pending without any clear direction and discussion. It is expected that work plan in 2017 could solve all these matter.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
Activity 1: Monitoring & Enhancing the Capacity on International Fish Trade-related Issues		
Sub-activity 1.1	Review the status of int'l fish trade-related issues	3,500
	1. Draft the executive report on International Fisheries-related Issues for 2016-2017	500
	2. Awareness building on the International Fisheries-related Issues and emerging issues	3,000
Sub-activity 1.2	Coordinate with other regional and international organizations	12,500
	1. Participate to international forum <i>e.g.</i> FAO,	7,200
	2. Participate to regional forum:	5,300
Activity 2: Developing the Regional Recommendations, Common/ Coordinated Positions as well as regional fishery policy recommendations		
Sub-activity 2.1	Provide platform to develop Common/coordinated position or Policy recommendations or adoption of the regional cooperation-related issues	53,476
	1. Regional Technical Consultation on E-ASEAN Catch Documentation system	33,476
	2. Development of the e-ACDS for Expansion of the Pilot country	20,000
Activity 3: Building the awareness and disseminating from the Project outputs		
Sub-activity 3.1	Develop and disseminate the publications-related to international fisheries related issues	4,000
Total budget		73,476

2. Expected Outcomes/Outputs of Activity for the Year 2016

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 1: Monitoring & Enhancing the Capacity on International Fish Trade-related Issues	
Sub-activity 1.1	1. Executive report on International Fisheries-related Issues for 2016-2017
Sub-activity 1.2	2. Enhanced capacity of AMSs on international fisheries-related issues or emerging issues
Activity 2: Developing the Regional Recommendations, Common/ Coordinated Positions as well as Regional Fishery Policy Recommendations	
Sub-activity 2.1	1. Adoption of the e-ACDS for implementation at the Pilot country
	2. Policy Recommendations to support the implementation of e-ACDS
	3. Final draft of the E-ACDS

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 3: Building the awareness and disseminating from the Project outputs	
Sub-activity 3.1	Publications-related to Regional Initiatives on Combating IUU fishing and ASEAN-SEAFDEC Common Position

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1												
Sub-activity 1.1												
Sub-activity 1.2												
Activity 2												
Sub-activity 2.1												
Activity 3												
Sub-activity 3.1												

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

Project id: 06201302

Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Strengthening SEAFDEC Network for Sustainable Fisheries		
Program Thrust:	V	Total Duration:	2013-2019
Lead Department:	Secretariat	Lead Country:	Indonesia
Donor/Sponsor:	JTF-6	Total Donor Budget:	USD 384,000
Project Partner:	None	Budget for 2017:	USD 54,000
Project Leader:	PPC Office	Involved Country:	All ASEAN Member States

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

Dealing with international and regional fisheries related issues which might affect sustainable development and management of fisheries and aquaculture, there is a need to strengthen the SEAFDEC network with all ASEAN Member States and between inter-agencies at country levels. This project also aims to monitor and evaluation of overall SEAFDEC programs with the aims to ensure the SEAFDEC activities/programs meet the requirements of the Member Countries. In addition the project support the dissemination of the results/outputs from activities/programs through the SEAFDEC quarterly magazine and/or specific publication such as Fish for the People, and SEASOFIA

2. Background and Justification

SEAFDEC has been working on the promotion of Sustainable Fisheries Development in the Southeast Asian Region for more than 4 decades since established. The SEAFDEC program frameworks to support Member Countries has been significantly changed in 1998 when SEAFDEC adopted the Resolution on SEAFDEC Strategic plans at the 30th Meeting of the SEAFDEC Council and more clear after the new millennium in 2001 when ASEAN-SEAFDEC adopted the Resolution and Plan of Action on Sustainable Fisheries for Food Security in the ASEAN Region” as well as the new decade Resolution and Plan of Action on Sustainable Fisheries for Food Security toward 2020 in 2011 as a policy guidelines for SEAFDEC and Member Countries. To support the implementation of the Resolution and Plan of Action, taking into account environmental changes and many policy emerging issues pressing at global and regional levels including the problems of IUU fishing, SEAFDEC therefore proposes a continuing project to strengthening SEAFDEC network among ASEAN country in order to move forward on sustainable utilization of fisheries resources in the Region. In conjunction to this, the strengthening cooperation within the region and Member Countries needed to be strengthened and included in the project framework in order to share and exchange information and transferring messages/information to work together to meet the final goal of the ASEAN SEAFDEC resolutions and plan of action that has been committed by all Member Countries.

In addition, to ensure that proposed activities to support Member Countries could meet the final goal as proposed, the monitoring and evaluation of overall SEAFDEC programs particularly Japanese Trust fund projects will be strengthened. The regional outputs and publications from SEAFDEC activities could be published/disseminated and shared among Member Countries and among regional and international level through the quarterly magazine or specific publication including SEASOFIA.

This project supports the 2011 ASEAN-SEAFDEC Resolution. No. 3 “Strengthen human capacity of relevant stakeholders through mobilization of resources and the harmonization of initiatives that support fisheries communities and governments, with a special focus on the women and youth”. The Project also supports the Resolution No. 8 on “Foster cooperation among ASEAN Member States and with international and regional organizations in combating IUU fishing”.

Recognizing the importance of the collaborative resources survey as carried out by the National Fisheries University-Japan in collaboration with SEAFDEC Member Countries, this project activity should be continued to maintain strengthening cooperation in the region and Member Countries in order to share, transfer and exchange fishery resources information through the discussions and meetings and to achieve the final goal of the ASEAN-SEAFDEC resolutions and plan of action that has been committed by all Member Countries.

Taking the importance of continuous implementation of these activities into account, SEAFDEC proposes to extend the project period for 2 years, until 2019.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1:	Outcome 1: Enhanced regional coordination and collaboration	Output 1: Strengthened cooperation with ASEAN Member States through RFPN and ASEAN higher authority on the results of FCG/ASSP programs	Activity 1.1: Support and strengthen the Regional Fisheries Policy Network (RFPN) stationed at SEAFDEC Secretariat
			Activity 1.2: Enhance cooperation among SEAFDEC and Member Countries on the results of FCG/ASSP programs
Objective 2:	Outcome 2: Strengthened monitoring and evaluation of the SEAFDEC programs and projects	Output 2: the update/progress/ outputs of the project activities are regularly monitored and evaluated	Activity 2.1: Monitor and evaluation of SEAFDEC programs/project activities
Objective 3:	Outcome 3: Strengthened the information dissemination of SEAFDEC projects results	Output 3: Outputs/outcomes of SEAFDEC projects are compiled and disseminated	Activity 3.1: Produce and disseminate SEAFDEC special publications

3.2 Overall Scope/Description of Project

Activity	Description
1.1 Support and strengthen the Regional Fisheries Policy Network (RFPN) stationed at SEAFDEC Secretariat	Regional Fisheries Policy Network (RFPN) Members are officers from ASEAN Member States who are invited and stationed at SEAFDEC/Secretariat to be involved in activities of SEAFDEC especially in terms of coordination with their own countries. In this activity, SEAFDEC supports cost of RFPN members' stationing at SEAFDEC/Secretariat as well as business trip to attend related meeting in the region with an aim of enhancing capacity of RFPN Members.
1.2 Enhance cooperation among SEAFDEC and Member Countries on the results of FCG/ASSP programs	The roles of ASEAN lead countries under the collaborative program of the FCG/ASSP mechanism would be strengthened. It is expected that regional program implementing by SEAFDEC should be coordinated with lead countries to ensure highest benefit of the activities meet the requirements of region. Through the communication with lead country, and support from ASEAN countries during the ASEAN forum, ASEAN lead country could play the role to lead discussion and support the project.

Activity	Description
2.1 Monitor and evaluation of SEAFDEC programs/project activities	Aside from the SEAFDEC program committee meeting, SEAFDEC-JTF program/activities review meeting are conducted to monitor and evaluate the activities whether it is in line with the requirements of Member Countries. This would be linked to the Implementation of the Resolution and Plan of Action and SEAFDEC Program framework. The evaluation aims to answer specific management questions and to judge the overall value of an endeavor and supply lessons learned to improve future actions, planning and decision-making. Evaluations commonly seek to determine the efficiency, effectiveness, impact, sustainability and the relevance of the project or organization's objectives.
3.1 Produce and disseminate SEAFDEC special publications	Based on the project implementations, the project results are encouraged to publish in the SEAFDEC publications such as Fish For the People, SEAFDEC Newsletters, and SEASOFIA in order to enhance its visibility to the Member Countries, regional and international arenas.

3.3 Activity, Sub-activity and Proposed Budget for 2013-2019

(Unit: USD)

Activity	Sub-Activity	Y1 2013	Y2 2014	Y3 2015	Y4 2016	Y5 2017	Y6 2018	Y7 2019
Activity 1:	1.1 Support and strengthen the Regional Fisheries Policy Network (RFPN) stationed at SEAFDEC Secretariat	32,000	32,000	32,000	32,000	32,000	32,000	32,000
	1.2 Enhance cooperation among SEAFDEC and Member Countries on the results of FCG/ASSP programs		1,000	8,500	10,500	10,500	10,500	10,500
Activity 2:	2.1 Monitor and evaluation of SEAFDEC programs/project activities	16,000	16,000	6,500	2,500	2,500	2,500	2,500
Activity 3:	3.1 Produce and disseminate of SEAFDEC special publications	7,500	7,500	9,000	9,000	9,000	9,000	9,000
Sub-Total		55,500	56,500	56,000	54,000	54,000	54,000	54,000

PART II: ACHIEVEMENTS OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the project Implementation for the Present Year

The key achievements of the project implementation for the year 2016 are the continued support and the capacity building of the RFPNs from 8 ASEAN Member States namely Cambodia, Indonesia, Lao PDR, Myanmar, Malaysia, the Philippines, Thailand and Viet Nam supported by this project (3 countries) and SEAFDEC-Sweden project (5 countries), enhancing the effective management of the SEAFDEC programs through the development of the database system in collaboration with CFTD/TD. The other achievement is strengthening cooperation with SEAFDEC partnership on the use of the Training Ship-KOYO Maru of the National Fisheries University of Japan (NFU) for the 3rd round of fisheries resources surveys in the Cambodian waters under the joint collaboration between SEAFDEC and the NFU with support from the Fisheries Administration (FiA) and Government of Cambodia. Findings and results of the survey have been reported, discussed and shared through the preparatory meetings held in Cambodia prior to the second and the third rounds of the surveys. In addition, the results of project implementations were published and disseminated through the SEAFDEC publications such as Fish for the People.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1.1					
1) 3 Regional Fisheries Policy Network (RFPNs) for Cambodia, Lao PDR and Viet Nam are supported	II	8			32,000
2) Enhanced 3 RFPNs capacity through participations of ASEAN-SEAFDEC Meetings as follows:	II	8 RFPNs			
❖ Expert Meeting on the Regional Cooperation to support the Implementation of Port State Measures in Southeast Asian Region on 2-4 February 2016 in Samut Songkram, Thailand					
❖ Regional Technical Consultation on Labor Issues on 25-27 February 2016 in Bangkok, Thailand					
❖ The Stakeholders Consultation on Regional Cooperation in Sustainable Fisheries Development Towards the ASEAN Economic Community: 1-2 March 2016 at Bangkok Hotel Lotus Sukhumvit, Thailand					
❖ Regional Technical Consultation on a Regional Approach to the Implementation of the FAO Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication on 7 – 9 June 2016 in Bangkok, Thailand					
❖ The Third Meeting of the Scientific Working Group on Neritic Tuna Stock Assessment in the Southeast Asian Waters on 27-29 June 2016, Chonburi Province, Thailand					
❖ High-Level Consultation on Regional Cooperation in Sustainable Fisheries Development Towards the ASEAN Economic Community on 3 August 2016, Bangkok, Thailand					
❖ The 3 rd Meeting of the Andaman Sea Sub-region on 18-20 October 2016, in Bangkok, Thailand					
Activity 1.2					
1) 12 th Convention of International Trade in Endangered Species of Wild Fauna and Flora (AEG-CITES) on 24-25 March 2016, in SEAM REAP, Cambodia	II		1		850
2) Consultation visit to FiA, Cambodia under the collaborative arrangements between NFU of Japan and FiA of Cambodia on the arrangements for T/S KOYO Maru	I	7	2	3 (Japan)	On-going (2,500)

List of Actual Sub-activity	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Cruise in Cambodia Waters for 2016 survey, 20 Sept 2016					
3) <will be updated for the 2 nd half of the year>					On-going (6,500)
Activity 2.1					
1) Developing the SEAFDEC program Database for effective management (improved system cost)	III		3		On-going (3,000)
2) Monitoring and review implementation of the ASEAN-SEAFDEC Resolution and Plan of Action (in relation to CCRF)	III		3		On-going (1,000)
Activity 3.1					
1) Publication and Dissemination of the Fish for the people (Vol. 14, I &II)	III				7,500
2) Publication on Combating IUU Fishing (On-going)	III				On-going (1,500)
Total Budget Spent till Aug. 16					40,350
Remaining Budget till end Dec. 16					14,500

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 1.1		
1) Regional Fisheries Policy Network (RFPNs) for Cambodia, Lao PDR and Viet Nam are supported	Strengthened cooperation with ASEAN Member States through the RFPNs coordination on the Results of FCG/ASSP program; and building the capacity of RFPNs through their participations to the SEAFDEC forum	Officials from Cambodia, Lao PDR and Viet Nam stationed at SEAFDEC Secretariat and involved in several SEAFDEC activities and coordinated with their own countries for technical matters and arrangements.
2) Enhanced 3 RFPNs capacity through participations of ASEAN-SEAFDEC Meetings as follows:		RFPNs gained the knowledge on various subjects related to development of regional policy recommendations and plan of actions on the effectiveness fisheries management and combating IUU fishing in the ASEAN region. In addition, RFPNs were trained on the recording of the meeting in order to enhance their English ability in specific fisheries issues.
Activity 1.2		
1) 12 th Convention of International Trade in Endangered Species of Wild Fauna and Flora (AEG-CITES) on 24-25 March 2016 in SEAM REAP, Cambodia		SEAFDEC Assistant Program and Policy Coordinator, Dr. Worawit Wanchana participated in the meeting. The Meeting underlined the need for ASEAN to ensure sustainable forest management and conservation of wild flora and fauna under CITES Convention. The Meeting was a good opportunity for SEAFDEC to provide information on current regional initiatives to improve sharks conservation and management in Southeast Asia, as well as continue efforts to monitor issues concerning commercially exploited aquatic species that are at risk of being included under the CITES Appendices. SEAFDEC also informed the Meeting on timeframe for developing common position of AMSs on CITES listing of aquatic species to be submitted to SEAFDEC Council for consideration and later for endorsement by

Planned activity	Expected outcome/output	Achievements
		SOM-AMAF prior to CITES COP 17.
2) Consultation Visit to FiA, Cambodia under the collaborative arrangements between NFU of Japan and FiA of Cambodia on the arrangements for T/S KOYO Maru Cruise in Cambodian Waters for 2016 survey, 20 Sept 2016		Supported joint discussion between FiA, NFU and SEAFDEC staffs for the Collaborative Research Program on the preparation for the Fisheries Resources Survey in the Cambodian waters by T/S KOYO Maru of the National Fisheries University (NFU). The program is planned for 3 years from 2014-2016.
3) Will be updated		
Activity 2.1		
1) Develop the SEAFDEC program Database for effective management (improved system cost)	Strengthened monitoring and evaluation of the SEAFDEC programs and projects	The 1 st draft of the SEAFDEC Program Database was developed and tested for further improvement for effective management and support the cost-benefit analysis.
2) Monitoring and review implementation of the ASEAN-SEAFDEC Resolution and Plan of Action (in relation to CCRF)		The country implementation on ASEAN-SEAFDC Resolution and Plan of Action were compiled for further reviews and report to the 38PCM.
Activity 3.1		
1) Publication and Dissemination of the Fish for the people	Strengthened the information dissemination of SEAFDEC projects results	2 volumes of Fish for the People were disseminated to worldwide institutions related to fisheries (Vol. 14, No. 1 and No. 2)
2) Publication on Combating IUU Fishing (Ongoing)		

4. List of Completed Publications and Others

List of completed publications for the Year 2016	Type of media	Attached e-file
1. Two (2) volumes of Fish for the People (Vol. 14, No. 1 &2)	Magazine	PDF
2. Template for SEAFDEC Program	Document	PDF
3. Draft SEAFDEC Program Database System	Website	URL
4. Results of the Country Implementation on 2011RES and POA	Document	<On going>
5. Will be updated		

5. Evaluation from Participants of Member Countries

Planned activity	Evaluation/ Views from Member Countries
Activity 1.1 Support and strengthen the Regional Fisheries Policy Network (RFPN) stationed at SEAFDEC Secretariat	None
Activity 1.2 Enhance cooperation among SEAFDEC and Member Countries on the results of FCG/ASSP programs	None
Activity 2.1: Monitor and evaluation of SEAFDEC programs/project activities	None
Activity 3.1: Produce and disseminate SEAFDEC special publications	None

6. Major Impacts/Issues

The key problem for collaborative arrangements with NFU for FiA on Fisheries Resources Survey is the availability of human resources and financial support for data analysis after the survey for TD as a Technical Department which is responsible for data analysis. Another problem is knowledge transfer to FiA researchers.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
1.1 Support and strengthen the Regional Fisheries Policy Network (RFPN) stationed at SEAFDEC Secretariat	- Continued support the RFPNs for three countries namely Cambodia, Lao PDR and Viet Nam to work and learn on policy development for ASEAN Member States and other management at regional levels	32,000
1.2 Enhance cooperation among SEAFDEC and Member Countries on the results of FCG/ASSP programs	- Continued enhance the cooperation with AMSs and other SEAFDEC partnership to address the awareness on Fisheries Related Issues and other important issues that might impact to the Region - Continued cooperation with NFU through the use of KOYO Maru to support AMSs in conducting the fisheries resources survey in the ASEAN Region (one selected country) for 2017-2019 - Other urgent matter	10,500
2.1 Monitor and evaluation of SEAFDEC programs/ project activities	- Conduct full operation of the SEAFDEC program Database to increase the effectiveness of program management - Reviews on the Implementation of the 2011 RES & PoA and reporting to the 48CM	2,500
3.1 Produce and disseminate SEAFDEC special publications	- Continued publish and dissemination of the Fish For the People, to enhance its visibility to the Member Countries, regional and international arenas	9,000
Total		54,000

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
1.1 Support and strengthen the Regional Fisheries Policy Network (RFPN) stationed at SEAFDEC Secretariat	- Increased knowledge of the 3-RFPNs on developing the policy recommendation and common positions related to CITES- Issues - Gained experiences in writing the reporting of the meeting - Learned the traditional and custom of AMSs countries for future work and cooperation among countries.
1.2 Enhance cooperation among SEAFDEC and Member Countries on the results of FCG/ASSP programs	- Attended the AEG-CITES to build the awareness on proposed listing of the CEAS to the CITES Appendices while introduce the agreed common position for addressing at the next CITES-CoP 17. - The reports of results of 2014, 2015 and 2016 Collaborative Research Survey in Cambodian Waters, which to be carried out through the consultation meetings and publications - Strengthened other cooperation with SEAFDEC Partnership
2.1 Monitor and evaluation of SEAFDEC programs/project activities	- Improved Database system for SEAFDEC Program - Improved monitoring and evaluation system
3.1 Produce and disseminate of SEAFDEC special publications	- Published and disseminated of SEAFDEC Publication such as the Fish For the People

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.1 Support and strengthen the Regional Fisheries Policy Network (RFPN) stationed at SEAFDEC Secretariat												
1.2 Enhance cooperation among SEAFDEC and Member Countries on the results of FCG/ASSP programs												
2.1 Monitor and evaluation of SEAFDEC programs/project activities												
3.1 Produce and disseminate SEAFDEC special publications												

**PROJECT DOCUMENT
PROPOSED ACTIVITY FOR YEAR 2017
AND
ACHIEVEMENTS FOR YEAR 2016**

Project id: 0620130103

Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	Fisheries and Habitat Management, Climate Change and Social Well-being in Southeast Asia		
Program Thrust:	Special Project	Total Duration:	5 yrs (2013-2017) <i>**to be extended to 2018</i>
Lead Department:	SEAFDEC/Secretariat	Lead Country:	Varies depending on thematic area
Donor/Sponsor:	Sida (through the Embassy of Sweden, Bangkok)	Total Donor Budget:	Total budget of 5 years, 48 Millions SEK
Project Partner:	BOBLME, CTI-CFF FAO/APFIC, MRC UNEP, IUCN/MFF, ILO, USAID	Budget for 2017:	10,000,000 SEK (Approx 1,323,754 USD)
Project Leader:	Ms. Pattaratjit Kaewnuratchadasorn SEAFDEC-Sweden Project Manager	Involved Country:	ASEAN Member States

PART I: OVERALL PROJECT DESCRIPTION

1. Background and Justification

In Southeast Asia, environmental degradation, overcapacity (illegal and destructive fishing) and threats from climate variability and climate change are seen as the significant problems for fisheries and aquatic habitats, threatening their sustainability and the livelihoods of the millions of people dependent on these resources. Through earlier Sida (current name is Sweden) support, SEAFDEC in cooperation with the ASEAN (under the ASEAN-SEAFDEC Strategic Partnership (ASSP)) and the ASEAN countries have been implementing regional collaborative programs to clarify regional policies and priorities as well as to support national efforts in addressing habitat and fisheries management and the management of fishing capacity.

The SEAFDEC-Sweden project (2013-2017) is building upon on the earlier work done under the SEAFDEC-Sweden cooperation. The ultimate targets of the Project are the poor coastal and inland communities who continue to experience declining catch as well as increased competition and conflict over natural resource use and space in coastal and inland waters of Southeast Asia. In a broader context, beneficiaries will also include staff of governments (local and central), NGOs, and international and regional organizations. The beneficiaries will be provided with support and guidance through collaborative arrangements supported by SEAFDEC-Sweden, in the process of developing better management of fisheries and important habitats in national and sub-regional contexts.

The basic strategy of the SEAFDEC-Sweden project is to build upon the expressed needs to improve social well-being and environmental health, by promoting processes to improve the management of fisheries, fishing capacity and better management of aquatic environments and habitats of importance for key species. To incorporate all relevant aspects (social, governance and aquatic resources/environment) an ecosystems approach will be applied. This includes management matters, such as (larger) fish resources conservation areas (*e.g.* building upon MPAs, *refugia*, etc), management of fishing capacity (combating IUU Fishing), social mobility and conflicts, etc. The perspective include the establishment of sub-regional agreements or other arrangements of relevance to fisheries and habitat management in the Gulf of Thailand; Andaman Sea and to support processes for the cooperation among countries in the Sulu-Sulawesi Seas and the Mekong River Region.

As part of the SEAFDEC-Sweden Project Strategy, the project will not be implemented by SEAFDEC in isolation but will rely on cooperation with other regional/international and national bodies. In order to address issues related to the management of important habitats for fisheries, fishing capacity and socio-cultural aspects, SEAFDEC will work closely with institutions and organizations that are well placed to facilitate and support provincial and district capacity-building. The strategy also involves capacity building for better management, including the capacity to engage more effectively with villagers in ASEAN-SEAFDEC Member Countries, which implies the involvement of broad stakeholder participation.

2. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

Overall Objectives (Outcomes objectives)

Sustainable use of aquatic resources and reduced vulnerability to climate change by coastal/rural (fishing) communities in the ASEAN region.

Bridging objective 1: Implementation of regional and sub-regional aquatic resources management actions by national institutions and organizations;

Bridging objective 2: Establishment and implementation of regional and sub-regional fisheries and habitat management agreements and action plans.

Outputs, Indicators and Activities

Table 1: Log Frame on Project Follow-up, Monitoring and Evaluation

Outcomes objectives	Bridging objectives	Outputs objectives	Activity	Key Performance Indicators (Results Assessment Framework (RAF) targets)
Sustainable use of aquatic resources and reduced vulnerability to climate change by coastal/rural (fishing) communities in the ASEAN Region	1. Sub-regional and regional agreements promoted and reported to ASWGFi on fisheries and habitats. 2. Sub-regional and regional agreements promoted and reported to ASWGFi on fishing capacity	1. Capacity built for integration of habitat & fisheries management and adaptation to climate change	1.1 Improved awareness and enhanced capacity/knowledge of habitat and fisheries management and eco-system approaches to fisheries. 1.2 Collaboration with and between local organizations and stakeholders 1.3 The drafting of sub-regional frameworks and implementation plans. 1.4 Dialogues to promote the understanding of trans-boundary resource and habitat management and conservation including the need for joint approaches at the sub-regional level. 1.5 Establishment of trans-boundary and regional agreements on habitat and fisheries 1.6 Sub regional capacity-building through sub regional and on-site events 1.7 Social well-being network (See also 2.6) 1.8 diversified livelihoods (See also 2.7 1.9 The role of women and youth (young people of 15	At least one sub-regional and sub-sub-regional events with focus on habitat/fisheries management (reaching 250 with partners involved (2017 - 1,250/awareness)

Outcomes objectives	Bridging objectives	Outputs objectives	Activity	Key Performance Indicators (Results Assessment Framework (RAF) targets)
			years and older) in fisheries (See also 2.8)	
		2.Capacity built and systems improved for the management of fishing capacity (monitoring; record and control)	2.1 Raised awareness of the need for fishing vessel registration and licenses to fish 2.2 Strengthening of links and cooperation between SEAFDEC and international and regional organizations on the management of fishing capacity and to issue licenses to fish 2.3 The sharing of information with key stakeholders 2.4 The drafting of plans to monitor, record and control active fishing capacity 2.5 MCS network establishment. 2.6 Social well-being network (See also 1.7) 2.7 Diversified livelihoods (See also 1.8) 2.8 The role of women and youth (young people of 15 years and older) in fisheries (See also 1.9)	One regional or sub-regional event organized (with partners) where fishing vessel registration, licensing, IUU fishing and labour issues will be discussed involving relevant (two or more) departments with around 60 participants
		3.Capacity built and policy development processes improved for the drafting and implementation of regional & sub-regional agreements	3.1 Collaboration between ASEAN countries and regional, national and local organizations 3.2 Collaboration between SEAFDEC and other regional and international organizations strengthened. 3.3 Regional and sub-regional consultations 3.4 Reviews and interpretations of important international conventions 3.5 Sharing of information on legislation and institutional arrangements for fisheries and habitat management by ASEAN countries 3.6 Information from project events made available to ASEAN bodies, SEAFDEC and ASEAN Member States 3.7 Triggering of policy changes/adjustments resulting from the work of the project 3.8 The profile and status of fisheries within the ASEAN	Follow-up on regular ASEAN level and sub-regional consultations on social, habitat and fisheries issues. At least one ASEAN-wide, two sub-regional and two trans-boundary event org with partners (average 50 part) Note: focus on national and local organizations while 3.2 focus on regional and international organizations

Outcomes objectives	Bridging objectives	Outputs objectives	Activity	Key Performance Indicators (Results Assessment Framework (RAF) targets)
			structure and policy development 3.9 Strengthening the role of SEAFDEC in ASEAN	
		4. Project Management and Coordination	4.1 Expenses of Staff, RFPN and administration, 4.2 Planning meetings, regular coordination meetings (FAO/RAP/APFIC, BOBLME, ASEAN, RPOA-IUU, WorldFish Centre, MRC, CTI-CFF, and with countries of the four sub-regions) 4.3 Reporting costs, editing and printing 4.4 Project monitoring and coordination, project mid-term review (year 3) and project evaluation (year 5) 4.5 Operating, equipments and maintenance expenses	

Note: Following the guidelines from Sweden, the results of the SEAFDEC- Sweden Cooperation *Project* (herein after refer to as the project) is presented in a so-called Results Assessment Framework (RAF).

3. Overall Scope/Description of Project

For the purpose of implementation and follow up, activities are planned under three output groups and Project management and coordination. This would also allow for the cross-referencing (*i.e.* gender, health, environment, climate change and capacity building) between outputs group, when assessing the results and related outcomes.

1. Capacity built for integration of habitat & fisheries management and adaptation to climate change
2. Capacity built and systems improved for the management of fishing capacity (monitoring; record and control)
3. Capacity built and policy development processes improved for the drafting and implementation of regional & sub-regional agreements
4. Project Management and Coordination
The geographical coverage includes four sub-regions (Andaman Sea, Gulf of Thailand, Sulu-Sulawesi Seas and the Mekong). The perspective include the establishment of sub-regional agreements or other arrangements of relevance to fisheries and habitat management in the Gulf of Thailand; Andaman Sea and to support processes for the cooperation among countries in the Sulu-Sulawesi Seas and the Mekong River Region.

Support is being provided to processes to strengthen regional cooperation on neritic tuna, fishing capacity, combating IUU fishing and EAFM and capacity building programs as requested by Member Countries. Process results and outcomes and achievements would, to a large extent be reflected in indications and reports from bodies, and individuals outside of the project, *i.e.* SEAFDEC Council, ASEAN, FAO/APFIC, RPOA-IUU, BOBLME, MRC, USAID, etc in recognition of steps being taken and impacts achieved.

In addition, SEAFDEC-Sweden project is continuing its support to long-term human resource development program for its Member Countries through the program of the SEAFDEC Regional Fisheries Policy Network (RFPN) that include an expanded role of assisting SEAFDEC in the development of regional priority and policy issues through their participation in the implementation of regional and sub-

regional programs and follow-up the commitment for the implementation of policies under the ASEAN framework. Among themselves, they have learned to work together as a team with a common regional perspective and they had successfully built up both strong friendship and strengthened cooperation among ASEAN Member States.

- **Activity, Sub-activity and Proposed Budget for 2013-2017** (based on a 5 year project framework from 2013 – but an extension is being discussed within the total available budget)

Budgets in the Table 2 show the relative balance between Output Objectives, cross-cutting elements has been divided between the groups. Actual need and use of funds will depend on successful link with partner organizations, such as BOBLME, MRC, CTI-CFF and more recently USAID.

Table 2: Proposed Budget based on activity and sub-activity for 2013-2017

(Unit: Baht)

(Activity Group) Output Objective	Sub-Activity	2013 (actual expenses)	2014 (actual expenses)	2015 (actual expenses)	2016 (contribution SEK 5,000,000)	2017 (Expected contribution)
Output objective 1: Capacity built for integration of habitat & fisheries management and adaptation to climate change	Output objective 1 have 9 activity “indicators” (see above) together with annual targets	1,389,694.98	8,571,044.97	12,236,940.85	5,132,000.00	11,369,406.55
Output Objective 2: Capacity built and systems improved for the management of fishing capacity (monitoring; record and control)	Output objective 2 have 8 activity “indicators” (see above) together with annual targets	142,247.00	3,286,701.00	3,954,403.16	2,942,000.00	9,071,494.78
Output Objective 3: Capacity built and policy development processes improved for the drafting and implementation of regional & sub-regional agreements	Output objective 3 have 9 activity “indicators” (see above) together with annual targets	1,495,821.32	4,006,832.78	1,924,153.05	7,702,000.00	6,097,726.64
4. Administration, personnel and coordination	1. Expenses of Staff, RFPN and administration 2. Planning meetings, regular coordination meetings (FAO/RAP/APFIC, BOBLME, ASEAN, RPOA-IUU, WorldFish	12,907,594.53	14,422,775.56	0	5,520,032.92	14,422,775.56

(Activity Group) Output Objective	Sub-Activity	2013 (actual expenses)	2014 (actual expenses)	2015 (actual expenses)	2016 (contribution SEK 5,000,000)	2017 (Expected contribution)
	Centre, MRC, CTI-CFF, and with countries of the four sub-regions 3. Reporting costs, editing and printing 4. Project monitoring and coordination, project mid-term 2015 review (year 3) and project evaluation (year 5)					
	Sub-Total (THB)	10,146,556.76	23,696,876.08	26,644,350.15	21,296,032.92	40,961,403.53
	Overhead charge	3,389,404.32	2,369,687.60	2,664,435.02	0	0

Remark: In 2015, there was zero (0) disbursement from Sida as sufficient balance was available from 2014

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the Year 2016

Promotion of sub-regional cooperation in Southeast Asia and Strengthening Regional and Sub-regional Programs and Organizations

After the successful facilitation of bi-lateral agreements and work-plans, the project kept the process moving ahead with activities (including activities implemented by partners) in four sub-regions. The Gulf of Thailand sub-region has been target for most activities implemented directly through the Project while other partners have been more active in other sub-regions (BOBLME, MRC, CTI-CFF, USAID Oceans, etc.). Implemented follow-up activities were based on actions identified by participating countries which also was linked to the capacity-building stated in the Project's two main outputs objectives. Meanwhile, the capacity building programs were conducted in collaboration with TD and MFRDMD as shown in Table 5:

In addition, the project will continue the process of the strengthen cooperation to bilateral dialogue:

- *Gulf of Thailand sub-region:* In follow-up the 5th Meeting of the Gulf of Thailand sub-region, bilateral dialogues will be conducted for countries bordering the Gulf of Thailand, namely: Thailand-Malaysia, Cambodia-Viet Nam, Cambodia-Thailand and by request from the Gulf of Thailand countries include additional dialogues with Cambodia-Malaysia and possibly Thailand-Viet Nam. The focus will emphasize the monitoring of progress in bilateral and sub-regional cooperation including implementation of action plans as indicated in Output objective 1 and 2 above and to review progress in the development and implementation of bi-lateral and sub-regional agreements.
- *Andaman Sea sub-region:* Similar to the Gulf of Thailand sub-region. The focus will emphasize the monitoring of progress in bilateral and sub-regional cooperation including implementation of action plans as indicated in Output objective 1 and 2 above and progress in the development and implementation of bi-lateral and sub-regional agreements. The activities focused on the Andaman will, with the appointment of one person designated to work on that, be further strengthened during 2016.
- *Mekong River Basin sub-region:* Monitor developments within the MRC and other Mekong related organization with a view to see how fisheries are being considered together with the development of the Mekong Basin Wide Fisheries Strategy. Furthermore, a sub-regional consultation will be organized with (former) Technical Advisory Body (TAB) to the MRC Fisheries Program to seek advice from the Mekong countries on how best to continue the inter-governmental cooperation on fisheries in the Mekong River Basin.

- *Sulu Sulawesi Sea sub-region*: Continue to monitor progress and program development of the CTI-CFF and USAID Oceans with regards to traceability and the monitoring and control of fishing efforts in the Sulu-Sulawesi Seas.

Management of Transboundary Species

Work on trans-boundary species is a common priority among the Gulf of Thailand countries and the Working Group on Trans-boundary Species Management was established. The priority is confirmed in the dialogue events organized between Cambodia-Viet Nam (2014), Malaysia-Thailand (2014) and Cambodia-Thailand (2015). Common elements in the work plans for 2015 and 2016 on trans-boundary species management include: 1) To improve understanding on stock assessment, biological parameters, lifecycle, schooling behavior and migration of priority species for the establishment of fisheries resources conservation areas to conserve trans-boundary species; 2) To improve skills and expertise of involved researchers and officers regarding the application of modern and traditional technologies; and 3) To compile existing data and information in order to identify critical habitats and to reverse the degradation of essential habitats through the demarcation of the protected habitats.

In 2015, good progress had been made on the development of a set of Standard Operation Procedures (SOPs) for biological parameter surveys which focused on selected trans-boundary species including anchovies, blue swimming crabs and mackerels. The project provided training for researchers and enumerators on the data collection based in the SOPs. However, the countries were recommended to strengthen fisheries policy and management framework with regards to needed improvements in data collection and stock assessment at the national level. Countries should include data collection and stock assessment within its national fisheries statistical framework for the improvement of national fisheries statistics.

However, activities indicated in the work plans on the data collection had not been started by early 2015. At the 5th Meeting of the Gulf of Thailand sub-region, held in September 2015, progress of implementation of the programs related to trans-boundary stock and habitat management and sub-regional cooperation on trans-boundary species were reported. The Meeting emphasized that priority should be given to anchovy due to its limited information while data collection for the other two (2) species would be conducted as well, to obtain whatever information that was not available. Concerning that Standard Operation Procedure (SOP) for the three species that had been developed, the Meeting agreed to revisiting the SOP to adjust the SOP to suit the priority choice (anchovy) of the countries and identify best way of conducting the study. In the mean-time, capacity building for countries which require assistance would continue to be provided and the initiative would be expanded to cover the whole Gulf of Thailand Sub-region. As for mackerel resource management, the recommendations include establishment of Working Group for Stock Assessment of Indo-pacific Mackerel by involving Cambodia, Thailand, Malaysia, and Viet Nam, conduct of DNA study to determine its stock structure, as well as for compilation and review of available information of the said species to understand its status.

During the Experts Group Meeting conducted on 22-23 September 2016, a number of technical information and papers was resented. The information generated are expected to provide the necessary inputs as basis for the formulation and development of joint management plans for the target species, known as Anchovy-Indo-Pacific Mackerel-Blue Swimming Crab or AIB-species, in the Gulf of Thailand.

Regional Cooperation to Promote Sustainable Utilization of Neritic Tuna Resources in Southeast Asia Waters

With a region-wide perspective, the SEAFDEC-Sweden project has been successful in advancing the regional dialogue (including government agencies, NGOs and private sector) to develop a regional plan of action for neritic tuna (RPOA-Neritic Tuna) and establishment of the Scientific Working Group for neritic tuna.

The project has successfully supported the Member Countries for the regional cooperation on the development of the Regional Plan of Action on Sustainable Utilization of Neritic Tunas in the ASEAN Region (RPOA-Neritic Tuna). The RPOA-Neritic Tuna was endorsed at the 48th Meeting of SEAFDEC

Council in April 2015 and at the ASWGFi, respectively. The progress continued in 2016 under the Work Plan proposed earlier with the preparation for neritic tuna stock assessment in the Southeast Asian Region. The resource person Dr. Tom Nishida, led national discussions with the Department of Fisheries, Thailand (1-2 February 2016) and the National Fisheries Research and Development Institute (NFRDI) of Philippines (3-4 February 2016) to determine and assess CPUE for neritic tuna and catch data for kawakawa (*Euthynnus affinis*) and longtail tuna (*Thunnus tonggol*). Subsequently, the Special Training/Workshop on Stock Assessment of kawakawa (*Euthynnus affinis*) and longtail tuna (*Thunnus tonggol*) was conducted on 17-25 April 2016 at SEAFDEC/MFRDMD, Kuala Terengganu, Malaysia.

The project also continued to provide for the annual platform of the “3rd Meeting of the Scientific Working Group (SWG) on Neritic Tuna Stock Assessment in Southeast Asian Waters” on 27-29 June 2016 in Chonburi province, Thailand in order to report on the progress and to discuss the proposed work-plan for the year 2017.

RPOA-Fishing Capacity

The project also supported since 2015 the series of consultations to the draft of the Regional Plan of Action for Management of Fishing Capacity (RPOA-Capacity), which could serve as basis for the AMSs in formulating relevant policies and provide an enabling environment for clear direction and understanding of the need to effectively manage the fishing capacity at national level. In addition, the need for AMSs to strengthen sub-regional and regional cooperation in managing fishing capacity in trans-boundary areas such as in the Gulf of Thailand (GOT), Andaman Sea, Sulu-Sulawesi Seas, and other sub-regional areas has been emphasized. The project supported the 2nd RTC on the Development of Regional Plan of Action for Management of Fishing Capacity in Southeast Asia which was convened in December 2015 to finalize the zero draft RPOA-Capacity was tabled for endorsement at the 49th Meeting of SEAFDEC Council in 2016 and the ASWGFi. The project will conduct a preliminary desk study on information on applications of Fishing Vessel Marking System in ASEAN countries. A Workshop will be conducted to introduce international standard for data exchange to improve information exchange (focusing registration and licensing) including awareness raising on importance of using international standardized data exchange for information exchange for the monitoring of active fishing capacity to further support implementation of the RPOA-Fishing Capacity

Stakeholders Consultation on ASEAN Catch Documentation Scheme (ACDS) to increase the application of the ACDS as basis for improved traceability systems and to promote the intra-regional and international trade will be further organized together with the Japanese Trust Fund and USAID Oceans. SEAFDEC staff gathered information on the Swedish system for traceability of fisheries products and e-catch documentation scheme during a study visit to SwAM in September 2016 that also facilitated strengthened cooperation with SwAM.

Combating IUU Fishing: Public-Private Consultation has been conducted in connection with various events promoting Regional Cooperation among ASEAN for Combating IUU Fishing as well as during the RTC on labor and working conditions in the fishing industry. The project has been cooperating with USAID Oceans on public-private partnerships.

Labor and Working Conditions

Labor issues and working conditions in the fishing sector has been receiving increased attention during 2014 and 2015 and SEAFDEC Council requested SEAFDEC in April 2015 to facilitate consultations within the region on how to improve working conditions, including the status for migrant labor. SEAFDEC in cooperation with ILO, the Thai DOF, ICSF and others developed the framework for the 1st Regional Technical Consultation on Labor Aspects within the Fishing Industry in the ASEAN Region. The event was successfully held on 25-27 February 2016 and a list of useful recommendations was provided by participants. Challenges ahead lies in being able to facilitate cooperation and involvement of range of responsible agencies (Labor departments), NGOs, trade unions and private sector representatives – and in the process define a suitable (and acceptable) role for the fisheries agencies of Member Countries. The Project will explore options to work with stakeholders to develop guidelines (or standards) on steps to

take to improve working conditions and the rights of migrant workers in the spirit of the ASEAN Community.

RTC on developing Regional Guideline for Small-Scale fisheries in the perspective of Southeast Asian situation

A great majority of our fisher-folk in the region are engaged in small-scale fisheries. It is therefore just fitting that we have to ensure its sustainability for the benefit of our small-scale fisher-folk. With the Code of Conduct for Responsible Fisheries as its backdrop, the “*FAO Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines/VGSSF)*,” had been developed with emphasis on securing sustainable resource use and access rights; securing post-harvest benefits; and securing social, economic and human rights, among others. Although voluntary in nature, discussions had been carried out on the applicability of the said Guidelines to the Southeast Asian region, such as during the Bali Meeting in August 2015. On the part of SEAFDEC, this issue has also been discussed in several fora, and in order to follow-up on the recommendations of the Bali Meeting, SEAFDEC was requested by the ASEAN Member States to convene a regional dialogue to develop appropriate actions for the implementation of the SSF Guidelines. The Regional Technical Consultation (RTC) on a Regional Approach to the Implementation of the FAO Voluntary Guidelines for Securing Sustainable Small-Scales Fisheries in the of Food Security and Poverty Eradication was convened in Bangkok, Thailand from 7 to 9 June 2016.

Cooperation and dialogue with partners

Another major challenge for Project has been the difficulty to maintain and build upon the cooperation and dialogue with partners such as BOBLME (the second phase is still pending and the first phase of the project was terminated in November 2015), ASEAN (limited staff capacity to actively engage in cooperation and dialogue) and furthermore the MRC/Fisheries Program has had staff changes with the MRC program structure in transition. A common problem is that we have not really been kept informed on developments, staff changes and upcoming events in a way that would facilitate effective cooperation on activities of common interest. Of specific concern, seen from a fisheries point of view is the developments within the Mekong River Commission (MRC) as indicated below.

Mekong River Commission

In the **Mekong River Region**, there are major changes taking place with regards to inter-governmental cooperation on Mekong fisheries as up until this year this has been led by the Fisheries Program of the Mekong River Commission (MRC) with support of the Technical Advisory Body (TAB) from riparian fisheries agencies and the National Mekong Committees (NMC’s). The MRC has been developing a new program structure that will have implications on options for agreement on joint management approaches to fisheries (under the MRC). On 13 January 2016, Ministerial delegates from the Mekong River Commission Council (the MRC Council) approved a Strategic Plan 2016-2020 and that set out a new direction and program structure for the MRC Secretariat. The aim is to increase the efficiency and effectiveness of the organization. With the new structure, MRC will change from program-based (with a range of sector programs, such as programs for fisheries, navigation, forestry, etc.), to a “core river basin-based” function structure. The newly approved structure will be implemented from July 2016. The Fisheries Program as a separate program will cease to exist as a separate entity. Fisheries aspects is said to be addressed in one of the four new Divisions (Administration Division, Environmental Management Division, Planning Division, and Technical Support Division).

SEAFDEC has been monitoring the development within the MRC including steps taken for the development of a Mekong Basin Wide Fisheries Management Strategy. Seen from a fisheries (and wetlands) perspective this raises some concerns as to how fisheries, habitats and the well-being of people dependent on fisheries and aquatic resources, will be managed and secured given scenarios of major infrastructure developments in the pipeline. Major concerns in this direction was also voiced during the ASEAN/SEAFDEC/MRC “Experts Meeting on Mekong Cooperation on Fisheries, Aquatic Resources and Wetlands: 20 years of lessons learnt”, Phnom Penh, November 2014. SEAFDEC and the Project intend to consult with riparian fisheries agencies on how to sustain a regular fisheries based monitoring of the status

of fisheries and habitats in the Mekong organize by organizing an Ad Hoc TAB Meeting – tentatively in the second quarter of 2016. Feedback so far from the countries are positive.

Support to Local Capacity Building

SEAFDEC as an intergovernmental body is not well suited to work at field level but to facilitate local capacity building, to strengthen local organizations, to support improved livelihood opportunities, poverty alleviation and to restore important habitats support is provided through local partners to allow for longer-term engagement at local level. Thus, the project has provided support to local capacity building facilitated by local organizations with the aims of improving livelihood opportunities, undertaking poverty alleviation, and restoring important fishery resources and habitats. In 2015, SEAFDEC continued support sub-contract agreements with the Learning Institute, Cambodia entitled “Strengthening Community Fisheries Management and Livelihoods Diversification in Cambodia”, CORIN-Asia Cambodia, carried out the activities aiming to i) strengthen relevant local institutions’ capacity to enable them to address natural resource degradation and climate change vulnerability of target coastal communities; ii) improve local people’s capacity to effectively cope with the challenges of climate change and other changes brought about by development through enhanced family livelihoods, sustainable use of natural resources and understanding of risks; and iii) strengthen the existing approaches at the local level developed through the Wetlands Alliance Program (WAP) for sustainable resource management of target coastal communities.

In Myanmar, CORIN-Asia Myanmar implemented activities with the overall objective of building capacity of local level government agencies and local authorities towards sustainable management of fisheries resources and important coastal habitat to protect coastal resources. It is anticipated that the establishment of linkages with local organizations and on-going projects would be an important factor to ensure adequate support and sustainability of the project outcomes.

Review of Laws and Regulations

Since 2015, a strong emphasis was given on the needs to review national law and regulations related to fisheries and habitats of each country, particularly, voiced from the Gulf of Thailand and Mekong River sub-region in order to raise awareness among concerned stakeholders on rules and regulations relevant to fisheries and habitat management in each country as a basis for joint action. In 2015, national consultants were assigned (through National Coordinators) to review the national laws and regulations in Cambodia, Lao PDR and Viet Nam. In 2016, the project continued to conduct the compilation of information of fisheries laws and regulations of Cambodia and Viet Nam and Cambodia and Lao PDR and possibly Cambodia and Thailand followed by dissemination to stakeholders through the conduct of on-site training workshops with the purpose to raise awareness. An external resource-person has been contracted to facilitate comparative analysis.

The process is ongoing, however, the work at national level is delayed and national reports have not been submitted as indicated in the work-plans. The facilitation of the Comparative study by an appointed International Consultant has also been delayed and the 1st discussion will be done in October 2016.

Coordination with International and Regional Organizations

The project will continue to coordinate with international and regional organizations by actively participating to regional and international events organized by ASEAN, FAO/APFIC, CTI-CFF, USAID, IUCN/MFF, ILO, RPOA-IUU, SEAFDEC, SwAM, SEAFDEC/Japanese Trust Fund (JTF) and others.

Cross-cutting Section in Support of the Three Output Objectives and the Outcome Objective, Including Sub-contracts for Local Level Capacity-building

A number of crosscutting elements were addressed in 2016. These included social well-being, gender, diversified livelihood options, climate variability/climate change, labor and working conditions in the fishing sector and capacity-building in related areas.

- SEAFDEC has been making advances on gender related integration. All contracts for local level capacity-building implemented during 2015 include requirements for a balanced gender perspective to ensure involvement of all community members. To ensure reference to gender balance in villages and implementation of local level activities SEAFDEC are requesting that reports from contracted organizations are including reference to gender balance.
- SEAFDEC, through the Project have, 2015, appointed a **gender focal point** (*Ms. Jariya Sornkliang*, based at TD). With support from the project she will be able to build her own capacity and extend that to SEAFDEC colleagues. In-house Training Workshop on Gender Awareness and Gender Mainstreaming in Fisheries sector was conducted from 26 to 28 July 2016 in Nakhon Nayok Province. The objective of this Training Workshop was to enhance the knowledge of SEAFDEC staff to ensure their better understanding and awareness on gender aspects and understand how to mainstream gender in the fisheries sector, throughout the project cycle. Sharing the information and knowledge on related gender aspects through participation regional/international forum as part of capacity building of young staff of TD.
- review of gender related aspects within the fishing sector/fishing industry and for Small-Scale is planned to be conducted in cooperation with the USAID Oceans, IUCN and the newly appointed SEAFDEC Focal Point for gender
- Efforts to address labor issues and working conditions in the fishing sector, including the role of migrant workforce, will be strengthened during 2016 and the perspectives from ASEAN Member States was explored during a RTC in February 2016 with subsequent feedback provided to the SEAFDEC Council (April 2016) and during the High-Level Consultation in August 2016.

As indicated in the SEAFDEC-Sweden Strategy section, SEAFDEC being an inter-governmental body is not well placed to directly engage in field level activities that requires long-term engagement, but in support of the improvement of livelihoods at village level SEAFDEC has during 2016 continued to support the strengthening of local communities through contractual arrangements with local partners that are more well suited for capacity-building at local/district level. Following the strategy continued work will be supported during 2016 as follows:

- Through the Learning Institute (LI) with communities and local administration in areas around Tonle Sap and coastal Cambodia including assessments of result of Cambodian fisheries reforms and right-based fisheries.
- Through CORIN-Asia Cambodia with communities and local administrations in Kampot, Kep and Sihanoukville in coastal Cambodia.
- Through CORIN-Asia Myanmar with communities and local administrations in Kawthoung Province in Southeast coastal Myanmar
- Through Sustainable Development Foundation (SDF) of Thailand, with communities and local administrations in Trat Province, Eastern part of the Gulf of Thailand border of Koh Kong Cambodia
- Dialogue with Educational Development Institute (EDI) for work in Koh Kong Province, Cambodia.

At the same time, SEAFDEC have been exploring options for field level work in Ranong, Thailand that would match the work in Kaw Thoung. To facilitate cooperation and share experiences and look at options for coordination the Project is following-up with IUCN/MFF and more recently Oxfam (Asia) Great Britain.

The cooperation has been maintained with important regional and international partners, organizations and relevant institutions to, as suitable, avoid duplication, to provide a basis for continued sharing of information and to secure other inputs as needed. Organizations and initiatives include; ASEAN and ASEAN Secretariat; FAO Regional Office in Bangkok/APFIC; The Bay of Bengal Large Marine Ecosystems Project (BOBLME); Mangroves for the Future/IUCN; Regional Plan of Action (RPOA-IUU) to Promote Responsible Fishing Practices including Combating IUU Fishing in the Region; Coral Triangle Initiative for Coral Reefs, Fisheries and Food Security (CTI-CFF); USAID, Mekong River Commission (MRC); UNEP; and the International Labour Organization (ILO).

2. Activities Conducted 2016 with the framework of the Current Project

Table 5: List of activity conducted including involved stakeholders and budget spent

List of Actual Sub-activity (1)	Type of activity	Number of Participants			Total Budget Spent
		MCs	SEAFDEC	Others	
Output objective 1: Capacity built for integration of habitat & fisheries management and adaptation to climate change					
Training Course on Stock Assessment (<i>Level 1: Basic of Fisheries Biology</i>), 29 January-5 February 2016	T	23 (14 Male, 9 Female)	7	5	
Training Course on Stock Assessment (<i>Level 2: Fish Stock Assessment</i>), 21-30 March 2016	T	17 (12 Male, 5 Female)	1		
Regional Training Workshop on Larval Fish Identification and Fish Early Life-history Science (Basic Course: Key to Family), 1-13 February 2016	T	14 (8 Male, 6 Female)	1		
Regional Training Workshop on Larval Fish Identification and Fish Early Life History Science (Advanced course: key to species), 4-14 July 2016	T	13 (7 Male, 6 Female)	1		
Essential Ecosystem Approach to Fisheries Management (E-EAFM) Training Course for Lao PDR, 2-7 November 2015	T	28 (22 Male, 6 Female)	1		
Essential Ecosystem Approach to Fisheries Management (E-EAFM) Training Course for Myanmar, 14-19 December 2015	T	17 (12 Male, 9 Female)	1		
Essential Ecosystem Approach to Fisheries Management (E-EAFM) Training Course for Cambodia, 5-10 September 2016	T	20			
Training of the Trainers of E-EAFM for the officers of Lao PDR, 25-29 April 2016	T	7 (6 Male, 1 Female)			
Training of the Trainers of E-EAFM for the officers of Myanmar, 28 June-1 July 2016	T	10 (6 Male, 4 Female)			
Training of the Trainers of E-EAFM for the officers of Cambodia, 27-30 September 2016	T	6			
Experts Group Meeting on Stock Status and Geographical Distribution of AIB-Species in the Gulf of Thailand, 22-23 September 2016	P	10	3		
Special Training/Workshop on Stock Assessment of Longtail Tuna and Kawakawa in Southeast Asia, 17-25 April 2016	T	13 (7 Male, 6 Female)	11		
Output objective 2: Capacity built and systems improved for the management of fishing capacity (monitoring; record and control)					
- Strengthening Malaysia and Thai Partnership in Support of Joint Fisheries Planning and Management in the Western Gulf of Thailand					
a) On-site Date Verification and Capturing pictures of Fishing Vessels in	R		5		

List of Actual Sub-activity (1)	Type of activity	Number of Participants			Total Budget Spent
		MCs	SEAFDEC	Others	
Malaysia, 11-15 Jan 2016 (conducted by TD)					
b) On-site Date Verification and Capturing pictures of Fishing Vessels in Malaysia, 26-27 January 2016 (conducted by TD)	R		4		
c) Working Team Meeting on Discussion of Baseline Survey on Monitoring and Control of Fishing Effort and Landing in the Western Gulf of Thailand, 1-3 March 2016	R	27	7		
- Experts Meeting on Regional Cooperation to Support the Implementation of Port State Measures, 2-4 February 2016	P	10 (8 RFPN)	17	4	
- Stakeholders Consultation on Regional Cooperation in Sustainable Fisheries Development Towards the ASEAN Economic Community, 1-2 March 2016	P	25			
- 3 rd Meeting of the Scientific Working Group on Neritic Tuna Stock Assessment in Southeast Asian Waters, 27-29 June 2016	P	15 (12 Male, 3 Female)	27		
- Regional Cooperation on the Implementation of ASEAN Catch Documentation Scheme					
a) Visit the Fish Marketing Organization, Fishing Port in Phuket to observe Traceability System from Sea to land, 21-22 July 2016	R				
b) Baseline Survey and Discussion Toward the Developing of the Electronic System of the ASEAN Catch Documentation Scheme for Piloting in Brunei Darussalam, 15-19 August 2016	R				
- Oceans and Fisheries Partnership Technical Working Group Training and Workshop, 12-14 July 2016, Bangkok	P	13			
Output objective 3: Capacity built and policy development processes improved for the drafting and implementation of regional & sub-regional agreements					
- RTC on Labor Aspects with the Fishing Industry in the ASEAN Region, 25-27 February 2016	P				
- RTC on a Regional Approach to the Implementation of the FAO-VGSSF, 7-9 June 2016	P				
Activity to promotion bi, tri cooperation and arrangement (also link to Outputs objective 1)					
Activity: Participation in the non-SEAFDEC-Sweden events and policy forum					
The 48 th Meeting of the SEAFDEC Council, 4-8 April 2016	P		3		
The Workshop on "Securing Small-Scale Fisheries in the Mekong Region: SSF Guidelines into Action, 30 April 2016	P		1		
The 8 th Meeting of the ASEAN Fisheries consultative Forum (AFCF), 30 May-1 July 2016	P		1		

List of Actual Sub-activity (1)	Type of activity	Number of Participants			Total Budget Spent
		MCs	SEAFDEC	Others	
Mission to visit CEO of Mekong River Commission/Secretariat, 16-17 June 2016	P		4		
6 th Meeting of the Regional Fishery Body Secretariat's Network and 32 nd Session of FAO COFI, 11-15 July 2016	P		1		
Workshop on the Improvement of Data for Marine and Coastal Resources Management through Participatory Approach around Ao Trat, Trat Province, 28-29 July 2016	P		2		
11 th Asian Fisheries and Aquaculture Forum, 3-7 August 2016	P				
Workshop to Review Activities and Methodologies for Promotion on Inland Fisheries, 8-10 August 2016	P		1		
The 39 th SEAFDEC Program Committee Meeting and 19 th ASEAN-SEAFDEC Fisheries Consultative Group, 27 November-2 December 2016, Indonesia	P		2		
Cat4: Project management and coordination					
1. Expenses of Staff, RFPN and administration, 2. Planning meetings, regular coordination meetings (FAO/RAP/APFIC, BOBLME, ASEAN, RPOA-IUU, WorldFish Centre, MRC, CTI-CFF, and with countries of the four sub-regions) 3. Reporting costs, editing and printing 4. Project monitoring and coordination, project mid-term review (year 3) and project evaluation (year 5) 5. Operating, equipments and maintenance expenses					

3. Output(s)

Table 6: Frame of the Output-Monitoring (for SEAFDEC Sweden with reference made to the Results report for 2016)

Output	Key Performance Indicator	Achievement based on indicator in Year 2016	Remarks
The Results Assessment Framework (RAF) specifies three Output Objectives	To each of the Output objectives in the RAF 8 or 9 "indicators" are specified together with annual targets	The list of achievements below is examples of how these indicators are met.	
1. Capacity built for integration of habitat & fisheries management and adaptation to climate change		<ul style="list-style-type: none"> - Action plans developed to support the development of bi-lateral agreements. - Establishment of working groups of persons from concerned departments. - Identification of the type of information that the Gulf of Thailand countries see as a priority for 	

Output	Key Performance Indicator	Achievement based on indicator in Year 2016	Remarks
2. Capacity built and systems improved for the management of fishing capacity (monitoring; record and control) 3. Capacity built and policy development processes improved for the drafting and implementation of regional & sub-regional agreements		information sharing as a basis for sub-regional dialogue. - Integration of fisheries and habitat management and the importance of trans-boundary stocks and habitats. - Agreement on the growing need to provide awareness and understanding on the important roles and functions of ports and landing places while recognizing the large amount of institutions involved in management and activities related to ports and landing sites.	

4. Project outcomes and Lesson Learned

The project has seen some good progress during 2015-2016. The Project has been facing some “bottlenecks” leading to delays in implementation of planned activities and dialogue events due to new appointments of responsible officers in some of the fisheries agencies. Attempts to increase local ownership through recommendations on the appointments of local consultants has also had delays, and lack of quality, in some countries as in the case of the review of laws and regulations. The issuance of new laws in some countries has further provided some hurdles to the reviews. Examples of these two “bottlenecks” are given below:

1) Sub-regional Cooperation in the Andaman Sea

The work plan during 2015 has been a sequence of events to follow-up on the requests from the Andaman Sea countries (Myanmar, Thailand, Malaysia and Indonesia) to support the continued sequence of dialogues among to strengthen cooperation in the Andaman as a whole as well as in the Northern Andaman (Myanmar and Thailand) and in the Southern Andaman (Thailand, Malaysia and Indonesia). However, the political and administrative changes that has (for different reasons) been taking place in the four countries has also led to delays in appointing national focal points to facilitate coordination and organization of events to come. The intention from the Project is to try to conduct the three planned events during 2016 and SEAFDEC is in contact with the four countries to have new national focal points nominated. The change in national Andaman Sea focal points (or lack of focal points) has also been connected to uncertainty among the fisheries agencies during the final year (2015) of the BOBLME and on how activities will continue 2016 and onwards.

2) Review Laws and Regulation and Comparative Study of Laws and Regulations of Neighboring Countries (Cambodia-Lao PDR, Cambodia-Viet Nam, Cambodia-Thailand)

In connection with the request to have reviews national laws and regulations in Cambodia, Lao PDR, Viet Nam and Thailand as a basis for comparative analysis of laws between neighboring countries the Project has been seeking to raise the involvement and ownership (as recommended by the MTR Team) of participating by having them to select the resource persons to be selected as consultants to do the national review. Based on the suggestions of the countries SEAFDEC could issue contracts for the Cambodian, Lao PDR and Vietnamese reviews. However, as it turned out the appointed people were not able to fully commit their time to do the review. With the exception of Viet Nam, the submission of inputs of national laws and regulations was delayed from 2015 as the Lao and Cambodian national consultants were much delayed due to commitment other assignments. Following the late submission of national reviews, the Comparative Study will be started in the middle of the Year 2016.

The national legal review in fourth country Thailand has been delayed because 2015 has been a year of many changes with regards to the national fisheries laws and the review has been postponed while waiting

for the new laws to come into force. A major step in framing of fisheries laws in Thailand took place on 3 November 2015 when a new fisheries legislation (the Royal Ordinance on Fisheries) and a set of important fisheries plans were issued and approved by the government (the Marine Fisheries Management Plan, and the National Plan of Action to Prevent, Deter and Eliminate IUU Fishing (NPOA-IUU)). The new plans and law is supporting efforts to combat illegal, unreported and unregulated (IUU) fishing and to promote sustainable management of living marine resources. However, the review of laws and regulations in Thailand could not be started in 2015, as Thailand is still (2016) amending the laws and sub-decrees that is needed to support the implementation of the Royal Ordinance 2015. The Thai review will be done during 2016 and SEAFDEC is seeking to appoint a national consultant to do the review work.

3) Project monitoring and Evaluation

The SEAFDEC-Sweden Project conducts the Annual Review Meeting (ARM) with the Swedish Embassy in every March or April in accordance to Agreement with the aim to review the progress of the implementation and discuss on the annual financial report on the utilization of the fund. The representative of Sweden and officer of the Swedish Agency for Marine and Water Management (SwAM) provide the comments and feedback for further improvement the performance of the project. During the year, the representatives of Sweden will also follow-up with the project on the progress and change based on the agreed minutes of the Meeting. In 2015, the Mid-term Review of the Project was done. An in-depth review is a requirement under the agreement with Sweden to thoroughly review project implementation, management and results. For the Field work implemented by sub-contract, the team will monitor regularly through the submission of the half year progress report and visiting the sites.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

Project/Activity Title	Duration	Remarks
To address the components above, expected events to be carried out in 2017:		
1. Continued the process of the collaboration between neighboring countries in 4 sub-regions (Gulf of Thailand, Andaman Sea, Mekong River, and Sulu-Sulawesi Sea) through the conduct of the bilateral dialogue, sub-regional meetings, Consultation and workshop, etc.	Jan-Dec	
2. Regional Cooperation to Promote Sustainable Utilization of Neritic Tuna Resources in Southeast Asia Waters	Jan-Dec	
2.1 4 th Meeting of the Scientific Working Group Meeting on Neritic tuna meeting		
2.2 Improve data collection for Neritic Tuna focusing tonggol tuna, kawakawa, etc.		
2.3 Genetic study (will be lead by SEAFDEC/MFRDMD)		
2.4 Capacity building on EAFM for Neritic Tuna via Training and information dissemination, awareness building: Thailand, Viet Nam, Indonesia, Malaysia, the Philippines		
3. Labor and Working Conditions will be further addressed following the recommendations in February 2016		
4. The regional approach for the implementation of the Voluntary Guidelines on Small-Scale Fisheries will be further developed with partners in the region	Jan-Dec	
5. Field-level work: More sub-contracts drafted and/or signed for field work and capacity-building in follow-up to requests from Member Countries and as recommended during sub-regional consultations.	Jan-Dec	
6. On-site events to be organized in Indonesia, Malaysia, Thailand, Myanmar, Cambodia, Viet Nam, Lao PDR and the Philippines in support of sub-regional dialogue and cooperation in the four target sub-regions.	Jan-Dec	
7. Active participation envisaged by the project to regional and international events organized by ASEAN, FAO/APFIC, Sida, CTI-CFF, USAID, IUCN/MFF, ILO, UNEP, MRC, RPOA-IUU, BOBLME, SEAFDEC, SwAM, SEAFDEC/Japanese Trust Fund (JTF), and others.		
8. Strengthening the capacity of young fisheries officers with a		

Project/Activity Title	Duration	Remarks
<p>variety of specializations and skills have been dispatched from the Member Countries through the SEAFDEC Regional Fisheries Policy Network (RFPN). (The SEAFDEC-Sweden collaborative project as well as by the SEAFDEC/JTF provide financial support to 8 Member Countries).</p> <p><i>Note: Aspects of climate change, gender will be integrated in all outputs groups as a cross-cutting matter to be considered.</i></p>		

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

	Project id: 2015060104		
Program Categories:	Project under the ASEAN-SEAFDEC FCG/ASSP Mechanism		
Project Title:	USAID-SEAFDEC “Oceans and Fisheries Partnership”		
Program Thrust:	Special Project	Total Duration:	14 May 2015 to 13 May 2020
Lead Department:	SEC in collaboration with TD	Lead Country:	Regional Program
Donor/Sponsor:	U.S. Agency for International Development (USAID)	Total Donor Budget:	USD 19,953,018
Project Partner:	USAID, SEAFDEC, CTI-CFF	Budget for 2017:	USD 6,380,916
Project Leader:	Geronimo Silvestre	Involved Country:	ASEAN and CTI-CFF Countries

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description

Southeast Asia’s fisheries are in a state of overcapacity. Overfishing combined with destructive and illegal, unreported, and unregulated (IUU) fishing practices are causing fisheries to decline, if not collapse, with devastating consequences for regional food security and marine biodiversity.

The goal of the Oceans and Fisheries Partnership (USAID Oceans), a USAID-funded activity, implemented by Tetra Tech ARD, is to strengthen regional cooperation for sustainable and legal management and trade of natural resources in the Asia-Pacific region. The objectives are to (1) demonstrate a sustainable Catch Documentation and Traceability System (CDTS) and Fisheries Information System (FIS), (2) expand use of CDTS/FIS to priority biodiversity areas, (3) strengthen the capacity of regional and national organizations to conserve biodiversity using an Ecosystem Approach to Fisheries Management (EAFM) and CDT, and (4) engage the private sector to ensure sustainability, while advancing regional fisheries governance.

Key project activities include:

- Developing a transparent and financially sustainable CDTS and complementary Sustainable Fisheries Management Plans (SFMP), tested in at least two fisheries in priority biodiversity areas in the Sulu-Sulawesi Marine Eco-region (SSME).
- Strengthening the capacity of regional, national, and local partners.
- Enhancing fisheries management through EAFM.
- Forging partnerships with the public and private sectors to ensure system uptake and sustainability.
- Cross-cutting incorporation of human welfare considerations into all activities.

Expected outputs of the project for year 2017:

- **Regional Coordination** - Capacity of SEAFDEC, CTI-CFF, and Technical Working Group (TWG) strengthened;
- **CDT**–Concept and design of the CDTS developed and implemented in two learning sites with Key Data Elements defined;
- **EAFM** - Completion of the SSME EAFM Regional Plan and development of learning site EAFM Plans;
- **Public-Private Partnerships** – Critical stakeholders in value chain and end-markets identified. Strategic partnerships launched to support CDTS development, implementation, and expansion;

- **Human Welfare** –Objectives identified for regional adoption, with in-depth studies completed to inform CDTS Key Data Elements and EAFM planning.

2. Background and Justification

Asia’s fish stocks and coral reefs are in danger as a result of unsustainable fishing practices, which threaten biodiversity, food security, and livelihoods. Across the region, Southeast Asia’s fisheries are in a state of overcapacity. Overfishing, combined with IUU and destructive fishing practices, have serious impact to the region some of the world’s most marine biodiverse areas. These impacts can be seen throughout the region, resulting in fisheries decline, threatened regional and global food security, and serious human welfare concerns.

Oceans supports SEAFDEC’s ongoing work to develop and implement the ASEAN Catch Documentation Scheme (ACDS) as well as related national level efforts. Work on the ACDS is strategically important to improving data/information availability, sustainable fisheries management programs, and overcapacity and IUU fishing reduction efforts.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities

3.1 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1: Develop a financially sustainable regional catch documentation and traceability system (CDTS) to combat IUU fishing and seafood fraud in areas where sustainable fisheries management plans (SFMPs) are being applied	Outcome 1: Overcapacity and IUU fishing in demonstration area fisheries reduced	Output 1: Financially sustainable CDT system with complementary SFMP implemented at 2 learning sites	Activity 1: Implement a Financially Sustainable Catch Documentation and Traceability System with Complementary SFMP in Regional Demonstration Sites
Objective 2: Expand use of the CDTS to priority biodiversity areas in the Asia Pacific region	Outcome 2: Overcapacity and IUU fishing in expansion areas reduced	Output 2: CDTS with complementary SFMP rolled out in expansion areas/fisheries	Activity 2: Expand Implementation of the CDT System and SFMP in Areas Important for Biodiversity in the Asia-Pacific Region
Objective 3: Strengthen human and institutional capacity of regional organizations to conserve marine biodiversity through CDT and SFMPs, including actions to combat IUU fishing and seafood fraud	Outcome 3: Regional and national organizations engaged in and capable of combatting overcapacity and IUU fishing through the use of CDTS and complementary SFMP	Output 3: Trainings and capacity-building regional and national organizations in CDT and SFM planning	Activity 3: Strengthen Capacity of Regional and National Organizations to Conserve Biodiversity using CDT Systems and Complementary SFMP
Objective 4: Enhance public-private partnerships (PPPs) to conserve biodiversity, promote sustainable fisheries management, and combat IUU fishing	Outcome 4: Private and public sectors engaged in development, implementation and sustainability of CDTS to combat	Output 4: Private and public sector partnership and investments in CDTS and SFMPs	Activity 4: Engage the Public and Private Sector to Enhance Fisheries Sustainability, CDT/SFMP Uptake and Coordination with Regional Stakeholders

Objective	Outcomes	Outputs	Activities
and seafood fraud	overcapacity and fishing		

3.2 Overall Scope/Description of Project

Activity	Description
Activity 1. Regional Support and Engagement to Implement a Financially Sustainable Catch Documentation and Traceability System and Complementary SFMPs in Regional Demonstrations	The Oceans and Fisheries Partnership will develop and implement a CDTS consistent with the ACDS, and strengthen sustainable fisheries management in the SSME, focusing on two learning sites.
Activity 2. National Support and Engagement to Learning Site Country – Philippines	The Oceans and Fisheries Partnership will build capacity at a national level for enhanced CDT, EAFM, and human welfare activities to support program objectives and combat IUU practices. National level support will complement learning site level activities to design, implement, and test the CDTS.
Activity 3. Site-Level Support and Engagement to Learning Site – General Santos City, Philippines	Oceans will work closely with the Philippine Bureau of Fisheries and Aquatic Resources (BFAR) to develop, implement, and test the CDTS, and implement complementary project objectives, including EAFM, human welfare, and partnership development.
Activity 4. National Support and Engagement to Learning Site Country – Indonesia	Oceans will build capacity at a national level for enhanced CDT, EAFM, and human welfare activities to support program objectives and combat IUU practices. National level support will complement learning site level activities to design, implement, and test the CDTS.
Activity 5. Site-Level Support and Engagement to Learning Site – Bitung, Indonesia	Oceans will work closely with the Indonesia Ministry of Maritime Affairs and Fisheries (MMAF) to develop, implement, and test the CDTS, and implement complementary project objectives, including EAFM, human welfare, and partnership development.
Activity 6. Support to Expansion I and II Sites	Technical support and capacity building activities will be conducted with Expansion I (Thailand and Malaysia) and II (ASEAN and CTI) countries. Oceans will work with local counterparts to support CDT implementation planning and will build capacity through engagement with learning site activities with additional support to be scaled in subsequent program years.

3.3 Activity, Sub-activity and Proposed Budget for 2016-2020

Activities 1-6 represent Oceans' tiered approach, dividing efforts into regional and national support through project learning sites and established Expansion Site I and II countries. Budget allocations are as follows:

- 34 % Regional Support – 50% Activity 1; 50% Activity 6
- 33% National and Learning Site Support (Philippines – Activities 2 and 3)
- 33% National and Learning Site Support (Indonesia – Activities 4 and 5)

Unit: USD)

Activity	Sub-Activity	Y1 2016	Y2 2017	Y3 2018	Y4 2019	Y5 2020
Activity 1. Regional Support and Engagement to Implement a Financially Sustainable CDTS and Complementary SFMPs in Regional Demonstrations	Sub-activities 1.1-1.5 address: Development of a regional PPP engagement strategy; Regional capacity building to support CDTS expansion;	605,296	1,063,486	824,016	693,599	139,106

Activity	Sub-Activity	Y1 2016	Y2 2017	Y3 2018	Y4 2019	Y5 2020
	Regional engagement on fair labor and gender equity considerations; Development and implementation of a regional communications strategy; and Support for the development of regional ACDS/CDTS Guidelines and Roadmap					
Activity 2. National Support and Engagement to Learning Site Country – Philippines	Sub-activities 2.1-2.4 address: Strengthening legal and policy frameworks for CDTS/FIS/EAFM; Integrating safe labor and gender considerations at national and local levels; and Disseminating strategic communications products to support national activities	605,296	1,063,486	824,016	693,599	139,106
Activity 3. Site-Level Support and Engagement to Learning Site – General Santos City, Philippines	Sub-activities 3.1-3.5 address: Developing and demonstrating CDTS/EAFM/PPP/Human Welfare; Building capacity of local stakeholders to support program objectives; Developing SFMP; Supporting fair labor and gender equity interventions; and Deploying strategic communications that support local implementation	605,296	1,063,486	824,016	693,599	139,106
Activity 4. National Support and Engagement to Learning Site Country – Indonesia	Sub-activities 4.1-4.4 address: Strengthening legal and policy frameworks for CDTS/FIS/EAFM; Integrating safe labor and gender considerations at national and local levels; and Disseminating strategic communications products to support national activities	605,296	1,063,486	824,016	693,599	139,106
Activity 5– Site-Level Support and Engagement to Learning Site – Bitung, Indonesia	Sub-activities 5.1-5.5 address: Developing and demonstrating CDTS/EAFM/PPP/ Human Welfare; Building capacity of local stakeholders to support program objectives;	605,296	1,063,486	824,016	693,599	139,106

Activity	Sub-Activity	Y1 2016	Y2 2017	Y3 2018	Y4 2019	Y5 2020
	Developing SFMP; Supporting fair labor and gender equity interventions; and Deploying strategic communications that support local implementation					
Activity 6. Support to Expansion I and II Sites	Sub-activities 6.1-6.3 address: Providing technical and capacity building support to Expansion sites.	605,296	1,063,486	824,016	693,599	139,106
TOTAL	Total Budget	3,631,777	6,380,916	4,944,096	4,161,595	834,634

*Note: Budget numbers are indicative. Total numbers reflect projected budget allocations. Sub-totals are a reflection of the estimated cost distribution. Only total funds expended by year will be available reflecting USAID Fiscal Year reporting requirements. USAID funds are subject to its availability as determined by the United States Congress on a yearly basis.

PART II: ACHIEVEMENT OF 2016 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the Present Year

Objective 1: Develop a financially sustainable regional CDTS to combat IUU fishing and seafood fraud in areas where SFMPs are being applied.

- Developed the CDT 101, a conceptual overview of the CDTS, as a basis for development, and proposed design approach. Drafting of the CDT 201, an in-depth technical overview of CDTS design specifications.
- Formalized the Oceans Technical Advisory Group to review and provide input on CDTS design and specifications, by way of the CDT 201 document.
- Submitted ADS548 IT procurement plans to USAID for review as a requirement to begin buildout of the CDTS.

Objective 2: Expand use of the CDTS to priority biodiversity areas in the Asia-Pacific region.

- Confirmed Oceans learning sites (General Santos City, Philippines and Bitung, Indonesia). Developed strategy for two tiers of expansion sites to include tiered support to ASEAN and Coral Triangle countries.
- Received nominations for and confirmed members to the Oceans National Technical Working Group (TWG). TWG members support each of the Oceans workstreams and will be vital to regional expansion throughout the life of the program.

Objective 3: Strengthen human and institutional capacity of regional organizations to conserve marine biodiversity through CDT and SFMPs, including actions to combat IUU fishing and seafood fraud.

- Convened the first annual TWG Training and Workshop, July 2016, in Bangkok, Thailand.
- Formalized partnership with SEAFDEC, and was adopted as an ASEAN SEAFDEC Strategic Partnership (ASSP) program.
- Initiated Rapid Appraisal of Fisheries Management Systems (RAFMS), Labor Rapid Appraisals and Gender Analyses that will serve as the backbone for EAFM, CDTS design and Human Welfare activities. Conducted research will inform future trainings, planning frameworks, and resources for capacity building activities.

Objective 4: Enhance PPPs to conserve biodiversity, promote sustainable fisheries management, and combat IUU fishing and seafood fraud

- Engaged with organizations from the public and private sectors to explore potential partnerships and opportunities for collaboration. Held Partnership Prioritization Workshop to select key strategic partnerships for program Years 1 and 2.
- Formalized partnerships with the Global Food Traceability Center, Monterey Bay Seafood Watch.
- Engaged with industry and market leaders to collaborate on CDTS design and testing, including Thai Union and MARS.
- Initiated Value Chain Analysis in General Santos City, Philippines learning site, and prepared to for Bitung, Indonesia analysis.

2. Information of Present Year Activity Including Involved Stakeholders

List of Actual Sub-activity	Type of activity*	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1					
Theory of Change Workshop	O	0	5	20	
CDT 101 Development	I	N/A	N/A	N/A	
CDT 201 Development	I	N/A	N/A	N/A	
Sub-activity 1.1 – Partnership Prioritization Workshop	O	0	12	15	
Sub-activity 1.2 – TWG Training and Workshop	T	47	12	25	
Sub-activity 1.2 – SEAFDEC EAFM Training	T	22	8	2	
Sub-activity 1.3 – 6 th Global Symposium on Gender in Aquaculture and Fisheries	O	150	1	1	
Activity 2					
Sub-activity 2.1 – Philippines Country Consultation (<i>multiple meetings</i>)	O	10+	2	10+	
Sub-activity 2.1 - 2.2 – BFAR National EAFM TWG Workshop	O	50	2	2	
Activity 3					
Sub-activity 3.1 – General Santos City Learning Site Launch and Technical Session	O	120	2	9	
Sub-activity 3.1 – Value Chain Analysis (General Santos City)	R	N/A	N/A	N/A	
Sub-activity 3.3 – Rapid Appraisal for Fisheries Management (General Santos)	R	N/A	N/A	N/A	
Sub-activity 3.4 – Labor Rapid Appraisal (General Santos)	R	N/A	N/A	N/A	
Sub-activity 3.4 – Planning for Gender Assessment (General Santos)	R	N/A	N/A	N/A	
Activity 4					
Sub-activity 4.1 – Indonesia Country Consultation (<i>multiple meetings</i>)	O	10+	2	10+	
Activity 5					
Sub-activity 5.1 – Planning for Rapid Value Chain Analysis	R	N/A	N/A	N/A	
Sub-activity 5.1 – Regional Fisheries Summit, Meetings with technology partners, USAID/Indonesia	O	4+	2	4	

List of Actual Sub-activity	Type of activity*	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 6					
Sub-activity 6.1 – Country Consultation – Thailand (<i>multiple visits, ongoing</i>)	O	4+	2	4	
Sub-activity 6.2 – Country Consultation – Malaysia	O	4+	2	4	
Sub-activity 6.3 – Country Consultation – Brunei	O	4+	2	4	
Sub-activity 6.3 – Country Consultation – Cambodia	O	4+	2	4	
Sub-activity 6.3 – Country Consultation – Myanmar	O	4+	2	4	
Sub-activity 6.3 – Country Consultation – Laos	O	4+	2	2	
Sub-activity 6.3 – Country Consultation – Singapore	O	3	0	5	
Sub-activity 6.3 – Country Consultation – Viet Nam	O	1	0	4	

3. Achievements and Expected Outcome/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 1		
Theory of Change Workshop	Theory of Change, Situation Analysis, revised indicators	Developed refined Theory of Change, Situation Analysis, and indicators on which to guide strategic planning
CDT 101 Development	CDTS Foundational Publication	Established conceptual overview of CDTS and Oceans objectives, solicited and received feedback from leading sector organizations, industry, and academia
CDT 201 Development	CDTS Foundational Publication	Developed technical overview of CDTS, technical requirements, and specifications for review by Technical Advisory Group and subsequent publication
Sub-activity 1.1 – Partnership Prioritization Workshop	Strategy for Partner Engagement	Partnerships formalized with GFTC, Monterey Bay Seafood Watch, coordination with Thai Union and leaders to support CDTS implementation in Indonesia and the Philippines
Sub-activity 1.2 – TWG Training and Workshop	Networking, Country-Specific Work Plans, Consistent Knowledge Baseline for Capacity Building	Baseline established for future capacity building activities, country-specific work plans drafted, and information gathered for country profiles
Sub-activity 1.2 – SEAFDEC EAFM Training, Siem Reap	Increased program visibility, Capacity building	Overview of Cambodia EAFM priorities, facilitation of 7 out of 17 presented modules, strengthened regional networking
Sub-activity 1.3 – 6 th Global Symposium on Gender in Aquaculture and Fisheries	Increased program visibility, Capacity building	Visibility increased for gender mainstreaming in fisheries, capacity building, strengthened regional collaboration
Activity 2		
Sub-activity 2.1 – Philippines Country Consultation (<i>multiple meetings</i>)	Raised Awareness/ Government Support and TWG Participation	Provided overview of Oceans, secured stakeholder buy-in, and identified priority challenges and opportunities for collaboration
Sub-activity 2.1 - 2.2 –	Mainstreaming EAFM	Finalized EAFM Planning Process Handbook,

Planned activity	Expected outcome/output	Achievements
BFAR National EAFM TWG Workshop	Planning Process Handbook	Developed work plan for testing EAFM Planning Process Training Modules
<i>(additional activities are included in Activity 3 detail)</i>		
Activity 3		
Sub-activity 3.1 – General Santos City Learning Site Launch and Technical Session	Formal launch of site-level activities	Secured stakeholder buy-in, cemented program commitment to support of General Santos City and relevant government agencies (BFAR, DENR)
Sub-activity 3.1 – Value Chain Analysis (General Santos City)	Analysis Report	Identified learning site supply chain issues and opportunities, profiled supply chain components, guidance for learning site supply chain strategies
Sub-activity 3.3 – Planning for Rapid Appraisal for Fisheries Management (General Santos)	Appraisal Report	Identified fisheries management issues and opportunities, profiled fisheries and fishing communities, guidance on the development of CDT and human welfare interventions.
Sub-activity 3.4 – Labor Rapid Appraisal (General Santos)	Appraisal Report	Identified labor rights issues and opportunities, guidance on learning site strategy and interventions
Sub-activity 3.4 – Planning for Gender Assessment (General Santos)	Assessment Report	Identified gender concerns and opportunities, guidance on learning site strategy and interventions
Activity 4		
Sub-activity 4.1 – Indonesia Country Consultation <i>(multiple meetings)</i>	Raised Awareness/Government Support and TWG Participation	Provided overview of Oceans, secured stakeholder buy-in, and identified priority challenges and opportunities for collaboration
<i>(additional activities are included in Activity 5 detail)</i>		
Activity 5		
Sub-activity 5.1 – Planning for Rapid Value Chain Analysis	Analysis Report	Identified potential Value Chain Analysis subcontractors;
Sub-activity 5.1 – Regional Fisheries Summit, Meetings with technology partners, USAID/Indonesia	Strengthened networking; CDTS design development	Identified potential technology solutions for the CDTS; coordinated with USAID/Indonesia; increased visibility and networking at Economist Regional Fisheries Summit
Activity 6		
Sub-activity 6.1 – Country Consultation – Thailand	Raised Awareness/Government Support and TWG Participation	Provided overview of Oceans, secured stakeholder buy-in, identified priority challenges and opportunities for collaboration, discussed Songkla as Oceans learning site
Sub-activity 6.2 – Country Consultation – Malaysia	Raised Awareness/Government Support and TWG Participation	Provided overview of Oceans, secured stakeholder buy-in, identified priority challenges and opportunities for collaboration, discussed Kelantan as Oceans learning site
Sub-activity 6.3 – Country Consultation – Brunei	Raised Awareness/Government Support and TWG Participation	Provided overview of Oceans to Department of Fisheries, secured buy-in, and identified priority challenges and opportunities for collaboration; Conducted visits to fish landing sites and met with port officers.
Sub-activity 6.3 – Country Consultation – Cambodia		Provided overview of Oceans, secured buy-in, and identified priority challenges and opportunities for collaboration.
Sub-activity 6.3 – Country		Provided overview of Oceans, secured buy-in, and

Planned activity	Expected outcome/output	Achievements
Consultation – Myanmar		identified priority challenges and opportunities for collaboration.
Sub-activity 6.3 – Country Consultation – Laos		Provided overview of Oceans to Fisheries Administration, secured buy-in, and identified priority challenges and opportunities for collaboration; Conducted visits to fish markets and landing sites.
Sub-activity 6.3 – Country Consultation – Singapore		Provided overview of Oceans to Government of Singapore, secured buy-in, and identified priority challenges and opportunities for collaboration.
Sub-activity 6.3 – Country Consultation – Viet Nam		Provided overview of Oceans to USAID/Viet Nam, Embassy representatives, Viet Nam Fisheries Department; secured buy-in; and identified priority challenges and opportunities for collaboration.

4. List of Completed Publications and Others

List of completed publications for the Year 2016	Type of media	Attached e-file
1. Fisheries Catch Documentation and Traceability in Southeast Asia: A Conceptual Overview (CDT101)	Report	
2. Fisheries Catch Documentation and Traceability in Southeast Asia: Technical Overview and Specifications (CDT201) – Draft for Technical Advisory Group Circulation and Review	Report	
3. March 2016, Rapid Appraisal of Labor and Social Welfare Issues General Santos	Report	
4. March 2016, Rapid Appraisal of Labor and Social Welfare Issues Bitung	Report	
5. July 2016, Technical Working Group Training and Workshop; Oceans Overview, Year 1 Progress, and Year 2 Work Plan Overview	Presentation	
6. July 2016, The Oceans and Fisheries Partnership Technical Working Group and Training Report	Report	
7. August 2016, Oceans 18 th National Tuna Congress Plenary Session	Presentation	
8. August 2016, Oceans Overview/General Santos City Technical Session and Learning Site Launch	Presentation	
9. October 2016, The Oceans and Fisheries Partnership Prioritization Report	Report	
10. Oceans and Fisheries Partnership Program Factsheet	Factsheet	
11. Oceans and Fisheries Partnership FAQs	Factsheet	
12. Oceans and Fisheries Partnership CDT Factsheet	Factsheet	
13. Oceans and Fisheries Partnership Year One Work Plan	Work Plan	
14. Oceans and Fisheries Partnership Year Two Work Plan	Work Plan	

5. Evaluation from Participants of Member Countries for WS and Training Course

Planned activity	Evaluation/Views from Participants
Activity 1	
Sub-activity 1.2 – TWG Training and Workshop	Evaluations scored positively, with an average rating of 4.26 (where 1 equals strongly disagree and 5 equals strongly agree) that the training met expectations, provided valuable skills and materials, and was an environment that encouraged open participation

6. Major Impacts/Issues

Oceans did not experience any major issues during the reporting period that impacted the achievement of project targets or plans. The project did experience some longer than anticipated timeframes for confirming learning site locations and coordinating launch arrangements. While this delayed initiation of

some site-level activities, the team used this time to continue research and design of the CDTS and conduct research to support the CDT, PPP, EAFM, and human welfare workstreams.

The Oceans and Fisheries Partnership has also encountered some challenges resulting from USAID restrictions on funding for some of the ASEAN Member States due to their developed or advanced developing country status and associated approval requirements. This has impacted the project's ability to fund invitational travel for some countries. The project is grateful for the support of SEAFDEC and its donors as well as Member Countries for their flexibility and assistance to address this challenge.

PART III: PROPOSED ACTIVITIES FOR YEAR 2017

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2017*

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget
Activity 1. Regional Support and Engagement to Implement a Financially Sustainable Catch Documentation and Traceability System and Complementary SFMPs in Regional Demonstrations	The core component of the work under Oceans is the development of a CDTS/FIS system for Southeast Asia. USAID Oceans will focus for the first two years of the activity's life on the development of a financially sustainable CDTS/FIS that supports approaches to and planning for improved fisheries management in the Sulu-Sulawesi Marine Eco-region. Sustainable Fisheries Management Plans (SFMPs) will be the umbrella framework for management, designed in consultation with local stakeholders. A CDTS will be developed and tested in the field to document harvest and to inform sustainable management.	1,063,486
Sub-activity 1.1: Develop and implement a regional PPP and industry engagement strategy	<ul style="list-style-type: none"> - Form the CDT Technical Advisory Group to support the CDTS design and demonstration - Develop CDT data exchange prototype - Develop partnership with satellite service provider to test and pilot mobile satellite solution for data capture at sea - Engage a U.S. buyer alliance to support CDTS design, demonstration and expansion in multiple countries - Engage regional industry alliance to support the expansion and sustainability of the CDTS/PPP - Present at key regional and international industry events - Partner with Thai Union to test CDTS in Southeast Asia - Engage the Tuna Subgroup of the Thai Sustainable Seafood Roundtable to support CDTS expansion - Establish a regional CDTS/FIS Operations Center - Provide regional support via technical expertise to strengthen existing national FIS to improve data exchange and interoperability between CDTS/FIS. Develop national CDTS/FIS design and roadmap for learning sites - Support regional engagement through CDTS Assistant, recruited in Year 1 	
Sub-activity 1.2: Build regional capacity for expansion	<ul style="list-style-type: none"> - Support CTI-CFF Regional Plan of Action EAFM Goal related to development of the Sulu-Sulawesi Marine Eco-region Plan - Organize study tours to learning sites (General Santos or Bitung) - Hold Technical Working Group Training/Workshop 	

Proposed Activity	Description of Proposed Activity	Proposed Budget
Sub-activity 1.3: Integrate fair labor and gender equity considerations at the regional level	<ul style="list-style-type: none"> - Participate in 6th Global Symposium on Gender in Aquaculture and Fisheries - Organize Regional Gender Workshop - Conduct workshop on labor considerations in Sustainable Fisheries Management/EAFM - Integrate agenda for Women’s Leaders’ Forum in Sustainable Fisheries Management with CTI-CFF 	
Sub-activity 1.4: Develop and implement a regional communication strategy	<ul style="list-style-type: none"> - Develop and maintain Oceans web portal, hosted on SEAFDEC website - Disseminate Quarterly eNewsletter to stakeholders - Develop program materials, to include workstream fact sheets, event materials, Success Stories, and other communications products as needed - Develop press releases, talking points, and media kits to support regional activities and engage press 	
Sub-activity 1.5: Support development of regional ACDS/CDTS guidelines (to include standards, architecture, and roadmap)	<ul style="list-style-type: none"> - Initiate development of the draft ACDS/CDTS guidelines - Support endorsement process, documents, and schedule for adopting ACDS/CDTS guidelines 	
Activity 2. National Support and Engagement to Learning Site Country – Philippines	<p>Oceans will work to strengthen the Philippines’ national legal and policy framework to better support the implementation of the CDTS. Efforts will focus on capacity building activities that engage national partners, including an integrated stakeholder workshop that encompasses all program components. Workshops will engage multiple audiences, including government, industry, and technology companies to ensure a holistic approach. The Activity will work to ensure that CDTS development at the site level is integrated into a national level architectural scheme that will enable replication and expansion. Oceans will work with the TWG to develop a CDTS/FIS roadmap with a data exchange that will be developed and tested at the national level. Oceans will provide support to identify integrating software or tools to enable the creation of an FIS specific to the Philippines context and needs. The CDTS and FIS will be housed in a national Operations Center that the Activity will work to establish with the government of Philippines by the end of Year 2. Oceans will also work to mobilize public-private partnerships to support local ownership, adoption and sustainability of the system.</p>	1,063,486
Sub-activity 2.1: Strengthen legal and policy framework and decision-integration tools for CDTS/FIS/EAFM	<ul style="list-style-type: none"> - Conduct integrated workshop on lessons learned and best practices 	
Sub-activity 2.2: Strengthen national capacity for CDTS/FIS/EAFM/PPP	<ul style="list-style-type: none"> - Develop and finalize Site Profile - Develop an Indonesia specific work plan to enable the government of Indonesia and national and local partners coordinate and mobilize resources effectively - Develop integrated training modules for Activity workstreams and conduct Training of Trainers - Develop national CDTS/FIS architecture design and roadmap - Conduct national CDTS/FIS/PPP workshops with government, industry and technology companies - Localize and test national CDTS data exchange 	

Proposed Activity	Description of Proposed Activity	Proposed Budget
	<ul style="list-style-type: none"> - Establish and staff national CDTS/FIS Operations Center - Provide regional support via software integration/development to strengthen existing Philippines national FIS systems - Localize and test national CDTS data exchange - Develop 1-2 partnerships to support the CDTS/FIS demonstration and expansion, and skills capacity building - Establish and staff national CDTS/FIS Operations Center 	
Sub-activity 2.3: Integrate safe labor and gender equity considerations at national and local levels	As a crosscutting component, human welfare objectives including safe labor and gender equity considerations, will be integrated in all activities, with specific gender and labor themed workshops held at the national and local learning site level.	
Sub-activity 2.4: Conduct strategic communications to support national activities	Strategic communications activities will also support all work streams seeking to raise the visibility of Oceans, strengthen the impact of Partnership interventions, and engage stakeholders to facilitate CDTS adoption.	
Activity 3. Site-Level Support and Engagement to Learning Site – General Santos City, Philippines	<p>Oceans will work intensively with the Philippines Bureau of Fisheries and Aquatic Resources/Region 12 and other stakeholders at the learning site in General Santos City to develop and demonstrate the CDTS, develop a SFMP that incorporates safe labor and gender considerations, and mobilize partnerships with industry and technology partners among others. Oceans will conduct a series of studies and research efforts to provide baseline information and guide programming including a Value Chain Analysis, Rapid Appraisal, Gender Analysis, Labor Study validation, Site Profile, and others. The studies will inform the design and development of the CDT for Philippines including confirmation of Key Data Elements, drafting of a General Santos City/Region 12 EAFM Plan, directing additional partnership development, and guiding training and capacity building efforts.</p> <p>The Activity will focus on demonstrating the CDTS at learning sites using an adaptive management approach to enable continuous learning and refinement of the system. CDTS software will be developed by subcontractors based on specifications from the CDT 201. The Activity will procure required hardware and software to test the system and distribute them to key partners. It will provide training on usage tailored to each stakeholder, and develop set curricula to enable replication and institutionalization. Stakeholder capacity building activities will be undertaken, including hands-on trainings with implementers. USAID Oceans will work with site-level counterparts to develop a fisheries management plan using the EAFM framework that links to the Sarangani Bay Management Plan and Regional Tuna Management Plan. In support of this objective, the USAID Oceans team will conduct a Rapid Appraisal and hold an integrated stakeholder validation workshop to ensure collaborative development.</p>	1,063,486
Sub-activity 3.1: Develop and demonstrate CDTS/FIS/PPP	<ul style="list-style-type: none"> - Develop SOCSKSARGEN Federation partnership to support the demonstration and expansion of 	

Proposed Activity	Description of Proposed Activity	Proposed Budget
	<p>CDTS in target fisheries and supply chains</p> <ul style="list-style-type: none"> - Conduct partnership planning workshop with industry associations and participating companies to develop partnership action plan - Conduct rapid value chain assessment to identify target 2-3 supply chains for the demonstration - Identify industry priorities and gaps for the implementation of CDTS - Organize local industry discussions and public private dialogues on CDTS design, design and demonstrations - Demonstrate application of CDTS/FIS components with key supply chain actors and local government in General Santos in partnership with industry associations and NGO partners - Develop concept note for the industry partnership to support CDTS implementation and other components in General Santos City - Integrate CDT data exchange server at the site with BFAR Region12 and key supply chain actors in cooperation with SOCKSARGEN - Localize mobile CDTS Minimal Viable Product for vessel traceability and point of capture data logger - Support the expansion of CDTS and fisheries data collection through sustainable business or investment models 	
Sub-activity 3.2: Build local stakeholder capacity to use CDTS/FIS/EAFM/PPP	<ul style="list-style-type: none"> - Conduct integrated trainings for implementers, local government, and hands-on training on use of CDTS/FIS with key users 	
Sub-activity 3.3: Develop fisheries management plan	<ul style="list-style-type: none"> - Conduct rapid appraisal using Rapid Appraisal of Fisheries Management Systems - Conduct integrated stakeholder validation workshop - Develop SFMP framework and SFMP in consultation with Philippines Bureau of Fisheries and Aquatic Resources 	
Sub-activity 3.4: Support fair labor and gender equity in local implementation	<ul style="list-style-type: none"> - Conduct in-depth gender analysis and labor studies, implement interventions - Conduct/participate in integrated stakeholder validation workshop - Provide grant to local women's group for CDT/EAFM training 	
Sub-activity 3.5: Conduct strategic communications to support local implementation	<ul style="list-style-type: none"> - Develop site level EAFM and SFMP Information and Education/policy material - Develop site level SFMP Information and Education materials - Develop site level gender and labor integration information materials - Develop suite of CDT materials, tailored to applicable target audiences (government, fishers, suppliers) - Establish Champion/Leaders program for outstanding PPP/industry partners. Develop informational and success sharing products (to include case studies, site-level event, and press materials). - Establish Leaders program for outstanding achievements for women in fishers, in coordination 	

Proposed Activity	Description of Proposed Activity	Proposed Budget
	<p>with the Women's Leadership Forum. Develop informational and success sharing products (to include case studies, site-level event, and press materials).</p> <ul style="list-style-type: none"> - Coordinate site-level launch event to engage local organizations, stakeholders, and media 	
<p>Activity 4. National Support and Engagement to Learning Site Country – Indonesia</p>	<p>Oceans will work to strengthen Indonesia's national legal and policy framework to better support the implementation of the CDTS. Efforts will focus on capacity building activities that engage national partners, including an integrated stakeholder workshop that encompasses all program components. Workshops will engage multiple audiences, including government, industry, and technology companies to ensure a holistic approach. The Activity will work to ensure that CDTS development at the site level is integrated into a national level architectural scheme that will enable replication and expansion. Oceans will work with the Technical Working Group to develop a CDTS/FIS roadmap with a data exchange that will be developed and tested at the national level. Oceans will provide support to identify integrating software or tools to enable the creation of an FIS specific to the Philippines context and needs. The CDTS and FIS will be housed in a national Operations Center that the Activity will work to establish with the government of Indonesia by the end of Year 2. Oceans will also work to mobilize PPPs to support local ownership, adoption and sustainability of the system.</p>	<p>1,063,486</p>
<p>Sub-activity 4.1: Strengthen legal and policy framework and decision-integration tools for CDTS/FIS/EAFM</p>	<ul style="list-style-type: none"> - Conduct integrated workshop on lessons learned and best practices 	
<p>Sub-activity 4.2: Strengthen national capacity for CDTS/FIS/EAFM/PPP</p>	<ul style="list-style-type: none"> - Develop and finalize Site Profile - Develop an Indonesia specific work plan to enable the government of Indonesia and national and local partners coordinate and mobilize resources effectively - Develop integrated training modules for Activity work streams and conduct Training of Trainers - Develop national CDTS/FIS architecture design and roadmap - Conduct national CDTS/FIS/PPP workshops with government, industry and technology companies - Localize and test national CDTS data exchange - Establish and staff national CDTS/FIS Operations Center - Provide regional support via software integration/development to strengthen existing Philippines national FIS systems - Localize and test national CDTS data exchange - Develop 1-2 partnerships to support the CDTS/FIS demonstration and expansion, and skills capacity building - Establish and staff national CDTS/FIS Operations Center 	
<p>Sub-activity 4.3: Integrate safe labor and gender equity considerations at national and</p>	<p>As a crosscutting component, human welfare objectives including safe labor and gender equity considerations, will be integrated in all activities, with specific gender</p>	

Proposed Activity	Description of Proposed Activity	Proposed Budget
local levels	and labor themed workshops held at the national and local learning site level.	
Sub-activity 4.4: Conduct strategic communications to support national activities	Strategic communications activities will also support all work streams seeking to raise the visibility of Oceans, strengthen the impact of Partnership interventions, and engage stakeholders to facilitate CDTS adoption.	
Activity 5. Site-Level Support and Engagement to Learning Site – Bitung, Indonesia	<p>Oceans will work intensively with the Indonesia Ministry of Marine Affairs and Fisheries and other stakeholders at the learning site in Bitung to develop and demonstrate the CDTS, develop a SFMP that incorporates safe labor and gender considerations, and mobilize partnerships with industry and technology partners among others. Oceans will conduct a series of studies and research efforts to provide baseline information and guide programming including a Value Chain Analysis, Rapid Appraisal, Gender Analysis, Labor Study validation, Site Profile, and others. The studies will inform the design and development of the CDT for Philippines including confirmation of Key Data Elements, drafting of a General Santos City/Region 12 EAFM Plan, directing additional partnership development, and guiding training and capacity building efforts.</p> <p>The Activity will focus on demonstrating the CDTS at learning sites using an adaptive management approach to enable continuous learning and refinement of the system. CDTS software will be developed by subcontractors based on specifications from the CDT 201. The Activity will procure required hardware and software to test the system and distribute them to key partners. It will provide training on usage tailored to each stakeholder, and develop set curricula to enable replication and institutionalization. Stakeholder capacity building activities will be undertaken, including hands-on trainings with implementers. USAID Oceans’ will work with site-level counterparts to develop a fisheries management plan that links to the Regional Tuna Management Plan. In support of this objective, the USAID Oceans team will conduct a Rapid Appraisal and hold an integrated stakeholder validation workshop to ensure collaborative development.</p>	1,063,486
Sub-activity 5.1: Develop and demonstrate CDTS/FIS/PPP	<ul style="list-style-type: none"> - Conduct rapid value chain assessment and identify industry priorities and gaps for the implementation of CDTS - Develop partnership with the Indonesia Sustainable Tuna Industry Alliance to support CDTS demonstration and expansion, sustainable fisheries management and human welfare in Indonesia pole-and-line and handline tuna fisheries - Develop and agree on partnership concept; Conduct partnership briefing for district/local government counterparts - Organize local industry discussion on CDT roadmap - Set up and hold local data management committee with key local stakeholders to support CDTS implementation - Localize mobile CDT minimally viable product for 	

Proposed Activity	Description of Proposed Activity	Proposed Budget
	<ul style="list-style-type: none"> vessel traceability and point of capture data logger - Demonstrate application of CDTS/FIS components with key supply chain actors and local government in Bitung in partnership with industry associations and NGO partners - Integrate CDT data exchange at the site with key supply chain actors and district/provincial government - Support the expansion of CDTS and fisheries data collection through sustainable business or investment models 	
Sub-activity 5.2: Build local stakeholder capacity to use CDTS/FIS/EAFM/PPP	Conduct EAFM training with FMA-716 (North Sulawesi province); EAFM lead training; and hands-on CDT training with key supply chain stakeholders	
Sub-activity 5.3: Develop fisheries management plan	<ul style="list-style-type: none"> - Conduct rapid appraisal of FMA-716 using Rapid Appraisal for Fisheries Management Systems - Conduct integrated stakeholder validation workshop - Develop SFMP framework and SFMP in consultation with MMAF 	
Sub-activity 5.4: Support fair labor and gender equity in local implementation	<ul style="list-style-type: none"> - Conduct in-depth gender analysis and labor studies, implement interventions - Conduct/participate in integrated stakeholder validation workshop 	
Sub-activity 5.5: Conduct strategic communications to support local implementation	<ul style="list-style-type: none"> - Develop site level EAFM and SFMP Information, Education, and Communications/Policy materials - Develop site level SFMP Information, Education, and Communications material - Develop site level gender and labor integration information materials - Develop suite of CDT materials, tailored to applicable target audiences (government, fishers, suppliers) - Establish Champion/Leaders program for outstanding PPP/industry partners. Develop informational and success sharing products (to include case studies, site-level event, and press materials). - Establish Leaders program for outstanding achievements for women in fishers, in coordination with the Women's Leadership Forum. Develop informational and success sharing products (to include case studies, site-level event, and press materials). - Coordinate site-level launch event to engage local organizations, stakeholders, and media 	
Activity 6. Support to Expansion I Sites (Thailand and Malaysia) an Expansion II Sites (ASEAN and CTI countries)	In Expansion Site II countries, Oceans will work closely with TWG counterparts to support regional EAFM, CDTS, and PPP expansion through technical support and capacity building. Oceans will also closely coordinate with SEAFDEC ACDS development and implementation activities to complement the CDTS testing in Brunei Darussalam and Myanmar (ACDS demonstration sites). Replication sites for ACDS/CDTS implementation will also be identified and prioritized in consultation with national Oceans TWG and the respective fisheries agencies in the ASEAN and CTI expansion countries.	1,063,486

Proposed Activity	Description of Proposed Activity	Proposed Budget
Sub-activity 6.1: Support to Expansion Site I - Thailand	<ul style="list-style-type: none"> - Develop Site Profile - Support TWG reps from other sites to national/site level training and workshops - Provide technical support for EAFM planning, including support for identification of EAFM issues, management objectives, and management measures to contribute to EAFM planning - Facilitate CDT mentoring from other countries to learning sites - Facilitate networking among women leaders through TWG human welfare 	
Sub-activity 6.2: Support to Expansion Site I - Malaysia	<ul style="list-style-type: none"> - Develop Site Profile - Provide technical support for EAFM planning, including support for identification of EAFM issues, management objectives, and management measures to contribute to EAFM planning - Facilitate CDT mentoring from other countries to learning sites - Facilitate networking among women leaders through TWG human welfare 	
Sub-activity 6.3: Support to Expansion Site II - Malaysia (ASEAN and CTI countries)	In Expansion Site II countries, Oceans will work closely with TWG counterparts to support regional EAFM, CDTS, and PPP expansion through technical support and capacity building. Oceans will also closely coordinate with SEAFDEC ACDS development and implementation activities to complement the CDTS testing in Brunei Darussalam and Myanmar (ACDS demonstration sites). Replication sites for ACDS/CDTS implementation will also be identified and prioritized in consultation with national Oceans TWG and the respective fisheries agencies in the ASEAN and CTI expansion countries.	
	TOTAL	6,380,916

*Note: Budget numbers are indicative. Total numbers reflect projected budget allocations. Sub-totals are a reflection of the estimated cost distribution. Only total funds expended by year will be available reflecting USAID Fiscal Year reporting requirements. USAID funds are subject to its availability as determined by the United States Congress on a yearly basis.

2. Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Expected Outcomes/Outputs of Activity
Activity 1. Regional Support and Engagement to Implement a Financially Sustainable Catch Documentation and Traceability System and Complementary SFMPs in Regional Demonstrations	Development of a financially sustainable CDTS/FIS that supports approaches to and planning for improved fisheries management in the Sulu-Sulawesi Marine Eco region
Sub-activity 1.1 Develop and implement a regional PPP and industry engagement strategy	CDT data exchange prototype, regional CDTS/FIS Operations Center
Sub-activity 1.2 Build regional capacity for expansion	Technical Working Group Training/Workshop, study tours to learning sites (General Santos or Bitung), SSME EAFM Plan
Sub-activity 1.3 Integrate fair labor and gender equity considerations at the regional level	Regional Gender Workshop, workshop on labor considerations in SFM/EAFM

Proposed Activity	Expected Outcomes/Outputs of Activity
Sub-activity 1.4 Develop and implement a regional communication strategy	Oceans web portal; Quarterly eNewsletter to stakeholders; program materials, to include workstream fact sheets, event materials, Success Stories, and other communications products as needed; press releases, talking points, and media kits to support regional activities and engage press
Sub-activity 1.5 Support development of regional ACDS/CDTS guidelines (to include standards, architecture, and roadmap)	Draft ACDS/CDTS guidelines
Activity 2. National Support and Engagement to Learning Site Country – Philippines	Strengthened national legal and policy framework to better support the implementation of the CDTS, integrated stakeholder workshop that encompasses all program components, CDTS/FIS roadmap with a data exchange, PPPs mobilized to support local ownership, adoption and sustainability of the system
Sub-activity 2.1 Strengthen legal and policy framework and decision-integration tools for CDTS/FIS/EAFM	Integrated workshop on lessons learned and best practices
Sub-activity 2.2 Strengthen national capacity for CDTS/FIS/EAFM/PPP	Site Profile, Philippines-specific work plan, integrated training modules for Activity workstreams, national CDTS/FIS architecture design and roadmap, national CDTS/FIS/PPP workshops, CDTS data exchange and Operations Center
Sub-activity 2.3 Integrate safe labor and gender equity considerations at national and local levels	Gender and labor themed workshops held at the national and local learning site level
Sub-activity 2.4 Conduct strategic communications to support national activities	Strategic communications activities will also support all work streams seeking to raise the visibility of Oceans, strengthen the impact of Partnership interventions, and engage stakeholders to facilitate CDTS adoption.
Activity 3. Site-Level Support and Engagement to Learning Site – General Santos City, Philippines	CDTS developed and demonstrated, SFMP that incorporates safe labor and gender considerations, partnerships mobilized with industry and technology partners among others. Value Chain Analysis, Rapid Appraisal, Gender Analysis, Labor Study validation, Site Profile conducted.
Sub-activity 3.1 Develop and demonstrate CDTS/FIS/PPP	Partnership with SOCSKSARGEN Federation, PPP action plan developed through partnership planning workshop, Supply chains identified through Rapid Value Chain Assessment, key applications of CDTS/FIS demonstrated with key supply chain actors/local government, CDTS data exchange serve integrated
Sub-activity 3.2 Build local stakeholder capacity to use CDTS/FIS/EAFM/PPP	Integrated trainings conducted
Sub-activity 3.3 Develop fisheries management plan	Rapid appraisal conducted using RAFMS, stakeholder validation workshop, SFMP framework developed
Sub-activity 3.4 Support fair labor and gender equity in local implementation	In-depth gender analysis and labor studies conducted, stakeholder validation workshop, grant provided to CDT/EAFM training
Sub-activity 3.5 Conduct strategic communications to support local implementation	Materials developed to support work streams, engage stakeholders, further program objectives
Activity 4. National Support and Engagement to Learning Site Country – Indonesia	Strengthened national legal and policy framework to better support the implementation of the CDTS, integrated stakeholder workshop that encompasses all program components, CDTS/FIS roadmap with a data exchange, PPPs mobilized to support local ownership, adoption and sustainability of the system
Sub-activity 4.1 Strengthen legal and policy framework and decision-integration tools for CDTS/FIS/EAFM	Integrated workshop on lessons learned and best practices

Proposed Activity	Expected Outcomes/Outputs of Activity
Sub-activity 4.2 Strengthen national capacity for CDTS/FIS/EAFM/PPP	Site Profile, Indonesia-specific work plan, integrated training modules for Activity workstreams, national CDTS/FIS architecture design and roadmap, national CDTS/FIS/PPP workshops, CDTS data exchange and Operations Center
Sub-activity 4.3 Integrate safe labor and gender equity considerations at national and local levels	Gender and labor themed workshops held at the national and local learning site level
Sub-activity 4.4 Conduct strategic communications to support national activities	Strategic communications activities will also support all work streams seeking to raise the visibility of Oceans, strengthen the impact of Partnership interventions, and engage stakeholders to facilitate CDTS adoption.
Activity 5. Site-Level Support and Engagement to Learning Site – Bitung, Indonesia	CDTS developed and demonstrated, SFMP that incorporates safe labor and gender considerations, mobilized partnerships with industry and technology partners. Completed Value Chain Analysis, Rapid Appraisal, Gender Analysis, Labor Study validation, Site Profile
Sub-activity 5.1 Develop and demonstrate CDTS/FIS/PPP	Industry priorities and gaps for the implementation of CDTS identified through Rapid Value Chain Assessment, partnership developed with Indonesia Sustainable Tuna Industry Alliance, finalized partnership concept, integrated CDTS data exchange at learning site developed and agreed upon partnership concept
Sub-activity 5.2 Build local stakeholder capacity to use CDTS/FIS/EAFM/PPP	EAFM training with Fisheries Management Area(FMA) 716 (North Sulawesi province); EAFM lead training; and hands-on CDT training with key supply chain stakeholders
Sub-activity 5.3 Develop fisheries management plan	Rapid appraisal of FMA-716 using RAFMS, integrated stakeholder validation workshop, SFMP framework and SFMP in consultation with MMAF
Sub-activity 5.4 Support fair labor and gender equity in local implementation	Gender analysis and labor studies, integrated stakeholder validation workshop
Sub-activity 5.5 Conduct strategic communications to support local implementation	Materials developed to support work streams, engage stakeholders, further program objectives
Activity 6. Support to Expansion I Sites (Thailand and Malaysia)	Site Profile(s); identification of EAFM issues, management objectives, and management measures to contribute to EAFM planning; established and strengthened network for learning support. Established and strengthened network for learning support, increased capacity for CDT, fisheries management, and human welfare objectives
Sub-activity 6.1 Support to Expansion Site I - Thailand	
Sub-activity 6.2 Support to Expansion Site I - Malaysia	
Sub-activity 6.3 Support to Expansion II Sites (ASEAN and CTI countries)	

3. Schedule of Activity for the Year 2017

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1. Regional Support and Engagement to Implement a Financially Sustainable Catch Documentation and Traceability System and Complementary SFMPs in Regional Demonstrations												
Sub-activity 1.1 Develop and implement a regional PPP and industry engagement strategy	x	x	x	x	x	x	x	x	x	x	x	x
Sub-activity 1.2 Build regional capacity for expansion							x	x	x			

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sub-activity 1.3 Integrate fair labor and gender equity considerations at the regional level	x	x	x	x	x	x	x	x	x	x	x	x
Sub-activity 1.4 Develop and implement a regional communication strategy	x	x	x	x	x	x	x	x	x	x	x	x
Sub-activity 1.5 Support development of regional ACDS/CDTS guidelines (to include standards, architecture, and roadmap)							x	x	x			
Activity 2. National Support and Engagement to Learning Site Country – Philippines												
Sub-activity 2.1 Strengthen legal and policy framework and decision-integration tools for CDTS/FIS/EAFM				x	x	x						
Sub-activity 2.2 Strengthen national capacity for CDTS/FIS/EAFM/PPP	x	x	x	x	x	x	x	x	x	x	x	x
Sub-activity 2.3 Integrate safe labor and gender equity considerations at national and local levels				x	x	x	x	x	x	x	x	x
Sub-activity 2.4 Conduct strategic communications to support national activities	x	x	x	x	x	x	x	x	x	x	x	x
Activity 3. Site-Level Support and Engagement to Learning Site – General Santos City, Philippines												
Sub-activity 3.1 Develop and demonstrate CDTS/FIS/PPP	x	x	x	x	x	x	x	x	x	x	x	x
Sub-activity 3.2 Build local stakeholder capacity to use CDTS/FIS/EAFM/PPP	x											
Sub-activity 3.3 Develop fisheries management plan	x	x	x	x	x	x						
Sub-activity 3.4 Support fair labor and gender equity in local implementation	x	x	x	x	x	x	x	x	x	x	x	x
Sub-activity 3.5 Conduct strategic communications to support local implementation	x	x	x	x	x	x	x	x	x	x	x	x
Activity 4. National Support and Engagement to Learning Site Country – Indonesia												
Sub-activity 4.1 Strengthen legal and policy framework and decision-integration tools for CDTS/FIS/EAFM				x	x	x						
Sub-activity 4.2 Strengthen national capacity for CDTS/FIS/EAFM/PPP	x	x	x	x	x	x	x	x	x	x	x	x
Sub-activity 4.3 Integrate safe labor and gender equity considerations at national and local levels				x	x	x	x	x	x			
Sub-activity 4.4 Conduct strategic communications to support national activities	x	x	x	x	x	x	x	x	x	x	x	x

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 5. Site-Level Support and Engagement to Learning Site – Bitung, Indonesia												
Sub-activity 5.1 Develop and demonstrate CDTS/FIS/PPP	x	x	x	x	x	x	x	x	x	x	x	x
Sub-activity 5.2 Build local stakeholder capacity to use CDTS/FIS/EAFM/PPP	x											
Sub-activity 5.3 Develop fisheries management plan	x	x	x				x	x	x	x	x	x
Sub-activity 5.4 Support fair labor and gender equity in local implementation	x	x	x	x	x	x	x	x	x	x	x	x
Sub-activity 5.5 Conduct strategic communications to support local implementation	x	x	x	x	x	x	x	x	x	x	x	x
Activity 6. Support to Expansion I and II Sites												
Sub-activity 6.1 Support to Expansion Site I - Thailand	x	x	x	x	x	x	x	x	x	x	x	x
Sub-activity 6.2 Support to Expansion Site I - Malaysia	x	x	x	x	x	x	x	x	x	x	x	x
Sub-activity 6.3 Support to Expansion Site II (ASEAN and CTI countries)	x	x	x	x	x	x	x	x	x	x	x	x

Cells shaded grey indicate that these months fall outside of USAID Oceans' current Fiscal Year 2017 Work Plan (October 1, 2016 to September 30, 2017)

Annex 6

SEAFDEC DEPARTMENTAL PROGRAMS OF ACTIVITIES FOR THE YEAR 2016-2017**I. Aquaculture Department (Appendix 1)**

Project Title	2016	2017	Appendix No.
1. Quality Seed for Sustainable Aquaculture	Y	Y	2
2. Healthy and Wholesome Aquaculture	Y	Y	3
3. Maintaining Environmental Integrity through Responsible Aquaculture	Y	Y	4
4. Adapting to Climate Change Impacts	Y	Y	5
5. Meeting Socio-economic Challenges in Aquaculture	Y	Y	6

II. Training Department (Appendix 7)

Project Title	2016	2017	Appendix No.
6. Promotion on Strengthening of SEAFDEC Visibility and Image	Y	Y	8
7. Tailor-made Training Programs	Y	Y	9
8. Improvement of Fisheries Technology and Reduction of the Impact from Fishing	Y	Y	10

Y = Program implemented during the year

N = Program not implemented during the year

SEAFDEC Departmental Programs for the Year 2016-2017

AQUACULTURE DEPARTMENT

OVERALL REVIEW

For 2016, SEAFDEC/AQD has implemented 55 studies under five thematic Programs which focus on: (i) Quality Seed for Sustainable Aquaculture, (ii) Healthy and Wholesome Aquaculture, (iii) Maintaining Environmental Integrity through Responsible Aquaculture, (iv) Adapting to Climate Change Impacts, and (v) Meeting Social and Economic Challenges in Aquaculture. Activities in these Programs involve research, verification and demonstration of aquaculture technologies in the priority areas of broodstock development and seed production, farming systems and ecology, nutrition and feed development, fish health management, and socio-economics. In addition, training and information dissemination activities have also been conducted.

The highlights of activities and accomplishments in 2016 (January to September) under the various Departmental Programs are presented below:

1. Quality seed for sustainable aquaculture

This Program focuses on studies and activities that determine the optimal conditions and methods for the production of quality seed stock in sufficient quantities. The research activities entail the use of methods of stock improvement such as domestication, broodstock management, strain evaluation and selective breeding or genetic improvement of traditional and emerging freshwater and marine species.

- *Development of good quality broodstock and implementation of proper stock management protocols*

To achieve the main objective of developing and managing quality broodstock for use in either commercial fish farming and/or stock enhancement, the following activities have been implemented:

Molecular markers are used to identify stocks and consequently aid in determining genetic quality and monitoring of hatchery stocks. For the donkey's ear abalone, six microsatellite DNA markers have been developed and were used to characterize the existing SEAFDEC/AQD hatchery stock and several Philippine stocks obtained from the wild for broodstock evaluation. Apart from genetic variability assessment, spawning sets from various stocks were formed to evaluate reproductive efficiency in the parental stocks. Molecular marker analysis for abalone is expected to be completed in December 2016 as the remaining samples for screening will be analyzed at the Tohoku University, Japan. The information on reproductive performance of the hatchery bred and wild stocks and those obtained from the molecular marker variation assessment shall be used in the formulation of a broodstock management and selective breeding scheme for the donkey's ear abalone.

Meanwhile, molecular genetic characterization of potential oyster (*Crassostrea irredalei*) broodstock from wild sources is currently being done by the University of the Philippines in the Visayas as part of the National Oyster R&D Program led by SEAFDEC/AQD, with funds from the Philippine Department of Science and Technology. Apart from the genetic screening of potential good quality oyster broodstock from among the wild populations, protocols for broodstock management and conditioning are being developed to maximize seedstock production in the hatchery. An experiment showed that a 30°C rearing temperature improved oyster broodstock sexual maturity while the highest broodstock survival (60%) was noted in conditioning tanks which hold stocks in ambient water temperature.

In an earlier mudcrab, *Scylla serrata* domestication study, three out of six published msDNA primers were used in the genetic variability assessment of stocks sourced from Samar, Cagayan and Sorsogon. Work on these stocks has continued with the plan to pursue selective breeding to improve growth and disease resistance. For the disease management component of this study, a mass selection protocol will be adopted to improve production (growth, survival, WSSV-resistance) in the stocks.

Meanwhile, in the tiger shrimp, a study that determines optimal environmental conditions that enable improved reproductive performance in captive and wild stocks is underway. Different water depths and temperature gradients are being assessed to identify the suitable environment that will have a positive effect on the mating behavior and mating success of wild and captive tiger shrimp broodstock. Aside from knowing the ideal environmental conditions that would enhance breeding performance in *P. monodon*, trials were done on the effect of vitamin C incorporation in tiger shrimp diets on the reproductive performance of captive broodstock. In another experiment, the effect of the type of holding system on the breeding performance was also assessed. High temperatures also seem to have hampered growth of the shrimp stocks that are now being cultured to broodstock size.

Nutritional approaches have also been investigated to improve reproductive performance in farmed aquatic commodities. In 2015, AQD found that increasing the level of *Marphysa* meal in formulated diet in combination with natural feed without live polychaetes correspondingly increased zoeal production. Hence, a study on the refinement of feeding protocols for the sustainable mass production of the marine annelid (*M. mossambica*) was initiated. Interventions such as optimizing light exposure to promote growth and survival of the annelids in the nursery phase as well as the utilization of feed enriched sediments in annelid grow-out rearing containers were tried.

The growth and reproductive performance as well as the nutritional composition of wild and hatchery-reared silver therapon, *Leiopotherapon plumbeus* were compared. In all the breeding trials, the combination of human chorionic gonadotropin (hCG) and ovaprim was still the most effective hormone in inducing ovulation in *L. plumbeus*. In another experiment where the effect of broodstock age on reproductive performance of hatchery-bred stocks was determined, it was noted that younger *L. plumbeus* broodstock had higher spawning success, fertilization and hatching rates compared to older groups. Finally, monthly gonadosomatic index (GSI) of therapon sampled from fed and unfed wildstocks and hatchery bred stocks were determined. In hatchery bred stocks, mean GSIs in both sexes were similar in both treatment groups. In contrast, mean GSIs in both sexes of wildstocks *L. plumbeus* were slightly higher in fed than those in unfed group.

For the giant grouper study that is in collaboration with the University of the Sunshine Coast in Australia and supported by ACIAR, activities have continued on broodstock development, induction of early maturation, spawning induction, as well as trials on hybridization and germ cell transplantation. A group of giant grouper broodstock was implanted with methyltestosterone and monitored monthly for male maturation. Another group of mature broodstocks are sampled monthly for trials on induction of final maturation using GnRH implants and spawning induction by HCG injection.

Concerning the sandfish *Holothuria scabra*, apart from environmental manipulation, nutritional approaches are being applied to improve reproductive performance in the broodstock. Feeding the sandfish broodstock with shrimp feed and Sargassum powder gave 100% survival when reared for the entire 8 week experimental run. Moreover, broodstock fed powdered shrimp feed grew heavier than those fed *Navicula* and *Sargassum*. When warm shock vs. cold shock was used in artificial spawning, the percentage of broodstock that spawned was 7% for those exposed to warm shock whereas, it was 2% for those under the cold shock treatment. Another study in the sandfish looks at the development of a diet that will improve breeding performance and larval quality. For this purpose, the basic biochemical composition (*i.e.* protein, lipids and fatty acids) of wild-caught male and female sandfish broodstock and hatchery-produced potential broodstock, and pre- and post-spawning experimental broodstock were analyzed. Based on results of proximate analyses, potential practical diets were developed and are now being tested to improve the breeding performance of sandfish broodstock.

- *Refinement of hatchery and nursery management methods to improve seedstock quality and production*

In the abalone, refinements are being tried to improve larval production and these involve establishing: (a) optimum veliger density, incubation time and incubation temperature; (b) appropriate light to be used in harvesting trochophore larvae and (c) suitable conditions (light provision and addition of substrate) during extended incubation time. A modified harvesting system that could minimize handling stress was also

designed to improve veliger survival rates. Other interventions were also made to increase abalone juvenile production through the use of chemical cues (positive ions, algal extracts) to improve settlement rate. On the use of illuminated and non-illuminated transparent tanks for settlement and rearing of early juveniles, results suggested that light is not needed in the transparent settlement tanks. An experiment was also conducted to develop an efficient sorting and harvesting protocol which involved the use of anaesthetic agents as muscle relaxant for juveniles.

Concerning the oysters, optimal conditions are being determined to refine larval, post-larval and settlement rearing methods. Improved larval survival was noted when water change was done once every 4 days. In another experiment, survival to eyed stage larvae was slightly higher in seawater that has been pre-filtered using a filter cartridge compared to those kept in UV-irradiated seawater. As regards nursery rearing of hatchery produced spats, after 50 days, faster growth was noted in spats that were transferred and reared in brackishwater ponds when they were 38 days old than those that were maintained in the hatchery. Moreover, survival was highest (76%) for spats transported with water. Specific growth rate was also higher when using smaller sized spats than bigger spats.

In the blue swimming crab, larval quality determination has been done through the formalin stress test. The cumulative mortality became higher as the formalin concentration increased in both poor and good quality larvae after 30 minutes of exposure to formalin. Concerning the trials on the use of antibiotics (oxytetracycline and nitrofurazone) in larval rearing of blue swimming crabs, results showed that larvae survived without antibacterial agents but the survival rate was higher with the use of antibacterial agents. Different feed types were tested to improve the blue swimming nursery production. Crab instars were fed formulated test diets in combination with mussel meat. Those fed natural food (mussel meat) alone had highest average body weight (0.634g) but had the lowest survival of 22%. Meanwhile, another experiment is in progress to determine the most economically feasible culture system (aerated tanks, net cages in ponds, and hapas inside a big pen).

To enable the promotion of *Kappaphycus* culture, nursery rearing techniques have been refined. Tissue-cultured cultivars are produced in the laboratory and reared in the land-based nursery tanks and then in sea cages. In land to sea based nurseries, the survival rate is 35% with a production output of approximately 2500 individuals per month from the sea-based nursery.

In the milkfish, a study that aims to develop a protocol in transporting juveniles from the nursery to sea cage facilities has been started. This study hopes to define optimal temperature and salinity requirements for the transport of milkfish juveniles, and includes trials on the suitable conditioning period of confinement in cages in ponds before the juveniles are transported to milkfish sea cage farming sites.

Improvements in the hatchery and nursery production of sandfish *Holothuria scabra* have been undertaken. Refinements in the hatchery protocol include the use of appropriate food and stocking densities. It was noted that *Chaetoceros*-fed larvae had better survival, faster development and less deformities. In another experiment, four settlement cues were compared: *Navicula* sp., *Amphora* sp., *Spirulina* paste and *C. calcitrans* paste. Corrugated plastic sheets were used as settlement substrates. Percent settlement was significantly high in plates with *Spirulina* paste (20.61%) as settlement cue. However, spats on substrates with *Navicula* sp. and *Spirulina* paste were bigger. Bloodworms were observed on the substrates with *Navicula* sp. and *Amphora* sp. as cue. Repeat runs of the same experiment will be conducted.

- Natural food production for hatchery use

In larval rearing, it is important to identify and propagate zooplankton species/strains that can be used as live feed for initial feeding to small-mouthed fishes. A study on the growth and reproductive performance of a minute rotifer, *Proales similis* de Beauchamp fed locally available microalgal strains, is being conducted. Culture of *P. similis* was successful in the laboratory using *Chlorella sorokiniana* pastes in 0⁰/₀₀ and 15⁰/₀₀ as these improved the rotifer's population growth. The centrifuge as a method of concentrating *C. sorokiniana* showed better results as compared to electrolytic method.

- *Development of schemes for the production, management, maintenance and dissemination of genetically selected and improved stocks*

Selective breeding programs have continued for selected commodities (mudcrab, shrimp and abalone). For the mudcrab, a mass selection scheme targeting improvements in growth and disease resistance commenced with the collection of founder stocks from Camarines Norte and Surigao provinces, Philippines. Crablets were produced from the founder stocks and used in the growth and health status (post-WSSV challenge) assessment. Preliminary results showed batch differences in relation to the response (mortality levels) to the infection challenge. Results will be used to identify disease resistant lines for the selective breeding program.

Hybridization is being continuously implemented using the local commercial abalone species (*Haliotis asinina*). *H. asinina* has been crossed with other Philippine abalone species, *Haliotis planata*, *H. glabra* and *H. varia*, to enable the production of stocks/species with improved traits. Samples of the hybrid stocks have been analyzed histologically and will also be analysed for molecular marker-based species differentiation. Meanwhile a sensory evaluation test was done to determine the acceptability (based on consumer-desired traits) of the hybrids that have been produced (as compared to the pure stocks).

Concerning seaweeds, methods to develop resistant strains of *Kappaphycus* and reduce epiphytes are being studied. As part of the study, seaweeds with epiphytes are collected and have been subjected to different pH levels to determine the epiphytes' survival under these conditions. Experiments will be repeated when enough epiphyte infested thalli are noted and a re-run will be done to refine the methodology.

- *Adoption of economically viable systems to produce sufficient seedstock*

Several fish/shellfish production projects are being implemented at AQD to demonstrate the viability of small-scale and/or large-scale seed production systems. Mass production of Nile/red tilapia fry/fingerlings (both in the Binangonan Freshwater Station and the Tigbauan Main Station), giant freshwater prawn post-larvae, as well as large-scale production of abalone juveniles and fry of various marine fish are continuously being done.

2. Healthy and wholesome aquaculture

The goal of the Program is to improve aquaculture production through innovations in nutrition and feeding and fish health management, and in preserving the environmental integrity of aquaculture areas.

- *Promoting the wider use of conventional diagnostic as well as new methods especially for newly reported, emerging diseases*

Studies were continued to investigate the diseases affecting shrimps including predisposing, risk and protective factors, and possible prevention and control measures. Shrimp samples were collected from farms in 14 out of 17 regions of the Philippines. Eleven bacterial isolates were identified to contain the specific PirA- and PirB-like toxin genes responsible for AHPND pathogenesis. Results showed that the isolated *V. parahaemolyticus* derived from outbreaks in Philippine shrimp farms are highly pathogenic to shrimp. Records of all the archived isolates are stored in an online database called the Online Philippine Shrimp Pathogen Information Resource (OPSPIR). OPSPIR geotags the presence of pathogens with the use of Google Maps and currently runs on <http://www.opspir.seafdec.org.ph>. Aside from the present bio-surveillance records, data from other sources were included to reflect the historical presence of diseases in the areas covered. To ensure continued bio-surveillance, cooperation among government agencies and local government units, the private sector, and other stakeholders to conduct remote data entry is needed for early detection, mitigation, management and control of disease outbreaks.

Other R&D initiatives of AQD on the control and management of emerging diseases (including EMS/APHND) in the region are reported under Government of Japan Trust Fund Project on 'Reinforcement and optimization of fish health management and the effective dissemination in the Southeast Asian Region'.

- *Evaluating the effectiveness of natural products to manage aquaculture diseases in lieu of harmful chemicals*

Investigation was continued on terrestrial plants and indigenous bacteria for their antimicrobial and probiotic properties as one of the practical strategies to manage diseases of mud crabs in hatcheries and grow-out ponds. Extracts that showed good antimicrobial activity by agar disc diffusion technique were further tested for their toxicity to various stages of crabs including zoea, megalopa, and crab instar. Results showed that survival of mud crab larvae (zoea 5 and crab instar 1) treated with *Terminalia catappa* crude ethanolic extracts was comparable to the antibiotic-treated group. However, diseases of non-infectious etiologies can also have a serious impact on the final survival; hence, should receive utmost attention in developing best management practices for *S. serrata* hatchery.

- *Investigation on the efficacy of indigenous probiotics*

Complete protection against pathogenic *Vibrio campbellii* was observed in *Artemia* fed *Bacillus* sp. JL47 with 55% PHB indicating that the protective effects of *Bacillus* sp. JL47 is superior when it contains higher amount of amorphous PHB. Experiments are also on-going to look into the effects of PHB-accumulating *Bacillus* sp. on the stress response of *P. monodon* exposed to extreme temperature changes in conjunction with the expression of biomarker for thermal stress in shrimp and other immune related genes. The efficacy of commercial probiotics (PRO W, PRO 2) and disinfectant (PUR) to control acute hepatopancreatic necrosis disease (AHPND) and luminescent vibriosis in *P. vannamei* culture is likewise being investigated.

- *Application of diagnostics that will ensure biosecurity within culture system*

Two major oyster production areas located in Cabugao bay and in Agojo River (3 sampling stations) in Capiz, Philippine were investigated for their sanitary quality. Oyster samples collected from Agojo River and Cabugao Bay were also examined for the presence of heavy metals during the wet and dry seasons. Taking into account the results of the microbiological examination of oysters examined in the current and previous year, data revealed that oyster culture areas in Cabugao Bay belong to *Class C* based on the *EU Shellfish Harvesting Area Classification Criteria* indicating the need to relay or depurate oysters harvested from these areas.

- *Finding different sources of fish meal substitutes and development of effective feed management schemes that incorporate sound management*

AQD has continued to provide focus on evaluating locally-available feed ingredients as fish meal substitutes in aquafeed formulations. Distillers dried grain solubles (DDGS) was used at 30% in a milkfish diet formulation without soybean meal. The diet was compared with a commercial milkfish diet and fed to milkfish juveniles in cages in a marine environment in Igang, Guimaras Province. After 75 days, DDGS fed fish had better survival rate (80.98% vs 63.6%), better final average weight (385g vs 292g), and better FCR (2.35 vs 8.79) than fish fed the commercial feed. On the other hand, 0-15% inclusion of milkfish hydrolysate in pompano feed has been tested in a small scale experiment. After 30 days, results have indicated that larvae fed the diet with at least 10% MOH has a significant ($P < 0.05$) improvement in performance parameters (weight and length gain, survival) compared to the rest of the fish fed with other dietary treatments. In abalone, studies have shown that the enriched powdered *Ulva pertusa* can replace up to 30% of the combined protein coming from fish meal and soybean meal in the formulation for abalone without compromising growth and efficiency. The apparent dry matter digestibility of feed with enriched seaweed was 92%.

- *Development of aquafeeds for selected species at specific growth stages especially for species or stages for which no artificial feed has been formulated*

The study conducted in pompano found that taurine is not required by bigger pompano (>100g) when the basal dietary level of taurine is 0.377% in a practical diet containing 46% protein. The study on the requirement of sea bass for three essential amino acids, Histidine, Lysine and Leucine is underway.

- *Promotion of better understanding of the concept of feed conversion ratio, and adequate nutrition and efficient feeding practices among fish farmers to promote fish health*

This is being addressed through various studies. For mud crabs, the improved production of SEAFDEC/AQD feed and improvements in feeding management resulted in similar growth rates in stocks fed the SEAFDEC/AQD feed and those given the commercial crab feed in experiments conducted in ponds for 7 months. However, crabs on mud crabs fed the SEAFDEC/AQD feed had better survival (32.4% vs 26.2%) and better production (105kg vs 94.8kg) than those fed the commercial crab feed.

For *Penaeus indicus*, when growth performance of postlarvae from wild and captive spawners was compared, better survival was noted in postlarvae from captive broodstock, while FCR and growth in terms of weight gain in both groups were comparable." Demonstration of semi-intensive grow-out culture of grouper (*Epinephelus coioides* and *E. fuscoguttatus*) using phased diets formulated by SEAFDEC/AQD has been done in four experimental runs in brackish water pond. Survival rates ranged from 94-95% at harvest with average weight of 414g to 460g after 6 -8 months of culture. The production of seaweed in ponds in summertime was high compared to other months, although, water salinity reached up to 40 ppt. Very high salinity was found not to affect growth of *Gracilaria heteroclada*. For the production of soft-shell mudcrab, three species were grown and from the initial stock of 3,558 crabs, about 55% was soft shell. This technology is now being disseminated to the private sector.

3. Maintaining environmental integrity through responsible aquaculture

The program aims to develop environment friendly-based aquaculture technologies by integrating environmental factors in SEAFDEC/AQD research activities and promoting responsible aquaculture.

- *Develop and promote efficient and suitable environment-friendly culture systems*

A number of studies under this objective are on-going for the following commodities: sandfish *Holothuria scabra*, abalone *Haliotis asinina*, slipper oyster, giant freshwater prawn *Macrobrachium rosenbergii*, and seaweed *Caulerpa lentillifera*.

For the culture trials on sandfish, *H. scabra*, three main nursery sites are being maintained: a protected cove at Igang, Nueva Valencia, Guimaras; open bay at Concepcion, Iloilo with an alternative site at a protected lagoon at Ajuy, Iloilo; and a shallow open coast at Molocaboc Island, Sagay, Negros Occidental. Site Assessment, community preparation and sea ranch establishment were completed for all three sites. Nursery rearing and consequent releases have also been done. Increasing the release size to >20g was targeted to minimize predation and increase survival at the ranch site. Results demonstrated that active participation of the community and strong protection of the site at Molocaboc Island in Sagay are important elements for the successful release of stocks. For the site in Iloilo, the commitment and assistance from the local partner, Northern Iloilo Polytechnic State College (NIPSC) was found beneficial to the project. In 2016, spawning runs conducted at NIPSC has produced a surplus of 7 million larvae which were transported to AQD's Tigbauan Main Station where the larval rearing phase will be continued. In the case of abalone, *Haliotis asinina*, the production performance of the stocks reared in ponds, tanks and reef flats was compared. Results showed better growth after 60 days in stocks cultured in tanks than those cultured in ponds and reef flats. This could be due to the good water quality in tanks, as there were few weather disturbances during that period.

Oysters reared in three different locations in Panay, Philippines showed differences in production performance. Coming from the same batch of spats, oysters reared in New Washington had significantly higher growth rates as compared with those reared in Ajuy and Dumangas. Survival rates of oysters grown in New Washington and Dumangas were comparable while those grown in Ajuy had significantly lower survival. Of the environmental parameters monitored, temperature was generally higher in Aklan than in Dumangas while more stable in Ajuy at 29°C; salinity was consistently lower in Aklan than in Ajuy while a wide range of salinity fluctuations was observed in Dumangas. A wide variation of total suspended solids was recorded both in Aklan and Dumangas while it was consistently low in Ajuy, a purely marine bay.

Aquasilviculture with shrimp is being conducted to assess factors affecting nutrient removal dynamics between mangrove and shrimp farms in order to establish the appropriate shrimp pond to mangrove area ratio. Ponds for the trials have been rehabilitated and prepared. Eventually, the aquasilviculture of shrimp as an ecosystem-based management strategy for sustainable production will be promoted in ASEAN countries.

The production performance of the giant freshwater prawn *Macrobrachium rosenbergii* in biofloc (BFT) system in grow-out at different stocking densities (30, 40 and 60 prawns/m²) is on-going. Another BFT run is on-going in indoor circular tanks using the same stocking density. A study on various strategies to improve production of the giant freshwater prawn *Macrobrachium rosenbergii* cultured in lake-based cages was started early this year. The effect of cheliped ablation in blue-clawed males of giant freshwater cultured in cages is being tested.

A study on optimizing the culture of the seaweed, *Caulerpa lentillifera* in tanks and ponds is on-going to quantify nutrient, salinity, and light requirement of the species. The chlorophyll as well as the carotenoid content at these different culture conditions will also be determined. *C. lentillifera* at 50 and 100 ppm NH₄Cl had the highest percentage nitrogen content in its thallus. In another experiment on *C. lentillifera* cultured in tanks with different fertilizers, results showed that after 121 days of culture, the control (no fertilizer) had the highest SGR (0.03% day⁻¹) and treatment using triple 14 (50 ppm) had the lowest SGR (-0.48% day⁻¹).

- *Conduct biological and ecological studies on species with potentials for resource enhancement*

Only one study is being conducted under this objective. Successful transport for 10-12 hours of sea horse at 1, 2, 3 individuals/liter with 100% survival has been achieved. Periodic assessment of the seahorse population in Molocaboc Island, Sagay, Negros Occidental show that there was an increase in number of wild seahorses (22-34 individuals) monitored monthly from March to July 2016 compared to sampling period from December 2014 to December 2015 (8-27 individuals). Sampling time coincided with the onset of high tide when natural food (mysids, etc.) comes with the tide. Divers participating in the project have been trained in the proper handling of as well as provided with lectures on the biology of the species.

4. Adapting to climate change impacts

The Program aims to identify changes in the environment brought about by the changing climate that may affect the aquaculture sector, prepare the sector to the possible effects of these changes, minimize and mitigate the adverse impacts of climate, and ensure the continued operation of all aquaculture production systems under changing climatic conditions.

- *Generate scientific information on the effects of high water temperature on the reproductive performance and recruitment of economically important marine aquaculture fishes*

Reproduction, spawning and recruitment are among the physiological processes that are highly affected by environmental temperature. The Philippines experienced an extended El Niño phenomenon from around the end of 2015 until the first half of 2016. The prolonged dry and hot spell was followed by extended periods of heavy rains. During this period, disruption in the reproduction of most of the commodities were observed *e.g.* decreased maturation rates and fewer spawning events in captive shrimps, abalone and crabs, decreased production of cocoons in both wild and captive polychaetes, *Marphysa mossambica*, among others. Growth and survival of different commodities were also affected. Growth of *Kappaphycus* in the nursery and grow-out was lower during the El Niño months; whereas, *Caulerpa* showed slow growth especially towards the end of the El Niño months and the onset of the rainy season when extended periods of heavy rainfall (and fluctuations/drop in salinity was experienced) when negative growth rates were recorded. Development of nectochaetes was also affected by exposure to sunlight (and hence, temperature). Better growth and survival was obtained in nectochaetes cultured indoors, followed by those cultured in a partially shaded area. Poor growth and survival were recorded for nectochaetes cultured in an area that is directly exposed to sunlight.

The above-mentioned observations point to the need for developing strategies or systems that would support normal growth and development under unfavorable or sub-optimal conditions brought about by climatic phenomena.

- *Promote public awareness on the possible effects of climate change to aquaculture activities*

Increasing the awareness of the fish farmers and the general public on the possible effects of climate change to aquaculture operations is a continuing activity of the Program. The AQD library is continuously sending updates and new information about the effects of climate change to aquaculture to all the staff. In addition, the training courses offered by AQD also include a lecture on climate change and its impact on aquaculture since 2013.

5. Meeting social and economic challenges in aquaculture

This Program aims to address the recommendations which were adopted during the June 2011 ASEAN-SEAFDEC Fisheries Conference on the following areas: (i) prioritizing collaborative R&D in aquaculture in the region to have a clear regional assessment and understanding of the role of aquaculture in poverty alleviation and provide basis for policy formulation; (ii) allocating R&D resources to address emerging issues on the impacts of climate change and global trade on aquaculture with emphasis on small-holder fish farmers; and (iii) enhancing multi-agency collaboration, sharing of information and resources to alleviate the socioeconomic conditions of the poor sector of region. The accomplishments are described below:

- *Prioritizing collaborative R&D in aquaculture in the region to have a clear regional assessment and understanding of the role of aquaculture in poverty alleviation*

The collaborative JIRCAS-funded project on IMTA was renewed for another 5 years. Investigation on the socio-economic aspect has continued and this aims to improve the economic efficiency and benefits among fisherfolks in Guimaras province, Philippines through increase in economies of scale in milkfish pen culture with seaweeds and sandfish. Another study initiated in 2016 was the investigation on the economics of seaweed farming using the IMTA concept. Seaweeds were planted alongside IMTA pens with pellet fed milkfish and detritus-feeding sandfish in substrates. The economic benefits and losses of seaweed farmers due to some climate change indicators are also being investigated. For this study, environmental parameters and socioeconomic profile of seaweed farmers in Guimaras province are being collected to serve as baseline reference in future evaluation of benefits and losses due to changes in climate parameters. Reconnaissance survey was conducted both in Panobolon and Guiwanon Islands, Nueva Valencia, Guimaras to validate the existence of seaweed farms, the problems encountered and actionable strategies to address these problems.

Another important focus of the Program is on Community-based resource enhancement. For 2016, the two on-going studies have again demonstrated the importance of partnerships with organized fisherfolks and their local government. These studies involve the community-based enhancement of threatened resources such as abalone *Haliotis asinina* and sandfish *Holothuria scabra* in Molocaboc Island in Sagay Marine Reserve in Negros Occidental; and shrimp, *Penaeus monodon* in Pinamuk-an in New Washington Estuaries in Aklan province.

- *Enhancing multi-agency collaboration, sharing of information and resources in addressing the common problems of alleviating the socioeconomic conditions of the poor sector of the region*

The Program has implemented R&D, training and on-site technology demonstration activities that have attracted multi-agency collaboration. In all projects, the Program showed that a tri-party collaboration enables successful implementation of community-based stock enhancement projects. For family-based aquaculture production projects, the critical role of local governance was demonstrated through active participation of fisherfolk families.

AQD's community-based resource enhancement projects were recently featured during the Philippines' biggest Agri-business Exhibition (Agri-Link) held last 6-8 October 2016 in Pasay City, Philippines. The purpose was for wider dissemination of information on the concept and benefits of community-based

resource enhancement in terms of rebuilding the coastal resources and improving the people's livelihood through aquaculture.

Other R&D Activities

1. Institutional Capacity Development on Sustainable Aquaculture (ICDSA) and other Collaborative Projects

The ICDSA seeks to promote aquaculture technologies developed by AQD through institutional capacity development; hence, the program is being implemented in partnerships with the local government units, donor communities, fisherfolks/farmers and other stakeholder groups. ICDSA provides a mechanism for the assessment of socioeconomic and environmental impacts of AQD aquaculture technologies and for building the capacity of beneficiary communities.

For the collaborative projects with Bureau of Fisheries and Aquatic Resources (BFAR), SEAFDEC/AQD renders technical assistance in the construction of multi-species marine fish hatcheries in different parts of the country. The multi-species marine fish hatcheries in Baler, Aurora; Sta. Lucia, Palawan; Bongabong, Oriental Mindoro and Sta Cruz, Davao del Sur have long been completed and are already operational. SEAFDEC/AQD has been providing technical assistance in the operation of Hatchery facility in Davao Del Sur. The construction of the hatchery facility in Sagnay, Camarines Sur is almost completed and will be operational very soon.

Through partnerships with DOST-PCAARRD, state universities and colleges, non-government organizations (NGO) and people's organizations, SEAFDEC is also promoting the on-site training courses in different parts of the country and has conducted courses in Capiz for oysters and grouper and in Leyte, for seaweeds, mangrove crabs, milkfish and oysters.

SEAFDEC/AQD is also working with Winrock International (an NGO) in implementing a development project for improved production efficiency in the CARAGA region. AQD's role is on capacity building in aquaculture through introduction of technologies that will enhance production of aquaculture species that are economically important in the region. A demonstration run on mud crab grow-out culture using SEAFDEC/AQD formulated feeds is on-going. SEAFDEC/AQD will also provide technical assistance to a private entrepreneur in the design and construction as well as operation (2 production cycles) of a mud crab hatchery that is envisioned to serve the region under the project.

2. ABOT AquaNegosyo

AQD has continued promoting the ABOT (Agree-Build-Operate and Transfer) Aqua Negosyo program to further disseminate the AQD technologies to aquaculture farmers/entrepreneurs. A total of 34 inquiries were received from October 2015 to September 2016. Most of these (23) were from the Philippines, and 10 were from other countries (Bangladesh, Sri Lanka, United Arab Emirates, Kuwait, and Qeshm Island). Inquiries were mostly on the aquafarming of mangrove crabs (almost 50%), shrimps, milkfish, tilapia, and high value marine fish species such as groupers, snappers and seabass; a few were on abalone, oysters, sandfish, seaweeds, and freshwater prawn. Among those that made inquiries, two became ABOT clients. Formal agreements are being finalized with these clients.

3. Training and Information

The science-based technologies developed by AQD are being transferred to Member Countries and various stakeholder groups through various capacity building programs. For 2016, a total of 217 international trainees participated in the 18 training courses offered by AQD between January and mid-September. These courses were on the following areas: marine fish (grouper, snapper, sea bass, pompano, rabbitfish and milkfish) hatchery; milkfish, abalone and oyster culture; catfish, mangrove crab and sandfish hatchery, nursery and grow-out operations; culture of seaweeds; tilapia and giant freshwater prawn hatchery and grow-out operations; and an online course on aquaculture nutrition. There are 10 more courses in the pipeline for the 4th quarter of 2016. The Training Section also facilitated the internship

program availed of by 40 individuals. A total of 142 students from 30 schools/universities in the Philippines also completed the on-the job training program.

Apart from scientific publications, AQD's Development Communication Section has published the Proceedings of the 'ASEAN-SEAFDEC Regional Technical Consultation on the Development and Use of Alternative Dietary Ingredients or Fish Meal Substitutes in Aquaculture Feed Formulation' and AQD Extension Manual on Seed production of milkfish (*Chanos chanos*). Among other publications were the brochures on grouper and giant freshwater prawn and a poster on the Life Cycle of Abalone. Proceedings of the ASEAN Regional Technical Consultation on EMS/AHPND, brochures on mangrove crab, seabass, tilapia, abalone and larval food laboratory, and videos on "Culture of single oysters" and "Abalone culture" are also in preparation and will be available by end of 2016.

AQD also published the bi-monthly issues of AQD Matters, did frequent updating of AQD website, posted stories about events at SEAFDEC/AQD in Facebook and Twitter, as well as press releases about SEAFDEC/AQD events and initiatives, and participated in fairs and exhibits. In 2015, SEAFDEC/AQD participated in six major aquaculture exhibits. AQD also showcased its technologies during the Agri-link Exhibition held in Pasay City last 6-8 October. AQD will also participate in the Philippine Seaweed Convention scheduled to be held in Cebu City on 23-25 November. All these activities are expected to contribute to the Department's mandate of timely dissemination of information and at the same time help enhance its visibility to its various stakeholders.

AQD's Library and Data Banking Services Section has further improved its user services and now offers digital and online reference services, current awareness services, selective dissemination of information and the Library Instruction and Information Literacy Program. Concerning SEAFDEC/AQD's Repository (SAIR), this has continued to enhance accessibility of AQD publications and visibility of the Department. From January to September 2016, SAIR had 665,210 searches performed and 787,707 pdfs downloaded. FishWorld, SEAFDEC/AQD's Museum of Aquatic biodiversity maintains a reference collection (currently consisting of >5000 species) and a live animal exhibit (70 species) of various aquatic organisms. Eleven high school local students availed of the internship programs on aquatic biodiversity conducted by FishWorld in 2016. FishWorld also held its annual AquaWeek which was participated in by 200 students from 11 high schools and 23 elementary schools from different parts of Panay Island.

PLANS IN 2017

AQD will continue most of the studies/projects conducted in 2016. It will also give priority to addressing the important (present and emerging) issues that affect the region's sustainable aquaculture development.

List of Programs

Departmental Programs Implemented in 2016

- a) Quality seed for sustainable aquaculture
- b) Healthy and wholesome aquaculture
- c) Maintaining environmental integrity through responsible aquaculture
- d) Adapting to climate change impacts
- e) Meeting social and economic challenges in aquaculture

Proposed Departmental Programs for 2017

- a) Quality seed for sustainable aquaculture
- b) Healthy and wholesome aquaculture
- c) Maintaining environmental integrity through responsible aquaculture
- d) Adapting to climate change impacts
- e) Meeting social and economic challenges in aquaculture

PROJECT DOCUMENT

Program Categories: Departmental Programs
Project Title: Quality Seed for Sustainable Aquaculture
Responsible Department: SEAFDEC/AQD
Total Duration: 2012-2020
Funding Sources¹: Philippine Government
Estimated Budget for 2017: USD 564,800

1. INTRODUCTION

Success in the sustainable production of aquatic species for human consumption depends primarily on the availability of good quality seedstock apart from the adoption of optimal husbandry techniques. With the intensification of aquaculture systems in most of the countries in Southeast Asia and the environmental challenges such as those resulting from climate change, both factors -- genetic quality and culture management should be considered as equally important in ensuring a steady yield of good quality seeds and later, marketable products from aquaculture. Hence through this program, activities that determine optimal conditions and methods in sufficient, quality seedstock production are being pursued.

2. PROJECT

2.1 Goal /Overall Objectives

Generate, verify and promote technologies to ensure the sustainable production of quality seed stock for aquaculture as well as for stock enhancement.

The specific objectives are to:

- Develop good quality broodstock for both traditional and emerging species
- Improve quality and production of seedstock through the refinement of hatchery and nursery management methods;
- Develop schemes for the production, management, maintenance and dissemination of genetically selected and improved stocks; and
- Produce sufficient seedstock through the adoption of economically viable seed production systems

2.2 Outcomes and Expected Outputs

- Good quality broodstock for both traditional and emerging species developed;
- Quality and quantity of seedstock improved; and
- Schemes for production, management, maintenance and dissemination of improved stocks established

2.3 Project Description/Framework

The program focuses on studies and activities that determine optimal conditions and methods for the production of quality seedstock in sufficient quantities. Conventional methods of stock improvement such as domestication, broodstock management, strain evaluation and selective breeding or genetic improvement of traditional and emerging freshwater and marine species are the approaches that are being adopted. Genetic intervention can enhance growth rate, survival, disease/ stress tolerance that are desired traits in the production of good quality seedstock. Broodstock and seedstock improvement by way of nutritional intervention is also considered. Suitable hatchery and nursery protocols are being developed and refined depending on the level of technology for each species. These technologies are verified and are packaged into the most viable or cost-effective method for broodstock and seed production. Once ready

¹Supplemental funds are also provided by other donors such as the Philippine's Department of Science and Technology, JIRCAS, GOJ-Trust Fund, ACIAR, etc.

for dissemination, industry stakeholders or primarily the fish farmers shall be informed of advances in seed production methods through training and the production of information, education and communication or (IEC) materials such as technical manuals.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2016

A. Development of good quality broodstock and implementation of proper stock management protocols

For aquaculture, the preference is for improved seedstocks for better yield as these are grown to marketable sizes. For stock release, the seeds produced by quality spawners ideally needs to be genetically similar to the stocks in the receiving area to maintain the genetic integrity of the population in the enhancement site. To achieve the main objective of developing and managing quality broodstock for use in either commercial fish farming and/or stock enhancement, the following activities were conducted in 2016:

- Commercial species

Molecular markers are currently being developed for several regionally important aquaculture species to identify stocks and also aid in determining genetic quality and monitoring of hatchery stocks.

Six microsatellite DNA markers have been developed for donkey's ear abalone and these were used to characterize the existing SEAFDEC/AQD hatchery stock and several Philippine stocks obtained from the wild for broodstock evaluation. Wild founder stocks from Pangasinan, Palawan, Zamboanga del Sur, Masbate, Sagay, Zamboanga del Norte and Cebu were collected last year. For 2016, stocks from Agusan del Norte and Surigao del Sur in Mindanao were collected and additional stocks from the Dinagat Island will be collected. Apart from genetic variability assessment, Spawning sets from these stocks were formed to evaluate reproductive efficiency in the parental stocks apart from the assessment of production traits in at least five families per stock. To date, msDNA genotype information is available for 8 families from the Pangasinan founder stock; 7, each for the Masbate and Palawan stocks; 4 from the Zamboanga del Sur stock; 2 from Sagay and 4 from the hatchery-bred stock which were originally obtained from Concepcion, Iloilo, Philippines. Molecular marker analysis for abalone will be completed during the last quarter of 2016 as the remaining samples for screening will be analyzed at the Tohoku University under a collaborative project funded by the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development of the Department of Science and Technology (PCAARRD-DOST). With regard to reproductive performance, hatchery-bred stocks spawned the highest number of eggs as well as the number of eggs per gram body weight (BW) female. Among the wild stocks, the breeders from Zamboanga del Sur had the highest fecundity while the Pangasinan-sourced broodstock produced the most number of eggs/g BW female. The stock with the least fecundity and number of eggs per gram BW female are those obtained from Palawan. In terms of larval survival, stocks from Cebu had the highest rate. These information and those obtained from the molecular marker variation assessment shall be used in the formulation of a broodstock management and selective breeding scheme for the donkey's ear abalone.

Meanwhile, molecular genetic characterization of potential oyster broodstock from wild sources is currently being done by the University of the Philippines in the Visayas as part of the National Oyster R&D Program led by SEAFDEC/AQD with funds from the Philippine Department of Science and Technology. Apart from the genetic screening of potential good quality oyster (*Crassostrea irredalei*) broodstock from among the wild populations, protocols for broodstock management and conditioning are being developed to maximize seedstock production in the hatchery. An experiment showed that compared to 33C and ambient water rearing temperature, a 30C rearing temperature improved oyster broodstock sexual maturity from an 82% spent broodstock status to a 70% sexually mature oyster stock. On the other hand, the highest broodstock survival (60%) was noted in conditioning tanks which hold stocks in ambient water temperature.

In an earlier mudcrab *Scylla serrata* domestication study, three out of six published msDNA primers were used in the genetic variability assessment of stocks sourced from Samar, Cagayan and Sorsogon. Work on these stocks continues in 2016 with the plan to pursue selective breeding to improve growth and disease

resistance. PCAARRD-DOST funding which started in mid 2015, allowed the preliminary screening of 96 potential primers which subsequently resulted to the development of three additional msDNA markers using mudcrabs from Surigao del Norte, Camarines Norte and Northern Samar. The potential primers were identified from the mudcrab genome sequence information using next generation sequencing. In all, the six working msDNA markers will be used in the on-going mass selection project in the mudcrab, to keep track of the impact of domestication and selective breeding on the farmed stocks that are being improved for growth and disease resistance. For the disease management component of this study, a mass selection protocol will be adopted to improve production (growth, survival, WSSV-resistance) in the stocks from Surigao del Sur and Camarines Sur. For now F₁ stocks have been produced and are currently being on-grown to mature, adult sizes. Prior to these the same stocks were stocked to evaluate growth in three-size groups of juveniles from Camarines and Surigao. The specific growth rate of crab juveniles produced from Surigao broodstock was higher in small-size crabs than in the normal growing (medium) and big-size crabs after 192 days of culture. The specific growth rate was comparable in medium and big crabs.

Meanwhile, in the tiger shrimp, a study that determines optimal environmental conditions that enable improved reproductive performance in captive and wild stocks is underway. Different water depths and temperature gradients are being assessed to identify the suitable environment that will have a positive effect on the mating behavior and mating success of wild and captive tiger shrimp broodstock. Aside from knowing the ideal environmental conditions that would enhance breeding performance in *P. monodon*, trials were done on the effect of vitamin C incorporation in tiger shrimp diets on the reproductive performance of captive broodstock. Stocks were fed a combination of squid, mussel, and pelleted diets. Treatment diets contained 0, 122.5, or 245 ppm Vitamin C. None of those fed with the diet (Control or without vitamin C) survived until the termination of the test. For both 122.5 and 245 ppm Vitamin C level treatments, survival rates were 50%. Gradual mortality occurred after two months in the control stock. In another experiment, the effect of the type of holding system on the breeding performance was also assessed. In comparing shrimp stocked in pens and tanks, all those reared in the tanks resulted in maturation up to Stage 2, but none matured in the pens. One tank given diet with taurine reached stage 3 and spawned, but the larvae died at the Mysis stage.

The observed maturation and spawning in the experiments were low which may be due to the extremely high temperatures at that time. Although the temperature in the experimental tanks reached only 28-29°C, the air temperature reached 38-40°C. In addition to this detrimental effect, high temperatures also seem to have hampered the growth of shrimps that are now being cultured to broodstock size.

Nutritional approaches have also been investigated to improve reproductive performance in farmed aquatic commodities. Last year, a study on the sustainable production of marine annelids (*Marphysa mossambica*) as feed for mud crab *Scylla serrata* broodstock was conducted. Zoal production per spawning of crab fed natural food (NF: mussel, fish, and squid at daily rotation) with live *Marphysa* was higher than those fed without live polychaetes. Increasing the level of *Marphysa* meal in formulated diet in combination with NF without live polychaetes correspondingly increased zoal production. In view of these developments, a study on the refinement of feeding protocols for the sustainable mass production of the marine annelid (*M. mossambica*) started this year. Interventions such as optimizing light exposure to promote growth and survival of the annelids in the nursery phase as well as the utilization of feed enriched sediments in annelid grow-out rearing containers were tried.

- *Emerging species for aquaculture*

Recently, a newly approved study is on the nutritional evaluation of wild-sourced and hatchery bred stocks of silver therapon, *Leiopotherapon plumbeus*, for feed development. One of the aims is to compare the growth and reproductive performance as well as the nutritional composition of wild and hatchery-reared silver therapon. Mean monthly gonado-somatic indices (GSIs) in both sexes of wild fish (W) reached its peak in April (female: 13.5%; male: 7.2%) while highest mean monthly GSIs in both sexes of cultured fish (HB) was noted in September (female: 13.4%; male: 11%) and was high in February until March (female: 5.6–10.2%; male: 5.1–5.3%). Proximate analysis of specimens collected from July 2015 to January 2016 showed that muscle protein content was relatively constant, ranging from 59.6 to 67.8% and

54.2 to 61.3% of dry weight in wild and cultured fish, respectively. Muscle lipid content was more stable, but much higher in both sexes of cultured tharapon (males: $21.0 \pm 3.1\%$; females: $19.1 \pm 2.8\%$) than their wild counterparts (male: $13.1 \pm 1.6\%$; female: $13.4 \pm 4.7\%$). The remaining muscle, liver and gonad samples in both sexes of wild and hatchery-bred fish collected in March and May 2016 are being analyzed for proximate (dry matter, crude protein and crude fat), total lipids and fatty acid composition.

In all the breeding trials, the combination of human chorionic gonadotropin (hCG) and ovaprim ($10 \text{ IU g}^{-1} + 0.5 \text{ mL kg}^{-1} \text{ BW}$) was still the most effective hormone in inducing ovulation in *L. plumbeus*. Using the most effective hormone, monthly spawning trials using both wild-sourced and hatchery-bred stocks showed that while shorter latency period and slightly higher relative fecundity were achieved for wild females, higher fertilization and hatching rates were obtained for hatchery-bred females. In another experiment where the effect of broodstock age on reproductive performance of hatchery-bred stocks was determined, it was noted that younger *L. plumbeus* broodstock had higher spawning success, fertilization and hatching rates compared to older groups.

Finally, monthly gonadosomatic index (GSI) of tharapon ($n = 5$ per replicate cages) sampled from fed and unfed WS and HB stocks were determined. In HB stocks, mean GSIs in both sexes (male: 9.6-9.9%; female: 11.6-11.8%) were similar in both treatment groups. In contrast, mean GSIs in both sexes of WS *L. plumbeus* were slightly higher in fed (male: 6.4%; female: 9.4%) than those in unfed group (male: 5.5%; female: 7.3%).

- *Species for stock management and enhancement*

Activities continue to be implemented for the second year, for a giant grouper study focused on broodstock development and genetic stock management. ACIAR is supporting this preliminary work on broodstock collection and genetic variability assessment using molecular markers. The msDNA-based genetic stock assessment is being done by an AQD junior staff at the University of the Sunshine Coast. The giant grouper broodstock collected from local sources are being kept at the Igang Marine Station for regular monitoring of gonadal maturity.

As for the seahorse *Hippocampus* sp., tissue samples were collected from the study site (Molocaboc Is., Sagay City), SEAFDEC seahorse hatchery and seahorse hatchery in Japan. Genetic characterization of collected seahorses was done. Only one species, *H. comes* was noted to be present in Molocaboc Island. Sequencing of mtDNA cytb and 16s rRNA genes were conducted in all six species of seahorses and a pipefish and phylogenetic trees were constructed to show the relationship among seahorse species. Primers HiSpiF1 and HiBarF1 were confirmed useful for the species identification of *H. spinosissimus* and *H. barbouri*. For *H. comes*, a microsatellite enrichment library was constructed and 35 primer pairs were designed to amplify potential microsatellite markers. Microsatellite marker analysis showed very low degree of differentiation among populations ($F_{st} = 0.086$) of wild and hatchery produced seahorses. Primers of *H. comes* microsatellite loci were successfully cross-amplified in other species of seahorses and a pipefish. Scientific manuscripts on the results of this study are currently being completed for journal publication.

Apart from environmental manipulation, nutritional approaches are being applied to improve reproductive performance in the sandfish *Holothuria scabra* broodstock. Survival of the broodstock fed the shrimp feed and Sargassum powder was 100% when reared for the entire 8 week experimental run. Broodstock fed *Navicula* sp. and powdered *Sargassum* sp. showed decreasing body weight (BW) from the start of the feeding trial through the ten-week monitoring period while those fed powdered shrimp feed grew heavier (than those fed *Navicula* and *Sargassum*) but the recorded weights fluctuated throughout the 10 week feeding experiment. When warm shock vs. cold shock was used in artificial spawning, the percentage of broodstock that spawned was 7% for those exposed to warm shock whereas it was 2% for those under the cold shock treatment.

Another study in the sandfish looks at the development of a diet that will improve breeding performance and larval quality. For this purpose, the basic biochemical composition (*i.e.* protein, lipids and fatty acids)

of wild-caught male and female sandfish broodstock and hatchery-produced potential broodstock, and pre- and post-spawning experimental broodstock were analyzed. On a dry matter basis, crude protein (CP) and crude fat (CF) contents were 32.8% - 34.5% and 0.2% - 0.4% in body walls, 42.5% - 50.4% and 4.2% - 5.0% in guts, 49.4% and 11.1% in female gonads, 74.1% and 5.9% in male gonads. Fatty acid profiling for all the tissues is on-going. Biochemical data for wild-caught sandfish were used as basis in formulating treatment diets. Hatchery-produced potential broodstock were likewise analyzed for proximate composition prior to feeding trials. Whole bodies were used due to the animals' inadequate sizes (BW < 10 g) as well as the absence of gonads. Levels of crude protein and crude fat were 21.9% and 0.6% respectively.

Based on the aforementioned proximate analyses, potential practical were developed and are being tested to improve the breeding performance of sandfish broodstock.

B. Refinement of hatchery and nursery management methods to improve seedstock quality and production

- Commercial aquaculture species

In the abalone, several refinements in terms of establishing (a) optimum veliger density, incubation time and incubation temperature; (b) appropriate light to be used in harvesting trochophore larvae and (c) suitable conditions (light provision and addition of substrate) during extended incubation time are being tried to improve larval production. A modified harvesting system which features a system that could minimize handling stress was designed to improve veliger survival rates. Other interventions were also made to increase abalone juvenile production through the use of chemical cues (positive ions, algal extracts) to improve settlement rate. Settlement inducers such as γ Settlement i acid (GABA) and ammonium chloride were tested. Abalone larvae were exposed to four concentrations of GABA (0, 10^{-3} , 10^{-5} and 10^{-7} M) and ammonium chloride (0, 0.1, 1.0, and 10 mM) for two hours, washed and allowed to settle for five days in settlement substrates with and without crustose coralline algae (CCA) and in the presence or absence of diatoms. After 120 h, larvae exposed to 10^{-5} M GABA induced a higher settlement rate of 48% compared to 0.1 mM of ammonium chloride (23.2%) regardless of settlement substrate. Larvae that were allowed to settle in plates with CCA and diatoms have higher inductive effect (GABA: 53%; ammonium chloride: 28%). In another experiment, application of 0.1 mM ammonium chloride (NH_4Cl) as settlement inducer was tried in 30L aquaria with or without diatoms and in plates with and without CCA. Higher settlement rate of 16.76% was attained after 10 days in treatment with NH_4Cl + diatoms + CCA plates. On the use of illuminated and non-illuminated transparent tanks for settlement and rearing of early juveniles, no significant difference in the settlement and survival rates were noted which means that light is not needed in the transparent settlement tanks.

In the abalone, an experiment was conducted to develop an efficient sorting and harvesting protocol and this involved the use of anaesthetic agents as muscle relaxant for juveniles. Data from three trials showed that abalone juveniles exposed to 0.5 mL/L, 0.7 mL/L, 0.9 mL/L and 1.0 mL/L 2-phenoxyethanol have times of detachment of 2.28 minutes, 2.26 minutes, 1.86 minutes and 1.34 minutes, respectively and times of recovery of 3.12 minutes, 2.61 minutes, 2.42 minutes and 2.17 minutes, respectively. There was no mortality recorded in each treatment. From these data, it is recommended to use 1.0 mL/L 2-phenoxyethanol for the large-scale trial in the use of anaesthetics for harvesting abalone juveniles.

Optimal conditions are being determined to refine existing larval, post-larval and settlement rearing methods in the oyster. Improved larval survival was noted when water change is done once every 4 days. Survival was recorded at 69.9% for larvae kept in rearing water where the first water change is done after 4 days and every 4 days thereafter compared to when water is first changed after 2 days. In another experiment, larval survival to eyed stage larvae was slightly higher in seawater that has been pre-filtered using a filter cartridge compared to those kept in UV-irradiated seawater. Finally, three trials showed that mean settlement rates in a hatchery down-welling set-up gave survival rates ranging from $9.1 \pm 2.6\%$ to $23.4 \pm 5.2\%$. As regards nursery pond rearing of hatchery produced spats, faster growth (10.15 ± 3.39 mm shell length) was noted when the spats were transferred to the pond after 88 days of culture in the hatchery as compared to when the spats were moved to the pond after 38 days. Finally, competent larvae (eyed-larvae) were transported to the fishpond site in moist cloth or in small containers covered with

hatchery water. After 4 hours during transport, survival was higher ($76.78 \pm 9\%$) in larvae transported with water (A) than without (B, $60.83 \pm 11\%$). Spat survival at days of culture in the nursery was highest (76%) for spats transported with water. When spats from remote settlement were nursed using fine mesh cylindrical containers in a brackish water pond. It was observed that specific growth rate was high when using smaller sized spats than bigger spats

In the blue swimming crab, larval quality determination has been done through the formalin stress test. The cumulative mortality became higher as the formalin concentration increased in both poor and good quality larvae after 30 min of formalin exposure. However, cumulative mortality in poor quality larvae was higher than good quality larvae. Larvae used in the stress tests were subsequently reared simultaneously in 1-ton and 3-ton tanks for seed production to validate the results in the small 150-ml enclosures. Survival was recorded until crab instar stage. The batches of larvae that survived only until early zoea were classified as “poor quality batch” and the crabs that reached until crab instar stage as “good quality batch. Finally, trials were made as well as to the use and non-use of antibiotics in larval rearing of blue swimming crabs. Results showed that blue swimming crab larvae survived without antibacterial agents but the survival rate was lower than those with antibacterial agents (oxytetracycline and nitrofurantoin).

Different feed types were tested to improve blue swimming nursery production. Crab instars were fed formulated test diets in combination with mussel meat. All formulated diets, some of which had Peruvian fish meal were fed in combination with mussel at a ratio of 70% formulated diet + 30% mussel meat. After 45 days, percentage survival ranged from 22 to 38%, and values were not significantly different. Those fed natural food alone had highest average body weight (0.634g) but had the lowest survival of 22%. In Phase 2, the same diets were tested. Survival ranged from 74.72 - 86.67%, and no significant difference was detected.

In another experiment which aimed to determine the most economically viable nursery enclosure system and method, crab instar 1 were stocked in aerated tanks, in net cages in ponds, and recently in hapas inside a big pen in the Igang Marine Station. After 3 weeks, those stocked in tanks gave mean survival rates of 14, 23, and 37% at stocking densities of 1200, 600, and 300 individuals/ton, respectively. Phase 2 nursery in tanks gave 35 and 54% survival at stocking densities of 200 and 300/ ton, respectively. In net cages inside ponds, stocking densities used for Phase 1 nursery were 100, 50, and 30 individuals/m² which gave similar survival rates of 43, 44, and 54%, respectively. A higher stocking density of 150 individuals/m² was also tested and this resulted to a mean survival rate that was comparable to both 100 and 50 individuals/m². Further rearing for three more weeks (Phase 2) gave survival rates of 62, 64, and 80% at stocking densities of 10, 20, and 30 individuals/m². For nursery rearing in hapas inside pens, stocking densities of 30, 50, and 100/m² gave survival rates of 32.41%, 25.89% and 14.22%, respectively. Phase 2 for the hapas inside pens still have to be conducted. Once the runs are completed, a financial analysis will be made to determine which system is economically feasible

To enable the promotion of *Kappaphycus* culture, nursery rearing techniques have been refined. Tissue cultured cultivars are produced in the laboratory and reared in the land-based nursery tanks and in sea cages. Thus far, production output from the land-based nursery is about 8000 *Kappaphycus* plantlets per month. In land to sea based nurseries, the survival rate was 35% with a production output of approximately 2500 individuals per month from the sea-based nursery.

In the milkfish, a study that aims to develop a protocol in transporting milkfish juveniles (with an average total length of 5-6 inches) from the nursery to sea cage facilities has been started. This experiment hopes to define optimal temperature and salinity requirements for the transport of milkfish juveniles. The study likewise includes trials on the suitable conditioning period of confinement in cages in ponds before the juveniles are transported to milkfish sea cage farming sites.

- *Emerging species for aquaculture*

Improvements in the hatchery and nursery production of sandfish *Holothuria scabra* have been undertaken. Refinements in the hatchery protocol include the use of appropriate food and stocking densities. It was noted that *Chaetoceros*-fed larvae had better survival, faster development and less

deformities. Survival of sandfish larvae fed *Chaetoceros calcitrans* was decreasing from early to late auricularia. A sharp decrease was observed during the late auricularia to settlement stage (8-12 days post-fertilization or DPF). Although not significantly different, highest survival at 12 DPF was observed in larvae fed 30000 cells ml⁻¹ (69%) and lowest in larvae fed 10000 cells ml⁻¹ (65%). Data analyses on growth and development are ongoing. Another run of the same experiment will be done using larvae from broodstock collected from other sites. Moreover, another experiment using the combination of two species of microalgae will also be done. In another experiment, four settlement cues were compared: *Navicula* sp., *Amphora* sp., *Spirulina* paste and *C. calcitrans* paste. Corrugated plastic sheets were used as settlement substrates. Percent settlement was significantly high in plates with *Spirulina* paste (20.61%) as settlement cue; however, spats on substrates with *Navicula* sp. and *Spirulina* paste were bigger. Bloodworms were observed on the substrates with *Navicula* sp. and *Amphora* sp. as cue. Repeat runs of the same experiment will be conducted using larvae produced by broodstock collected from other sites.

- Natural food production for hatchery use

In larval rearing, it is important to identify and propagate zooplankton species/strains that can be used as live feed for initial feeding to small-mouthed fishes. A study on the growth and reproductive performance of a minute rotifer, *Proales similis* de Beauchamp fed locally available microalgal strains, is being conducted. Culture of *P. similis* was successful in the laboratory using 0⁰/₀₀ and 15⁰/₀₀ *Chlorella sorokiniana* pastes as these improved the rotifer's population growth. Cultivation of *C. sorokiniana* using cheaper commercial fertilizers is viable. Using an 8-well dish culture, a maximum of 2030 ± 184 ind ml⁻¹ was obtained using 15% centrifuged *C. sorokiniana* concentrate. The centrifuge as a method of concentrating *C. sorokiniana* showed better results at 1370 ± 145 ind ml⁻¹ as compared to electrolytic method.

C. Development of schemes for the production, management, maintenance and dissemination of genetically selected and improved stocks

- Commercial species

Selective breeding programs have continued for selected commodities (mudcrab, shrimp and abalone) with support from SEAFDEC/AQD and the Philippine Department of Science and Technology. For the mudcrab, a mass selection scheme targeting improvements in growth and disease resistance commenced with the collection of founder stocks from Camarines Norte and Surigao. Crablets were produced from the founder stocks and used in the growth and health status (post-WSSV challenge) assessment. Growth in three-size groups of juveniles from Camarines and Surigao populations were evaluated. The specific growth rate of crab juveniles from Surigao-sourced broodstock was higher in small-size crabs than the normal growing (medium) and big-size crabs after 192 days of culture. The specific growth rate was comparable in medium and big crabs. While the specific growth rates of two batches of crab juveniles from Camarines-sourced broodstock were comparable in three-size groups after 185 and 97 days of culture, respectively. Two more batches of juveniles are being grown for evaluation. All the batches of crabs will be cultured until the adult stage and will later form the control (average sized crabs) and selected (big sized crabs) for use as parents in the production of the next generation offsprings as part of the selection program. Meanwhile some batches of crabs (P₀A and P₀B) belonging to the same spawns used in the growth experiment were subjected to disease (white spots syndrome virus) challenge tests. Preliminary results showed batch differences in relation to the response (mortality levels) to the infection. Comparing batches P₀A and P₀B, there is a difference in mortality of about 10% in P₀A (23.34%) and P₀B (33.33%) at the same challenge dose (1x10⁻⁴ LD₅₀/crab). The results of these disease challenge tests will be used to identify disease resistant lines for the selective breeding program.

Hybridization is being continuously implemented using the local commercial abalone species (*Haliotis asinina*). *H. asinina* has been crossed with other Philippine abalone species, *Haliotis planata*, *H. glabra* and *H. varia*, to enable the production of stocks/species with improved traits. Some of the findings of this research reported that pure *H. asinina* and hybrid *H. glabra* HAFGM attained optimum growth after 420 days of culture (*H. asinina*: 38.6 g; hybrid *H. glabra*: 36.0 g) while hybrid *H. planata* HAFPM attained optimum growth at a longer culture period of 450 days of culture, but heavier (44.16 g). The stocks were being grown to become potential broodstock. The gonads of the potential breeders did not improve (stage

1 and stage 2). Due to impaired development of gonads for HAFPM, HAFGM and pure *H. asinina* stocks, the breeders were re-conditioned in the Igang Marine Station. They have been returned to the main station and segregated according to gonadal stages. The gonads of some breeders belong to Stage 3 and the male and female are conditioned in separate tanks. They are monitored twice a month to check the spawning and reproduction of hybrids. Several spawning trials with 1M:1F ratio for each strain were conducted, but only one pair of pure *H. asinina* spawned.

Samples of the hybrid stocks have been analyzed histologically and will also be analyzed for molecular marker-based species differentiation. Meanwhile, a sensory evaluation test was done to determine acceptability (based on consumer-desired traits) of the hybrids that have been produced (as compared to the pure stocks). Respondents have been limited to ordinary consumers. Plans are underway for a third-party validation of the sensory evaluation with respondents coming from professionals (*e.g.* selected market consumers *e.g.* Japanese and/or restaurateur-consumers) with discriminating palates.

Ice-ice disease in seaweeds is a problem. Methods to develop resistant strains of the seaweed *Kappaphycus* and reduce epiphytes are being studied. As part of the study, seaweeds with epiphytes are collected and have been subjected to different pH levels to determine the epiphytes' survival under the aforementioned conditions. Seaweeds with *Neosyphonia* (red), *Ectocarpus* (brown), *Ulva* (identity to be confirmed) (green) epiphytes were exposed to different pH (pH 3 - pH 11). Mortality (pigment loss) of *Neosyphonia* (red epiphyte) was observed after 11 min of exposure in pH 3 and 4; 20 min in pH 5; 30 min in pH 9, 10, 11. Mortality of the *Ulva*-like species was observed after 21 min in pH 3,4,5 and; 30 min in pH 9, 10, 11. No mortality was observed in pH 6, 7, 8 after 1 hour. This will be repeated when enough epiphyte infested thalli are noted and a re run will be done to refine the methodology.

D. Adoption of economically viable systems to produce sufficient seedstock

Several fish/shellfish production projects are being implemented at AQD to demonstrate the viability of small-scale and/or large-scale seed production systems. Mass production of Nile/red tilapia fry/fingerlings (both in the Binangonan Freshwater Station and the Tigbauan Main Station), giant freshwater prawn post-larvae, as well as large-scale production of abalone juveniles, are continuously being done.

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2017

4.1 Planning of the Project Activities

Studies/activities will continue to focus on: (i) development of good quality broodstock for both traditional and emerging species through domestication, genetic and nutritional intervention and the implementation of proper stock management protocols; (ii) improvement of quality and quantity of seedstock through the development and refinement of hatchery and nursery management methods; (iii) development of schemes for the production, management, maintenance and dissemination of genetically selected and improved stocks; (iv) production of sufficient seedstock through the adoption of economically viable seed production systems; and (v) building the capacity of fishfarmers and other industry stakeholders in appropriate breeding and larval rearing technologies through training, extension and information dissemination.

4.2 Expected Outputs in 2017

Shrimps:

- Improved growth, breeding/reproductive performance; healthy broodstock produced
- Conditions and protocols for reproductive performance improvement established.
- Technology for sustainable production of high health captive broodstock developed.

Freshwater prawns:

- freshwater prawn post larvae produced and training of hatchery and grow-out technology for farmers conducted

Mudcrab/blue swimming crab:

- Larval rearing protocol improved
- Mass production method of annelids established
- Improved growth, breeding performance
- Healthy broodstock produced; inbreeding minimized
- Nursery production improved
- Reduced seed production cost and increased survival
- Optimal hatchery and nursery protocols available
- Preliminary objectives for selective breeding (especially for mudcrab) attained

Marine fishes:

- Fry quality improved through broodstock management
- Genetic stocks screened; information used for broodstock management.
- Methods to reduce cannibalism determined; schemes to improve survival determined.
- Optimal conditions for seed production/larval rearing established.
- Nursery rearing of marine fishes improved (verification run using optimum stocking density and AQD formulated feeds conducted).
- Target production achieved.

Freshwater fishes:

- Tilapia fingerlings (normal, sex-reversed and mixed sex Nile tilapia hybrid) produced; production target attained.
- Breeding and seed production protocol defined for emerging species.
- Larval rearing methods optimized for emerging species.

Shellfishes:

- Improved hatchery methods.
- Genetic stocks for broodstock production and selective breeding in abalone evaluated.
- Production technology demonstrated and disseminated.
- Most efficient spawning techniques for oyster verified; existing larval and post-larval rearing techniques refined.

Other invertebrates:

- Consistent method for broodstock conditioning (stock management and nutrition) for spawning established.
- Survival of sandfish juveniles improved through efficient nursery systems.

Seaweeds:

- Disease-resistant strains developed.
- Performance of diploid *Kappaphycus* in natural environment evaluated.
- Nursery rearing protocol for production of *Kappaphycus* seedlings optimized.
- Culture method defined; production target achieved.

General:

- Training courses on fish/crustacean/mollusk breeding and hatchery operations conducted.
- Clients under the Agree Build Operate and Transfer AquaNegosyo supported in terms of technical assistance in hatchery/nursery operations.
- New manuals and updated manuals on breeding and hatchery operations for selected species published.
- Information disseminated through publications and participation in fairs/exhibits.

PROJECT DOCUMENT

Program Categories: Departmental Programs
Project Title: Healthy and Wholesome Aquaculture
Responsible Department: Aquaculture Department
Total Duration: 2012-2020
Funding Sources¹: Philippine Government
Estimated Budget for 2017: USD432, 000

1. INTRODUCTION

Healthy and wholesome aquaculture is one of the thematic programs aimed to address the role of attaining sustainable aquaculture production through provision of protein needs for the growing human populace. Although research and development efforts on this aspects have already resulted in phenomenal growth of the sector in the last decades or so, there is still a need for further studies on this aspect since we are faced with challenges posed by ecological, economic, and climatic changes among others that we now encounter in our present situation. In order therefore to be assured of significant improvements and production sustainability for future generations, there is a need to consider working more on this healthy and wholesome aquaculture program. This Program aims to contribute to improvement of aquaculture production through innovations in nutrition and feeding and fish health management and in preserving the environmental integrity of aquaculture.

2. PROJECT

2.1 Objectives

- 1) Investigate the efficacy of probiotics and rationalize the need and application of diagnostics that will ensure biosecurity within culture systems and keep out exotic pathogens, especially transboundary pathogens.
- 2) Promote the wider use of conventional diagnostic as well as new methods especially for newly reported, emerging diseases.
- 3) Find effective alternative safe drugs/chemicals (including natural products) to manage aquaculture diseases in lieu of the harmful chemicals and drugs which have been discouraged or banned for use due to quality and safety issues
- 4) Find different sources of fish meal substitutes and develop effective feed management schemes that incorporate sound management
- 5) Develop aquafeeds for selected species at specific growth stages especially for species or stages for which no artificial feed has been formulated
- 6) Promote better understanding of the concept of feed conversion ratio (FCR) and adequate nutrition and efficient feeding practices among fish farmers to promote fish health

2.2 Outcomes and Expected Outputs

The application of probiotic *Bacillus* species in larval rearing of *Peneaus* is established

- Field- tested immunostimulants for important marine species
- Identified causative agent for the two months mortality syndrome including ways to prevent or control disease occurrence/outbreak
- Bacterial and viral vaccines for the grow out of fish and crustaceans developed
- Zoonotic bacteria and parasites from cultured organisms identified
- Health status of wild shrimp stocks (primarily WSSV and other potential pathogens) updated
- Economics of producing mudcrab juveniles for soft-shell crab farming identified

¹ Supplemental funds are also provided by other donors such as the Philippines' Department of Science and Technology, USAID, JIRCAS, United Soybean Board (USA), ACIAR, Japan Fisheries Research Agency

- Fish health specialists from Member Countries trained on fish disease diagnostics (through Government of Japan trust funds)
- Effective feed management developed and different sources of fish meal substitutes identified
- Efficient diets developed for specific species at specific growth stages
- Netcage culture of freshwater prawn and tilapia in semi-commercial scale demonstrated

2.3 Project Description

The Program is critical in attaining significant improvements and sustaining aquaculture production in the face of many challenges posed by present and future ecological, economic, as well as, climatic changes. The strategies invoked in this Program will concentrate on improving the nutrition and feeding management practices to promote healthy farmed aquatic animals; disease diagnosis, control, monitoring and surveillance of aquatic animals; and environmental integrity, certification, and food safety. The optimization and sustainability of aquaculture production shall be based on Best Management and Good Aquaculture Practices to ensure the least impact on the environment.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2016

- *Investigation on the efficacy of indigenous probiotics*

The protective effects of *Bacillus* sp. JL47 containing different levels of amorphous Poly- β -hydroxybutyrate (PHB) was examined using gnotobiotic *Artemia*. The *Bacillus* isolate was grown to accumulate different levels of amorphous PHB (29% and 55% PHB cell dry weight), fed to gnotobiotic *Artemia* nauplii, and subsequently challenged with *Vibrio campbellii* LMG 21363 at 6 hours post-feeding. *Artemia* nauplii fed *Bacillus* sp. JL47 with 55% PHB resulted in a significantly higher survival rate than those fed with *Bacillus* sp. JL47 with 29% PHB. Moreover, complete protection against pathogenic *Vibrio campbellii* was observed in *Artemia* fed *Bacillus* sp. JL47 with 55% PHB indicating that the protective effects of *Bacillus* sp. JL47 is superior when it contains higher amount of amorphous PHB.

The effects of PHB-accumulating *Bacillus* sp. on the water quality and thermal stress response of *Penaeus monodon* postlarvae during culture are also currently being investigated. Specifically, ongoing experiments are looking into the effects of PHB-accumulating *Bacillus* sp. on the stress response of *P. monodon* exposed to extreme temperature changes in conjunction with the expression of biomarker for thermal stress in shrimp, *i.e.* hsp70 and other immune related genes such as prophenoloxidase (proPO).

The efficacy of commercial probiotics (PRO W, PRO 2) and disinfectant (PUR) to control acute hepatopancreatic necrosis disease (AHPND) and luminescent vibriosis in *P. vannamei* culture is likewise being investigated. Ongoing experiments aim to (a) determine the *in vitro* sensitivity of *V. parahaemolyticus* and *V. harveyi* to PRO W, PRO 2 and PUR, (b) elucidate the toxicity of PUR disinfectant to *P. vannamei*, (c) determine the effect of feeding with PRO 2 on growth and survival, and (d) elucidate the effect of PRO 2 on bacterial level and composition in *P. vannamei* gut and tank water.

- *Application of diagnostics that will ensure biosecurity within culture system*

Two major oyster production areas located in Cabugao bay (1 sampling station) along the coastal barangay of Brgy. Basiao, municipality of Ivisan and in Agojo River (3 sampling stations), municipality of Panay, Province of Capiz (Philippines), were investigated for their sanitary quality in conjunction with the fecal coliform count (FCC) and *Escherichia coli* count (ECC), *Vibrio parahaemolyticus* count (VpC), and presence of *V. cholerae* (Vc) and *Salmonella*, in the rearing water and oysters' meat, respectively. All 3 sampling stations in Agojo River have lower FCC from January until March with mean FCC ranging from 15 MPN/100 ml to 52 MPN/100 ml. Regardless of the fact that stations 1 and 2 are respectively located downstream and midstream wherein several households have been confined along the riverbanks, the lower FCC maybe attributed to the sporadic rainfall in the area during the sampling period. ECC in oysters obtained from Cabugao Bay sampling stations were generally higher, *i.e.* ranging from 1,725 MPN/100 g to 2,220 MPN/100 g. Oysters are filter feeders and have the ability to concentrate bacteria from surrounding seawater in their digestive system. *E. coli* is normally found in the feces of humans and warm-blooded mammals, hence, the ability of *E. coli* to survive in the water of oyster production areas

serves as indicator of fecal contamination. VpC in oysters' meat collected from all sites were below the detection limit. In addition, while Vc was not detected in all oyster samples examined, *Salmonella* was erratically detected in oyster samples examined.

Oyster samples collected from Agojo River and Cabugao Bay were also examined for the presence of heavy metals during wet/rainy and dry seasons. The level of copper (Cu) in oysters' meat collected from all sampling sites ranged from 11.514 ppm to 14.702 ppm while zinc (Zn) ranged from 35.1 ppm to 55.3 ppm during the wet season. In addition, the level of cadmium (Cd), chromium (Cr), lead (Pb), and mercury (Hg) were nil or below the detection limit. Moreover, the quantity of Cu (19.839 to 37.932 ppm) and Zn (44.811 to 82.506 ppm) in oyster samples collected during the dry season were relatively higher compared with results of the wet season. Cd (0.63 to 0.97 ppm) was surprisingly detected in oysters collected from all sites. The levels of Cr, Pb, and Hg in oysters' meat likewise were nil or below the detection limit.

Taking into account the results of the microbiological examination of oysters examined in the current and previous year, data revealed that oyster culture areas in Cabugao Bay accordingly belong to *Class C* based on the *EU Shellfish Harvesting Area Classification Criteria* indicating the need to relay or depurate oysters harvested from these areas. Thus, the potentiality of the 3 relaying stations located in the deeper portion of Cabugao Bay (ca. 1.5 to 2 km away from the existing oyster production areas) were monitored in conjunction with the FC of water over a period of 1 year. The mean FC in the water examined over a period of 1 year was generally <43 MPN/100 ml (categorized as an *Approved Area* based on *US National Shellfish Sanitation Program Shellfish Harvesting Area Classification Criteria*). To examine the effect of relaying on ECC in oysters' meat during the wet and dry seasons, relayed oysters were examined weekly over a period of 3 weeks. Oysters to be relayed were placed in trays that were tied to a raft and submerged ca. 1 meter below the water surface. Oysters collected from the production areas served as control. Initial mean ECC in oysters deployed in relaying sites (RS) 1 and 2 during the wet season were 800 MPN/100 and 990 MPN/100 g, respectively. In the control site, the mean ECC in oyster samples was 12,700 MPN/100 g. After 7 days, ECC in oysters obtained from RS1 and 2 significantly decreased to <20 and 70 MPN/100 g, respectively, clearly indicating the potentiality of these identified sites for relaying oysters harvested from the nearby areas. On the contrary, mean ECC in oysters obtained from control site was still high (1,300 MPN/100 g). Examination of the ECC in oyster samples collected at week 2 and 3 post-relaying is ongoing.

- *Promoting the wider use of conventional diagnostic well as new methods especially for newly reported, emerging diseases*

Diseases affecting shrimps including predisposing, risk and protective factors, and possible prevention and control measures of the diseases were studied.

Shrimp samples were collected from farms in 14 out of 17 regions of the Philippines from 2014 to 2016. The samples were subjected to bacterial and viral pathogen detection using a combination of bacterial isolation, biochemical characterization, PCR, and whole genome sequencing. In 2014, out of 5 regions sampled in Visayas and Mindanao, 2 regions (VI, and IX) were positive for WSSV. From January 2015 to March 2016, out of 13 regions sampled, 4 regions (V, VI, VIII and X) were WSSV-positive with highest occurrence in Region V at 53.13%. For acute hepatopancreatic necrosis disease (AHPND), samples were gathered from 9 regions of which only regions III, IVB, VI, VII, VIII and XI were AHPND-positive. All the isolates and tissue samples were stored at -80°C freezers at the biobank room using an archiving system that allows easy sample management. Eleven bacterial isolates were identified to contain the specific PirA- and PirB-like toxin gene responsible for AHPND pathogenesis. Experimental infection of healthy shrimp with these isolates, using a previously published laboratory infection model, caused 100% mortality after 24 hours which was accompanied by characteristic AHPND histopathology and confirmed to be AHPND-positive by PCR analysis. Further tests revealed that the mortality rate was dose- and size (age)-dependent. These results showed that the isolated *V. parahaemolyticus* derived from outbreaks in Philippine shrimp farms are highly pathogenic to shrimp. Records of all the archived isolates are stored in an online database called the Online Philippine Shrimp Pathogen Information Resource (OPSPIR). It contains epidemiological information of gathered samples including host, collection site, water quality parameters, pathogen, and isolates. It was built using PHP scripting language and MySQL

format making it expansion ready and available to any web browser online. OPSPIR geotags the presence of pathogens with the use of Google Maps. It currently runs on <http://www.opspir.seafdec.org.ph>. Aside from the present bio-surveillance records, data from other sources were included to reflect the historical presence of diseases in the areas covered. To sustain continued bio-surveillance, cooperation among government agencies and local government units, the private sector, and other stakeholders to conduct remote data entry (RDE) is needed for early detection, mitigation, management and control of disease outbreaks.

With regard to the development of shrimp pathogen diagnostic tools using nested PCR and lateral flow strip biosensors (LFSB) coupled with a mobile app and cloud-based information management, current data demonstrated that the detection limit of LFSB kit is at par with the nested-step optimized WSSV PCR method. The LFSB kit provides a cost-effective DNA-based biosensor which can be readily modified and adopted to target emerging strains of WSSV as genome data for WSSV strains from the Philippine Genome Center (PGC) become available

- *Evaluating the effectiveness of natural products to manage aquaculture diseases in lieu of harmful chemicals*

Terrestrial plants and indigenous bacteria were respectively investigated for their antimicrobial and probiotic properties as one of the practical strategies to manage diseases of mud crabs in hatchery and grow-out ponds. Plant samples were gathered from different locations in Panay. Crab samples were also collected from Capiz and Northern Iloilo to isolate potential probiotic bacteria. Preparation of crude extracts and testing for *in vitro* antimicrobial activity was subsequently conducted. During this time, collection of additional bacterial isolates from Lanao del Norte and Pampanga was also undertaken. Extracts that showed good antimicrobial activity by agar disc diffusion technique were further tested for their toxicity to various stages of crabs including zoea, megalopa, and crab instar. *In vivo* efficacy of the extracts was also determined in crab instar by oral administration and injection followed by experimental infection with *V. harveyi*. *Bacillus* spp. were isolated using selective media and further tested for their antimicrobial and quorum sensing inhibitory activity. Extracts and bacterial isolates showing good antimicrobial, quorum sensing, and *in vivo* efficacy as evidenced by conferment of protection against *V. harveyi* challenge were examined using simulated hatchery and grow-out trials. Results of simulated hatchery and grow-out trials showed that *Terminalia catappa* crude ethanolic extracts was comparable to the antibiotic treated group in terms of survival at the zoea 5 and crab instar 1 stages. However, diseases of non-infectious etiologies can also have a serious impact on the final survival, and hence, should receive utmost attention in developing best management practices for *S. serrata* hatchery.

- *Finding different sources of fish meal substitutes and development of effective feed management schemes that incorporate sound management*

Distillers dried grain solubles (DDGS) was used at 30% in a milkfish diet formulation without soybean meal. The diet was compared with a commercial milkfish diet and fed to milkfish juveniles (79.17 g average body weight) in 8 cages (5m X 5m X 2m) in a marine environment in Igang, Guimaras Province. After 75 days, DDGS fed fish had better survival rate (80.98% vs 63.6%), better final average weight (385g vs 292g), and better FCR (2.35 vs 8.79). Furthermore, structure of the intestine in fish fed with commercial diet exhibited morphological changes while liver morphology did not indicate any abnormalities in fish fed either of the diets. Moreover, 0-15% inclusion of milkfish hydrolysate in pompano feed has been tested in a small scale experiment. After 30 days, results have indicated that larvae fed the diet with at least 10% MOH has a significant ($P < 0.05$) improvement in performance parameters (weight and length gain, survival) compared to the rest of the fish fed with other dietary treatments. In abalone, studies have shown that the enriched powdered *Ulva pertusa* can replace up to 30% the combined protein coming from fish meal and soybean meal in formulation for abalone without compromising growth and efficiency.

- *Development of aquafeeds for selected species at specific growth stages especially for species or stages for which no artificial feed has been formulated*

The study conducted in pompano found that taurine is not required by bigger pompano (>100g) when the basal dietary level of taurine is 0.377% in a practical diet containing 46% protein. In a similar study on abalone, the apparent dry matter digestibility of feed with enriched seaweed was 92%. The study on growth requirement of sea bass for three essential amino acids, Histidine, Lysine and Leucine is underway.

- *Promotion of better understanding of the concept of feed conversion ratio, and adequate nutrition and efficient feeding practices among fish farmers to promote fish health*

For the experiment on mud crabs, the improved production of SEAFDEC/AQD feed and on feeding management resulted in similar growth rates with a commercial crab feed in experiments conducted in ponds for 7 months. However, crabs on SEAFDEC/AQD feed had better survival (32.4% vs 26.2%) and better production (105kg vs 94.8kg) than the commercial crab feed. For *Penaeus indicus*, growth performance of postlarvae from captive and wild broodstock showed no significant differences in average body weight and FCR but better survival was noted in postlarvae coming from captive broodstock and that there was an improvement of postlarvae production in the new set of breeders.

Demonstration of semi-intensive grow-out culture of grouper (*E. coioides* and *E. fuscoguttatus*) using phased diets formulated by SEAFDEC/AQD has been done in four experimental runs in brackish water pond. Survival rates ranged from 94-95% at harvest with average weight of 414g to 460g after 6 -8 months of culture. The production of seaweed in ponds in summertime was high compared to other months, although, water salinity reached up to 40 ppt. Very high salinity was not noted to affect the growth of *Gracilaria heteroclada*. For the production of soft-shell mudcrab, three species were grown and from the initial stock of 3,558 crabs about 55% was soft shell and harvested weight was 60g to 90g while the remaining 45% were weighing >90g. This technology is now being disseminated to the private sector.

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2017

4.1 Planning of the Project Activities

Major program activity	Duration	Remarks
Prevention and mitigation of diseases in mud crab culture	2015-2018	On-going (Year 2)
Effects of Poly- β -hydroxybutyrate-accumulating <i>Bacillus</i> species on the water quality and thermal stress	One year	SEAFDEC-AQD funded study
Establishment of sanitary quality of oysters (<i>Crassostrea iredalei</i>) and their culture environments	Until March 2017	DOST-PCAARD ² funded study
Use of commercial probiotics (PRO W, PRO 2) and disinfectant (PUR) to control acute hepatopancreatic necrosis disease (AHPND) and luminescent vibriosis in <i>P. vannamei</i>	Until March 2017	Contracted research
Field validation of PCR-based kits	3 years 2017-2020	Proposal in preparation for submission to DOST-PCAARRD
Application of SMART Technology for the timely and accurate disease diagnosis and intervention	3 years 2017-2010	Proposal in preparation for submission to DOST-PCAARRD
Use of disinfectants to ensure pathogen-free status of annelids as feed for shrimp broodstocks	3 years 2017-2010	Proposal in preparation for submission to DOST-PCAARRD
Efficacy of chemotherapeutic agent (SLICE) against <i>Amyloodinium</i> sp. and <i>Caligus</i> sp.	1 year 2017	Proposal in preparation for submission to NRCP

² Department of Science and Technology-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development

Major program activity	Duration	Remarks
Investigation on the etiology and pathogenesis of infectious diseases of cultured oysters (<i>Crassostrea iredalei</i>) in the Philippines	3 years 2017-2020	Proposal in preparation for submission to DOST-PCAARRD
Potential of polymer-silver nanoparticles for disease prevention in cultured shrimp	2 years 2017-2018	Proposal in preparation for submission to DOST-PCAARRD
Demonstration of the viability of <i>P. indicus</i> culture in ponds using low-cost diet	2017	Viability of <i>P. indicus</i> culture in ponds using low cost diet demonstrated
Refinement of existing grow-out diet Production cost and return analysis-	2017-18	Refinement of existing grow-out diet for <i>P. indicus</i>
Utilization of poultry by-product meal in milkfish	2017	Poultry by-product meal utilized as feed ingredient for milkfish diet
Formulation of SEAFDEC diet for seabass	2017-2019	Amino acid requirement of seabass juveniles identified
Testing of refined grow-out diet	2017-2018	Refined abalone grow-out diet tested in sea cages; Use of <i>Ulva sp.</i> in abalone diet
Feeding management strategies for silver therapon	2017	Effective feeding management strategies for grow out silver therapon identified
Utilization of agricultural by-products as feed ingredient for tilapia	2017-2018	
Feed development for <i>C. ignobilis</i>	2017	
Culture of <i>Gracilaria</i> in ponds	2017	

4.2 Expected Outputs in 2017

Nutrition and Feed Development

- Viability of *P. indicus* culture in ponds using low cost diet demonstrated
- Refinement of existing grow-out diet for *P. indicus*
- Use of soybean meal replacement with DDGS in Igang and ponds demonstrated
- Poultry by-product meal utilized as feed ingredient
- Amino acid requirement of seabass juveniles identified
- Refined abalone grow-out diet tested in sea cages
- Use of *Ulva sp.* in abalone diet
- Effective feeding management strategies for grow out silver therapon identified
- Taurine requirement of important aquaculture species at the nursery phase of culture
- Effort to initiate a network among SEAFDEC Member Countries on alternative feed ingredients for marine protein and lipid sources in aquaculture feed

Fish Health

Prevention and mitigation of diseases in mud crab culture

- Microbial load (WSSV, *Vibrio*) in water/soil/mudcrab that would result in infection/mortality quantified using qPCR;
- Environmental parameters that would affect infection/mortality of mud crab identified
- Epidemiological data generated

Effects of Poly- β -hydroxybutyrate-accumulating *Bacillus* species on the water quality and thermal stress response of *P. monodon* postlarvae during culture

- Bioremediation activity of PHB-accumulating *Bacillus* on the water quality of *P. monodon* postlarvae (PL) culture specifically the removal of ammonia, nitrite and nitrate determined
- Effects of PHB-accumulating *Bacillus* spp. On the growth, survival, and mRNA expression of hs70 and proPO in *P. monodon* PL exposed to high water temperature (35 °C) elucidated
- Effects of PHB-accumulating *Bacillus* spp. on the survival of *P. monodon* PL exposed to high water temperature (35 °C) and subsequently challenged with VP_{AHPND} strain examined

Establishment of sanitary quality of oysters (*Crassostrea iridalei*) and their culture environments

- Effective and practical relaying and depuration procedures generated
- Practical and effective water treatment procedures for depurating oysters established
- Manuals on bacteriological, heavy metals and pesticide residue determination and effective depuration procedures published
- Training courses promoting the importance of oyster's sanitary quality as a critical indicator of food safety conducted

Use of commercial probiotics (PRO W, PRO 2) and disinfectant (PUR) to control acute hepatopancreatic necrosis disease (APHND) and luminescent vibriosis in *P. vannamei*

- In vitro sensitivity of *V. parahaemolyticus* and *V. harveyi* to PRO W, PRO 2 and PUR determined.
- Toxicity of PUR disinfectant to *P. vannamei* elucidated.
- Effect of feeding with PRO 2 on growth and survival determined.
- Effect of PRO 2 on bacterial level and composition in *P. vannamei* gut and tank water elucidated.
- Effect of PRO W on the rearing water parameters and as well as growth and survival of shrimp examined; and
- Effect of commercial probiotics (PRO W and PRO 2) and PUR disinfectant on survival of *P. vannamei* against experimental challenge with *V. parahaemolyticus* and *V. harveyi* elucidated.

Field validation of PCR-based kits

- Optimization, validation, and field testing of PCR-based kits

Application of SMART technology for the timely and accurate disease diagnosis and intervention

- Application of database and mobile application

Use of disinfectants to ensure pathogen-free status of annelids as feed for shrimp broodstocks

- Establishment of effective and practical disinfection protocol

Efficacy of chemotherapeutic agent (SLICE) against *Amyloodinium* sp. and *Caligus* sp.

- Efficacy of SLICE via oral treatment established
- Data on bioassay correlated with hematological parameters

Investigation on the etiology and pathogenesis of infectious diseases of cultured oysters (*Crassostrea iridalei*) in the Philippines

- Etiology and pathogenesis of infectious diseases (bacterial, fungal, viral, parasitic) elucidated
- Practical and efficacious prophylactic and chemotherapeutic agents against infectious diseases of oysters established

Potential of polymer-silver nanoparticles for disease prevention in cultured shrimps determined

PROJECT DOCUMENT

Program Categories: Departmental Programs

Project Title: Maintaining Environmental Integrity through Responsible Aquaculture

Responsible Department: SEAFDEC Aquaculture Department (SEAFDEC/AQD)

Total Duration: 2012-2020

Funding Sources¹: Philippine Government

Estimated Budget for 2017: USD 80,000

1. INTRODUCTION

The Program was developed to address issues on the negative impacts of aquaculture to the environment and how these impacts will be minimized. It has been known that the phenomenal growth of aquaculture has caused modification, destruction or complete loss of habitat; unregulated collection of wild broodstocks and seeds; translocation or introduction of exotic species; loss of biodiversity; introduction of antibiotics and chemicals to the environment; discharge of aquaculture wastewater, thus coastal pollution; salinization of soil and water; and dependence on fishmeal and fish oil as aquaculture feed ingredient, to name a few. Asia, the birthplace of aquaculture, has been and is still experiencing all these. Particulate organic waste from fecal materials and uneaten food in intensive aquaculture production have the greatest potential to generate waste. These wastes can enrich aquatic ecosystems and may bring about physical and chemical changes in the water and sediment which may result to anoxic condition in extreme cases. Pond, pen and cage culture systems of both finfish and crustaceans can generate huge amount of organic waste that may cause drastic change to the natural ecosystems adjacent to them.

SEAFDEC/AQD which has been developing aquaculture techniques for various species of finfish, crustaceans, mollusks and some new emerging species to boost fisheries production in the Philippines and the Southeast Asian region should also take the lead and be responsible in looking at the impacts of these aquaculture activities to the environment.

2. PROJECT

2.1 Goal /Overall Objectives

Goal: Develop environment-based aquaculture technology by integrating environmental factors in SEAFDEC/AQD research activities and to maintain environmental integrity by promoting responsible aquaculture practices.

Objectives:

- 1) assess impacts of aquaculture on biodiversity, and water and sediment qualities in the culture areas and adjacent ecosystems both in marine and freshwater systems;
- 2) identify appropriate extractive species that may be used in Integrated Multi-Trophic Aquaculture (IMTA);
- 3) develop and promote efficient and suitable environment-friendly culture systems; and
- 4) conduct biological and ecological studies on species with potentials for resource enhancement.

2.2 Outcomes and Expected Outputs

- Changes in biodiversity, water and sediment qualities due to aquaculture and related activities known; recommendations to mitigate the impacts of aquaculture formulated
- Efficiency of different extractive species (seaweeds, sandfish, bivalve mollusk) in assimilating nutrients, sulfides and other aquaculture effluents assessed
- Production of selected commodities used in Integrated Multi-Trophic Aquaculture determined
- Appropriate culture protocols in ponds, pens in ponds and other systems for sandfish determined

¹Supplemental funds are also provided by JIRCAS, ACIAR

- Models on carrying capacity of and decision support tools for selected inland water bodies in the Philippines available
- Improved production of sandfish, abalone, mud crab in stock enhancement sites identified for the program
- Efficient and suitable environment-friendly culture systems and practices promoted through training and information dissemination activities

2.3 Project Description/Framework

The program will generally focus on the impacts of aquaculture on the environment and how to minimize them. Aside from the goals that the program aims to achieve, it will also incorporate issues presented during the ASEAN-SEAFDEC Conference on Sustainable Fisheries such as the need for better management of the aquaculture sector; abuse in the use of feeds and fertilizer and poor feed utilization and feeding management; excessive use of antibiotics and chemicals; environmental imbalance due to the destruction of habitats which leads to depletion of fish population and loss of biodiversity; and the development of IMTA in a tropical environment.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2016

- *Assess impacts of aquaculture on biodiversity, and water and sediment qualities in the culture areas and adjacent ecosystems both in marine and freshwater systems*

All studies pertaining to the various stations of AQD were completed in 2015. No studies for other marine and freshwater systems were implemented for 2016. Findings of the studies will be disseminated through publication.

- *Identify appropriate extractive species that may be used in Integrated Multi-Trophic Aquaculture(IMTA);*

Studies proposed under this objective were completed in 2015 and no new studies were undertaken in 2016. Preparation of scientific papers to report the findings is in-progress.

- *Develop and promote efficient and suitable environment-friendly culture systems*

A number of studies under this objective are underway for the following commodities: sandfish *Holothuriascabra*, abalone *Haliotisasinina*, slipper oyster, giant freshwater prawn *Macrobrachium rosenbergii*, and seaweed *Caulerpa lentillifera*.

Three main nursery sites are being maintained for this study: (1) a protected cove at Igang, Nva. Valencia, Guimaras; (2) an open bay at Concepcion, Iloilo with an alternative site at a protected lagoon at Ajuy, Iloilo; and (3) a shallow open coast at Molocaboc Island, Sagay, Negros Occidental.

Since 2015, only an average of 4000-5000 per batch was actually released for nursery rearing. The target total production of release-size (>3g) juveniles was supposedly 20,000 per site for 2015 and 2016, but actual production was low. Survival in the nursery was also low for 2016 because of long dry spell for almost half of the year, followed by strong water movement (wind and current) when Southwest monsoon started this quarter.

Site Assessment, community preparation and sea ranch establishment were finished for all three sites (Nueva Valencia, Guimaras; Concepcion, Iloilo; and Sagay, Negros Occidental) in 2015. Nursery rearing and consequent releases have also been done at these sites. Releases at the Igang site were unsuccessful primarily because of the lack of sufficient early juveniles stocks. Preliminary experimental releases also showed high degree of predation especially for smaller juveniles. At the Concepcion site, supply of early juveniles was also a problem but has been lately supplemented by local production from the satellite hatchery. Survival at the nursery site was low because of more turbulent sea conditions this year; while released juveniles (>3g) in to pens at the sea ranch site have apparently low survival and high predation as well. Increasing the release size to >20g is targeted to minimize predation and increase survival at the

ranch site. Meanwhile, because of active participation and strong protection of the site at Molocaboc Island in Sagay, successful releases were made.

Assistance from the local partner National Iloilo Polytechnic State College (NIPSC) has benefited the project. In 2016, spawning runs conducted at NIPSC commonly produces huge surplus of fertilized eggs. For two runs now, this surplus (recently, about 7 million larvae) was transported to Tigbauan Main Station (TMS) where the larval rearing phase will be continued. This system has allowed for more efficient partitioning of resources –NIPSC being more efficient in spawning, while TMS, being best for larval rearing.

Socio-Economic profiling was done for Nueva Valencia, Guimaras and Concepcion, Iloilo sites with 60 and 94 participating households, respectively. The same social survey using the standardized instrument (questionnaire) has been planned to be carried out in the Sagay, Negros Occidental site.

The production performance of abalone *Haliotis asinina* reared in ponds, tanks and reef flats was compared. The comparatively higher mean standard length and body weight at 60 days of culture observed in abalone cultured in tanks compared with those cultured in ponds and reef flats could be due to the good water quality in tanks, as there were few weather disturbances during that period.

Oysters were reared in three different locations and results showed differences in production performance. Coming from the same batch of spats, oysters used for grow-out in Batan Bay were significantly smaller than those used in Dumangas and Ajuy during the start of the experiment but were able to surpass the size in both sites after two months. Oysters reared in New Washington had significantly higher growth rates in terms of length (ANOVA, $F=8.69$, $p<0.01$) and weight (ANOVA, $F=31.53$, $p<0.001$) as compared with those reared in Ajuy and Dumangas. Oysters reared both in New Washington and Dumangas had almost the same survival rates from the commencement of the experiment until harvest. However, oysters reared in Ajuy had significantly lower survival than those reared in the other two sites.

Aquasilviculture with shrimp is being conducted to assess factors affecting nutrient removal dynamics between mangrove and shrimp farms in order establish the appropriate shrimp pond to mangrove area ratio. Ponds for the trials have been rehabilitated and prepared. Eventually, the aquasilviculture of shrimp as an ecosystem-based management strategy for sustainable production will be promoted in ASEAN countries.

The production performance of the giant freshwater prawn *Macrobrachium rosenbergii* in biofloc (BFT) system in grow-out at different stocking densities is on-going. Grow-out in outdoor BFT system has been conducted at 30, 40 and 60 prawns/m² and no significant differences in growth, and FCR was observed. However, survival was higher in the highest stocking density. Another BFT run is on-going in indoor circular tanks using the same stocking density is on-going.

A study on various strategies to improve production of the giant freshwater prawn *Macrobrachium rosenbergii* cultured in lake-based cages was started early this year. The effect of cheliped ablation in blue-clawed males of giant freshwater cultured in cages is on-going.

A study on optimizing the culture of *Caulerpa lentillifera* in tanks and ponds is on-going to quantify nutrient, salinity, and light requirement of the species. The chlorophyll as well as the carotenoid content at these different culture conditions will also be determined. *C. lentillifera* at 50 and 100 ppm NH₄Cl had the highest percentage nitrogen content in its thallus. In another experiment *C. lentillifera* was cultured in tanks with the following treatments: Treatment 1 no fertilizer (control), Treatment 2 (50 ppm NH₄Cl), Treatment 3 (50 ppm NH₄Cl + 10 ppm ASL), Treatment 4 (10 ppm NaNO₃) and Treatment 5 (50 ppm triple 14). Results showed that after 121 days of culture, the control had the highest specific growth rate (0.03% day⁻¹) and treatment using triple 14 had the lowest specific growth rate (-0.48% day⁻¹).

- Conduct biological and ecological studies on species with potentials for resource enhancement

Successful transport for 10-12 hours of sea horse at 1, 2, 3 individuals/liter for 10-12 hour with 100% survival has been achieved. The study on the time of release for seahorses showed that there was an increase in number of wild seahorses (22-34 individuals) monitored monthly from March to July 2016

compared to sampling period from December 2014 to December 2015 (8-27 individuals) in Molocaboc Island, Sagay, Negros Occidental. Sampling time coincided with the onset of high tide when natural food (mysids, etc.) comes with the tide. Divers participating in the project have been trained in the proper handling of as well as provided with lectures on the biology of the species.

Major program activity	Duration	Remarks
Objective: Develop and promote efficient and suitable environment-friendly culture systems		
Culture trial for sandfish <i>Holothuria scabra</i> in ponds and sea ranch	4 years 2014-2017	With funding from ACIAR ²
Grow-out of abalone in small islands and/or community	3 years 2014-2016	With funding from DOST ³
Refinement of existing oyster grow-out techniques	3 years 2014-2016	With funding from DOST
Responsible aquaculture through aquasilviculture	2015-2019 5 years	GOJ-TF ⁴ funded
Giant freshwater prawn culture in biofloc system	2015-2016 1.5 years	AQD-funded
Giant freshwater prawn culture in lake-based cages: Strategies to improve production through stock manipulation and management	2016-2018 3 yrs	AQD-funded
Culture of <i>Caulerpa</i>	3 years 2015-2017	AQD-funded
Objective: Conduct biological and ecological studies on species with potentials for resource enhancement		
Promotion of resource enhancement of seahorses	5 years 2015-2019	GOJ-TF funded

Planned Activities for 2017

Major program activity	Duration	Remarks
Objective: Develop and promote efficient and suitable environment-friendly culture systems		
Determination of optimal conditions for sandfish <i>Holothuria scabra</i> culture		
Refinement of existing oyster grow-out techniques	2014-2017	To continue until 1 st Quarter 2017; funded by DOST
Giant freshwater prawn culture in lake-based cages: Strategies to improve production through stock manipulation and management	2016-2019	To continue
Giant freshwater prawn culture in biofloc system	2015-2017	To continue
Culture of <i>Caulerpa</i>	2015-2017	To continue
Responsible aquaculture through aquasilviculture	2015-2019	To continue; funded by GOJ-TF
Objective: Conduct biological and ecological studies on species with potentials for resource enhancement		
Promotion of resource enhancement of seahorses	2015-2019	To continue; funded by GOJ-TF

Expected Outputs in 2017

- Scaled-up production of juveniles of sandfish
- Firmed up partnership with communities on sandfish seed production
- Socio-economic, political conditions at sea ranch sites for sandfish established
- improved growth and survival of abalone using improved artificial diet and seaweeds
- the best culture environment for abalone by comparing growth and survival in pond, land-based tanks and small island reef farming determined

² ACIAR (Australian Centre for International Agricultural Research)

³DOST (Philippine Department of Science and Technology)

⁴GOJ-TF (Government of Japan-Trust Fund)

- best practices for oyster farming developed
- Feasibility of grow-out of freshwater prawns in bioflocsystem determined.
- Production characteristics of lake-based grow-out of giant freshwater prawn after claw ablation determined
- Culture conditions of *C. lentillifera* optimized.
- The time required for a mangrove habitat to remove nutrients (*i.e.* N, P) from shrimp farm effluents determined
- Appropriate size of seahorses for release and the time of the day of release established

PROJECT DOCUMENT

Program Categories: Departmental Programs
Project Title: Adapting to Climate Change
Responsible Department: Aquaculture Department
Total Duration: 2012-2020
Funding Sources: Philippine Government
Estimated Budget for 2017: USD 100,000

1. INTRODUCTION

The threat from the changing global climate is real. In recent years, several parts of the world have experienced more frequent and more intense extreme weather events (like typhoons and hurricanes) as well as abnormal weather patterns or disturbances like extended hot and dry spells or intense drought and frequent heavy rains resulting to severe flooding, among others, largely attributed to global climate change.

These climate-related disturbances are projected to impact broadly across ecosystems increasing the pressure on all livelihoods and food supply chains, including the fisheries and aquaculture sectors. In particular, the sustainability of aquaculture will be further challenged since the effect of these climatic changes on farmed organisms is largely unknown. The different aquaculture systems, facilities, and support systems to aquaculture operations, as well as the fish farmers themselves will be affected. The small-scale fish farmers in the region that produce the great bulk of the aquaculture production are largely vulnerable. Mitigation and adaptive measures are therefore urgently needed to address the threats to food and livelihood provision that may arise due to the changing climatic conditions observed globally.

2. PROJECT

2.1 Goal /Overall Objectives

The overall goal of the program is to identify the accompanying changes in the environment brought about by the changing climate that may affect the aquaculture sector, prepare the sector to the possible effects that these changes may have on aquaculture operations, minimize and mitigate the adverse impact(s) of climate change in aquaculture, and ensure the continued operation of all aquaculture production systems under changing climatic conditions.

2.2 Objectives:

The long-term objective of the program is to ensure that aquaculture production of important aquaculture commodities will continue even under conditions of higher temperature and more acidic waters for continuous supply of food fish and for income generation of people. To achieve this, scientific information are necessary as basis for future interventions. These information are addressed in the specific objectives below:

- 1) To gather scientific information on the susceptibilities of various economically important aquaculture species to the combined effects of high seawater temperature and acidity.
- 2) To generate scientific data on the effects of abrupt changes in water temperature and salinity brought about by long dry spell followed by heavy rains in the outdoor production of natural live food organisms for hatcheries and for pond culture systems.
- 3) To promote awareness to the fish farmers and the general public on the possible effects of climate change to aquaculture operations.
- 4) To assist other government agencies in the country and in the region in gathering baseline information on aquaculture areas/sites that are most vulnerable to climate change effects/impacts.
- 5) To collaborate with other institutions in the country and in the region in gathering baseline information on the effects of climate change to mangrove ecosystem.

- 6) To explore potential adaptive measures to mitigate the impact(s) of climate change to the different aquatic farming systems.
- 7) To collaborate with other institutions in the country and in the region in gathering scientific information that will serve as basis for the formulation/design of alternative aquaculture systems that are adaptive to climate change.

2.3 Program Description/Framework

Activities of the program include the important issues and recommendations that were discussed during the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020, Fish for the People 2020: Adaptation to a Changing Environment. Areas in the region that are vulnerable to climate change-related effects will be identified and the kind of probable impact(s) will be determined so that appropriate adaptive measures can be proposed. The fish farmers and the general public will need to have better understanding about climate change and its likely impact(s) to their livelihood opportunities for better preparation and adaptation. Since largely almost nothing is known how climate change will affect the biology of various species presently farmed and the various support systems, series of experiments will be conducted to gather important scientific data that will serve as basis for the mitigation measures that will be provided. Improvements and innovations on the different aquaculture holding systems and structures are also necessary in order to lessen and/or reduce the impact to fish supply production.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2016

- *Generate scientific information on the effects of high water temperature on the reproductive performance and recruitment of economically important marine aquaculture fishes*

Considering the relatively narrow fluctuations in environmental parameters like water temperature in the tropical region, marine organisms living in this area are more susceptible to physiological effects of exposure to environmental conditions outside of the normal range, compared to organisms in the temperate areas. Reproduction, spawning and recruitment are among the physiological processes that are highly affected by environmental temperature. The Philippines experienced an extended El Nino phenomenon from around the end of 2015 until the first half of 2016. The prolonged dry and hot spell was followed by extended periods of heavy rains. During this period, disruption in the reproduction of most of the commodities were observed *e.g.* decreased maturation rates and fewer spawning events in captive shrimps, abalone and crabs, decreased production of cocoons in both wild and captive polychaetes, *Marphysa mossambica* among others. Growth and survival of different commodities were also affected. Growth of *Kappaphycus* in the nursery and grow-out were lower during the El Nino months, whereas *Caulerpa* showed slow growth especially towards the end of the El Nino months and the onset of the rainy season when extended periods of heavy rainfall (and fluctuations/drop in salinity) was experienced when negative growth rates were recorded. Development of nectochaetes was also affected by exposure to sunlight (and hence, temperature). Better growth and survival was obtained in nectochaetes cultured indoors, followed by those cultured in a partially shaded area. Poor growth and survival were recorded for nectochaetes culture in an area that is directly exposed to sunlight. These observations point to the need for developing strategies or systems that would support normal growth and development under unfavorable or sub-optimal conditions brought about by climatic phenomena.

- *Promote awareness on the possible effects of climate change to aquaculture operations*

Increasing the awareness of the fish farmers and the general public on the possible effects of climate change to aquaculture operations is a continuing activity of the Program. Since 2013, all training courses offered by AQD have included a lecture on the impacts of climate change on aquaculture and strategies towards resiliency. The AQD library is continuously compiling relevant updates and new information about the effects of climate change to aquaculture for easy access to interested stakeholders. On the other hand, SEAFDEC/AQD supported and participated in the series of workshops on Climate Resilient Aquaculture Operations organized by the Bureau of Fisheries and Aquatic Resources (BFAR).

4. PROPOSED ACTIVITIES FOR THE YEAR 2017

4.1 Planning of the Project Activities

Planned Activities:

- Continue investigating the effects of wide and abrupt temperature, acidity levels and salinity fluctuations on susceptibility and performance of various economically important cultured species.
- Conduct trials to develop breeding and seed production and culture techniques for candidate resilient species.
- Library collection of articles and literatures on climate change
- Conduct survey of sites and areas used for aquaculture activities in the country and the region that are most vulnerable to climate change.

PROJECT DOCUMENT

Program Categories: Departmental Programs

Project Title: Meeting Social and Economic Challenges in Aquaculture

Responsible Department: Aquaculture Department

Total Duration: 2012-2020

Funding Sources¹: Philippine Government

Estimated Budget for 2017: USD 91,000

1. INTRODUCTION

Growth of aquaculture in the Southeast Asian region is driven by the scientific and technological breakthroughs developed and the adoption of culture technologies by receptive entrepreneurs. However, the development of aquaculture in the region has brought and caused a number of unintended problematic scenarios, such as: 1) inequitable distribution of opportunities and benefits across adopters of aquaculture; 2) technology and production cost dualism among aquaculturists; 3) social conflicts and economic losses due to competing uses of resources for aquaculture and other purposes; and 4) high cost of rehabilitation of habitats affected by misuse of natural resources for aquaculture.

This Program aims to develop and implement social and economic strategies in aquaculture and resource management to secure food and income through stakeholder collaboration.

2. PROJECT

2.1 Objectives

The main objective is to respond to the specific recommendations for meeting the social and economic challenges in aquaculture identified and adopted during the *ASEAN-SEAFDEC Fish for All Conference* in June 2011. These include:

- 1) Prioritizing collaborative R&D in aquaculture in the region to have a clear regional assessment and understanding of the role of aquaculture in poverty alleviation and provide basis for policy formulation;
- 2) Allocating R&D resources to address emerging issues on the impacts of climate change and global trade on aquaculture with emphasis on small-holder fish farmers; and
- 3) Enhancing multi-agency collaboration, sharing of information and resources between and among SEAFDEC and its Member Countries and other organizations in addressing the common problems of alleviating the socioeconomic conditions of the poor sector of region.

2.2 Outcomes and Expected Outputs

- Economically viable and sustainable aquaculture enterprises adopted
- Prototype aquaculture technology adoption model for securing food and livelihood for inland and coastal communities
- Enabled participation of rural communities in sustainable stock enhancement and aquaculture initiatives
- Policy and governance recommendations on resource management
- Improved multi-agency collaboration in addressing the common problem of alleviating the socioeconomic conditions of the rural communities and small-holder farmers
- Establishment of social science regional network initiated

¹ Supplemental funds are also provided by the Government of Japan Trust Fund, JIRCAS, RIHN (Japan)

2.3 Program Description/Framework

The R&D activities of the Program intend to address the four categories of social and economic problems in aquaculture discussed and adopted for development of action plans during the *ASEAN-SEAFDEC Fish for the People Conference*. These issues define the scope and coverage of the MSECAP as follows: (i) enhancing the role of aquaculture in addressing food, income and livelihood security through improved governance, multi-agency collaboration, and comprehensive and inter-disciplinary approaches; (ii) promoting sustainable aquaculture through enabling policies that support the management of natural and environmental resources; (iii) enabling mechanisms, institutions and infrastructure to encourage adoption of better aquaculture practices; (iv) understanding and improving linkages from production to marketing and trade of fishery products to support small and medium enterprise (SME) development; and (v) strengthening the capacity of aquaculture stakeholders by mainstreaming specific rural and peri-urban aquaculture programs and policies in local, national and international development programs.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2016

Prioritizing collaborative R&D in aquaculture. To address this objective in 2016, the Program has implemented three socio-economic studies which are described below.

Aquaculture of milkfish through IMTA: The collaborative socioeconomics and environmental study with Government of Japan (JIRCAS) was renewed with another 5-year term. It aims to look into the development of technologies for sustainable aquatic production in harmony with tropical ecosystems. For 2016, a study has set-up a small-holder integrated multi-tropic aquaculture (IMTA) of milkfish through mariculture in Guimaras province. This IMTA study aims to improve economic efficiency and benefits among fisherfolks by exploring increasing economies of scale in milkfish pen culture with seaweeds and sandfish that will absorb excess nutrients due to uneaten feeds and fish excreta. The small-holder milkfish production through IMTA essentially aims to involve fisherfolks in improving local milkfish sufficiency, generate income, but without without polluting the culture environment.

The economics of seaweed farming. Seaweeds were planted alongside IMTA pens with pellet fed milkfish and detritus-feeding sandfish in substrates. A new study on the economic benefits and losses of seaweed farmers due to some climate change indicators was initiated and funded by AQD. The study has focused on seaweed farmers in Panabolon Island in Nueva Valencia in Guimaras province, Philippines. Environmental parameters and socioeconomic profile of seaweed farmers are being collected to serve as baseline reference in future evaluation of benefits and losses due to changes in climate parameters.

A reconnaissance survey was conducted both in Panabolon and Guiwanon Islands, Nueva Valencia, Guimaras to validate the existence of seaweed farms. It was verified that in Guiwanon Island seaweeds farming no longer operate due to lack of source of seaweed propagules while in Panabolon Island, a year-round production still continues but is confronted by problem on source of new seaweed propagules. Thus, Panabolon Island, Nueva Valencia, Guimaras was selected as the study site. There were 117 active seaweed growers and one stocker/trader within the island. Majority of the seaweed growers used the submerged-monoline method in cultivating *Kappaphycus alvarezii* and *K. striatum*. Growers identified that the presence of ice-ice, epiphytes and parasites are the most common problems. Actionable strategies to combat the effect of these problems are: the transfer of culture area where water exchange is good, exposure to adequate amount and intensity of light and less growth of algae. Growers, however, had difficulty in marketing the product at a competitive price. The market price of dried seaweeds is only PhP 23/kg (US\$ 0.47), but fresh seedlings are sold at PhP 20/kg (US\$0.41).

Community-based resource enhancement. The two on-going studies involve partnership with organized fisherfolks and their local governments in Sagay, Negros Occidental and New Washington, Aklan. Both of these studies have 5-year supplemental funds from the Government of Japan Trust Fund (GOJTF, 2015-2019) and the Research Institute for Humanity and Nature (RIHN, Japan, 2012-2017). These studies include the community-based enhancement of threatened resources such as abalone *Haliotis asinina* and sandfish *Holothuria scabra* in Molocaboc Island in Sagay Marine Reserve in Negros Occidental; and shrimp *Penaeus monodon* in Pinamukan in New Washington Estuaries in Aklan province.

Since the start of these stock enhancement projects, hatchery-bred juveniles of abalone (12,640 pieces, 2.5cm mean shell length), sandfish (52,310 pieces), and shrimp (655,000 pieces) have been released.

Due to the terms of the tri-party collaboration, the release sites have been protected by local fisherfolks and with governance support from local officials. Monthly monitoring of simple growth and survival parameters (shell length, weight, recovery of tagged samples that could easily be monitored by fisherfolks) showed that the released stocks established together with its wild conspecifics.

Monitoring of buy-and-sell activities of local fish traders showed that released stocks, together with recruits, comprise the catch of the gleaners and fishers. Increased catch outside of the release sites supplemented the income of subsistence fishermen.

Allocating R&D resources to address emerging issues due to climate change and global trade

A new 2-year study on the economic benefits and losses of seaweed farmers due to some climate change indicators was initiated in 2016. The study focuses on seaweed farming activities in Panabolon Island in Nueva Valencia in Guimaras province. Environmental parameters and socioeconomic profile of seaweed farmers are being collected to serve as baseline reference in future evaluation of benefits and losses due to changes in climate parameters.

Somehow, the IMTA milkfish culture with sandfish and seaweeds being conducted by fisherfolks is an R&D study that could compare growth performance, harvest and income between runs conducted in different seasons for some years. IMTA runs are being conducted to complete three (3) crops per year (*i.e.* dry season May to July; wet season September to December; and dry-cold season January to April), possibly to elicit environmental and economic comparisons to improve IMTA culture practices across changing seasons.

Enhancing multi-agency collaboration at the local and international levels

The Program has implemented research, training and on-site technology demonstration activities that have attracted multi-agency collaboration. At the local level, a private company proposed a corporate social responsibility (CSR) initiative by funding the establishment of giant freshwater prawn (GFP) hatchery and nursery in Barangay Pipindan in the middle of Laguna Lake, Rizal province. SEAFDEC/AQD will provide technical support, especially to the fisherfolks who have been trained at AQD’s Binangonan Freshwater Station (BFS).

At the international level, the abalone, sandfish and shrimp stock enhancement projects and the IMTA milkfish study described above have been implemented and funded by the Government of Japan (GOJ Trust Fund, RIHN and JIRCAS).

In all the projects, the Program has demonstrated that a tri-party collaboration enables successful implementation of community-based stock enhancement projects. For family-based aquaculture production projects, the critical role of local governance is in terms of guaranteeing participation of fisherfolk families.

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2017

4.1 Planned Activities for 2017

Major program activity	Duration	Remarks
<p><i>Prioritizing collaborative R&D in aquaculture</i></p> <p>Collaborate on the establishment and operationalization of the giant freshwater prawn (<i>Macrobrachium rosenbergii</i>), hatchery proposed project situated in Barangay Pipindan, Binangonan, Rizal as part of the corporate social responsibility (CSR) of a private telecommunications company. The high-value giant freshwater prawn will be co-cultured with tilapia to increase income. Tilapia seed production and grow-out farming has been the existing livelihood of many fisherfolks in Laguna Lake.</p>		<p>This Giant Freshwater Prawn Hatchery responds to the need to increase post larval supply for grow-out farming (problem raised in previous years).</p> <p>Previous problem/priority: Access to sources of breeders</p>

Major program activity	Duration	Remarks
Encourage replicates of this giant freshwater prawn and tilapia hatchery through partnership with private sector in lakeshore areas around Metro Manila to promote and support peri	urban aquaculture to create livelihoods and income.	Encourage replicates of this giant freshwater prawn and tilapia hatchery through partnership with private sector in lakeshore areas around Metro Manila to promote and support peri
<i>Allocating R&D resources to address emerging issues due to climate change and global trade</i> Continue IMTA of milkfish in Guimaras Province; Continue Seaweeds EBL study in Guimaras Province New topics: Risk assessment & building resilience in coastal communities		
<i>Enhancing multi-agency collaboration at the local and international levels</i> Aside from continuing the existing studies with AQD and foreign funds, the Program will build support for aquaculture-based CSR activities of the private sector. Studies on gender and development in aquaculture and aquaculture-based resource enhancement.		Collaboration with GOJ, RIHN and JIRCAS can be expected to support future R&D plans.

4.2 Expected Outputs in 2017

The Program is expected to contribute in resolving or decreasing the following incidences of unintended problematic scenarios caused by development of aquaculture in the region such as:

Target	How? (Activities)
1) Inequitable distribution of opportunities and benefits across adopters of aquaculture;	Participation of fisherfolks in: - more small-holder IMTA aquaculture - aquaculture-based seed production for stock enhancement (Sagay-abalone & sandfish)
2) Technology and production cost dualism (wide diversity for small vs commercial) among aquaculturists;	IMTA aquaculture (promote profitable small-holder aquaculture techniques)
3) Social conflicts and economic losses due to competing uses of resources for aquaculture and other purposes; and	- increase catch due to spill-over from stock enhancement (<i>e.g.</i> abalone, sandfish, shrimp) - tri-party collaboration model (improved governance & collective participation)
4) High cost of rehabilitation of habitats affected by misuse of natural resources for aquaculture.	- promote IMTA in aquaculture area to mitigate pollution & cost of rehabilitation - tri-party collaboration model - collect database of climate change parameters to improve harvest & benefits

Expected Outcomes

1. Increased number of juveniles of abalone, sandfish and shrimp released in replicate sites.
2. Increased manifestation and evidences of recruits of abalone, sandfish and shrimp due to stock enhancement.
3. Higher supplemental income among fishers derived from increased volume of abalone, sandfish and shrimp catch due to stock enhancement.

4. Improved and enhanced skills of fisherfolks in seed production for release in replicate stock enhancement sites.
5. Improved governance and compliance to ordinances to protect enhanced stocks of previously identified threatened species in municipalities that host the community-based resource enhancement study sites.
6. Database of climate change parameters for evaluation of economic benefits and losses in seaweeds farming.

SEAFDEC Departmental Programs for the Year 2016-2017

TRAINING DEPARTMENT

OVERALL REVIEW

In 2015, TD conducted three projects under Departmental program. The project of Promotion on strengthening of SEAFDEC visibility and image was implemented to strengthen and encourage TD and SEAFDEC visibility to public. Imparting knowledge of fisheries information through SEAFDEC role to public is main output by conducted exhibition, AFT magazines. Moreover, the electronic files of AFT magazine and other information were produced and distributed to TD network by this channel. In 2016, the project is continued. Understanding on SEAFDEC/Departments role and activities, delivery of fisheries information to stakeholders and the public, tools and management information system of organization are expected output of this project implementation.

The project of Tailor-made Training Program was organized ten tailors-made training courses and study tour programs, based on the need and requirement from the partners to develop of human capacity building of partner and also Member Countries. According to this, the tailor-made training courses and study tour programs will be continued to conduct, designed and planned out by the consultation and agreement of TD and training partners. This includes the choice of subjects, duration, location, and the target participant. Courses/programs can be conducted by combining existing training programs or a totally new topics and programs. The organization or course fee will be estimated base on the cost recovery and actual expenses

Moreover, the project of Improvement of Fisheries Technology and Reduction of the Impact from Fishing was conducted. The main activities are promotion of appropriate technologies and practices of fishing marine engineering, fisheries research, and database for deep-sea fisheries resource survey. The outcomes and expected outputs is technology transfer and development through enhancement of strengthening on coordination and collaboration with other relevant agencies on the issues related to fishing technology, marine engineering, fisheries information and database. In 2015, seven sub-activities under main activities will be continued as follows; Sea trial on reducing the energy use in trawlers – low energy consumption trawl net (LEC-trawl), Manual for fishing gear survey, Advanced Sustainable Technology: Underwater camera system for observing trawl net, FAO Energy Audit for Trawlers in the Gulf of Thailand, Research on bottom sediment around set net area in Ban Phae, Rayong Province, Coastal Capability Enhance in Southeast Asia: Study on Bycatch in Bottom Gillnet Fisheries along the coast of Rayong Province, and Development of database system for management of data from the cruise surveys.

1. Promotion on Strengthening of SEAFDEC Visibility and Image

The fishing information through SEAFDEC role and TD implementation activities was imparted to public via four national and a international exhibitions. More than 100,000 audiences visited TD booths in totally. Three issues of Advance Fisheries Technology (AFT) Magazine in the theme of “Technology for oceanographic survey”, “Seafood traceability to combat IUU fishing”, and “Fish passage for sustainable of fishery resources” were produced respectively and disseminated to TD network by hard and soft copy. In the activities of management information system, the project collaboration with the Secretariat developed database system for managing overall SEAFDEC programs. Otherwise, capacity building for SEAFDEC staff for develop her skill for apply to information work were enhanced via relevant training course and annual SEAFDEC seminar.

2. Tailor-made Training Programs

More than 53 participants were attended in three tailors-made training courses and study tour programs in 2016, based on the need and requirement from the partners. The programs were designed and planned out by the consultation and agreement of TD and training partners. This includes the choice of subjects, duration, location, and the target participant to build up human capacity on the fisheries related.

3. Improvement of Fisheries Technology and Reduction of the Impact from Fishing

Eight sub-activities from three main activities as promotion of appropriate technologies and practices of fishing marine engineering, fisheries research, and database for deep-sea fisheries resource survey were conducted to transfer appropriate technologies and practices to support sustainable utilization of coastal and marine fisheries resources, including capture fishery, marine engineering, and fishery information, and strengthen collaboration with relevant agencies at national and regional level

LIST OF PROJECTS

1. Promotion of strengthening of SEAFDEC Visibility and Image
2. Tailor-made Training Programs
3. Improvement of Fisheries Technology and Reduction of the Impact from Fishing

PROJECT DOCUMENT

Program Categories: Departmental Programs

Project Title: Promotion on Strengthening of SEAFDEC Visibility and Image

Responsible Department: Training Department

Total Duration: 2017

Funding Sources: Training Department

Estimated Budget for 2017: 50,000 USD

1. INTRODUCTION

The Information Strategies for Enhancing SEAFDEC Visibility and Communication which was endorsed by the SEAFDEC Council in 2006 are used as a common policy framework for information-related activities of the organization. In 2009, the strategies were revised and simplified. However, they still emphasize raising SEAFDEC image at international, regional, national levels and enhancing communication and information sharing both within SEAFDEC and with Member and non-Member Countries, other international/regional organizations, and the public.

Moreover, the Plan of Action on Sustainable Fisheries for Food Security Towards 2020 which was adopted in ASEAN-SEAFDEC Conference, “Fish for the People 2020” and “Adaptation to a Changing Environment” in Bangkok, Thailand during 13-17 June 2011 emphasize the enhancement of regional fishery information systems and mechanisms to facilitate sharing, exchange and compilation of information

Following the information strategy of SEAFDEC and the Plan of Action on Sustainable Fisheries for Food Security Towards 2020 through promotion of SEAFDEC role, implementation activities, visibility and image to Member Countries, other international institutions and the public, TD will propose and implement the project of “Promotion on strengthening of SEAFDEC visibility and image” under Departmental program.

2. PROJECT

2.1 Goal /Overall Objectives

SEAFDEC role, visibility and image are promoted and enhanced among Member Countries, others international institutions and the public

2.2 Outcomes and Expected Outputs

Outcomes

- Strengthening of SEAFDEC and Departments visibility and image

Expected Outputs

- Understanding on role and SEAFDEC / Departments activities
- Delivery of fisheries information to stakeholders and the public
- Hub of fishery information in the region

2.3 Project Description/Framework

Activity 1: Promotion and Enhancement of SEAFDEC Visibility and Image

SEAFDEC role and implementing activities as knowledge on fisheries information in collaboration with other SEAFDEC Departments will be promoted and enhanced among others international institutions and the public via national and international exhibitions as required and other suitable channels.

Activity 2: Production of Information Materials

Hard and soft copies such as Advance Fisheries Technology (AFT) magazine, electronic multimedia, fisheries information packages, *etc.* on fisheries information knowledge and also implementation activities will be produced. These information materials will be promoted and delivered to the public to enhance SEAFDEC visibility and image through fisheries information knowledge.

Activity 3: Management Information System

The Training Department will cooperate with SEAFDEC Department such as to develop database and management information system which support SEAFDEC's project. Strengthening of TD information and network such as an electronic mail group, TD website and integration of relevant website has been maintained as sub-activity.

Activity 4: Human capacity building for SEAFDEC and information staffs

The knowledge, skill and experience of SEAFDEC especially information staff will be enhanced and developed by relevant ICT training program with outside institutions such as strategy of Public Relation, website design, *etc.* Moreover, skill of writing and present on research activities for SEAFDEC staff will be developed and enhanced via annual SEAFDEC seminar.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2016

Project Activity Title	Duration	Remarks
1) Promotion and Enhancement of SEAFDEC Visibility and Image - Exhibition on Fishery Resource Conservation and promotion SEAFDEC and TD activities for Children Day at Agriculture Museum and Pomprachunlajomklao Navy was organized.	9 Jan 16	
- Exhibition on "IUU Fishing in the ASEAN region" was organized in collaboration with Fish Marketing Organization with focused on: what is IUU fishing, and forms of IUU fishing activities in Southeast Asian region in the event of "Chatuchak and Fish Market"	31 March – 2 April 16	
- Exhibition on "Fishery Resources Survey in the Region" was organized in collaboration with Marine Science Association of Thailand in The 5 th Marine Science Conference	1-3 June 2016	
- Exhibition at the annual national fair "Pramong Nomklao" was organized in collaboration with the Thai Department of Fisheries. TD presents "Fish passage for sustainable fisheries resources" as a research project which conducted by TD. In this regard, the model of fish passage was shown for more understand of audiences. Moreover, the distribution of various technical publications, brochures, VCDs and fishery-related souvenirs to the audiences, the SEAFDEC visibility was promoted	1-10 July 16	
- TD joined "ASEAN Fisheries and Aquaculture Conference and Exposition 2016: ASEAN Seafood for the World and 11 th Asian Fisheries and Aquaculture Forum and Exhibition: Asian Food Security for the World" at the Bangkok International Trade and Exhibition Centre (BITEC) in Bangkok, Thailand. At the exposition, TD presented the activities in focus, promotion of countermeasures tools to reduce IUU fishing, fishery resources survey in collaboration with Member Countries, responsible fisheries and fish passage for sustainable fishery resource. Moreover, the information packages and documents were distributed to audiences as strengthening of SEAFDEC visibility and image.	4-6 Aug 16	
2) Production of Information Materials - Three issue of Advance Fisheries Technology in theme of "Technology for oceanographic survey", "Seafood traceability to	Jan, May, and Sep 16	

Project Activity Title	Duration	Remarks
combat IUU fishing”, and “Fish passage for sustainable of fishery resources” were produced and distributed about 6,000 copies to TD networks and the public by mail and e-mail to enhance fisheries knowledge and public relation of TD and implementation activities.		
- Two cartoon story as “Tanu story” and “Story of a boy named POR” was re-printed to promote conservation fishery resources.	Jan 16	
3) Management Information System	Jan-Dec 16	
- Maintenance and update TD website and integration website		
- TD collaboration with Secretariat is developing ACDS database	Jan-Dec 16	
- TD has been developing database on fishing license and vessels registration to support Cambodia in combating IUU fishing	Jan-Dec 16	
4) Human capacity building for SEAFDEC and information staff	Jan 16	
- An information staff attend training course on Magazine Design with Adobe Indesign CC 2015 to develop her skill and apply to her information work.		
- Two information staff attend training course on “Library service and development” to develop their skill and apply to their work	26 Feb 16	
- Annual SEAFDEC seminar to development and enhancement skill of writing and presentation on research activities for staff.	20 Dec 16	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2017

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Activity 1: Promotion and Enhancement of SEAFDEC Visibility and Image National and international exhibitions as required will be organized to promote and enhance SEAFDEC role, visibility and image through present knowledge on fisheries information in collaboration with other SEAFDEC Departments.	Jan-Dec	
Activity 2: Production of Information Materials - Three issues of Advance Fisheries Technology (AFT). - Fisheries information package to promote awareness understanding for fishermen, stakeholder and public will be produced. The package will include books, brochures, CD-ROM, etc.	Jan-Dec	
Activity 3: Management Information System The Training Department will cooperate with SEAFDEC Department such as to develop database and management information system which support SEAFDEC’s project. Strengthening of TD information and network such as an electronic mail group, TD website and integration of relevant website has been maintained as sub-activity.	Jan-Dec	
Activity 4: Human capacity building for SEAFDEC information staff The knowledge, skill and experience of SEAFDEC especially information staff will be enhanced and developed by relevant ICT training program with outside institutions such as strategy of Public Relation, website design, etc. Moreover, skill of writing and present on research activities for SEAFDEC staff will be developed and enhanced via annual SEAFDEC seminar.	Jan-Dec	

4.2 Expected Outcomes/Outputs

- Strengthening of SEAFDEC and Departments visibility and image
- Understanding on role and SEAFDEC/Departments activities of public
- Delivery of fisheries information to stakeholder and public

PROJECT DOCUMENT

Program Categories: Departmental Programs
Project Title: Tailor-made Training Programs
Responsible Department: Training Department
Total Duration: 1 year (2017)
Funding Sources: Training Department
Estimated Budget for 2017: -

1. INTRODUCTION/BACKGROUND

In each year TD has conducted several regional training courses, that are a channel to transfer activities outcomes and technology which are found out or developed by SEAFDEC to its Member Countries, therefore the participants will come home with knowledge about “how they learn and how they do in SEAFDEC/TD, Thailand”. However continuously, in every year SEAFDEC/TD has requested to conduct some tailor made courses and study tour programs that are a direct follow-up of its advisory activities with and for, organizations in this region. Such courses/programs are referred to as tailor-made courses/programs because they are set up at the request and need of the organizations, with this they can be enormous benefit in developing the capabilities of the workforce, training doesn’t come cheaply. Training needs to be for the right people, it needs to be the right type/design of training and it needs to be at the right time. Due to this the participants background, work responsibilities, objectives and expectation to be able to do at the end of the training course/program will be used for the course designing, it is tailored to the specific training needs of the requesting organization's staff. The tailor-made training courses and study tour programs which are conducted by TD emphasize learning by doing, observing. This is an approach that relies heavily on the participants' active involvement. An important part of learning by doing and seeing are that lecturers act more often as facilitators than as teachers in the traditional sense. The course will not focus on the theory but more dealing with practical application.

2. PROJECT

2.1 Goal/Overall Objectives and Performance Indicators

This project goal is to continue in giving support to the interested of SEAFDEC Member Countries and others for strengthening the capability of the training partners’ target participants which will be directly meet to their own specific need and required of the technical areas in related to the fisheries. Moreover, the specific objectives of the project are as following:

1. Wide range of tailor-made training courses in the field of fisheries and other relevance aspects will be continued to support by TD.
2. Training facilities of TD will be fully utilized and made use for Member Countries and the region.

2.2 Expected Outcomes and Outputs:

TD will continuously be a part to support Member Countries or other organizations/institutes to build up human capacity on the fisheries related issues especially base on the need and requirement aspects of the training partners/donors.

2.3 Project Description/Framework

The tailor-made training courses and study tour programs will be conducted based on the need and requirement from the partners. The programs will be designed and planned out by the consultation and agreement of TD and training partners. This includes the choice of subjects, duration, location, and the target participant. Courses/programs can be conducted by combining existing training programs or a totally new topics and programs. The organization or course fee will be estimated base on the cost recovery and actual expenses.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2016

3.1 Activities Achievements in the Year 2016

Achievements based on Activities	Duration	Remarks
1. The Short-term Training Course for University Students on Ecosystem Approach to Fisheries Management" (Batch-59). The training course was conducted at SEAFDEC/TD, there were 27 students from seven different Universities attended in the training course.	11 days (7-17 June 2016)	
2. A long-term training course on fishing operation for Tinsulanonda Fisheries College. This training course is conducted under the collaboration between TD and the Office of Vocational Education Commission. The training is a part to support the country in producing seamen and navigators for fisheries industrials of Thailand. There were 21 students attending on this training course for this batch.	4 months, (4 Oct. 2016 - 17 Feb. 2017)	
3. Study Visit Program to Thailand in observing fisheries sectors for Senior officers from Pangkep State Polytechnic of Agriculture Institutions in South Sulawesi Indonesia	6 days (14-19 Nov. 2016)	

4. PROPOSED ACTIVITIES FOR THE YEAR 2017

At least three tailor-made training programs will be conducted in the year 2017. (The course titles, programs and activities will be designed base on the requirements/needs from the training partners).

4.1 Expected Outcomes/Outputs of the Year 2017

TD will continuously be a part to support Member Countries or other organizations/institutes to build up human capacity on the fisheries related issues especially base on the need and requirement aspects of the training partners/donors.

PROJECT DOCUMENT

Program Categories: Departmental Programs

Project Title: Improving of Fisheries Technology and Reduction of the Impact from Fishing

Responsible Department: Training Department

Total Duration: 2014-2017

Funding Sources: Department of Fisheries, Thailand

Estimated Budget for 2017: -

1. INTRODUCTION

Over the years, TD has initiated several projects/programs aiming to promote responsible fishing technology and practices, including reduction of the impact from fishing through improvement of onboard current fishing practice; develop deck machineries; and conduct practical research on fishing technology and fisheries marine engineering. This program covers a wide range of activities, implemented in collaboration with Department of Fisheries Thailand and other government agencies (*e.g.* Fish Marketing Organization of Thailand, National Agricultural Training Council – Malaysia, and Research Institute of Humanity and Nature – RIHN). The activities are included with technical assistances, research and development, sea trials, and demonstrations. Project activities have been implemented since 2014 under 3 main components;

1. Promotion of appropriate technologies and practices of fishing and marine engineering;
2. Fisheries research on impact of fishing practice to marine ecosystem; and
3. Database for fisheries resources survey

2. PROJECT

2.1 Goal /Overall Objectives

- 1) Dissemination of the appropriate technologies and practices to support sustainable utilization of coastal and marine fisheries resources including capture fisheries, marine engineering, and fishery information system
- 2) Strengthening the collaboration with relevant national, regional, and international agencies

2.2 Outcomes and Expected Outputs

Through the technology transfer and development, it is envisaged that capture process will be improved. In addition, coordination and collaboration with other relevant agencies on the issues related to fishing technology, marine engineering, fisheries information and database will also be strengthened.

2.3 Project Description/Framework

1) Promotion of appropriate technologies and practices of fishing and marine engineering

Series of activities have been focused on the promotion on appropriate technology and practices of fishing and marine engineering. Activities on energy saving in fishing emphasized on fishing gear design and standard energy auditing for shrimp trawlers in the Gulf of Thailand. The outputs include comprehensive scientific report of the result from the field test onboard trawlers. In order to investigate the impact of fishing gear and underwater structure of fishing gear, by-catch observation, productivity and quality of catch, sub-project activity, underwater camera system for observing fishing gear has been proposed and introduced to perform a limited scope study in partnership with relevant institute, agencies and private company to conduct field test and demonstrate the advantage of using underwater camera system, so-called CatchCam real-time video/lighting system as a sustainable productivity tool in Thai trawl fisheries. SEAFDEC/TD in collaboration with Department of Fisheries, Thailand has carried out the improvement of fishing port facilities in Rayong Province, eastern part of Gulf of Thailand. There are five (5) sub-activities under this program as follows;

- Sub-activity 1: Study on the energy use in fishing practices, i.e. low energy consumption trawl net (LEC-trawl), FAO Energy Audit for trawlers in the Gulf of Thailand
- Sub-activity 2: Advanced sustainable technology: underwater camera system for observation fishing operation
- Sub-activity 3: Manual for fishing technology
- Sub-activity 4: Fishing technology improvement to specific purposed, e.g. reducing man-power in fisheries, fish sampling, and etc.
- Sub-activity 5: Improvement on fishing port facilities

2) Fisheries research on impact of fishing practices to marine ecosystem

This program has been focused on impact of fishing practices to marine ecosystem. Activities have been jointly implemented by SEAFDEC, Department of Fisheries Thailand and relevant institute & agencies e.g. RIHN (Research Institute of Humanity and Nature), and Department of Marine Technology of Burapha University, aiming to monitor the change of bottom sediment around the set net area and monitoring discards and garbage in small-scale gillnet fisheries operating in the coastal area of Rayong Province. There are 2 Sub-activities under this program as follows;

- Sub-Activity 1: Research on environmental impact from fishing operation.
- Sub-Activity 2: Study on bycatch and discards from fishing operation.

3) Database for fisheries resources survey

SEAFDEC Training department in collaboration with Deep Sea Fisheries Technology Research and Development Institute (DFTRDI), Department of Fisheries, Thailand has developed database system for managing data from the cruise resource surveys. The activities aimed to harmonize data collection for the research cruise survey on fisheries resources between DFTRDI of Department of Fisheries, Thailand and SEAFDEC/TD. Since 2013, a series of workshop to develop a manual for data collection of the fisheries resources survey onboard research vessels (R/V Chulabhorn, R/V Mahidol, M.V. SEAFDEC, and M.V. SEAFDEC2). SEAFDEC/TD and DFTRDI has verified the systematic data collecting, data storage, manage and sharing in order to improve national database for data collection from the cruise survey of their national research vessels for future data compilation.

Sub-Activity 1: Development of database system for management of data from the cruise surveys

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2016

Project/Activity Title	Duration	Remarks
1. Study on the energy use in fishing practices 1.1. Sea trial on reducing of energy use in trawlers – low energy consumption trawl net (LEC-trawl) 1.2. FAO Energy Audit for trawlers in the Gulf of Thailand	Jan - Dec 2016	- Data analysis is on-going - Report is submitted to FAO-HQ
2. Advanced Sustainable Technology: Remotely Observation Vehicle and Underwater camera system for fishing operation observation 2.1. Report on the Testing the Installation of Camera Recorder GoPro Hero 3 [®] to Observe the Fishes Escapement from Codend of Trawl Net in Trawling Operation 2.2. Final sea trial on improvement of Remotely Observation Vehicle	Jan - Nov 2016 Nov 2016 Oct 2016	E-Document on SEAFDEC Website Process on final report
3. Manual for fishing technology 3.1. Technical Report on Modified Bottom Trawl Net (High Opening Characteristic) of Thailand 3.2. Manual for fishing gear survey	Oct 2016 Oct 2016	E-Documents on SEAFDEC Website
4. Improvement on fishing port facilities	Jun - Dec 2016	On-process
5. Study on bycatch and discards from fishing operation a. Study on Bycatch in Bottom Gillnet Fisheries along the Coast of Rayong Province, Thailand	Apr - Dec 2016	Data collection completed, Analysis Process is on-going

Project/Activity Title	Duration	Remarks
6. Development of database system for management of data from the cruise surveys	Jan - Dec 2016	On-process

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2017

4.1 Project Description/Framework

- 1) Promotion of appropriate technologies and practices of fishing and marine engineering
 - Sub-activity 1: Study on the energy use in fishing practices, *i.e.* low energy consumption trawl net, FAO Energy Audit for trawlers in the Gulf of Thailand
 - Sub-activity 2: Advanced sustainable technology: underwater camera system for observation fishing operation
 - Sub-activity 3: Manual for fishing technology
 - Sub-activity 4: Fishing technology improvement to specific purposed, *e.g.* reducing man-power in fisheries, fish sampling, and etc.
 - Sub-activity 5: Improvement on fishing port facilities
- 2) Fisheries research on impact of fishing practices to marine ecosystem
 - Sub-activity 1: Research on environmental impact from fishing operation.
 - Sub-activity 2: Study on bycatch and discards from fishing operation
- 3) Database for fisheries resources survey
 - Sub-Activity 1: Development of database system for management of data from the cruise surveys

4.2 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
1. Study on the energy use in fishing practices <ul style="list-style-type: none"> 1.1. Study on the Energy Audit for trawlers in the Gulf of Thailand 1.2. Study on Feasibility to improve Deck Machinery for Fisheries installed in Thai fishing vessels, socioeconomic and fishing technology perspective 	Jan - Dec 2017	Planning process
2. Advanced Sustainable Technology: Remotely Observation Vehicle and Underwater camera system for fishing operation observation <ul style="list-style-type: none"> 2.1. Develop the collaborative improvement on Remotely Observation Vehicle Phase-2 	Jan - Nov 2017	Planning process
3. Manual for fishing technology <ul style="list-style-type: none"> 3.1. Improve the course curriculum of fishing technology subject for undergraduate student of Thailand 3.2. Improve reference for fishing technology subject for undergraduate student of Thailand 3.3. Human Resources Development on Specific Detail of Fisheries Management for Provincial and Port-In and Port-Out (PIPO) Officers of Thailand 	Jan - Dec 2017	Planning process
4. Fishing technology improvement to specific purposed, <i>e.g.</i> reducing man-power in fisheries, fish sampling, and etc. <ul style="list-style-type: none"> 4.1. Set net installation in coastal zone to collect fish sampling for specific proposes 4.2. Technical support to Department of Fisheries Thailand to formulate Fisheries Management Plan in Trat Province 		Planning process
5. Improvement on fishing port facilities	Jun - Dec 2017	On-process
6. Study on bycatch and discards from fishing operation <ul style="list-style-type: none"> 6.1. Study on Bycatch in Bottom Gillnet Fisheries along the Coast of Rayong Province, Thailand 	Apr - Dec 2017	Data collection completed, Analysis Process is

Project/Activity Title	Duration	Remarks
		on-going
7. Development of database system for management of data from the cruise surveys	Jan - Dec 2017	On-process

4.3 Expected Outcomes/Outputs

1. Draft Plan of Project Energy Audit for trawlers in the Gulf of Thailand
2. Proposal on the Study on Feasibility to improve Deck Machinery for Fisheries installed in Thai fishing vessels, socioeconomic and fishing technology perspective
3. Memorandum of Understanding on the collaborative improvement on Remotely Observation Vehicle Phase-2 and Underwater camera system of SEAFDEC/TD for observing fishing operation.
4. Progress report on Improvement on fishing port facilities.
5. Report on deck machinery for fisheries installed in Thai fishing vessels
6. Draft report on the discard and trash in bottom gillnet fisheries along the coast of Rayong province
7. Improved curriculum and activity report on the Human Resources Development on Specific Detail of Fisheries Management for Provincial and Port-In and Port-Out (PIPO) Officers
8. Documents as reference for fishing technology for undergraduate student of Thailand
9. Drafted report on the Study on Bycatch in Bottom Gillnet Fisheries along the Coast of Rayong Province, Thailand
10. Progress report of the database system from the cruise surveys and improvement plan

Annex 7

OTHER PROGRAMS

Project Title	Lead Department	Period	Appendix No.
Coastal Area Capability Enhancements in Southeast Asia (SEAFDEC/RIHN Collaborative Project)	TD	2012-2016	1
Application of Fish Passage Design Principles to Enhance Sustainability of Inland Fishery Resources in the Southeast Asian Region	SEC/TD	2015-2016	2

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
PROPOSED ACTIVITY FOR YEAR 2017**

			Project id: 0120120201
Program Categories:	Other Program		
Project Title:	Coastal Area Capability Enhancements in Southeast Asia (SEAFDEC/RIHN Collaborative Project)		
Lead Department:	TD	Total Duration:	2012-2016
Donor/Sponsor:	RIHN (Research Institute for Humanity and Nature, Japan)	Total Donor Budget:	USD 304,700
Project Partner:	(Japanese Institutes, Fac. of Fisheries-Kasetsart Univ., EMDEC-DOF-Thailand)	Budget for 2016:	USD 14,300 (Proposed)
Project Leader:	Nopporn M., Project Coordinator	Involved Country:	The Philippines, Thailand and Japan

1. INTRODUCTION/BACKGROUND

The coastal areas of Southeast Asia contain great biodiversity, where livelihoods of the people of Southeast Asia directly and indirectly depend on this biodiversity. However, there are some difficulty to achieve harmonization between sustainable development of fishery community and coastal conservation, as their complex linkage between natural resources and ecosystem services and utilizations. Hereby the Research Institute for Humanity and Nature (RIHN) and some Japanese Universities and research institutes would like to start a cooperative research project named “Coastal capability enhancement in Southeast Asia” in corporation with the Southeast Asian Fisheries Development Center (SEAFDEC), Eastern Marine Fisheries Research and Development Center (EMDEC) of Department of Fisheries, Thailand, Faculty of Fisheries of Kasetsart University, Thailand, the University of Philippines Visayas, Aklan State University and other related institutions/organizations. In this project “holistic approach” will be adopted to give a full understanding how people utilizes the coastal resources, for the purpose to establish the rational and practical measures both for social and ecological sustainability. Based on the holistic data and information, we try to create new development concept named “Area Capability” that can show us how the ecosystem health can be harmonized with the welfare of the people. Through this project, we expect several inventories of ecosystem services and livelihoods of coastal area to complete the guideline of new research approach using the concept on Area Capability.

Target Sites

3 Main Sites:

Panay Is.-the Philippines
Rayong Prov./PrachuabKiri Khan Prov.– Thailand and,
Ishigaki Is.-Japan

3 Sub Sites:

Guimaras Is.-the Philippines
Trang, SuratTani Prov.- Thailand and,
Mikawa Bay-Japan

Participating Organizations/Institutions

- **Regional Institute**

- Southeast Asian Fisheries Development Center (SEAFDEC-Training Department , SamutPrakan, Thailand and Aquaculture Department-the Philippines)

- **Japanese Institutes**

- Research Institute for Humanity and Nature (RIHN)
- The University of Tokyo (Graduate School of Agricultural and Life Sciences, Atmosphere and Ocean Research Institute, Institute for Advanced Studies on Asia)
- Tokyo Univ. Marine Science and Technology (TUMSAT)
- School of Marine Science and Technology, Tokai University
- School of contemporary sociology, Chukyo University
- Kyoto University (Center of Southeast Asian Studies, Graduate School of Science, Kyoto University, Graduate School of Agriculture)
- National Fisheries University
- Kagoshima University (Faculty of Fisheries, The Kagoshima University Museum)
- National research institute of fisheries science, Fisheries Research Agency of Japan

- **Thailand Institutes**

- Faculty of Fisheries, Kasetsart University, Bangkok
- Eastern Marine Fisheries Research and Development Center-EMDEC, Department of Fisheries of Thailand, Rayong Prov.

- **Philippines' Institutes**

- University of Philippines of Visayas
- Aklan State University

2. **PROJECT**

2.1 **Goal/Overall Objectives**

The coastal area, consisting of the eco-tone between land and the sea, naturally provides a wide range of habitat for flora and fauna. It has one of the richest biodiversity and the highest primary productivity on the earth. Its ecosystem is also characterized with the complexity and vulnerability. Fluctuation of water flows such as river water discharge, tidal flow and sea current easily affects the food chains and material flows of the ecosystem, causing irreversible shift of ecosystem in some cases. In Southeast Asia, coastal areas are characterized by the close linkage between ecosystem and local people. The coastal area is the basis of the livelihood of local people, and human intervention is deeply embedded in ecosystem. This linkage enhances the complexity and affects the vulnerability of the ecosystem in the region.

2.2 **Expected Outcomes and Outputs**

- 1) Inventory database and reference books on coastal fishery in Southeast Asia
- 2) Inventory database and taxonomic field guide books of coastal resources in Southeast Asia and Population structure map of major marine fisheries target species in Southeast Asia
- 3) Research protocol guideline and reference books on ecosystem health for coastal area
- 4) Research protocol guideline and reference books on social aspects for coastal area
- 5) Acoustic survey methodology and analysis system for coastal area
- 6) Guideline of community based Set-net fishery installation and utilization for coastal management
- 7) Guideline of community based restocking activities for co-managements of coastal resources
- 8) Establishment of "Area Capability Approach" and its guidelines, through the human networks among SEAFDEC Member Countries

2.3 Project Description/Framework

Component 1: Capture capability survey for coastal fisheries

Activity 1: Standardization of Capture Capability survey and compilation of data

Share the experiences for Capture Capability survey for standardizing the data format and analysis methods. And assemble existing data and information of Capture Capability.

Activity 2: Fishing gear/boat and target species survey

Data and information on Capture Capability including fishing gears and boats including size, materials, structure, operation, fishing ground, initial and operational cost, average daily catch amount and species compositions etc., are collected through observation and interview survey at fishing sites. Data and information are installed into data base which can be accessed through web site. The field survey of Capture Capability will be conducted at target sites.

Activity 3: Publication of the field guides of Capture Capability of coastal fisheries

Inventory books of fishing gears/boat and operations of Southeast Asian coastal area will be published with photos and illustrations.

Component 2: Biological resource survey

Activity 1: Standardization of Taxonomic and DNA analyses

Several participating researchers will be invited to Japan for several weeks to exchange ideas and experiences and standardize methodologies of taxonomy and DNA studies. And the visiting researchers discuss about joint research activities and publications of outcomes among members.

Activity 2: Specimen collection for biological resource analysis

Biological Specimen will be collected in target sites. Size, Location, Species name of specimens will be recorded and tissue specimen for DNA analyses will be preserved (the tissue specimen will be also used for Material and Stable Isotope analyses). Specimens will be stored in accordance with the standardized methods. Taxonomic and DNA analyses will be conducted at RIHN and collaborative institutes. All data and analyses results will be installed into the data base.

Activity 3: Publication of the field guide books of biological resources

Inventory database and reference books on biological resources in Southeast Asian Coastal area will be published with photos and illustration.

Component 3: Environment assessments and ecosystem health survey

Activity 1: Standardization of environment assessments and ecosystem health analyses

Several participating researchers will be invited to Japan for several weeks to exchange ideas and experiences and standardize methodologies of material flow analyses including stable isotope analyses and biomass surveys. And the visiting researchers discuss about joint research activities and publications of outcomes among members.

Activity 2: Specimen collection for material flow analyses and biomass surveys

Specimen for material flow analysis and biomass survey will be collected in target sites. Specimens will be preserved in accordance with the standardized methods. Data and information of specimen will be installed into the database. Material flow analyses and biomass estimation analyses will be conducted at RIHN and collaborative institutes.

Activity 3: Publication of the Research Protocol guideline on ecosystem health

Research Protocol guideline on ecosystem health of coastal area will be published including material flow, chemical and stable isotope analyses and biomass evaluations.

Component 4: Human capability survey for Coastal Area

Activity 1: Standardization of Human capability survey for Coastal Area

Several participating researchers will be invited to Japan for several weeks to exchange ideas and experiences and standardize methodologies of social and human capability surveys. And the visiting researchers discuss about joint research activities and publications of outcomes among members.

Activity 2: Household and Social survey

Household data including member list, Job history, Sex, Age, Education, incomes, properties, health conditions, hopes, and participation to social activities, experiences of migration, religion and ethno-linguistic groups are collected through interview and questioner surveys. Inter-industrial structures are examined based on the data and survey. Regulation, registration and other official administrative affairs are examined. All data and information will be installed into database. Approximate 100 households' data will be collected at each area.

Activity 3: Publication of the research protocol guideline on social aspects and inventory books on coastal livelihood and society

Research Protocol guideline on social aspects of coastal area including interview and questioner surveys and analyses will be published. And inventory books of social and livelihoods in Southeast Asian Coastal area will be published with photos and illustration.

Component 5: Development of acoustic survey equipment and systems for shallow waters

Activity 1: Developing the new data collection equipment and analysis systems of acoustic survey at coastal area.

Acoustic data collection system including equipment modification will be conducted for coastal area survey. And analysis methodology is also developed.

Activity 2: Field test of the developed equipment and system

Newly developed equipments and systems will be tested at field.

Activity 3: On-site-Training of new acoustic survey equipments and systems

The operation of the new acoustic survey equipment and systems will be demonstrated around set-net area. And the analysis of the data is also shown to expected users.

Activity 4: Publication of the research protocol guideline of acoustic survey for coastal area

Operation manual and guidebooks of acoustic survey in coastal area will be published.

Component 6: Community-based Set-net introduction for coastal management and HRD

Activity 1: Support of the set-net installation and operation

Technical support of installation of set-net at coastal area will be provided from experts.

Activity 2: Impact evaluation of set-net fishery on environment and livelihood

Species and size compositions of the fish catch of set-net and other fishery are examined based on the logbook, statistics and observation data. And the biodiversity aspects of target species will be examined by DNA and material analyses. Water quality and material flow condition around set-net will be examined. Information of fishing grounds and operation time of the fishery conducted around set-net will be collected for impact evaluation. Income and time allocation data and information of villagers who live around set-net are analyzed to clarify the linkage among set-net installation and livelihood changes.

Activity 3: Publication of the Set-net installation manual and management guidebook

Set-net installation manual and management guidebooks will be published.

Component 7: Community-based fishery resource rehabilitation for coastal management and rural development (Based and implemented in the Philippines*)**Activity 1:** Technical support of the hatchery works

Technical supports to establish and to manage local hatchery activities will be conducted from experts.

Activity 2: Conduct stock enhancement works with local institutions

Release works of larvae and/or fry of important species in Batan Bay in the Philippines

Activity 3: Impact evaluation of rehabilitation on environment and livelihood

Environment of coastal area around rehabilitation sites including water and material flows, species diversity and biomass will be examined using the scientific analyses. And data and information of fishy catch, incomes of the fishermen, social capital, linkages among sectors, job opportunity, time allocation, food safety and health condition of fishermen will be gathered to evaluate impact from rehabilitation activity

Activity 4: Publication of the local hatchery management and rehabilitation activities for local development

Manual and guide books of the small scale community based hatchery activities and its management are published.

Component 8: Database construction, Workshops and Wrap-up Activities**Activity 1:** Developing the new database system

Integrated database will be established. Main server is installed at RIHN. Mirror servers will be installed at local areas.

Activity 2: Workshops and Seminar of Area Capability Approach

Workshops and Seminar will be held for exchange data, information, experiences, ideas, and results of this study.

Activity 3: International Symposium of Area Capability Approach

International symposium for Area Capability Approach for coastal development will be held.

Activity 4: Area Capability Guidebook Publication

Area Capability Approach guide book will be published based on the collaborative research results.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2016

3.1 Activities Achievements in the Year 2016

The over-all activities of standardization of methods on existing data collection, monthly field surveys and tests, equipment and system development and all data collection on environment are in progress at the present.

The first 4 years of the project implementation emphasized on the preliminary surveys to examine the present status of the resources, biology, livelihoods, social activities, environment that would contribute to the future evaluation of the area capability in the coastal areas which uses the set-net as a core of the project activity.

Physical conditions such as wind, current and oceanographic parameters are key factors for catch-ability and performance of the set-net and other fishing activities. A series of preliminary surveys have been repeatedly made, monitored and followed-up periodically. However, since the fishing season for set net is limited for only 7 months (Oct-April), therefore, periodical monitor and follow up surveys on the fishing activities and oceanography are considered incomplete for the whole year and must be fulfilled. While for the land surveys (social, livelihoods and fish sampling) are in progress. Since the technology transfer of Japanese-type set-net at Rayong Province on 2003, the catch and marketing record has been accumulated for 13 years, under the official permission on set-net research activity for 10 years. Due to the termination of permission on 2014, the process to extend the permission period was requested to the group, so that the installation and operation of set-net was suspended for recent two years led to less activities conducted during 2015 to 2016.

Some survey results were disseminated in the public by means of oral and poster presentations through annual RIHN Seminar for the first, second and third year of the project implementation.

Activities and all findings in each component have been reported in the 7th World Fisheries Congress “Challenge to Sustainable Fisheries and Safe Seafoods” session 25 “Area-Capability Approach for Coastal Community and Fisheries Developments” in Busan, Korea during 23-27 May 2016

Summary of all activities and results would be reported in the 5th RIHN Final Project Seminar held in February 2017, in Thailand.

Project/Activity Title	Duration	Remarks
Component 1: Fishing Capability survey	April 2016-March 2017	Compilation/ Publication
Component 2: Biological Survey	April 2016-March 2017	Compilation/ Publication
Component 3: Environmental Survey	April 2016-March 2017	Data analysis/ Compilation/ Publication
Component 4: Social and Livelihoods Survey	April 2016-March 2017	Data collection/ Compilation/ Publication
Component 5: Acoustic Survey	April 2016-March 2017	Compilation/ Publication
Component 6: Set-net Impact Evaluation	April 2016-March 2017	Compilation/ Publication
Component 7: Re-stocking Impact Evaluation	April 2016-March 2017	Compilation/ Publication
Component 8: Workshop and Meeting	April 2016-March 2017	Database Development/ Meeting, Workshop, Seminar, Study tour/Compilation and Publication

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2017

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Component 1: Fishing Capability survey	April 2016-March 2017	Compilation/ Publication and Dissemination
Component 2: Biological Survey	April 2016-March 2017	Compilation/ Publication and Dissemination
Component 3: Environmental Survey	April 2016-March 2017	Compilation/ Publication and Dissemination
Component 4: Social and Livelihoods Survey	April 2016-March 2017	Data collection/ Compilation/ Publication and Dissemination
Component 5: Acoustic Survey	April 2016-March 2017	Compilation/ Publication and Dissemination
Component 6: Set-net Impact Evaluation	April 2016-March 2017	Data collection/ Compilation/ Publication and Dissemination
Component 7: Re-stocking Impact Evaluation	April 2016-March 2017	Compilation/ Publication and Dissemination
Component 8: Workshop and Meeting	April 2016-March 2017	Database Development/ Meeting, Workshop, Seminar, Study tour/Compilation and Publication

4.2 Expected Outcomes/Outputs

1. Inventory database and reference books on coastal fishery in Southeast Asia
2. Inventory database and taxonomic field guidebooks of coastal resources in Southeast Asia and Population structure map of major marine fisheries target species in Southeast Asia
3. Research protocol guideline and reference books on ecosystem health for coastal area
4. Research protocol guideline and reference books on social aspects for coastal area
5. Acoustic survey methodology and analysis system for coastal area
6. Guideline of community based Set-net fishery installation and utilization for coastal management
7. Guideline of community based restocking activities for co-managements of coastal resources
8. Establishment of “Area Capability Approach” and its guidelines, through the human networks among SEAFDEC Member Countries

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2016
AND
ANDPROPOSED ACTIVITY FOR YEAR 2017**

			Project id: 2015060201
Program Category:	Other Program		
Project Title:	Application of Fish Passage Design Principles to Enhance Sustainability of Inland Fishery Resources in the Southeast Asian Region		
Lead Department:	TD and Secretariat	Total Duration:	May 15 – March17 ¹
Donor/Sponsor:	ACIAR	Total Donor Budget:	AUD 150,000
Project Partner:	DOF Thailand	Budget for 2017:	AUD 50,000
Project Leader:	Chumnarn Pongsri	Involved Country:	Thailand as implementation site

1. INTRODUCTION/BACKGROUND

Inland capture fisheries in the Southeast Asian region including Mekong River Basin deliver food security and income for rural households and also serve as a valuable source of protein and important micro-nutrients. Nevertheless, inland fisheries are becoming increasingly threatened by riverine development projects. Construction of cross-river obstacles such as dams, weirs, roads, etc. as means for rapid development in response to increasing population and demand for agriculture products, hydropower generation or urbanization, are major threats to the long term sustainability of inland capture fisheries as any changes in migration, reproduction and biodiversity of aquatic populations has the potential to decrease capture fisheries productivity. Appropriate mitigation measures to alleviate possible impacts from such migration barrier are therefore necessary.

Fishways have been constructed worldwide and have proved to help mitigate many fisheries globally. Nevertheless, in order to assure the effectiveness of the fishways, it is important that fishway design criteria are established for local species and conditions of the specific region, and not adopted from studies conducted elsewhere.

SEAFDEC in collaboration with the Department of Fisheries of Thailand therefore proposed the project on “Application of fish passage design principles to enhance sustainability of inland fishery resources in the Southeast Asian region” to be implemented for the period of 16 months starting from May 2015 with funding support from the Australian Centre for International Agricultural Research (ACIAR). The Agreement for this collaborative project was approved by the SEAFDEC Council (by *ad referendum*) in April 2015. Under this project, fishway model would be designed in such a way that critical parameters, e.g. slope, water flow/velocity, pass dimension, etc. could be adjusted, in order to determine the most appropriate design for various conditions. Experiments would be conducted on-station, using selected indigenous fish species. It is expected that the research results would provide basic information on the considerations for designing of fish passes that could be applied for different localities of the Southeast Asian region.

2. PROJECT

2.1 Goal/Overall Objectives

The project aims to apply the principles of fishway design more broadly throughout the Southeast Asian region. Specifically the project will:

- 1) Develop a regional collaborative approach on fish passage through the conduct of an expert workshop;
- 2) Design and construct experimental fishway facilities in Thailand; and
- 3) Provide a pathway for further research to improve knowledge on appropriate designs that could facilitate upstream migration of indigenous fish.

¹ The project which would originally be completed in September 2016 would be extended until March 2017.

2.2 Expected Outcomes and Outputs:

The ultimate outcomes of the project are:

- 1) Greater regional collaboration on fish passage issues;
- 2) An agreed list of design criteria for experimental facilities;
- 3) The construction of an experimental facility in an accessible location; and
- 4) The ability to demonstrate fishway facilities to management agencies and other interested parties.

The major project outputs include:

- 1) Paper summarizing outcomes from an expert panel workshop;
- 2) List of engineering designs for experimental facilities;
- 3) A commissioning report outlining facility success; and
- 4) Final project report.

2.3 Project Description/Framework

Activity 1. Conduct of expert workshop on fishway design

An expert workshop on fishway design would be convened to review available information on fish migration biology and ecology in Southeast Asia. Available information on fishway design worldwide would also be reviewed. Based on such information, the workshop would determine fishway designs that are most likely to succeed for the region, with a range of criteria required to develop terms of reference for facility construction.

Activity 2. Preparation of engineering designs and construction of fishway model

The project team will select an appropriate site in Thailand for installation of fishway facility based on the criteria agreed during the expert workshop. Engineering design of fishway models, with elaboration of factors such as slope, construction material, expected operating life, an operations and maintenance manual, key construction materials required and expected construction time, would be prepared. Upon agreement of the experts attending in the workshop, construction of experimental facility would be pursued.

Activity 3. Undertaking of pilot commissioning

The final activity is to commission the experimental fishway unit and ensure it performs to design specifications. At this stage, minor modification of the construction could be properly made to enhance effectiveness in its operation. Panel of selected experts could be convened to perform a physical inspection and review of the fishway construction. The unit would then be trialed to ensure it performs hydraulically and ecologically. Experiment would also be conducted to see its applicability to facilitate upstream migration of fish.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2016

3.1 Activities Achievements in the Year 2016

Project/Activity Title	Duration	Remarks
<p>Activity 1. Conduct of expert workshop on fishway design</p> <p>The “Experts Workshop on Fishway Design Principles to Enhance Sustainability of Inland Fishery in the Southeast Asian Region” was organized on 6-10 March 2016 in Thailand and Lao PDR. The Experts attended in the Workshop noted the preliminary fishway designs constructed by SEAFDEC/TD, and provided recommendations for improvement of the design. Workshop also identified future activities that should be conducted by SEAFDEC, as well as way forward for enhancing the applicability and the use of fishway in the future.</p>	<p>6-10 Mar 2016, Thailand and Lao PDR</p>	

Project/Activity Title	Duration	Remarks
Right after the Experts Workshop, SEAFDEC also convened a “Work Planning Session,” which facilitated discussion among key project staff on actions to be taken by TD in following up to the Experts Workshop.	10 Mar 2016, Thailand	
<p>Activity 2. Preparation of engineering designs and construction of fishway model</p> <p>Based on the preliminary fishway design constructed at the TD in 2015, TD took into account the recommendations from the Experts Workshop, and improved the engineering designs and construction of the fishway model.</p> <p>In addition to the fishway model design for experimental activities, TD also designed and construct small-size model of fishway design for exhibition display, aiming to enhance public awareness on the use of fishway to mitigate impacts from cross-river construction. The small-size model was used during the national fisheries exhibition of Thailand (Pramong Nomklao, 1-10 July 2016, Pathumthani, Thailand); and the ASEAN Fisheries Exposition (4-6 August 2016, Bitec, Thailand)</p>	<p>Apr-Oct 2016</p> <p>Jul-Aug 2016</p>	
<p>Activity 3. Undertaking of pilot commissioning</p> <p>The final activity is to commission the experimental fishway unit and ensure it performs to design specifications. The unit would be trialed to ensure it performs hydraulically and ecologically. Experiment would also be conducted to see its applicability to facilitate upstream migration of fish. Panel of selected experts could be convened to perform a physical inspection and review of the fishway construction.</p>	Nov-Dec 2016	
<p>Other</p> <p>The project staff attended in the “Conference on Fish Passage in the Lower Mekong Basin” organized on 14-17 November 2016 in Lao PDR to exchange experiences with other researchers/scientists working on fish passage.</p>	14-17 Nov 2016, Lao PDR	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2017

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
<p>Activity 1. Conduct of expert workshop on fishway design</p> <p>Report of the “Experts Workshop on Fishway Design Principles to Enhance Sustainability of Inland Fishery in the Southeast Asian Region” would be published.</p>	Jan-Feb 2017	
<p>Activity 2. Preparation of engineering designs and construction of fishway model</p> <p>Engineering design of fishway models, which was constructed at TD based on recommendations from the Experts Workshop held in March 2016 would be further used for pilot commissioning to observe its performance. During the pilot commissioning, the model would also be improved to assure its effectiveness and suitability to facilitate movement of fish across the fishway.</p> <p>Handbook on Engineering design of fishway models would be prepared and published to facilitate replication/adaptation elsewhere as appropriate.</p>	Jan-Feb 2017	

4.2 Expected Outcomes/Outputs of Activity for the Year 2017

Proposed Activity	Outputs of Activity
Activity 1. Conduct of expert workshop on fishway design	Report of the Experts Workshop on Fishway Design Principles to Enhance Sustainability of Inland Fishery in the Southeast Asian Region
Activity 2. Preparation of engineering designs and construction of fishway model	Handbook on Engineering design of fishway models
Activity 3. Undertaking of pilot commissioning	Paper summarizing results from pilot commissioning of fishway design.

Expected Outcomes

This project seeks to design a laboratory fishway which, upon completion, will provide scientists, engineers and students opportunity to perform focused experiments on fishway design with a small number of key species under controlled conditions, and hydraulic modeling to understand critical design parameters. Based on the laboratory fishway model, detailed experiments with a range of different fishway designs and fish species could be performed. It is anticipated that this project would come up with fishway designs that could be practical and applicable for the Southeast Asian specificity, and contribute to sustainability of inland fishery resources for countries in the Southeast Asian region.

**PIPELINE PROJECT:
CONCEPT NOTE ON ENHANCING SUSTAINABLE UTILIZATION
AND MANAGEMENT SCHEME OF TROPICAL**

Project Title: Proposal to JAIF: Enhancing Sustainable Utilization and Management scheme of Tropical Anguillid Eel Resources in Southeast Asia

Prospect Funding Agency: JAPAN-ASEAN INTEGRATION FUND (JAIF)

Lead Department: Secretariat

Proposed Budget: Total budget 800,000 USD (pending)

Duration: 2 years

1. BACKGROUND/INTRODUCTION

World demand of anguillid eels is increasing and majority of the world eel production is from aquaculture of Japanese eel (*Anguilla japonica*). Catch of juvenile of Japanese eels from the wild as seeds for eel culture in the whole East Asian region has been decreasing recently. As a result, interest in the exploitation of juveniles of other eel species has been growing as cheaper alternative species, and all sights are set towards Southeast Asia where some tropical anguillid eel species could be found in its waters and already exploited in some areas in progress. However, there is no historical record on the status of tropical anguillid eel resources, fisheries and aquaculture production. Furthermore, there are only a few policies and measures that manage the anguillid eel resources appropriately and practically in Southeast Asia. Since European eel (*Anguilla anguilla*) had been threatened by rapid increase of market demands without appropriate resource management, European eel has been listed in CITES Appendix II since 2009 to ban international trades for the conservation of the species in consequence. In ASEAN region, there are some economically-important eel species existed, such as Indian mottled eel (*Anguilla bengalensis*), Indonesian shortfin eel (*Anguilla bicolor*), marbled eel (*Anguilla marmorata*) and so on. Development of eel culture has much potential to create new fisheries business for ASEAN region. SEAFDEC and Member Countries have acknowledged such rapid rising demand on anguillid eel resources without appropriate resource management measures in ASEAN region. They understand that both eel fisheries and eel farming industries in this region should conserve and manage the tropical anguillid eel resources properly for their sustainable use. The 1st Regional Technical Consultation was held in February 2014, at this meeting, some basic information on the eel resources in SEAFDEC Member Countries had been exchanged and compiled, such as distribution, fishing gears, production, import and export of eels, as well as regulations on catching and trading of eels in some SEAFDEC Member Countries. The 2nd Regional Technical Consultation was held in August 2015 then issued the “Regional policy recommendation on conservation and management of eel resources and promotion of sustainable aquaculture”. This recommendation had been accepted at 47th meeting of the council of SEAFDEC in April 2015 and also endorsed by the 23rd ASEAN Sectoral Working Group on Fisheries in June 2015. Furthermore, SEAFDEC had also summarized the “Way forward for Enhancing the Sustainability of Catadromous Eels in Southeast Asia (April 2016)” and listed the detailed issues and required concrete actions to solve the problems on both eel fishery and eel culture in this region.

2. JUSTIFICATION

2.1 Problem analysis

Eel farming is reliant on wild-caught anguillid eels such as glass eel, elver and yellow eel. Because of the rapid decrease of juvenile of temperate anguillid eels such as Japanese eel (*A. japonica*), European eel (*A. anguilla*) and American eel (*A. rostrata*) in recent years, tropical anguillid eels become getting attention to compensate the shortage of supply of eel seeds for aquaculture. However, there are no historical record on the status of tropical anguillid eel resources, catch statistics especially on juveniles for seeds, and aquaculture production in Southeast Asia. Tropical anguillid eel resources have much potential as one of the favorable target species for commercial freshwater aquaculture through appropriate resource management for sustainable use of the resources. SEAFDEC held the international workshop on “Enhancement of sustainability of eels resources in Southeast Asia” on 27-29 April 2016 to clarify the

technical issues and confirmed necessity for sustainable utilization of eel resources. It was also clarified that there were not enough statistical records on the status of exploited tropical anguillid eel resources, fisheries and aquaculture production and not much effective measures for appropriate resource management were taken in ASEAN Members States.

It is needed that tropical anguillid eel resources should be properly conserved and managed to prevent the overexploitation and listing on CITES appendices in consequence.

This project is inevitable for “increase of fishery/aquaculture” and “Enable sustainable production” referred in paragraph 57 of “ASEAN Economic Community Blueprint 2025”.

In addition, this project requires support from scientists/experts on Japanese eel who have lead the researches/investigations in the world.

2.2 Regionality

The demands of anguillid eel products are expected to expand significantly in Japan, China and South Korea as well as ASEAN Members States. In addition, the main producing area of tropical anguillid eels are ASEAN Members States. Hence, the appropriate utilization of anguillid eel resources is required in this area.

2.3 Participation

- ASEAN Member States (Government officers in the sections of both the capture fisheries and aquaculture department, fisheries bureau who manage the eel resources and develop the national plan on eel industry, scientists/researchers of the fisheries research agencies/institutes and universities, eel fishers/farmers.)
- SEAFDEC Secretariat, IFRDMD, and AQD

2.4 Beneficiaries

- Direct/immediate beneficiaries are eel fishers/farmers and government officers.
- Indirect beneficiaries are both the eel producing countries and also consuming countries.

2.5 Commitment

ASEAN member states are tackling with improvement of resource management in coastal and inland fisheries in accordance with Plan of Action on Sustainable Fisheries for Food Security for the ASEAN region adapted by the ASEAN-SEAFDEC Conference.

3. Objectives

- To strengthen the statistical information system for monitoring and understanding the present status and past/future trends on tropical anguillid eels at each species and stages in ASEAN Member States;
- Improvement of the effective utilization of natural eel seeds in eel farming in ASEAN Members States; and
- To strengthen eel resource management framework for sustainable provision of eel products and eel capture fisheries/eel aquaculture in ASEAN Member States.

4. Intended activities to be implemented in the project

Activity 1: To establish the statistical information collection system for understanding the present status and past/future trends on anguillid eels at each species and stages in Southeast Asia

Sub-activity 1a: Strengthening the statistical information collection system on juvenile anguillid eel fishery with indices of fishing efforts

- 1a-1. To study and analyze the methods and processes for collecting statistical information on juvenile anguillid eel fishery with indices of fishing efforts
- To grasp the major fishing grounds of juvenile anguillid eels (glass eel and elver)
 - To investigate whether any catch statistics on juvenile anguillid eels have been existed in the major fishing grounds or not yet
 - To grasp the commodity chains of juvenile eel seeds for aquaculture
 - To find out the appropriate points for surveying/checking the quantity of daily/weekly/monthly catch of eel seeds at each stage with fishing effort indices from the commodity chains of eel seeds then collect the independent data of catch statistics besides of the official catch statistics, if it has already existed
 - To clarify the accuracy/precision of the existed catch statistics and the appropriateness of the contents/items of the data/information on eel seeds catch and corresponding fishing effort indices, with consideration of the needs of additional data for cross-checking and monitoring the trend of both catch and efforts (to estimate the long-term chronological trend of CPUE).
 - To clarify the time series of the consecutive catch statistics of juvenile anguillid eels with appropriate fishing effort indices at each major fishing ground for collecting eel seeds
 - To analyze the trend of juvenile anguillid eel catch and CPUE at each major fishing ground from the time series of catch statistics with fishing efforts and evaluate the present situation and trend of anguillid eel resources at each fishing ground and species.
- 1a-2. To recommend the appropriate statistical information collecting with indispensable contents/items of the catch statistics of juvenile eels (incl. indices of fishing effort) at each major fishing ground and/or country that have (or have potential of starting) juvenile eel fishery.
- 1a-3. To support the national/local governments and/or fishers' committees to develop the persistent system of statistical information collection with fishing effort indices at each country/fishing ground of eel seeds through fields survey.

Sub-activity 1b: Strengthening the statistical information collection system on yellow and silver eel fishery with indices of fishing efforts

- 1b-1. To study and analysis for statistical information collection on yellow and silver eel fishery with indices of fishing efforts
- To grasp the major fishing grounds of immature/matured anguillid eels (yellow eels and silver eels). It contains both seeds for culture and landing for consuming
 - To investigate whether any catch statistics on yellow/silver eels have been existed in the major fishing grounds or not yet
 - To grasp the commodity chains of yellow/silver eels for getting the information of the amount of landing and transportation
 - To find out the appropriate points for surveying/checking the quantity of daily/weekly/monthly catch of yellow and silver eel at each stage with the fishing effort indices from the commodity chains of eels then collect the independent data of catch statistics besides of the official catch statistics, if it has already existed
 - To clarify the accuracy/precision of the existed catch statistics (if it existed in 1b-2) and the appropriateness of the contents/items of the data/information on yellow/silver eel catch and corresponding fishing effort indices, with consideration of the needs of additional data for cross-checking and monitoring the trend of both catch and efforts (to estimate the long-term chronological trend of CPUE). Confirmation whether the other species such as rice-paddy eels would be contaminated into the item of anguillid eels in the catch statistics is needed
 - To clarify the time series of the consecutive catch statistics of yellow and silver eel with appropriate fishing effort indices at each major fishing ground
 - To analyze the trend of yellow and silver eel catch and CPUE at each major fishing ground from the time series of catch statistics with fishing efforts and evaluate the present situation and trend of anguillid eel resources at each area and species

- 1b-2. To recommend the appropriate statistical information collecting with indispensable contents/items of the catch statistics of yellow/silver eel (incl. indices of fishing effort) at each major fishing ground and/or country that have (or have potential of starting) eel fishery.
- 1b-3. To support the national/local governments and/or fishers' committees to develop the persistent system of statistical information collection with fishing effort indices at each country/fishing ground of yellow/silver eels through the fields survey.

Sub-activity 1c: Strengthening the statistical information collection system on production of anguillid eel farming at each species

- 1c-1. To investigate whether statistics of eel production from eel farming has been existed or not at each country.
- 1c-2. To check the accuracy and precision of the statistics of eel production from eel farming, such as coverage of data collection, possibility of handling at each anguillid eel species or not, checking the possibility of contamination of the other species like rice-paddy eel.
- 1c-3. To urge the national/local governments and/or eel farmers' committees to establish the persistent system for collecting/summarizing the statistics of eel production from eel farming at each species.

Sub-activity 1d: Developing the decisive method of species identification of juvenile anguillid eels with latest DNA fingerprint techniques

- 1d-1. To analyze the causes and background why the studies of species identification of juvenile anguillid eels in Southeastern Asian region using DNA technology are still in confusion and could not reach the united conclusion yet among the scientists in this region who handle tropical anguillid eels in ASEAN member states, on both technique and interpretation of the results.
- 1d-2. To consider the appropriate measures/methods to get the agreeable results among the scientists who handle tropical anguillid eels, with the supports from the Japanese scientists who have latest techniques and the methods of interpretation of the results.
 - 1d-3. To develop the survey design of gathering juvenile anguillid eels (glass eel and elver, if needed) from the major fishing grounds of eel seeds among the ASEAN member states, with the careful consideration of any limitations/laws to regulate the handling of specimen and acceptance of foreign scientists at each ASEAN member state.
- 1d-4. To collect juvenile anguillid eel as a specimen for testing DNA fingerprint, under the supports from DoF of ASEAN Member States and SEAFDEC.
- 1d-5. To analyze the specimen from the major fishing grounds of eel seeds in Southeast Asia then summarize (monthly/seasonal/annual) trends of species composition at each site.
- 1d-6. To estimate the actual quantities and trends of eel seeds catch at each species using the species composition ratio applying into the catch statistics of eel seeds

Activity 2: To improve the survival rate of juvenile anguillid eels under the artificial culture condition

- 2-1. To collect the data of survival rate of juvenile anguillid eels (from glass eel to ever stage) in the eel farms in various places in ASEAN member states, with the additional information of species, source of seeds, handling methods, transportation methods, water condition, feed for initial seedling, and the other possible causes/reasons that might affect the survival of juvenile anguillid eels.
- 2-2. To identify critical factors that contribute to high mortality rates of eel juveniles (glass eels) in captive rearing conditions (eel farm).
- 2-3. To develop strategies (or protocols) for improved survival of eel juveniles under captive rearing conditions.
- 2-4. To publish a manual on improved protocols for farming of eels, including handling and transport from collection grounds to the farm for use of eel farmers, government extension workers and other stakeholders.

Activity 3: To construct framework for eel resource management

- 3-1. To propose the eel resource management measures and technologies/methodologies.

- 3-2. To hold the seminar to exchange the information and to disseminate the methodologies and technologies on anguillid eels.
- 3-3. To hold the workshop for strengthening the statistical information system on anguillid eels for government officers
- 3-4. To support government to hold seminars for dissemination of appropriate sustainable eel resource management for farmer and fishers which has been clarified through effective Activities 1 and 2.

5. Outputs

- 1) To establish the statistical information collection system for understanding the present status and past/future trends on anguillid eels at each species and stages in ASEAN members state
- 2) To improve the survival rate of juvenile anguillid eel under the artificial culture condition
- 3) To construct the framework for eel resource management.

6. Management arrangement and Implementation arrangement

6.1 Management arrangement

- 1) Southeast Asian Fisheries Development Center (SEAFDEC), Secretariat
Coordinated by Dr. Kaoru Ishii,
Deputy Secretary General and Trust Fund Manager and
Dr. Somboon Siriraksophon, Policy and Program Coordinator
(Contact person: Mr. Isao Koya)
- 2) Southeast Asian Fisheries Development Center (SEAFDEC), IFRDMD,
Coordinated by Dr. Satoshi Honda, Deputy Chief of IFRDMD

6.2 Implementations arrangement

- 1) Southeast Asian Fisheries Development Center (SEAFDEC), Secretariat
Coordinated by Dr. Taweekiet Amornpiyakrit, Senior Policy and Program Officer
Mr. Isao Koya Senior Expert and Assistant Project Manager for the Japan Trust Fund Program
- 2) Southeast Asian Fisheries Development Center (SEAFDEC), IFRDMD,
Dr. Satoshi Honda, Deputy Chief of IFRDMD
Southeast Asian Fisheries Development Center (SEAFDEC), AQD
- 3) Dr. Chihaya Nakayasu, Acting Chief of AQD
- 4) Eel research/investigation consultant in Japan

7. Others

The proponent of the project shall be a one of ASEAN Member States.
SEAFDEC can also be the proponent in case that ASEAN Member States request.

STATEMENT

By *Dr. David Brown*,
FAO Regional Office for Asia and Pacific (FAO/RAP)

Chair, Secretary-General and Chief of the Training Department, *Dr. Kom Silapajarn*,
MMAF, Indonesia,
Distinguished Delegates from SEAFDEC Member Countries,
SEAFDEC colleagues and IFRDMD, and
Delegates from regional organizations and arrangements and partners,

On behalf of *Kundhavi Kadiresan*, Assistant Director General and Regional Representative of the Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific, FAO would like to thank SEAFDEC and our Hosts the MMAF, Government of Indonesia for inviting FAO to this meeting and providing the opportunity to give a statement on areas of mutual interest and scope for future cooperation.

Cooperation and collaboration between SEAFDEC and FAO has been strong for many years. FAO further hopes to deepen and improve the impact of our joint activities. FAO appreciates the contribution made by SEAFDEC to strengthening regional cooperation and the significant work it has carried out over the years with ASEAN.

The Blue Sectors of Fisheries and Aquaculture make a significant contribution to food and nutrition security and the livelihoods of millions of people around the world. Some 880 million people are dependent on them with around 200 million people relying on the value chain from harvesting to distribution and consumption. Seafood products are among the most traded commodities globally. The sectors are even more important in the Asia Pacific Region which is home to around 87 percent of those people with livelihoods that depend on them. In recent years capture fisheries production has levelled off and more fisheries have become fully exploited or over exploited. The reasons for this are complex but include, for example, overexploitation of marine resources and marine pollution and habitat modification. The increasing pressures of human activities are being further compounded by the effects of climate change.

FAO is also pleased to hear of the strong progress being made by SEAFDEC and members on all elements of the programme of work presented.

FAO congratulates SEAFDEC and its partners (the governments of the USA, Sweden and Japan) on its support to its members in combating IUU fishing and implementing the PSMA in the region. The link to both vessel registries and effective catch documentation schemes are important areas for regional collaborative effort in coordination, capacity building and technical support.

SEAFDEC's cooperation in the regional development of capacity for EAFM is also to be congratulated and the roll out of country specific training is an excellent development.

FAO appreciates the cooperation with SEAFDEC in providing the Regional Facilitation Unit for the joint execution of the Strategies for Trawl fisheries Bycatch Management (REBYC II).

FAO is pleased to see synergies with many other parts of the SEAFDEC programme. As we move to 2017, FAO envisages and hopes for very close collaboration on a number of key areas, namely:

- SEAFDEC's ongoing cooperation with FAO on regional workshops and meetings is welcomed including participation in the recent APFIC RCFM and 34th Session in Sri Lanka.
- Combatting Illegal Unreported and Unregulated (IUU) fishing represents a major challenge for the fisheries sector in the region, jeopardizing already difficult efforts to sustainably manage fisheries

resources. FAO looks forward to further collaboration with SEAFDEC and Member Countries in this respect.

- Support to Member Countries in the implementation of the FAO Port State Measures Agreement (PSMA), which came into force on June 5th 2016 with support from the FAO Global Umbrella programme and regional programmes.
- FAO welcomes the interest shown by SEAFDEC Member Countries to support implementation of the adopted “Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication”. FAO is interested to collaborate with SEAFDEC and programme committee members on promoting and implementing these guidelines.
- FAO looks forward to further strong collaboration on a range of forthcoming GEF projects to be implemented (and more to be developed) during the coming years including:
 - BOBLME – 2 (Strategic Action Plan Implementation),
 - Inland Fisheries Biodiversity main in Palembang with MMAF
 - Indonesian Seas Large Marine Ecosystem Project (Governments of Timor Letse and Indonesia)
 - Identification of potential collaboration for the Lower Mekong Basin, Andaman Sea and REBYCII follow on actions.
- The FAO Blue Growth initiative is an important element on the sustainable development of Fisheries and Aquaculture in the region to address the projected gap in supply in the coming years.
- FAO is committed to supporting SEAFDEC and its Members Countries in their plans to address the new SDG’s (and in particular SDG 14).
- Climate Change is now a major focus of work for the FAO and it RAP regional office. The Fisheries and Aquaculture sectors are especially important in this region. FAO looks forward to further collaboration with SEAFDEC and Member Countries in achieving their targets set by the Paris Declaration (and INDC’s). FAO is now GCF accredited and is happy to work with SEAFDEC and Member Countries in the development of projects to address INDC priorities for the sector.

Mr. Secretary-General, I would like to thank SEAFDEC for the opportunity to participate as an observer in this 39th SEAFDEC PCM and thank our hosts, the MMAF providing their warm hospitality and for the arrangements which have been extended to FAO.

Thank you.

STATEMENT

*By Mr. Mitsuo Mori,
Prefectural Inland Fisheries Training Center of Gifu*

Good afternoon. I am Mori, the Director of the Gifu Prefectural Inland Fisheries Training Center. I'm very grateful for this precious opportunity given to me in the 39th SEAFDEC Program Committee Meeting. Today, the purpose of my presentation is to introduce the activities of Gifu Prefecture which we are caring to contribution internationally for the inland fisheries and to ask for cooperation with ASEAN countries.

This is the outline of my presentation. For your better understanding on the inland fisheries in Gifu prefecture, I first would like to explain about the location of Gifu Prefecture and the outline of our fisheries. Then about the "Ayu of the Nagara River System" which was designated as GIAHS (Globally Important Agricultural Heritage Systems) by FAO (Food and Agriculture Organization) in December last year, then introduce our Research activities for inland fisheries. After that I'd like to explain main topic about our "Gifu Prefecture Inland Fisheries Training Center" which we established as a base of our international contribution activities for fisheries. Gifu Prefecture is located at the center of Japan, an inland prefecture, without facing sea. The topography is full of ups and downs, from plains at 0 meter altitude and mountains of 3,000 meters high. 80 % of our land are forests, which holds many water resources. There flow 8 river systems with abundant water system, which are home to more than one hundred variety of fishes Fisheries of Gifu prefecture consist of the inland fisheries and the freshwater fish aquaculture. For inland fisheries, we have about 20 species of target fish, with annual catch of 713 ton. Among which 66% is AYU. The annual production of freshwater aquaculture is 1,389 tons, and 985 ton or 71% is Ayu. As you can see, Ayu is a so important fish for our fisheries, that Ayu is designated as "the fish of Gifu Prefecture". In December last year, "Ayu of the Nagara River System" has been designated GIAHS (Globally Important Agricultural Heritage Systems) by FAO (Food and Agriculture Organization).

GIAHS -"Ayu of the Nagara River System" is a system where, through adequate contribution of human activities, such as river environment conservation, afforestation at river sources and others, cyclical river system linked with Ayu and other fishery resources, Ayu-related culture and sustainable bio-diversity has been developed, thus the Nagara River keeps providing the economical and mental benefit for everyone. Also "Ayu of the Nagara River System" is the first of the inland fisheries designated as GIAHS. The Gifu Prefectural Research Institute for Fisheries and Aquatic Environments was established with the aims for carrying the research and development of the related technology, and its promotion. The Headquarter is located in the southern part of the prefecture, and Gero Branch is in the central area. The Research Institute carries research and development of breeding and farming technology, as well as the maintenance of the aquatic ecosystem, specializing the Headquarter, for warm water temperature fish, and the Gero branch, for cool water temperature fish. In the headquarter we have 3 departments, Ecological Environment, Resource Breeding and Fisheries Training Dept.

Let me introduce the primary research programs of the Research Institute.

- For the Fisheries Section, we carry development of effective fry release techniques, construction techniques of spawning grounds for Ayu and Salmonidae.
- For the Aquaculture Section, we carry development of high value-added fish using biotechnology, including feminization technology of 100% of Ayu, and triploid bred of salmonidae.
- For Ecological Environment Section, we are doing survey and research on rare fish, improvement of their habitable environment, as well as survey and research on fish species and their estimated number, applying the environmental DNA index.

Now let me talk about today's main topic, our intended international contribution to the development of inland fisheries. "Ayu of the Nagara River System" was just designated as GIAHS in last December. We seek to contribute to the potential of inland fisheries in developing countries through the dissemination of the knowledge, techniques expertise of fishing and breeding that supported "Ayu of the Nagara River System".

To realize this idea, in July this year, we established the Inland Fisheries Training Center within our Research Institute. In this training center, we accept trainees, also dispatch our experts to contribute to the development of the inland fisheries in the developing countries. The primary training items are about GIAHS “Ayu of the Nagara River System”, environmental conservation initiatives, fishery zone management by fishermen’s cooperatives association, aquaculture dissemination techniques and so on, which are to be given in lecture, site visits and practices.

Training program modules are shown in our brochure. These are just examples. You can find at hand “the list of menu to set-up the training program”. To make the training be useful as much as possible for you, we take the system that the training menu are to be selected for your own needs, and the main part of the training program to be arranged accordingly to those needs and requests. This is our plan for acceptance of trainees, and dispatch of experts. We accept trainees twice in a year, five trainees for each, means around 10 person annually. Training period is around one to two weeks. The contents of training, as I explained before, are to be tailored with the specific needs and requests of the regions. Regarding the training costs, Gifu prefectural government covers all expenses, such as travel fee, accommodation etc., except meals and daily allowances. For dispatch of experts, the period of their stay is around 1 week. They will give on-the-site teaching of the aquaculture techniques, and provide support to GIAHS candidate countries to prepare for its designation. For the recruitment, we will announce details in the future. We hope you could give good consideration to our offer and join with our training program. One thing, please keep in mind. This plan is now under discussion with the financial department of the prefecture. So there might be some change of the plan due to the budget situation. These are the pictures of the training we organized last July. With the cooperation of JICA, we accepted trainees from African countries. The training, as you can see here, consists of lecture, practice, field visit of Ayu hatchery and Fisheries Cooperative Association. That’s all. I hope you could understand about our Gifu Prefectural Inland Fisheries Training Center, and would consider how to make the best of our facilities for the benefit of your own countries.

Thank you for your attention.

STATEMENT

*Ms. Louise Herrman,
Embassy of Sweden in Bangkok, Thailand*

Mr. Chairman,
Mr Wibowo,
Dear Friends,

On behalf of Sweden I would first thank you for inviting me to this meeting.

I would also like to take this opportunity to congratulate SEAFDEC and all the Member Countries for your efforts and engagement which contributes to improved regional collaboration on management of sustainable fisheries and aquaculture in the region.

I am pleased to hear about the progress made and the results achieved in 2016, as well as learning about the activities that you are planning to undertake in 2017. I am impressed! Both on how you are driving the technical agenda forward, enhancing capacity while navigating in a complex cultural and political context.

As you know, Sweden and SEAFDEC has cooperated for many years. The on- going programme, was initiated in 2013 and has been prolonged to 2020. The total sum of the programme is 4.8 million EURO.

The four areas of focus are:

- Coordination of fisheries and habitat management;
- Management of fishing capacity;
- Combating destructive and illegal (IUU) fishing;
- Regional and sub-regional fisheries management mechanisms and agreements; and
- These all are fully in line with SEAFDECs' five working thrusts.

I would like to acknowledge SEAFDEC for the achievements made throughout the programme. A Regional Plan of Action for Sustainable Utilization of Neritic Tunas in ASEAN region is in place. You have improved catch documentation and traceability and for concerted efforts to combat illegal (IUU) fishing. The Regional Plan of Action on Management of Fishing Capacity (RPOA-Capacity) has been adopted. You have addressed the need to take a human rights based approach with regards to the labour and the implementation of the Small- Scale Fisheries Guidelines.

Sweden values that SEAFDEC works in cooperation with partners such as: NGOs, private sector, ministers to reach the best results. As many of you know, equality between women and men is a fundamental aim of Swedish foreign policy. Ensuring that women and girls can enjoy their fundamental human rights is both an obligation within the framework of our international commitments, and a prerequisite for reaching Sweden's broader foreign policy goals on peace, and security and sustainable development.

Sweden endorsed the new Strategy for Development Cooperation for Asia and the Pacific in August 2016. What is unique in this strategy that Sweden is to work on an overarching goal integrating environment and climate change and human rights and gender. The aim is strengthening regional actors and states to take greater responsibility concerning the environment and climate, human rights, democracy and gender equality. The focus is to be on cross-border challenges, where solutions can best be sought in regional cooperation. The strategy will apply in 2016–2021 and provide a total of SEK 1,800 million.

Therefore we are very pleased to see that SEAFDEC work is in line with the strategy. That SEAFDEC puts a lot of effort in integrating gender into all its operations. During this year you have recruited a gender specialist and you have developed strategic plan on how to promote gender integration into the operations. We also welcome that you now have a closer collaboration with ILO to work on the labor

rights of fishery sector, and that you promote a human rights based approach in costal fisheries. It is our strong belief that SEAFDEC, being a competent and strong expert-body, will strengthen this important regional work and generate a range of new opportunities for the Region's fisheries and aquaculture sectors within the framework of ASEAN.

Sweden is taking lead together with Fiji on the High Level Meeting on Oceans, SDG 14 on the 5-7 June in New York this year. There are currently groups working on each and every result under the SDG 14. We would encourage SEAFDEC to take an active role in this meeting and to realize your achievements and work towards the SDG 14 at a global level.

Thank you for your attention!

STATEMENT

By *Dr. Alfred Nakatsuma,*
*United States Agency for International Development/
Regional Development Mission for Asia (USAID/RDMA)*

The U.S. Government would like to thank SEAFDEC and all its Member Countries for the opportunity to participate in this 39th Program Committee Meeting. We also would like to extend our thanks to the Government of Indonesia for its hospitality and leadership in hosting this most important meeting in the beautiful and historic city of Yogyakarta. We have many reasons to be thankful to SEAFDEC, Member Countries and our esteemed colleague countries Japan and Sweden, including an effective and comprehensive partnership on sustainable fisheries in South East Asia, and for your ongoing collaboration and support for the Oceans and Fisheries Partnership.

We congratulate SEAFDEC for this well-run meeting and for the impressive results that have been described in the review of these activities. We appreciate this opportunity to review progress, discuss issues, ask questions and in so doing, promote continuous implementation improvement and the development of more and deeper partnerships. During the course of these three days and informal evening sessions, many innovations, partnerships, strengthened communications and friendships have been fostered. Such critical technical reviews, as well as the “socialization” process will lead to a stronger SEAFDEC and greater results, and we recognize and congratulate all that has been done for this approach.

In this context, USAID has been able to learn from SEAFDEC and Member Countries on improvements and a strengthened capability to implement the Oceans and Fisheries Partnership. We understand that our desire to develop the ASEAN Catch Documentation and Traceability System is an enormous challenge that can only be achieved as collaborative effort. Only with such dynamic partnership offered by the ASEAN-SEAFDEC platform, can we convene some of the best minds; capture and apply best practices; agree to joint implementation and cross-learn to develop a CDT model that can be applied and adapted to address the vastly varying needs across the region.

This platform is also important to develop a team approach to implement Port State Measures in South East Asia. We are highly encouraged by SEAFDEC and Member Countries leadership in this important activity that will reduce IUU fishing. USAID plans to support this coordinated, team approach and looks forward to a strong partnership with SEAFDEC, fellow supporting countries and the FAO.

Progress in these and numerous other fisheries management initiatives takes place best under a true Partnership. USAID has been very pleased to see the growing leadership of SEAFDEC across the region as a respected authority and voice for fisheries management. We are gratified that this partnership – formally initiated through a Memorandum of Understanding in 2014 – has become so strong and fruitful. That MOU is now enabling us to provide funds directly to SEAFDEC through a grant to the U.S. Department of Interior to further enhance regional CDT work. That grant is very close to being finalized and will further fortify our partnership for the years to come.

We are all convinced that there is a great need to manage the fisheries of South East Asia. This need is urgent and it is immediate. USAID is fully committed to doing its utmost to contribute effectively, and we believe that SEAFDEC and the associated actions of Member Countries are critical toward this end. We believe that the Oceans and Fisheries Partnership’s efforts to develop a catch documentation and traceability system, as well as a consolidated effort to promote Port State Measures represent key elements to reducing IUU fishing and improving fisheries management, and we congratulate and are thankful to SEAFDEC for the progress we are making together in these areas.

Finally, I would like to reaffirm the U.S. Government’s ongoing commitment and support to protecting the Asia-Pacific region’s marine biodiversity and combatting IUU fishing. We will continue to facilitate engagement of the Department of State, NOAA, the Department of Interior and other USG counterparts towards this goal. We will continue to work with our bi-lateral missions to leverage efforts and resources

to maximize impacts. We will continue to engage with regional partners like the CTI-CFF, RFMOs, FAO and others to synergize efforts. And most importantly, USAID will continue to seek ways to build on our relationship with SEAFDEC to promote its leadership and advance the priorities of the SEAFDEC Member Countries towards national and regional priorities.

There is a lot of work to do, but fisheries management is truly important for South East Asia and the planet, and we are eager to continue supporting and building on this excellent partnership in the coming years ahead.

MONITORING AND EVALUATION OF SEAFDEC PROGRAMS FOR 2016 AND ONWARDS

**Summary of the Achievements of
FCG/ASSP Programs from 2013-2016**

SEAFDEC SECRETARIAT

Thrust 1: Developing and Promoting Responsible Fisheries for Poverty Alleviation & Food Security						
Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials
0120130101	Human Resource Development for Sustainable Fisheries (TD)	2013	Information	2000	1. Application of EAFs and MCS for fisheries management 1. Application of EAFs and MCS for fisheries management +G5:G57	Public
			Training:	63,000	1. The onsite training on Applicable Fisheries Management Approaches for Sustainable Fisheries was conducted in Cambodia.	CAM
		2014	Training	36340	2. The National training on Offshore and High Sea Fisheries Management in Vietnam is conducted in Hai Phong, Vietnam	VN
		2014	Information	2000	Regional training on Essential EAFM and Extension Methodologies	Regional
		2015	Information	14700	1. Production of cartoon booklet "story of a fisherman" and 2 Summary of the course activities through the VDO	Ref.
			Training	35000	1. Training course curriculum, training session plan, PowerPoint presentation and toolkit on the fisheries extension methodologies	All AMS
		2016	Information		1. Regional Training Course on Essential EAFM and Extension Methodologies: (21 participants from MCs)	All AMS
2016	Training/Me	10000	1. Review the output-proposed fisheries management plan from the regional/national training courses for pilot-learning site selection	Ref.		
2016	Training/Me	10000	Meeting with DOF Myanmar for intensive HRD on the project learning site	Ref.		
Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials
0120130102	Optimizing Energy Use and Improving Safety in Fishing Activities (TD)	2013	Training:	?	1. Regional training workshop on optimizing energy and safety at sea for small-scale fishing vessels	All AMS
			information	?	1. Dissemination of guidelines on safety at sea for small fishing vessels (FAO) 2. Dissemination of guidelines on optimizing energy for fishing vessels (FRA)	Ref.
		2014	Training:	?	1. Training on Optimizing Energy and Safety at Sea for Small Fishing Vessels, 28 to 30 January 2014, Semarang, Indonesia : There are 30 participants from 2 countries i.e. Indonesia and Philippines.	IND, PH
			Training:	?	2. Training on Optimizing Energy and Safety at Sea for Small Fishing Vessels, 24 to 28 March 2014, Cebu, Philippines : : There are 30 participants from 2 countries i.e. Indonesia and Philippines.	IND, PH
		2015	information	5000	1. One Hundred (100) copies of translated optimizing energy and safety at sea for small fishing vessels guidelines were published by SEAFDEC/TD. Sixty (60) set have been disseminated during the onsite training in Cambodia.	All AMS
Training	31,000		1. Conducted the On-site training program on optimizing energy and safety at sea for small fishing vessels in Prek Sihanoukville, Cambodia. Attended by 30 participants from MCs.	CAM		
2016	Training	5,000	1. Conducted the Optimizing Energy and Safety at Sea for Small Fishing Vessels in Cambodia on 20 to 22 September 2016. There are 30 participants from MCs.	CAM		
Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials
01201001	Rehabilitation of Fisheries Resources and Habitat/Fishing Grounds through Resources Enhancement < change to Promotion of Sustainable Fisheries Resources Enhancement Measures in Critical Habitats/Fishing Grounds in Southeast Asia > in 2015 (TD)	2013	Information	742	Seminar on the Dog Conch Resource Management Measures in Krabi Province, Thailand on 31 Aug 2013.	TH
			Research	909	Installation of Fish/Resource Enhancing Devices in the Artificial Reefs	TH
			Training:	6,144	Demonstration and training on mobile-hatchery were conducted in the reservoir in Lao PDR	Lao PDR
		2014	Research	13,828	1. The second seminar on dog conch shell resource management measures in the Andaman Sea was organized in Krabi Province, Thailand on 20 August 2014. 2.A series of surveys in Rayong Province to study and evaluate enhancement practices including impacts of artificial reefs to fisheries resources and the environment.	TH
Training:	8,881		3. suitable designs of resource enhancement practices has been extended to Lao PDR. Nam Houm Reservoir	Lao PDR		
0120130103	Rehabilitation of Fisheries Resources and Habitat/Fishing Grounds through Resources Enhancement < change to Promotion of Sustainable Fisheries Resources Enhancement Measures in Critical Habitats/Fishing Grounds in Southeast Asia > in 2015 (TD)	2015	Information	6,166	Demonstration and training on construction and deployment of fish shelters for protection of brood-stock were conducted in the reservoir in Lao PDR	Lao PDR
			Research	13,035	1. Conducted the Regional Inception Workshop on the Promotion of Sustainable Fisheries Resources Enhancement Measures in Critical Habitats/Fishing Grounds in Southeast Asia was organized on 31 July 2105 in Pattaya, Thailand.	All MCs
		2016	Policy	90,000	2. The seminar on Andaman province dog conch resources management measures was conducted in Krabi Province, Thailand. There are 5 participants from MCs attended the seminar.	TH, MCs
			Information	450	Strategic Plan for Promotion of Sustainable Fisheries Resources Enhancement Measures in Critical Habitats/Fishing Grounds in Southeast Asia (based on symposium)	All MCs
2016	Information	450	1. Paper"Strengthening fisheries resources rehabilitation measures to mitigate the impacts of IUU fishing" through SEAFDEC Fish for the People (Vol. 14 No. 2). 2. Proceedings of the Symposium on Strategy for Fisheries Resources Enhancement in the Southeast Asian Region".	All MCs		
Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials

0320150102	Environment-friendly, Sustainable Utilization and Management of Fisheries and Aquaculture Resources (AQD)	2015-201	Research	41,400	1. Feeding trials conducted to evaluate the protein quality/nutritional value of agricultural wastes/by-products as ingredients in aqua-feed formulation 2. Processing technique to improve the nutritional value of selected agricultural by-products as feed ingredients tested 3. Baseline data obtained on the duration for a mangrove habitat to remove nutrients from shrimp pond effluent. 4. Successful abalone spawning was demonstrated to fisherfolk association in a demo-hatchery 5. Sandfish nursery in floating hapa net cages and grow-out pens was conducted/demonstrated 6. Acclimation strategies and optimum shocking density for seahorse juveniles during transport (from hatchery to stock enhancement release site) were established 7. Fisherfolk organization members were trained on the proper handling of live seahorses and seahorse biology	All AMS (except Lao PDR)
			Training	16,000	1. Technologies on breeding and hatchery rearing of marine fishes extended and demonstrated through the International Training Course on Marine Fish Hatchery conducted from 13 June to 19 July 2016; of the 5 participants, 3 received GOJ-TF Fellowship Grants 2. Arrangements made for the 10-day training course on Community-based freshwater aquaculture for remote areas of Southeast Asia. This will be held from 22 November to 1 December 2016 in AQD's Binangonan Freshwater Station	Myanmar, Philippines, and Thailand
Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials
Under Secretariat Activity before moved to IFRDMD in 2015		2014	Information	18,500	Report of First Regional Technical Meeting on Information Gathering of Eel Resources and Aquaculture Production in Southeast Asia	All MCs
			Res:	20,000	Understanding the situation of Eel resources and capture fisheries in ID and PH	All MCs
			Policy:	40,000	Policy Recommendations for the Conservation and Management of Catadromous Eel Resources In Southeast Asia	All MCs
0520150101	Enhancement of Sustainability of Catadromous Eel Resources in Southeast Asia (IFRDMD)	2015	Research	24,000	1. Updating the trends and intensity of eel capture including glass eel catch and also their commercial distribution through the surveys. 2. DNA templates were prepared from the samples collected in Indonesia and Philippines, as a part of this study.	All MCs
		2016	Research	60,000	1. Summarising the present issues and corresponding required actions on eel fishery and eel farming through the workshop. 2. Eel farming and the accommodation chains of eels in Myanmar had been grasped. 3. Present status of the catch statistics on glass eel in Indonesia had been reported as scientific paper.	All MCs
Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials
0520150101	Enhancement of Sustainability of Catadromous Eel Resources in Southeast Asia (IFRDMD)	2015	Research	24,000	1. Updating the trends and intensity of eel capture including glass eel catch and also their commercial distribution through the surveys. 2. DNA templates were prepared from the samples collected in Indonesia and Philippines, as a part of this study.	All MCs
		2016	Research	60,000	1. Summarising the present issues and corresponding required actions on eel fishery and eel farming through the workshop. 2. Eel farming and the accommodation chains of eels in Myanmar had been grasped. 3. Present status of the catch statistics on glass eel in Indonesia had been reported as scientific paper.	All MCs
Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials
420150105	Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management (MFRDMD)		Research	33,700	The Regional Technical Consultation on Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management in Furama Hotel Kuala Lumpur, Malaysia from 16 – 19 May 2016 2. The need assessment questionnaire has been compiled, harmonized and sent to Brunei Darussalam, Indonesia and Malaysia for the survey.	BN, ID, MY

Thrust 2: Enhancing Capacity & Competitiveness to Facilitate International and Intra-regional Trade

Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials
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0220130101	Chemicals and Drug Residues in Fish and Fish Products in Southeast Asia – Biotoxins (ASP, AZA, and BTX) and Harmful Algal Blooms (HABs) in the ASEAN Region	2013	Policy	35,500	1. Improved knowledge and understanding on levels of ASP, AZA and BTX biotoxins occurrences and incidences in fish and fisheries products in the ASEAN region and facilitate exchange of information among Member Countries. 2. Capacity/Training needs of Member Countries and biotoxins analyses training course details including expert trainers agreed and confirmed.	All AMS
		2014	Training:	39,870	Enhanced knowledge and skills on the analyses of these biotoxins, set up these methods to upgrade their laboratory capabilities to conduct the biotoxins monitoring surveys at country level.	All AMS
		2015	Research	15,000	Surveys implemented and conducted in 9 Member Countries except Cambodia.	All AMS
			Policy	26,900	1. Improved knowledge and understanding on toxic HAB occurrences and incidences in fish and fisheries products in the ASEAN region and facilitate exchange of information among Member Countries. 2. Capacity/Training needs of Member Countries and HAB species identification training course details including expert trainers agreed and confirmed.	All AMS
		2016	Research	5,000	1. Continued Surveys carried out in 9 Member Countries except Cambodia. 2. Improved knowledge and understanding on ASP, AZA and BTX biotoxins occurrences and incidences in fish and shellfish in Member Countries (based on the Surveys).	All AMS
			Training	52,036	Capacity building on identification of toxic HAB species in Member Countries.	All AMS
Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials
0220150102	Cold Chain Management for Seafood	2015	Others	18,000	1. The Project Inception and Planning Meeting improved knowledge and information on cold chain management and practices or the lack of it in Member Countries. 2. The Meeting planned and agreed on the details and schedule for all project activities.	All AMS
			Training:	37,569	1. Improved knowledge and understanding on the concept & importance of Cold Chain Management for Seafood: from sea to table 2. Discussed regulatory/ trade requirements and guidelines for cold chain management of seafood.	All AMS
		2016	Research	5,090	1. Cold chain pilot trials implemented in Myanmar, Philippines and Singapore for their targeted seafood commodities; others in process of implementation except Brunei Darussalam. 2. Quality indices for four key seafood commodities in the ASEAN region, i.e. tiger prawn, seabass, tilapia and red grouper, developed.	All AMS
Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials
0320150101	Reinforcement and Optimization of Fish Health Management and the Effective Dissemination in the Southeast Asian Region (AQD)	2016	Research	44,000	1. Information obtained on infection threshold level of shrimp for WSSV through preliminary experiment 2. Field efficacy of formalin-inactivated NNV vaccine for the prevention of viral nervous necrosis in high value marine fish was evaluated 3. Efficacy of dsRNA treatments in protecting shrimp against WSSV tested 4. The use of garlic extract and its efficacy when applied as therapeutic immersion treatment for monogenean in grouper was determined 5. Preliminary studies on tiger shrimp done to evaluate the efficacy of siganid against APHND	All AMS
		2016	Training	14,000	1. A follow-up training course on bacteriology (isolation, characterization, and bioassay) was conducted from 7-11 November 2016. The training was participated by fish health officers and faculty & graduate students of Myanmar University. 2. As part of the guided research, a proposal submitted by the fish health staff will be reviewed and submitted to the Department of Fisheries, Myanmar for possible funding. 3. Arrangements made for the conduct of specialized training course and guided research in Cambodia during the last quarter of 2016.	Myanmar and Cambodia

Thrust 3: Improving Management Concepts and Approaches for Sustainable Fisheries

Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials	
		2013 (proposed budget 199,500)	Policy:		Steering Committee Meeting was held on 13 May 2013.		
					Regional technical workshop on data collection Trawl fisheries management information and data requirements was held on 8-11 May		
					participate the APFIC Regional Expert Workshop on Tropical Trawl Fishery Management was held on 30 September - 4 October		
			Training:		Regional Training-cum-Workshop on Co-Management and Selective Fishing Gears and Other Practices was held on 7-11 October		
				Research		Economic incentives in Southeast Asian trawl fisheries	
				Policy	11,901	The 2nd Project Steering Committee Meeting (spent 11,901.15)	

0120130104	Strategies for Trawl Fisheries By-catch Management (TD)	2014	Training	111,872	1. Practical Workshop on Ecosystem Approaches for Fisheries Management (spent 14,578.92)	Indonesia, Philippines Thailand, Vietnam		
					2. Workshop on Economic Drivers And Incentives In Trawl Fisheries (spent 20,913.12)			
		2015	Research	175,000	3. Regional Workshop On REBYC-II CTI Work Planning: 2014 – 2015 and Workshop on FAO Administrative Systems and Financial Operations (spent 16,629.50)	Ind, Ph Th, Viet		
					4. Essential Ecosystem Approaches for Fisheries Management and Training to Trainer (spent 17,767.10)			
					5. Mapping Fisheries Resources through GIS (spent 22,200.00)			
					6. Regional Training on Project Planning, Monitoring & Evaluation (19,784.10)			
		2016	Research	178,379	7. EAFM LEADs material writeshop I	Ind, Ph Th, Viet		
					8. EAFM LEADs material writeshop I			
					9. Workshop on Development of Work plans			
					10. Project Steering Committee Meeting			
					11. Trawl Fisheries Socioeconomic			
					12. Project Lesson Learn workshop			
					13. Regional meeting on Trawl Fisheries Management in Southeast Asia			
					14. Project Lesson Learn workshop			
15. Promotion on Ecosystem Approaches for Fisheries Management for Leaders Executives and Decision makers (EAFM LEADs);								
16. EAFM LEADs material writeshop II								
17. EAFM LEADs Consultation for Municipal Heads of Philippines								
18. EAFM LEADs Consultation for Viet Nam								
0120130105	Promotion of Counter Measures to Reduce IUU fishing activities (TD)	2013	Policy:	1,200	19. Strengthening of PSMs and other surveillance measures in the region	All AMS except Lao PDR		
					20. Countries awareness building and common understanding of fisheries management and reducing IUU activities activities as a tool to reduce IUU fishing via on-site training and workshop			
		2014	training	40,000	21. Countries awareness building and common understanding of fisheries management and reducing IUU activities activities as a tool to reduce IUU fishing via on-site training and workshop	Malaysia and Myanmar		
					22. core Expert Meeting to discuss on formulation and dissemination of the “ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain”			
					23. Policy recommendations and way forward for implementation of RFVR database, as well as an agreement for the participating countries to provide addition information required in effectively enhancing the RFVR database (results from Technical Workshop			
					24. Policy			
		2015	Policy	26,207	25. 1. Strategies and way forward for Asian Member States and SEAFDEC to prevent, deter and eliminate IUU fishing through utilization of RFVR. Agreement of AMSs on management and updating the RFVR 24 meters in length and over.	All AMS		
					26. 1. The report of the Experts Meeting on Regional Cooperation to Support the Implementation of Port State Measures in Southeast Asian Region.			
		2016	information	789	27. 1. Facilitation and supporting Cambodia to development database on fishing license and vessel registration.	All AMS except Lao PDR		
					28. 2. Identified issues for harmonization to support and regional cooperation on the implementation of PSM in the region.			
		Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials
					information	396	Identification of existing practices / mechanisms and associated problems in compliance with the EC Regulation No. 1005/2008 in the region	All AMSs

0420130104	Combating IUU Fishing in the Southeast Asian Region through Application of Catch Certification for Trading of Fish and Fishery Products (MFRDMD)	2013	Policy:	32,604	1. The Meeting with Malaysian Officials for Preparation of the “Core Expert Meeting On Combating IUU Fishing in Southeast Asian Region through Application of Catch Certification for International Trade in Fish and Fishery Products” was held at KL International Hotel, Kuala Lumpur, Malaysia from 11 – 13 June 2013	only Malaysian Officials
					2. Regional Core Expert Meeting on Combating IUU Fishing in the Southeast Asian Region through Application of Catch Certification for International Trade in Fish and Fishery Products was held at Quality Hotel, Kuala Lumpur, Malaysia from 7th to 9th of October 2013.	All AMSs and Local Officers
		2014	information	8000	1. Identification of existing mechanisms and associated problems 2. Possible solutions to the problems	All AMSs
		2015	Policy	10,000	1. Meeting with Malaysian officials to further developed the regional guidelines from 10 to 11 February 2014 at Empress Hotel, Sepang, Malaysia	Malaysia
					2. IUU project discussion between officials from SEAFDEC Secretariat and MFRDMD, 28 – 30 April 2014 at SEAFDEC / MFRDMD, Terengganu, Malaysia	SEAFDEC
					3. Meeting with Singapore (Lead Country) on Combating IUU Fishing in Southeast Asian Region was held on 25 August 2014 at Furama Hotel Bukit Bintang, Kuala Lumpur Malaysia	Singapore
					Regional Technical Consultation on the Regional Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing into the Supply Chain was held in Kota Kinabalu, Sabah, Malaysia from 23 to 25 September 2014.	All AMSs USAID, Local officers
			Information	196	1. Identify real situation and difficulty in each member countries in implementation of the Guidelines and discuss possible practical actions in consideration with different circumstance and conditions in each country.	All AMSs
			Policy	9066	1. In cooperation with SEAFDEC/Secretariat, MFRDMD facilitated the discussion with Member Countries for the 2 nd Draft ACDS.	All AMSs
		Meeting on Promotion of “ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain”, 11 – 13 August 2015, Dynasty Hotel, Kuala Lumpur, Malaysia			Malaysia and local stakeholders	
2016	information	17,450	Information gathering activity on implementation of the “ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain” in Cambodia, Indonesia, Malaysia, Myanmar, Thailand, and Lao PDR	Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar and Thailand		
	Policy	32,604	Regional Technical Consultation on Promotion of “ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain” was held on 7 – 9 March 2016, at Kuala Lumpur, Malaysia	All AMSs and local officer		

Thrust 4: Providing Policy & Advisory Services for Planning & Executing Management of Fisheries						
Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials
		2013	Training:		1. The regional workshop on offshore fisheries resources survey in Southeast Asia was organized in Bangkok in November 2013 2. The regional training course on improvement of tuna handling was organized in General Santos – the Philippines from 11 to 13 December 2013.	
				5,000	1. Seven (5) trainees from Fisheries Administrative of Cambodia and three (3) SEAFDEC/TD researchers participated with cruise survey Training Ship Koyo Maru, in November 2016.	CAM
			information	No expens	1. SOPs on Stock Assessment of Tuna Resources in Sulu and Sulawesi Seas 2. SOPs on FAD survey in Sulu and Sulawesi Seas 3. SOPs on Tuna Larvae Study in Sulu and Sulawesi Seas 4. SOPs on Genetics Study on Tuna	IND, MAL and PH,

0120130107	Offshore Fisheries Resources Exploration in Southeast Asia (TD)	2014	Policy:	35,000	1. Technical meeting among participating countries of tuna research program in Sulu and Sulawesi Seas organized in Kuching, 27 to 28 May 2014, Malaysia. 2. Technical meeting among participating countries of tuna research program in Sulu and Sulawesi Seas organized in Tawau, 19 to 21 August 2014, Malaysia	IND, MAL and PH,
			Information	1,117	1. Dissemination of the publications of Atlas of Early Stage Fish in Japan. Regional reference on identification of early stage fish. Human resource development on the Larvae identification for SEAFDEC Member Countries.	All AMSs
			Policy	4,087	1. M.V. SEAFDEC 2 Cruise Survey on Tuna Research Survey in Sulu and Sulawesi Seas on 20 March – 13 May 2015.	PH, ID, MY
			Training	22,000	1. Twenty One (21) participants enhance knowledge and practical skills on reduction of post-harvest losses. 2. Strategies/ways forward to improve fish handling in assigned coastal and offshore fisheries cases in Southeast Asia.	All AMSs
		2015	Collaboration:	25,421	1. Data collection on Tuna from three (3) SSS Member Countries for study on stock assessment of tuna in Sulu and Sulawesi Seas 2. Agreed on the appropriated stock assessment model for investigate tuna abundance in Sulu and Sulawesi Seas 3. Plan of the Second Working Group Meeting on Joint Program on Tuna Research in Sulu and Sulawesi Seas 4. Final cruise plan for research activities in SSSs using M.V. SEAFDEC 2 in the year 2015 adopted by Project's Participating Countries 5. Draft report (internal used only) Stock assessments of yellowfin tuna (<i>Thunnus albacares</i>), bigeye tuna (<i>Thunnus obesus</i>) and skipjack tuna (<i>Katsuwonus pelamis</i>) in Sulu and Sulawesi Seas by ASPIC* 6. Plan of the Joint Program on Tuna Research in Sulu and Sulawesi Seas in Year 2016-2017 7. Cruise report on the first tuna research survey in SSSs using M.V. SEAFDEC 2 from 17 October to 8 December 2015 (Post SW Monsoon) 8. Cruise report on the second tuna research survey in SSSs using M.V. SEAFDEC 2 from 20 March to 13 May 2015 (Pre SW Monsoon) 9. Meeting report on the technical meeting and working group meeting	IND, MAL and PH,
			Training	5,000	1. Seven (5) trainees from Fisheries Administrative of Cambodia and three (3) SEAFDEC/TD researchers participated with cruise survey Training Ship Koyo Maru, in November 2016.	CAM
			Information	2,000	1. Technical documents of Stock assessments of yellowfin tuna (<i>Thunnus albacares</i>), bigeye tuna (<i>Thunnus obesus</i>) and skipjack tuna (<i>Katsuwonus pelamis</i>) in Sulu and Sulawesi Seas by ASPIC* . 2. Cruise report on the second tuna research survey in SSSs using M.V. SEAFDEC2 from 20 March to 13 May 2015 (Pre SW Monsoon). 3. Cruise report on the first tuna research survey in SSSs using M.V. SEAFDEC2 from 17 October to 8 December 2015 (Post SW Monsoon). 4. A set of SOPs for assessing the status of tuna resources in region or sub-region waters in Southeast Asia.	IND, MAL and PH,
			Policy	15,000	1. Twenty six (26) participants enhance knowledge and practical skills on reduction of post-harvest losses 2. Strategies/ways forward to improve fish handling in assigned coastal and offshore fisheries cases in Southeast Asia	All AMSs
		2016	Training	5,000	1. Seven (5) trainees from Fisheries Administrative of Cambodia and three (3) SEAFDEC/TD researchers participated with cruise survey Training Ship Koyo Maru, in November 2016.	CAM
			Collaboration	15,000	1. Data collection on Tuna from three (3) SSS Member Countries for study on stock 2. Scientific coordination between countries around Sulu Sulawesi Seas (SSSs). 3. Support the tuna management plan in SSSs 4. Plan of the Joint Program on Tuna Research in Sulu and Sulawesi Seas after year 2017 5. Agree cruise plan M.V. SEAFDEC2 in year 2017 with SEAFDEC Member Countries under the cost sharing scheme.	IND, MAL and PH,
Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials

0120130108	Enhancing the compilation and Utilization of Fishery Statistics and Information for Sustainable Development and Management of Fisheries in Southeast Asian Region (a) : Facilitating fisheries activity information gathering through introduction of Community-based Resources Management /Co-	2013	Training:	52,000	<ol style="list-style-type: none"> 1. Training on Practical Approach to Co-management in Inland Fisheries of Cambodia on 20-23 May 2013 at Siem Reap, Cambodia. 2. Training on Practical Approach to Co-management in Coastal Fisheries of Cambodia on 23-26 September 2013 at Sihanoukville, Cambodia. 3. On-site Training on Facilitating Fisheries Information Gathering Through Introduction of Community-based Fisheries Management on 17-20 June 2013 at Luang Prabang, Lao PDR. Philippines on 15-19 July 2013, Thailand on 13-18 January 2013 at Lamtakong, Thailand. at Thanh Hoa, Vietnam on 13-16 May 2013, Can Tho city, Vietnam. on 1-5 July 2013. 4. Regional Workshop on Improvement of Fisheries Information Collection in Coastal Small-scale and Inland Fisheries of the Southeast Asian Region on 28-30 January 2013, Bangkok, Thailand. 5. Mobile On-site Training Program on Applicable Fisheries Management Approaches for Sustainable Fisheries in Inland Fisheries of Cambodia on 3-7 June 2013 at Siem Reap, Cambodia. 	Cambodia, Lao PDR, Philippines, Thailand, Viet Nam
		2014	information		<ol style="list-style-type: none"> 1. Report of TOT (Training on Trainer) on Facilitating Fisheries Information Gathering through Introduction of Community Based Fisheries Management: Legislative and Institutional Aspects of Rights-based Fisheries Management, 13-15 August 2014, Da Nang City, Vietnam. 2. Report on Mobile On-site Training (MOT) on Practical Approach to Co-management in Marine and Inland Fisheries of Cambodia, 28 July-1 August 2014, Siem Reap, Cambodia 3. Report on Mobile On-site Training (MOT) on Facilitating Fisheries Information Gathering Through Introduction of Community-based Fisheries Management 1-10 July 2014, Sakon Nakhon Province, Thailand 	Cambodia, Lao PDR, Philippines, Thailand, Viet Nam
			Training:	70,000	<ol style="list-style-type: none"> 1. Training To Trainers (TOT) on Facilitating Fisheries Information Gathering through Introduction of Community-based Fisheries Management: Legislative and Institutional aspects of Right Based Fisheries Management, 13-15 August 2014. at Da Nang City, Vietnam. There are 30 participants from Member Countries (spent 22,000 USD) 2. Mobile On-site Training (MOT) on Facilitating Fisheries Information Gathering Through Introduction of Community-based Fisheries Management, 1-7 July 2014, Nam Oon Dam, Sakon Nakhon Province, Thailand. There are 40 participants from Member Countries (spent 6,200 USD) 3. Mobile On-site Training (MOT) on Practical Approach to Co-management in Marine and Inland Fisheries of Cambodia, 28th July-1st August 2014, Siem Reap, Cambodia. There are 56 participants from Member Countries (spent 22,000 USD) 3. MOT on Practical Approach to Co-management in Marine and Inland Fisheries of Cambodia during 17 – 21 November 2014, Koh Kong Province, Cambodia. 4. Local workshop to assist fisheries officer and fisheries community to prepare fisheries management activity, rule and regulation for sustainable fisheries resources in Nam Oon Dam, Sakon Nakhon Province, on 25-26 November 2014. 	Cambodia, Thailand, Viet Nam
		2015	Research	14,000	1. Base-line survey and consultation meeting on clarification of feasible ways for implementation of management measures in Cambodia, 6-8 May 2015. The concrete information about issues and challenges for implementation of CBRM/Co-management using real cases of Chong Khneas fishing community, Siem Reap Province has been listed by community fisheries. Formulated “Implementation Plan” for improvement of CBRM/Co-management in the community.	Cambodia, Thailand
			Training	34,000	<ol style="list-style-type: none"> 1. Conducted the TOTs on Facilitating Fisheries Information Gathering through Introduction of CBRM/Co-management in Lao PDR, 27-30 April 2015 2. TOT on Facilitating Fisheries Information Gathering through Introduction of CBRM/Co-management in Viet Nam, 12-14 May 2015. 3. Follow-up activities on the current situation related to challenges in implementing/promoting CBRM/Co-management in Thailand, 22-26 February, and 3-7 August 2015. 	Lao PDR, Cambodia, Thailand, Viet Nam

	management				<p>1. Monitoring and evaluation CBRM/Co-management project in Nam Oon Dam, 15-19 May 2016, Nam Oon Dam, Sakon Nakhon Province. 50 Volunteer Fishers around Nam Oon Dam, Sakon Nakhon Province and 10 local officers have better understand on CBRM/Co-management, by install the sign buoy for conservation zone. More than 100 Fishers attend the traditional ceremony on destined fish with local officers. (Report on Monitoring and evaluation CBRM/Co-management project in Nam Oon Dam, 15-19 May 2016, Nam Oon Dam, Sakon Nakhon Province.)</p> <p>2. Monitoring and evaluation CBRM/Co-management approach in Chong Khneas Commune, Siem Reap, Cambodia, 21-22 July 2016. The Implementation plan 2016 have improved and take action by Chong Khneas Commune. Implementation Plan 2017 created by Chong Khneas Commune with knowledge on CBRM and Co-management. (Report on Monitoring and evaluation CBRM/Co-management approach in Chong Khneas Commune, Siem Reap, Cambodia, 21-22 July 2016.)</p>	Cambodia, Thailand
		2016			<p>1. TOTs (Training on Trainers) on Data analysis and Extension to promote CBRM/Co-management in Viet Nam, 15-17 June 2016, Danang City, Viet Nam. 34 local officers have knowledge of utilization data to formulate the fisheries resources management plan and implementation as well as introduce the extension strategy and components to promote CBRM/Co-management in Viet Nam. (Report on TOTs on Data Analysis and Extension to promote Co-management in Viet Nam, 15-17 June 2016, Danang City, Viet Nam.)</p> <p>2. TOTs on Facilitating Fisheries Information Gathering through Introduction of CBRM/Co-management: Effective Implementation CBRM/Co-management in Lao PDR, 19-22 September 2016, Vientiane, Lao PDR. 25 local officers from central part of Lao PDR have better understanding on the leading role in practicing and transferring knowledge on Co-management for Inland Fisheries Community. (Report on TOTs on Facilitating Fisheries Information Gathering through Introduction of Co-management and CBFM: Effective Implementation Co-management and CBFM in Lao PDR, 19-22 September 2016, Vangvieng City, Lao PDR.)</p>	Lao PDR, Viet Nam
Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials
0120130108	(b) Improving the data collection of the commercially-exploited aquatic species and threaten species		Training:	42000	<p>1. Regional Technical Working Group Meeting on Data Collection for Sharks in Southeast Asian Region was organized in Phuket in April 2014. Member Countries were encouraged to formulate contents and format of shark data collection, landing sites for data collection were selected.</p> <p>2. Regional TOT on elasmobranch taxonomy was organized by TD in May 2014 in Malaysia.</p>	MM, CAM, ID, MY, PH, TH, VN
		2015	information	20560	<p>1. Work plan for data collection at the selected sites in the Participating Countries</p> <p>2. Standard Operational Procedure (SOP) of shark and ray data collection</p> <p>3. Onsite trainings on shark species identification for local enumerators in each participating countries organized for Monitoring of data collection</p> <p>4. Set of data collected on shark landing at the selected sites set validated by the project advisor</p>	MM, CAM, ID, MY, PH, TH, VN
		2016	information	5,000	<p>1. SOP on Sharks Data Collection will also been finalized and published in order to disseminate to all countries of the ASEAN.</p> <p>2. Report on the Sharks Data Collection in Southeast Asia.</p>	MM, CAM, ID, MY, PH, TH, VN
			Research		<p>1. Set of data collected on shark landing at the selected sites .</p>	MM, CAM, ID, MY, PH, TH, VN
			Training	16,000	<p>1. National workshops and onsite trainings on shark species identification for local enumerators in seven (7) participating countries. Well trained enumerators making correct and valid identification of species at landing sites during data collection activities. Compiled information and utilization of sharks and rays.</p> <p>2. Verify the Standard Operational Procedure (SOP) of shark and ray data collection.</p>	Myanmar, Cambodia (will be contonued in 2017 in other MCs)
Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials
30108	(c) Harmonization of fisheries	2013	information		Publishing and dissemination of Updated List of Aquatic Species in Southeast Asia	All AMSs
		2014	information	1,412	List of Aquatic Animals and Plants in SEA produced and disseminated to Member Countries, relevant organization and other users in 2014	All AMSs

Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials
01201	Fishery statistics in the Southeast Asian region	2015	information	5,380	1. Draft structure and required inputs for SEASOFIA developed at the 16th ISP Meeting	All AMSs
		2016	information	5,550	1. Development of inputs for SEASOFIA by respective Departments	All AMSs
0420130102	Comparative Studies for Management of Purse Seine Fisheries in the Southeast Asian Region	2013	information		1.The first meeting for the Japanese Trust Fund VI on TAC was held on 20th May 2013. 2. SEAFDEC/MFRDMD started to compile landings and compare CPUE data for the last 30 years in Malaysia and Thailand where historical CPUE data are available to examine the trend of stock status for purse seine fisheries in the region. 3.The second meeting was organized in July to discuss about the suitable format of data and construction of database for CPUE. 4. To handle large number of specimens, one thermal cyclor and other genetic equipments were purchased by SEAFDEC/MFRDMD.	8 MCs
		2014	information	54261	1. SEAFDEC/MFRDMD continued to compile and compare CPUE data for the last 30 years in Malaysia and Thailand where historical CPUE data are available to examine the trend of stock status for purse seine fisheries. (spent 4,051 USD) 2. Amblygaster sirm were chosen for the genetic study of a pelagic species in the South China Sea and Andaman Sea. (spent 2,914 USD for genetic study and 4,508 USD for sample collection) 3. The Core Expert Meeting in August 2014 was held in August in Kuala Lumpur, Malaysia (spent 42,624 USD) 4. The in-house meeting with a Japanese expert for Japanese Trust Fund VI on TAC was held in March. (spent 164 USD) 5. Pelagic fisheries in the South China Sea areas (SEAFDEC newsletter) 6. Regional analyses for purse seine in the South China Sea (Presentation)	8 MCs
			Research	13000	1. Continuously compared different TAC systems in the world to examine which TAC system is applicable for management of fishery resources in the region. MFRDMD also studies the concept of total allowable effort (TAE) and its possible applicable approach for management of purse seine fishery in the region. 2. Amblygaster sirm was chosen for the genetic study of a pelagic species in the South China Sea and Andaman Sea. Participating member countries and/or MFRDMD collected reasonable number of specimens. Each specimen was photographed and tissue samples for the DNA study was shipped to MFRDMD according to the sampling procedures determined at the Core Expert Meeting in 2014. MFRDMD will visit several member countries, which have difficulties in species identification of A. sirm, and conduct on-site training (schedule under discussion). 3. Dissection of fish and DNA extraction will follow the standard operational procedures by SEAFDEC/ MFRDMD. DNA was extracted the collected tissue samples and analyzed for population structure. DNA markers determined at the Core Expert Meeting in August 2014 was used for the genetic study.	8 MCs
		2016	information	34000	1. Collected updated information on purse seine fisheries from Member Countries and continuously examined the data for regional synthesis of purse seine fisheries in the region to suggest possible suitable stock indicator and management systems in the member countries. 2. Conducted the Internal Workshop in Tok Bali, Malaysia on 6-7 January 2016 to discuss regional synthesis of purse seine fisheries information. Also, MFRDMD will invite member countries to organize Workshop in Dec 2016 to study on case studies and some application of catch and fishing effort management strategies for purse seine fisheries in the region. 3. Conducted the “Core Expert Meeting on Comparative Studies for Management of Purse Seine Fisheries in the Southeast Asian Region” was held on 9-11 August 2016 in Kuala Lumpur, Malaysia. The meeting was attended by the representatives from 7 participants from MCs; as well as resource persons from Japan and Malaysia. A meeting report and regional synthesis of purse seine information will be published before March 2017.	8 MCs
			Research	5000	1. Genetic samples from spotted sardinella (Amblygaster sirm) collected by participating Member Countries were analyzed and the preliminary result based on four sampling locations (namely Muara; Brunei Kuantan, Kudat; Malaysia, and Songkla, Thailand) was presented during the Core Expert Meeting. The results found that Amblygaster sirm in South China Sea is a single evolutionary unit and therefore can be regarded as a single conservation unit for the management of sustainable fisheries.	8 MCs
Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials

0420150103	Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region	2013	information	2,674	Publication of 'Look-alike sharks and rays species in the Southeast Asian Region'	All AMSs
		2014	information	7,320	1. A book entitled 'Field Guide to Rays, Skates and Chimaeras of the Southeast Asian Region' was published in 2014 2. A book entitled 'Standard Operating Procedure for Tissue Sample Collection and Preservation of Sharks and Rays' was published in 2014	All AMSs
			Research	4,000	The total of 27 species of sharks (143 specimens) and 41 species of rays (127 specimens) has been collected at six landing sites (Kuantan, Dungun, Kuala Terengganu, Mukah, Bruit Island in Malaysia and Phuket Island, Thailand) for DNA barcoding and biological study. From that no. of samples, 49 individuals from 10 shark species and 15 individuals from 9 ray species were successfully sequenced for their DNA.	Malaysia, Thailand
		2015	infoRmation	16,000	1. MFRDMD visited Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Thailand and Viet Nam (not implemented yet, will be started from September 2015) to collect socio-economic information on by-catch sharks and rays. Local fishery officers and external experts in this field assisted this activity. Collected information will be used for better fishery management of sharks and rays in the region.	MY, MM, ID, (2017 continued for other MC)
			ResEArch	5000	1. MFRDMD and SEAFDEC member countries collected genetic samples of sharks and rays to conduct bar-coding research which is progressing in the world. MFRDMD visited Sandakan, Mukah, and Perak (Malaysia) to collect tissue samples. MFRDMD analyzed 61 samples of sharks and 57 samples of rays. Fifteen species of sharks and 17 species of rays were identified.	Malaysia
			Training	10,000	1. MFRDMD visited Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Thailand and Viet Nam (not implemented yet, will be started from September 2015) to assist data collection on sharks and rays. On-site trainings were conducted in the above countries to identify problems associated with identification of sharks and rays at selected landing sites.	MM, MY, CAM and Cambodia (2017 continued for other MC)
		2016	ResEArch	8000	1. MFRDMD and SEAFDEC Member Countries collected genetic samples of sharks and rays to conduct bar-coding research which is progressing in the world. MFRDMD visited and collected specimens from Malaysia (Pahang, Terengganu, Perak, Sabah and Sarawak). The total of 21 species of sharks (95 specimens) and 32 species of rays (122 specimens) has been identified. Samples collected from Vung Tau, Viet Nam is currently analyzed.	MY, VN, (will be contonued in 2017 in other MCs)
			Training	14000	1. SEAFDEC/MFRDMD in collaboration with TD and the SECRETARIAT jointly organized "Training on Elasmobranch Taxonomy" in Vung Tau, Viet Nam from 23 to 27 May 2016. During the training, a total of 25 new species records for Viet Nam (14 sharks, 7 rays, 4 skate) were recognized. SEAFDEC/MFRDMD has assisted Vietnam for six months data collection of landing and biological information as well as DNA sampling for further strengthening their ability of sharks and rays information collection in Viet Nam. 2. SEAFDEC/MFRDMD in collaboration with TD will convene Workshops in Cambodia, Myanmar and Vietnam in October/November for compilation and verification of the biological and landing data in the countries. Also, information will be collected on socio-economy, marketing and trade of sharks and rays.	MY, VN, MM (will be contonued in 2017 in other MCs)

Thrust 5: Addressing International Fisheries Related Issues from a Regional Perspective						
Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials
		2013	information	8,000	<ol style="list-style-type: none"> Paper on tuna fisheries resources in the Southeast Asian Region Policy paper on Regional Cooperation to promote the sustainable tuna fisheries in the Southeast Asian Region Concept note on ASEAN Catch Certification (in later called ASEAN Catch Documentations System) for consideration by 45th Council Meeting and 21st ASWGF Meeting Concept note for Regional Fishing Records for vessels 24 m in length and over for consideration by 45th Council Meeting and 21st ASWGF Meeting. Reviewed CITES issues on Commercially-exploited Aquatic Species especially on sharks Executive summary on the International Fish Trade-related Issues for 2013-2014 (included a) the results of CITES-CoP16, b) Development of ASEAN Catch Certification Concept Note, and c) Development of Regional Fishing Records of Vessels 24 m in length and over. The Ninth Session of the Scientific Committee of the WCPFC was held in Pohnpei, Micronesia from 6-14 August 2013 (8000 USD) 	All AMSs

0620130101	Assistance of Capacity Building in the Region to Address International Trade Related Issues	2014	Policy:	62,900	<ol style="list-style-type: none"> 1. The ASEAN-SEAFDEC Common Positions for the Commercially-exploited Aquatic Species to be addressed at the CITES CoP16, the results from the Regional Consultation was organized on 22 January 2013 in Bangkok, Thailand. (25,500 USD) 2. The CITES-CoP16 held in Bangkok, Thailand from 3-14 March 2013. During the meeting SEAFDEC supported 1 Brunei Darussalam, 2 Cambodia, 1 Indonesia, 1 Malaysia, 1 Myanmar, 1 Philippines, 1Thailand, 1Vietnam to participate in the meeting (37,400 USD) 	All AMSs
		2014	information	25,000	<ol style="list-style-type: none"> 1. Updated the information from the FAO resumed Technical Consultation on International Guidelines on securing sustainable small scale fisheries in FAO, Rome from 3-7 February 2014. The results of meeting are shared to ASEAN Member States for consideration and information. (spent ~ 8,000 USD) 2. Involved in the Asian regional consultative workshop on Capacity assessment for the implementation of new CITES listing of the sharks and manta rays during 13-15 May 2014 (spent ~3,000 USD) 3. Progressed the SEAFDEC main activities related to the Regional implementation of the RCCRF, combating iuu fishing, and ect at the 31ST Session of the Committee of Fisheries from 9-13 July 2014 (spent ~8,000 USD) 4. Internal Expert Meeting for the 1st Draft of the Regional Guidelines for prevention the entry of fish and fishery products from iuu fishing/activities into the supply chain (based on the MCs Inputs during Experts Meetings organized by MFRDMD) (spent ~6,000 USD) 5. The publicize the outputs from project to the Regional Events-related issues 	All AMSs
		2014	Policy:	113,000	<ol style="list-style-type: none"> 1. Regional Policy Recommendation on Sustainable Management of Eel Resources and Aquaculture Productions, the results of the 2nd Regional Consultation held on 31 August – 1 September 2014, Palembang, Indonesia (spent 41,000 USD) 2. Draft Regional Guidelines for Preventing the Entry of Fish and Fishery Products from IUU activities into the Supply Chain” , the results from Co-organization of the RTC on 23-25 September 2014, Horizon Hotel, Kota Kinabaru, Malaysia.(spent 22,000 USD) 5. Draft Catch Documentation Schemes/ System, the Results from Co-organized the Small Group Expert Meeting held on14-16 October 2014, Concorde Inn KLIA, Sepang, Malaysia (spent 22,000 USD) and the Regional Technical Consultation on ASEAN Catch Documentation System, 16-18 December 2014, , Malaysia (spent 28,000 USD) 	All AMSs
		2015	information	4,870	<ol style="list-style-type: none"> 1. The AEG-CITES Members understood the current situation of the CEAS that listed in the CITES Appendices including the situation of catadromous eels (Japanese eels and Indonesian short-fin eels). 2. The Possible action carried out by FiA and Government of Cambodia on combating IUU fishing and elimination of the FOC using Cambodian Flags outside the EEZ. 3. Required improvement of the fishing licensing system through the use of database system (future work plan). 4. All SEAFDEC Departments involved in the project-related to combating IUU fishing understood their role and frameworks for future activities to avoid duplication efforts but enhancing the cooperation in meeting at the same goal. 5. The RFVR database system is promoted to fisheries authority and further extend to other agency concerns and relevant stakeholders through the media/information dissemination. 	All AMSs
		2015	Policy:	104,113	<ol style="list-style-type: none"> 1. A zero draft of the RPOA-Capacity based on the priority issues raised during the meeting. 2. The final draft of the ASEAN Guidelines was supported by the 23ASWGF to be raised for consideration by the high-levels. 3. The 3rd draft ACDS and the Info-graphic on Usages of ACDS in Various Scenarios of Trading of Fish and Fishery Products in ASEAN Region will be used for Stakeholder Consultation and testing of the system by 2016/2017. 4. The final zero draft of the RPOA-Capacity will be addressed at the next RTC in December. 	All AMSs
		2015	information	3,320	<ol style="list-style-type: none"> 1. More than 500 managers/experts from the world understand the SEAFDEC initiatives particular on regional cooperation towards combating IUU fishing framework. 2. Enhance the SEAFDEC's visibility 3. SEAFDEC introduced the ACDS framework that aims to enhance the seafood traceability in ASEAN region to the meeting; while contributed the recommendations/information for further development of the good practices in seafood traceability in ASIA. 	All AMSs

		2016	Policy:	121,850	<p>1. The Executive Report on Addressing International Fisheries Related Issues (2015-16) was address at the 24ASWGFi for consideration and endorsement, in which there are many management tools are linked.</p> <p>2. FiA Officers understand the concept of combating IUU Fishing, and create a work plan for further development and implementation of the NPOA-IUU Fishing under the extra fund support EU.</p> <p>3. All relevant stakeholders such as government officers, fishing industry, processors, civil-society organization, regional and international organizations understand the SEAFDEC initiatives toward combating IUU fishing in the ASEAN region.</p> <p>4. Future collaboration to support the implementation of the management tools to combat IUU fishing.</p> <p>5. SEAFDEC updated the CITES CoP17 -related commercially-exploited aquatic species (CEAS) information to the 12AEG-CITES.</p> <p>6. SEAFDEC also informed the 12AEG-CITES on the work plan for developing the ASEAN Common Positions.</p> <p>7. The proposed CEAS by COP-17 was introduced and reviewed by experts from the SEAFDEC Member Countries.</p> <p>8. The recommendations from the meetings were concluded and to be raised at the Regional Consultation Meeting.</p> <p>9. ASEAN-SEAFDEC member countries adopted her country positions as suggested by the Regional Consultations at the 48CM held in April 2016.</p> <p>10. The results from the 48CM was addressed to the 24 ASWGFi and SOM-AMAF for endorsement of the ASEAN Common Position on the proposed listing of CEAS into the CITES Appendices.</p> <p>11. At the SOM-AMAF held in August 2016, Thailand as a ASEAN lead country of this matter will propose for consideration and endorsement.</p>	All AMSs
			Collaborative Program:	4,300	<p>1. Apply the CCAMLR' CDS particularly the usage of database modules to support the development of CDS.</p> <p>2. Introduction of the CCAMLR' CDS at the 48th SEAFDEC Council with aims to seek cooperation from AMS for compliance the CCAMLR CDS.</p>	All AMSs
Project ID	Project Name	Year	Act-Category	Estimated Budget	Achievements/Outputs	Beneficials
		2013	information	21,560	<p>1. Tri-annual monitoring system /concept in order to follow the progress and achievement of project activities every 4 months starting as suggested by Member Countries</p> <p>2. Japanese Trust Fund project evaluation from the Meeting on Review of the Japanese Trust Fund Program for 2013 and Onward from 28 February-1 March 2013, at Jasmine Hotel, Bangkok, Thailand</p>	SEAFDEC
			information	29,000	<p>1. The agreement between FRA/J and SEAFDEC (PDF)</p> <p>2. Report of the 4th Meeting of SEAFDEC Program Review for Japanese Trust Fund V in Feb 2014 (PDF)</p> <p>3. Evaluation results of the JTF projects (PDF)</p> <p>4. The List of Prioritized Issues for Future Regional Program Formulation (PDF)</p> <p>5. Fish for the People for 1st and 2nd volume of 2014 has been published and distributed. (spent 7,000 USD)</p> <p>6. Mini Symposium on the 10-years Achievements and Prospects for Future Cooperation with FRA/Japan, 23 Jan 2014, TH (2000USD)</p> <p>7. 1st Meeting on Information Gathering of Eel Resources and Aquaculture Productions in the Southeast Asia, in 27 Feb 2014, TH (20,000)</p>	All AMSs and SEAFDEC Departments

0620130102	Strengthening SEAFDEC Network for Sustainable Fisheries	2014	Policy:	55,900	<ol style="list-style-type: none"> 1. Consultation Visit to Indonesia to discuss on IFRDMD Programs for 2015 and onward, Jakarta, Indonesia from 22-23 Jul 2014. (spent 4,800 USD) 2. Consultation Visit to FiA, Cambodia under the collaborative arrangements between NFU/Japan and FiA on the arrangements for KOYO Maru Cruise in Cambodia Water and Future Plan for Data Analysis, 15-16 September 2014 (spent 2,100) 3. Organizing the Mini-Symposium on the "10-years Achievements and Onward Cooperation between FRA/J and SEAFDEC" and signing ceremony of MOU, 23 Jan 2014, Bangkok. (spent 2,000 USD) 4. Organized the Fourth Meeting of SEAFDEC Program Review for Japanese Trust Fund-V and Identification of Prioritized Issues for Future Regional Program Formulation was convened in Bangkok, Thailand from 25 to 27 February 2014. (spent 27,000) 5. Expert Group Meeting on Regional Plan of Action on Sustainable Utilization of Neritic Tuna Resources In the Southeast Asia Waters, 18-20 Jun 2014, TH 6. The Sub-regional Consultative Meetings on the Collaborative Fisheries Management in <ul style="list-style-type: none"> o CM-Lao, 5-6 Feb 2014 o CM-VN, 5-7 Mar 2014 o MY-TH, 14-15 May 2014 o North Andaman Sea 27-28 May 2014 o CM-Lao, 2-4 Jun 2014 7. The 4th Meeting of SEAFDEC Program Review for Japanese Trust Fund V, in 25 Feb 2014, TH (20000 USD) back to back with Regional Consultation Meeting on Identification of Prioritized Issues for Future Regional Program Formulation in 26 Feb 2014, TH 	All AMSs and SEAFDEC Departments
			Training:	32,000	<ol style="list-style-type: none"> 1. Official from Cambodia, Lao PDR and Myanmar seconded at SEAFDEC Secretariat and involved in several of SEAFDEC activities in order to enhance the cooperation between SEAFDEC and Member Countries as well as built up their capacity. (spent 32,000 USD) 2. ASEAN Regional Workshop for Facilitating Community-based Resources Management in Coastal and Inland Fisheries, 18-21 Feb 2014, Cambodia 3. On-the-job training on Project Development and Management using Result-based Management Approach, Apr-Jul 2014 4. On-the-job training-writershop on Technical Writing and Editing (Aug-Oct 2014) 	RFPNs
		information	13,000	<ol style="list-style-type: none"> 1. 3 volumes of Fish for the People were disseminated to worldwide institutions related to fisheries 2. Publication on Combating IUU Fishing (Ongoing) 	Public	
		Research	3,500	<ol style="list-style-type: none"> 1. Supported joint discussion between FiA, NFU and SEAFDEC staffs for the Collaborative Research Program on the preparation for the Fisheries Resources Survey in the Cambodian waters by T/S KOYO Maru of the National Fisheries University (NFU). The program is planned for 3 years from 2014-2016. 2. The country implementation on ASEAN-SEAFDC Resolution and Plan of Action were compiled for further reviews and report to the 38PCM. 	Cambodia, TD	
		2015	Training:	32,000	<ol style="list-style-type: none"> 1. Officials from Cambodia, Lao PDR and Viet Nam stationed at SEAFDEC Secretariat and involved in several SEAFDEC activities and coordinated with their own countries for technical matters and arrangements. 2. RFPNs gained the knowledge on various subjects related to development of regional policy recommendations and plan of actions on the effectiveness fisheries management and combating IUU fishing in the ASEAN region. In addition, RFPNs were trained on the recording of the meeting in order to enhance their English ability in specific fisheries issues. 3. Raising Awareness to the ASEAN Expert Group on CITES (AEG-CITES) on the current listing of the Commercial Exploited Aquatic Species (CEAS) to the CITES Appendices, and the possible proposed listing of CEAS such as Bluefin tuna, Japanese eels, and impact on Indonesian short-fin eels. 4. The 1st draft of the SEAFDEC Program Database was developed and tested for further improvement for effective management and support the cost-benefit analysis. 5. The 1st draft of SEAFDEC Questionnaires on Human Resources in ASEAN Countries was prepared for further development of the Online system Questionnaires. 	All AMSs and RFPNs

2016	information	13,000	<p>1. The 1st draft of the SEAFDEC Program Database was developed and tested for further improvement for effective management and support the cost-benefit analysis.</p> <p>2. The country implementation on ASEAN-SEAFDC Resolution and Plan of Action were compiled for further reviews and report to the 38PCM.</p> <p>3. Updated information on current regional initiatives to improve sharks conservation and management in Southeast Asia, as well as continue efforts to monitor issues concerning commercially exploited aquatic species that are at risk of being included under the CITES Appendices to the EAG-CITES Meeting.</p>	All AMS and SEAFDEC Departments
	Training	32,850	<p>1. Officials from Cambodia, Lao PDR and Viet Nam stationed at SEAFDEC Secretariat and involved in several SEAFDEC activities and coordinated with their own countries for technical matters and arrangements. (32,000)</p> <p>2. RFPNs gained the knowledge on various subjects related to development of regional policy recommendations and plan of actions on the effectiveness fisheries management and combating IUU fishing in the ASEAN region. In addition, RFPNs were trained on the recording of the meeting in order to enhance their English ability in specific fisheries issues.</p>	RFPNs
	Research	3,500	<p>1. Finalized the workplan of T/S Koyo Maru for 2016 based on the joint discussion between FiA, NFU and SEAFDEC staffs for the Collaborative Research Program on the preparation for the Fisheries Resources Survey in the Cambodian waters by T/S KOYO Maru of the National Fisheries University (NFU).</p>	Cambodia, TD

**REVIEWS OF THE IMPLEMENTATION OF THE 2011 ASEAN-SEAFDEC
RESOLUTION AND PLAN OF ACTION ON SUSTAINABLE FISHERIES FOR FOOD
SECURITY FOR THE ASEAN REGION BY THE ASEAN MEMBER STATES (2011-2016)**

The **Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020** were prepared by the ASEAN-SEAFDEC Member Countries in collaboration with ASEAN and SEAFDEC and were adopted by the Ministers and Senior Officials responsible for fisheries of the ASEAN-SEAFDEC Member Countries during the Ministerial and Senior Official Meetings of the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 “Fish for the People 2020: Adaptation to a Changing Environment” held during 13-17 June 2011 in Bangkok, Thailand. The Resolution and Plan of Action are envisaged to serve as policy framework and priority actions to support sustainable development of fisheries and enhancing the contribution from fisheries to food security and better livelihood of people in the region towards the coming decade.

On the occasion of 5-year implementation of the 2011 ASEAN-SEAFDEC Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020 in 2015, SEAFDEC Secretariat as a coordinating body of the SEAFDEC would propose to review the progress and results of programs implementation based on the 2011 ASEAN-SEAFDEC Resolution and Plan of Action, and the priority issues to be addressed in ensuring sustainable fisheries development and enhancing the contribution of fisheries to food security in the Southeast Asian region. This is also to ensure that the implementing programs and activities are in line with the Resolution and Plan of Action and maintained in the track towards 2020.

To monitor the progress of the programs and activities, SEAFDEC Secretariat has prepared a survey questionnaire and sent to all SEAFDEC Member Countries which would seek cooperation and contribution to the said purposes.

The followings are the feedback of the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020 contributed from the SEAFDEC Member Countries (as of May 2016):

1. Brunei Darussalam
2. Malaysia
3. Myanmar
4. Philippines
5. Singapore
6. Thailand
7. Viet Nam

5-year Implementation of the 2011 ASEAN-SEAFDEC RES¹ & POA² on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020

Contents

- I. Preparation of this document
- II. Priority issues in implementing the 2011-RES & POA
- III. Conclusion and way forward

I. PREPARATION OF THIS DOCUMENT

1. This document presents the results of programs and activities that have been implemented in the Southeast Asian region based on the *2011 Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020* (2011-RES&POA), and compiled by the SEAFDEC Secretariat using a survey questionnaire. Based on inputs from the Member Countries, the priority issues, concerns and activities for implementing 2011-RES&POA are consolidated in this document. Details of information from the Member Countries are shown in **Appendix 1**.

2. Based on information from the countries, their activities had been rearranged where appropriate. This document is therefore meant to provide better understanding on the priority issues addressed by the countries for ensuring sustainable fisheries development and enhancing the contribution of fisheries to food security in the Southeast Asian region. It is also envisaged that this document will be used as a regional reference for the Member Countries. In this regard, the Member Countries are kindly requested to review and provide comments/amendments for improvement of this document.

II. PRIORITY ISSUES IN IMPLEMENTING THE 2011-RES&POA

2.1 RESOLUTION

3. In Brunei Darussalam and Malaysia, noticeable progress has been gained in various activities related to managing fishing capacity through a number of approaches, such as limiting the number of fishing licenses, establishing fishing zones, strengthening enforcement of fishery regulations, promoting responsible fishing gear and practices, and improving fisheries information collection systems. This has been attained through HRD and research programs to support better management of the fisheries, and enhance competitiveness in fish trade through improvement of food safety standards.

4. As reported, some countries have experienced varying degrees of success. In Malaysia for example, the National Plan of Action on Sustainable Fisheries for Food Security Towards 2020 has been developed which is currently being implemented. In Brunei Darussalam, fishery and habitat management programs/activities are well developed and integrated based on the results of the national research survey of fishery/habitat resources. Public awareness programs on such activities were also launched as form of national campaign in Brunei Darussalam to promote the reduced use of destructive fishing gear and practices in the country. In Singapore, establishment and implementation of National Guidelines on Good Aquaculture Practices for fish Farming (GAP-FF) have been successfully made. Meanwhile, establishing guidelines on good manufacturing and hygiene practices for post-harvest processing of fishery products as well as guidelines on good handling practices for live and chilled seafood were also achieved.

PLAN OF ACTION – PLANNING AND INFORMATION

5. Currently, a number of activities related to enhancing the fisheries resources have been implemented in Philippines through habitat protection. Various human resources capacity building

¹ RES – Resolution on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020: <http://www.seafdec.org/download/resolution-and-plan-of-action-2011/>

² POA – Plan of Action: A. Planning and Information; B. Fisheries Management; C. Aquaculture; D. Optimal Utilization of Fish and Fishery Products; E. Fish Trade; and F. Regional and International Policy Formulation

programs were conducted by targeting the fisheries officers at the Department of Fisheries Malaysia to effectively gather fisheries-related information. In Viet Nam, the Master Plan of Fisheries Development (so-called Vision 2030) was approved and being implemented until the year 2020. To enhance sharing of such information, Officials of the Directorate of Fisheries of Viet Nam has been participating in relevant international and regional workshops.

2.2 PLAN OF ACTION – FISHERIES MANAGEMENT

6. In the Philippines, many fisheries resource management plans were developed where activities are implemented through consultation and engagement of key stakeholders, such as the management plans for tuna, sardines, and blue swimming crabs. In the case of Viet Nam, the national guidelines for commercial fisheries management had been successfully developed.

7. Using the ecosystem approach to manage fisheries, a number of national frameworks and plans of action had been developed in some countries and currently implemented through resources survey, stakeholders' consultations and knowledge sharing programs. For example, results from resources survey had been used as basis for developing the management plan for habitat and fisheries resources in Myanmar. In Malaysia, the National EAFM Steering Committee and EAFM Technical Committee were established for the development of national EAFM framework and its plan of action. Tuna fisheries management plan in Viet Nam was drafted by integrating the ecosystem approach.

8. To ensure that climate change responses are integrated into fisheries policy framework, a variety of activities related to promotion of co-management have been undertaken in some countries including the Philippines. In addition, the capacity of fisheries communities and fisheries related organizations has been built in the Philippines to adopt alternative livelihoods that adapt to climate change in support to achieving sustainable development.

9. To enhance and promote participation of local communities, the Department of Fisheries Malaysia successfully established "Fishery Volunteer Community Program" with over 5,000 members throughout the country. In the Philippines and Thailand, formulation of fisheries management policies always involved various stakeholders and achieved through support activities by research.

10. In the Philippines, a number of small fishing boats use sails and supplemental fuel such as biofuel/gas as means of promoting the use of alternative energy source for fishing boats.

11. To enhance appropriate employment practice in accordance with domestic laws and regulations, the Philippines is now being compliance of Labor Laws in employment of fishers.

12. A survey on non-traditional fishing grounds was conducted in the Philippine waters to obtain information and knowledge on improving/finding potential fisheries resources that could be used for developing necessary guidelines and enhancing the capacity of relevant authorities and communities to collaboratively resolve conflicts with other stakeholders.

13. Singapore regularly engages relevant stakeholders on administration processes and policy frameworks relevant to Port State Measures and tools to combating IUU fishing.

2.3 PLAN OF ACTION – MARINE AND INLAND FISHERIES

14. The NPOA-IUU Fishing is one of the major activities that have been formulated by a number of countries in the region, including Brunei Darussalam, Malaysia, Viet Nam, and Thailand. Moreover, Malaysia published the national guidelines on fishing licensing, boat registration, and port state measures to facilitate the implementation of the NPOA-IUU Fishing.

15. In many countries, such as Malaysia, Philippines, Thailand, and Viet Nam, there has been a significant increase in the conduct of research on the impact of various fishing gear types and methods on the marine ecosystem. For example, a research on reduction of by-catch in trawl net was carried out in Malaysia, and studies on the impacts of various fishing gears and lights were

conducted in the Philippines. In Viet Nam, trials on the use of circle hooks in line fishing to minimize the incidental catch of sea turtles was carried out. In some countries, such as Philippines, by-catch reduction program with its relevant fisheries management measures have been implemented and enforced.

16. One of main activities under resource enhancement program is the deployment of artificial reefs, which is being conducted in some countries in the region including Malaysia and Thailand. Study on the possible impacts of fish aggregating devices had been carried out in the Philippines.

17. To ensure the inclusion of fisheries objectives in management plans of future MPAs and promote the adoption of the *refugia* concept in line with the ASEAN-SEAFDEC Regional Guidelines on the Use of Fisheries *Refugia* in Capture Fisheries Management, the Philippines has been exploring the possibility of applying the fishery *refugia* concept as means of increasing productivity of fishing grounds. In Malaysia, improvement of its national coordination and management of fish stock and critical habitats has been undertaken. Furthermore, Malaysia challenges to improve the sustainability of fish stocks through habitats management.

18. With regards to strengthening the efforts to address safety at sea, Viet Nam issued Decree No. 66/2005 to ensure the safety of fishers onboard and fishing vessels operating at sea. In the Philippines, monitoring of the working conditions of fishers onboard has been carried out. At the same time, providing safety materials and promoting appropriate boat design are also being sustained for the safety of fishers onboard as well as the vessels at sea.

19. A number of countries including Malaysia, Myanmar, and Viet Nam fully recognize the need to establish fishery policies and legal frameworks for inland fisheries management using the ecosystem approach. In Malaysia, the Fisheries Regulation and National Plan for Integrated Lake and Reservoir Management has been established. A number of scientific information and research activities have been conducted in Viet Nam for the development of management plan for inland fisheries, such as the study on environment-friendly fishing gears for inland, alternative livelihoods (tourism) to reduce the impacts of capture fisheries on the resources and environment.

20. In Malaysia, school children, village communities and working committees are being made aware of the importance of freshwater fisheries for food security, through a number of national activities on restocking of depleted fish stocks, conservation and reintroduction of endangered species, and improvement of fishing opportunities. As means of maintaining the natural fish stocks, Thailand has been implementing various fisheries resources restocking programs.

21. Indigenous freshwater fish sanctuaries and protected areas have been established in Malaysia with the specific objective of promoting coordinated planning on the use of inland waters. Community-based management system (so-called Tagal system practiced by Sabahan local traditional fishers in Sabah waters of Malaysia) was established to enhance inland fishery resources. Moreover, Malaysia developed national water resource policy and management measures through a wide range of stakeholders' consultation processes. In Viet Nam, the technology to enhance inland fisheries has been improved in close coordination with other relevant sectors such as rice farming and water resources management. A study on fishing capacity in inland fisheries was conducted in Viet Nam for the development of a co-management model.

2.4 PLAN OF ACTION – AQUACULTURE

22. Malaysia addresses social, economic, and environmental aspects of sustainable aquaculture through the development and implementation of national policies to transform and restructure freshwater aquaculture system, rearrange aquaculture activities for SMEs, encourage the involvement of young agropreneurs, promote good aquaculture practices, and enhance mobile marketing of agriculture products. Myanmar devolves co-management to the local authorities and stakeholders through the national project on sustainable development and mangrove friendly small-scale aquaculture and fisheries aimed at building the capacity of communities for co-managing fisheries and aquaculture systems within the mangrove ecosystem. The Philippines initiated a national program on mariculture

development for fisherfolk, providing infrastructures, equipment and technical support.

23. Replanting of mangroves in the Philippines had been implemented through rehabilitation program, in the priority areas including abandoned, underdeveloped and underutilized fishponds. The activities were implemented under Fish Pond Lease Agreements where the key biodiversity areas were identified by Department of Environment and Natural Resources. In addition to that of promoting environment-friendly aquaculture, the Philippines implemented a number of programs/activities for establishment of aquaculture livelihoods, including community-based multi-species hatcheries, organic aquaculture, organic farming protocols known as the Philippine National Standard on Organic Aquaculture, and seaweeds development at national level.

24. With regards to the development and implementation of the ASEAN guidelines for environment-friendly and responsible aquaculture and good aquaculture practices, various activities to build the capacities of human resources (fish farmers) were carried out in Brunei Darussalam fulfilling the minimum requirements in biosecurity, and in Malaysia for promoting responsible aquaculture. A number of farms complying with Good Aquaculture Practices had increased in Malaysia and Thailand. Monitoring program on the use of drugs and others is being carried out in Malaysia to ensure the safety of food for consumption, and improvement of the quality of aquaculture products.

25. Malaysia established its aquaculture industrial zoning to increase production and create additional employment. In addition, knowledge of fisheries officers of Malaysia on new techniques has been improved through its national training program on management of freshwater aquaculture for rural area development. This aims to support the integration of aquaculture into rural development activities. In Myanmar, the number of small-scale fish farmers had increased through its national project on small-scale aquaculture extension for promotion of livelihood of rural communities (4-year project from 2009-2012). The results showed that the livelihoods of farmers in 5 townships had been improved, and the capacity of DOF local staff working in the project areas had been enhanced.

26. With regards to the implementation of measures and strategies at national level to monitor/regulate aquaculture operations, a number of countries (Brunei Darussalam, Malaysia, Thailand, and Viet Nam) have developed and implemented national programs of activities related to management of aquaculture operations. In Brunei Darussalam, several R&D activities were carried out to develop and increase aquaculture production within the context of environmental friendly concept. In Malaysia, environmental impact assessment has been conducted and reported, initiating a national regular monitoring program for aquaculture development. Moreover, Malaysia provides technical advice to fish farmers on aquaculture site selection, fish handling, and diseases and culture management through the establishment of E-Aquaculture. The capacity of Thai farmers has been enhanced on breeding and other aspects in response to the needs of farmers, resulting in increased aquaculture production. In Viet Nam, the capacity of fish farmers has been enhanced in the aspect of fisheries products improvement to meet the requirements of the importers.

27. To provide support for R&D in improving the existing genetic resources, Nucleus Broodstock Center and Broodstock Multiplying Center have been established in Malaysia, resulting in the improvement of the genetic characteristics of red tilapia. Regarding the production and distribution of specific pathogen-free (SPF) and quality seeds being promoted in Malaysia, SPF *Macrobrachium rosenbergii* has been produced, domesticated and improved. In Brunei Darussalam, good quality seeds have been produced to supply industries. Moreover, fish husbandry practices were introduced through a model-farming project for promoting fish cage culture operations in Brunei Darussalam.

28. In Malaysia, quality broodstocks have been provided and introduced to local farmers through training programs on broodstock management, for them to apply the concept of aquatic biosecurity, especially the small-scale hatchery operators and farmers. In addition, a number of farmers have adopted the appropriate technology for their hatcheries.

29. To encourage good employment practices in accordance with domestic laws and regulation, Malaysia established the guidelines on occupational safety and health "Act 1994" based on results of survey on safety conducted at workplaces.

30. Malaysia established the national committee on risk assessment and importation of alien species since 2011 to reduce negative environmental impacts in accordance with the Regional Guidelines on the Responsible Movement of Live Aquatic Animals and Plants. The Malaysian Quarantine and Inspection Services was also established covering 52 entry points around the country for monitoring the transfer of aquatic organisms.

31. In Malaysia, a national mechanism and several programs were established and developed to continue the efforts of controlling serious disease outbreaks, including the establishment of fish disease mechanism for surveillance and notification.

32. The following activities were implemented in some countries to enhance their capabilities in the diagnosis and control of fish diseases:

Brunei Darussalam

- Periodic surveillance program for diseases in aquaculture farms
- Establishment of diseases early warning system

Malaysia

- Capacity building program of the National Fish Health Lab
- Capacity building program for farmers, extension staff, and state biosecurity staff
- Proficiency testing on aquatic animal diseases
- Establishment of Reference Lab for timely access to disease control experts in the region

Thailand

- Establishment of trade agreement to conduct disease surveillance program for raw products from bivalves, shrimp, and fish

Singapore

- Conducting research on vaccines and pharmaceuticals for more effective disease management
- The development of new products for the rapid detection of aquaculture diseases

33. With regards to raising awareness of new diseases that may pose risks, Malaysia makes sure to immediately report any occurrences of diseases. In Viet Nam, there is an ongoing project on environmental monitoring for aquaculture on fish diseases implemented from 2015 until 2020.

34. To support the development of suitable alternative protein sources that will reduce the dependence on fishmeal, Malaysia has conducted R&D to find suitable alternative protein sources to replace fishmeal by focusing on locally-available ingredients.

35. To enable the aquaculture sector to mitigate and adopt better to the impacts of climate change, Malaysia developed the national policy on climate change in 2010, and conducted several R&D activities on climate change, for example, assessment of the effects of climate change on aquaculture, water quality, and aquaculture production. Malaysia also plans to develop inshore and offshore aquaculture management plan.

2.5 OPTIMAL UTILIZATION OF FISH AND FISHERY PRODUCTS

36. In order to support the development/application of technologies to optimize the utilization of catches and reduce onboard and onshore post-harvest losses, capacity building programs have been implemented in Brunei Darussalam, Malaysia, Philippines, and Thailand, focusing on seafood processing technology, fish handling, food safety and standards of fisheries products. A research activity for value-added marine products was conducted in Thailand. In Philippines, a comprehensive plan on post-harvest and ancillary industries has been developed and implemented.

37. To promote traditional fish products, the Philippines provides technical assistance program including training on food safety and safety requirements (GMP/SSOP/HACCP and HALAL Certifications), and information campaign by disseminating IEC materials.

38. Malaysia and Philippines have established the national traceability system with mechanism to certify or validate information for the supply chain of fishery products in line with international standards. In Malaysia, such systems include traceability system for ornamental and food fish;

traceability system for all supply chain (since 2011); E-Biosecurity system for fish (since 2012); and E-Permit for live fish movement at the entry/exist point (since 2013). As for monitoring and implementing its national program on traceability, the Philippines implement traceability system and enforcement scheme in various production stages of the whole supply chain of fish and fishery products.

39. With regards to promoting the system for quality and safety of fish and fishery products, National Reference Lab was established in Malaysia for fish health inspection. In order to support the competitive position of ASEAN fish products in the world market, six (6) laboratories in Malaysia were accredited with ISO/IEC17025. In Thailand, focus was given to inspection and certification of fishery products for standard and monitoring from farm to table including certification for quality of marine products for export. Facilities and services of laboratories in the Philippines have been upgraded for implementing risk-based inspection and recognition scheme to test those laboratories.

40. To encourage relevant control agencies in applying appropriate legislation and coordinated activities regarding handling, processing, quality and safety of seafood, distribution, etc., Malaysia established Market Access Group Meeting consisting of Central Competent Authority and other competent authorities on fish and fisheries products. In the Philippines, Codes of practice on proper handling, processing, storage, and distribution of fish and fishery products were developed and implemented. In addition, mandatory accreditation of cold storage warehouse and assurance of fish/fishery products for safety and quality have been developed.

41. Philippines delivered capacity building programs and technology transfer to BFAR regional offices, industries, and other stakeholders on post-harvest technologies, GMP, SSPO/HACCP and HALAL Certifications. These were aimed at upgrading the technical skills and competencies of personnel in the public and private sectors on fisheries post-harvest technology and food safety management systems.

42. Malaysia developed and implemented Good Aquaculture Practice Guidelines and Hygiene Onboard Guidelines for handling and transportation, and hygiene. Furthermore, harmonization of Malaysia's GAP Guidelines with that of the ASEAN was conducted. In the Philippines, standard and guidelines for fish handling, transport of fishery and aquaculture products were formulated and established.

PLAN OF ACTION – FISH TRADE

43. To increase the competitiveness of its fishery products in regional and international markets, Malaysia has established and implemented the following activities:

- Promoting the ASEAN-GAP Standard
- Controlling transportation of live finfish (since 2010) in accordance with WTO notification of import requirements for live fish
- Controlling movement of live fish (since 2011) in accordance with the guidelines on responsible movement of live food finfish
- Controlling the use of chemicals in aquaculture (since 2014) in accordance with the guidelines on the use of chemicals in aquaculture
- Branding of fish and fishery products including HALAL foods

44. On the activities related to strengthening the cooperation among Member Countries of SEAFDEC to work towards common understanding on positions reflected in international fish trade fora, Malaysia has been actively participating in and providing inputs to various relevant meetings (ASWGF_i, CITES, CODEC, FTA, RCEP-SWGSPS, SEAFDEC, etc.).

45. With regards to the implementation of appropriate international, capacity of officials of Department of Fisheries Malaysia has been built for biotoxin analysis.

46. To strengthen risk assessment and R&D related to the use of GMO products in fisheries and aquaculture, including food safety issues, Malaysia presented, discussed and shared information on the use of GMO products in fisheries and aquaculture at the GMO Meeting under arrangement by

the Department of Biosafety – Ministry of Natural Resources and Environment Malaysia.

47. On the activities related to strengthening cooperation among Member Countries to implement international standards with regards to trade on fish and fishery products within the ASEAN region, Singapore has actively been as lead country for the development of regional initiatives such as ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain as well as ASEAN Catch Document Scheme (ACDS).

PLAN OF ACTION – REGIONAL AND INTERNATIONAL POLICY FORMULATION

48. Brunei Darussalam has developed national fishery policy based on relevant regional management policy frameworks. Malaysia participated in various international fora to reflect the country's position on relevant issues.

III. CONCLUSION AND WAYS FORWARD

49. A number of programs and activities had been implemented in the Member Countries in line with the 2011-RES&POA since its adoption in 2011. It can be said that the 2011-RES&POA is effective in addressing a range of programs/activities that the countries aimed to tackle. Based on the information from the countries, it seemed that the most priority area is on “management” of marine and inland fisheries, followed by aquaculture. More involvement and interactions among key stakeholders to formulate/develop national policies and frameworks were also observed.

50. A summary of major findings based on inputs from the countries is as follows:
- Brunei Darussalam, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam actively participated in reviewing the programs/activities implemented in line with 2011-RES&POA;
 - Malaysia accomplishes the development of 2020 NPOA on Sustainable Fisheries for Food Security while the other countries also implemented a number of relevant programs/activities in line with the 2011-RES&POA;
 - Singapore has established and implemented the National Guidelines on Good Aquaculture Practices for Fish Farming (GAP-FF);
 - Malaysia, Myanmar, Philippines, and Viet Nam increase their efforts in promoting the involvement of key stakeholders in the process of developing/formulating/implementing specific fishery management plans;
 - Ecosystem approach for fisheries management is one of the key aspects that have been adopted for the development of national policies and frameworks;
 - Various capacities of local communities and fisheries-related organizations have been built and prepared for adopting alternative livelihoods that adapt to climate change in support to achieving sustainable development;
 - Fisheries resource surveys are being used as source of information for management planning, while fish restocking program is still a conventional way of enhancing fisheries resources;
 - Efforts of the countries in monitoring and regulating the development of aquaculture are within the context of environment-friendly concept; and
 - Efforts have been made by the countries in promoting traditional fish and fishery products to be more competitive in the world market in compliance with international standards.

51. It is possible that still a lot more relevant activities are not being reported in this document due to limited information provided and the period for information compilation. In this connection, the countries are kindly requested to provide inputs and information regarding the implementation of the 2011-RES&POA in the next 4 years.

National Activities of the Member Countries in Implementing ASEAN-SEAFDEC Resolution and Plan of Action for Food Security Towards 2020

RESOLUTION

Resolution	Activities
<p>RES#1 Sustain the supply of fish and fishery products from the ASEAN region to improve food security, facilitate poverty alleviation, and improve the livelihoods of ASEAN people dependent on the harvesting, farming and marketing of fish and fishery products, by enhancing the necessary national fisheries policy, legal and institutional frameworks that encourages and support small-scale fisheries/farmers, including providing alternative livelihood opportunities.</p> <p>RES#10 Strengthen knowledge/science-based development and management of fisheries through enhancing national capacity in the collection and sharing of fisheries data and information.</p>	<p>Brunei Darussalam - Fisheries resource and habitat survey:</p> <ul style="list-style-type: none"> - Moratorium of fishing and zonation established - Marine protected area established - Fishery and habitat management programs developed/revised based on data collected through a survey using the MV SEAFDEC2
<p>RES#1</p> <p>RES#5 Further develop regional initiatives to promote a responsible fisheries management mechanism, taking into account the specific social, economic, cultural, ecological and institutional contexts and diversity of ASEAN and ASEAN fisheries in the spirit of development of the ASEAN Economic Community and the ASEAN Socio-Cultural Community</p> <p>RES#7 Promote better management of fishing capacity and use of responsible fishing technologies and practices, recognizing the movement towards replacing the “open access” to fisheries resources with “limited access: through rights-based fisheries, and at the same time, secure the rights and well-being of inland and coastal fisheries communities.</p>	<p>Brunei Darussalam - Promotion of CCRF:</p> <ul style="list-style-type: none"> - Enforcement of: square mesh size regulation for cod-end of trawl net, subsequently, capacity of enforcement officers built on investigation and arresting procedures in accordance with Fisheries Order 2009 and collaboration with other enforcement agencies established - Legal framework on MPAs updated and strengthened - Public awareness has risen through roadshows and awareness campaign resulting in gradual phasing out of unethical methods of fishing and use of destructive fishing gear <p>Brunei Darussalam - Issues related to fishing zonation:</p> <ul style="list-style-type: none"> - Freezing trawl fishing licenses for demersal trawlers fishing in zone 2 through moratorium on the issuance of new licenses (since 2000) - Limiting entry/access to fishing zone of all fishing operations in Brunei waters by: i) prohibiting commercial in all forms to fish in zone 1 area or near shore (3 nm from shoreline); and ii) allowing full time small-scale fishers to fish in zone 1 - Fishing gear license quota by zone adopted - 500 m safety zone in area of oil structure enforced in compliance to Merchant Shipping Act 2009 - Safety at sea for fishers from dangers encountered at nearby oil structures improved - Registration of all fishing boats with the Marine Department was made compulsory

Resolution	Activities
<p>RES#8 Foster cooperation among ASEAN Member States and with international and regional organizations in combating IUU-fishing</p>	<p>Singapore</p> <ul style="list-style-type: none"> - Participation in Workshop on Global Record of Fishing Vessels - Supported the adoption and implementation of the Regional Fishing Vessel Records as a member of SEAFDEC <p>Singapore</p> <ul style="list-style-type: none"> - Development of regional MCS networks - Active participation in Regional Workshops and meetings on Port State Measures and fisheries resources management
<p>RES#10 Strengthen knowledge/science-based development and management of fisheries through enhancing national capacity in the collection and sharing of fisheries data and information.</p>	<p>Brunei Darussalam</p> <ul style="list-style-type: none"> - User-friendly fishery database developed - Human resources capacity built on data collection and analysis - Publication of fisheries statistics improved
<p>RES#14 Promote inter-agency coordination of multiple uses of freshwater resources for sustainable development of the resources and conservation of freshwater habitats (related to Inland Fisheries Management)</p>	<p>Brunei Darussalam</p> <ul style="list-style-type: none"> - Study on population status of freshwater prawn conducted - Study on socio-economic for prawn fisheries conducted for future management for prawn fisheries
<p>RES#18 Promote joint ASEAN Approaches and positions in international trade in fish and fishery products indigenous to the region by harmonizing the standards, criteria and guidelines and developing mutually-recognized agreements on sustainability and safety management system.</p> <p>RES#19 Support the competitiveness of the ASEAN fish trade through the development of procedures and programs that would certify, validate or otherwise indicate the origin of fish to reflect the need for traceability, sustainable fishing practices and food safety, in accordance with international and national requirements</p> <p>RES#20 Optimize the utilization of catch from water to market by reducing post-harvest losses and waste to increase fish support and improve economic returns through promotion of appropriate technologies and facilities along the supply chain</p>	<p>Brunei Darussalam</p> <ul style="list-style-type: none"> - Guidelines on good manufacturing practices and HACCP in all seafood processing plants adopted - Certification program endorsed by National Standard Centre, Ministry of Industry and Primary Resources - Opportunity for market at global level increased - Safety seafood measures adopted - Processing plants certified for HACCP - Brunei Halal Brand trademark established and recognized <p>Singapore</p> <ul style="list-style-type: none"> - Established and implemented National Guidelines on Good Aquaculture Practices for Fish Farming (GAP-FF) - Established guidelines on good manufacturing and hygiene practices for post-harvest processing of fishery products - Established guidelines on good handling practices for live and chilled seafood

Resolution	Activities
RES#21 Improve technologies and facilities to ensure fish quality assurance and safety management systems, taking into account the importance of traditional fishery products as an alternative livelihood for fisheries communities.	
<p>RES#22 Support the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020 adopted by the ASEAN-SEAFDEC Senior Officials; and</p> <p>RES#23 Pledge our commitment to fully support this Resolution and task ASEAN Senior Officials to implement necessary actions and report the progress in the advancement of sustainable fisheries that contribute to a prospectus, stable and peaceful ASEAN Community.</p>	<p>Malaysia</p> <ul style="list-style-type: none"> - National Plan of Action on Sustainable Fisheries for Food Security Towards 2020 developed

PLAN OF ACTION

PLANNING AND INFORMATION

Plan of Action	Activities
POA#1 Integrate planning of marine capture fisheries, inland capture fisheries and aquaculture sub-sectors to promote sustainable development of fisheries sectors, including harvesting and post-harvest in both capture fisheries and aquaculture.	<p>Philippines</p> <ul style="list-style-type: none"> - Management plans implemented to enhance fishery resources through habitat protection and law enforcement implementation accepted by various stakeholders <p>Viet Nam</p> <ul style="list-style-type: none"> - Master Plan of Fisheries Development approved by Prime Minister (Vision 2030 – for implementation until 2020)
POA#3 Strengthen national statistical mechanisms for fisheries and aquaculture and the exchange of statistical data and related information. Include other non-routine data and information such as fish consumption surveys as well as mobilizing local knowledge with the aim of improving the valuation of fisheries and monitoring their performance, to address the needs of the ecosystem approach to fisheries and adaptation to climate change.	<p>Malaysia</p> <ul style="list-style-type: none"> - Capacity built for Fisheries Officers to effectively gather information
POA#6 Coordinate, decentralize and enhance the sharing of relevant statistics and information of fisheries-related statistical data and information between the national fisheries	<p>Viet Nam</p> <ul style="list-style-type: none"> - Officials of Directorate of Fisheries participated in relevant international and regional workshops

Plan of Action	Activities
and other authorities including those responsible for food security, environment, trade, aquaculture, water resources, agriculture/forestry, wetlands, migration/employment and rural development.	

FISHERIES MANAGEMENT

Plan of Action	Activities
POA#7 Regular review, update and strengthen notional fisheries policy, legal and institutional frameworks through consultation and engagement of government agencies, private sectors, civil society and other relevant stakeholders.	<p>Philippines</p> <ul style="list-style-type: none"> - Management plan for tuna, sardines, and blue swimming crab implemented through participatory approach and engagement of stakeholders (ongoing) expecting to improve stocks, productivity, production of the environment, increase income and reduce poverty of fishers <p>Singapore</p> <ul style="list-style-type: none"> - Regular engagement of relevant stakeholders on administration processes and policy frameworks relevant to Port State Measures and tools to combat IUU fishing <p>Viet Nam</p> <ul style="list-style-type: none"> - Guidelines for commercial fisheries management established
POA#8 Accelerate the development of fisheries management plans based on an ecosystem approach, as a basis for fisheries conservation and management.	<p>Malaysia</p> <ul style="list-style-type: none"> - National EAFM Steering Committee and EAFM Technical Committee established - EAFM framework and national plan of action developed/implemented based on stakeholders' consultation and knowledge sharing, including: training courses on EAFM; EAFM Pilot Projects (2014-2015); and Establishment of map on areas suitable for coral reef rehabilitation in some areas <p>Myanmar</p> <ul style="list-style-type: none"> - Marine fisheries resources survey conducted for the development of national and regional frameworks for the implementation of EAFM to fisheries management and to acquire additional knowledge on marine ecosystems for planning and monitoring programs <p>Philippines</p> <ul style="list-style-type: none"> - Approval and implementation of management plans using EAFM in a more holistic and effective manner <p>Viet Nam</p> <ul style="list-style-type: none"> - Draft plan for tuna fisheries management formulated/developed by integrating the eco-system approach in its action plan
POA#11 Adopt co-management at all levels and with relevant stakeholders in the process of planning and policy formulation for management, conservation, and rehabilitation of habitats and protective geographical features, as well as policy formulation on the use and management of natural and human resources to ensure that climate change responses are	<p>Philippines</p> <ul style="list-style-type: none"> - Co-management applied in planning and policy formulation for fisheries management including climate change

Plan of Action	Activities
integrated into fisheries policy frameworks.	
POA#12 Strengthen capacity of fisheries communities, fisheries related organizations, NGOs and private sector to better implement necessary actions towards enabling the communities and local organizations to increase resilience improve livelihoods, alleviate poverty, adopt alternative livelihoods adapt to climate change in support to achieving sustainable development, and encourage participation of woman and youth groups in the process.	<p>Philippines</p> <ul style="list-style-type: none"> - Capacity building programs included the fisherfolks, NGOs and private sectors in programs formulated and implemented.
POA#13 Enhance and promote participation of local communities, fisheries associations and other stakeholders in fisheries management and co-management. In addition, communities should take part in fisheries and stock assessment by providing data, local ecological knowledge, and status of the stocks.	<p>Malaysia</p> <ul style="list-style-type: none"> - Fishery volunteer community program established in 2015 with 5,000 members in whole Malaysia <p>Philippines</p> <ul style="list-style-type: none"> - Formulation of fisheries management policies always involved various stakeholders, and through support activities in research <p>Thailand</p> <ul style="list-style-type: none"> - Participation of communities in every level for effectively management of fisheries - Awareness of key stakeholders on the value of resources had risen
POA#15 Increase the efficient use of alternative energy sources and reduce the carbon fossil energy.	<p>Philippines</p> <ul style="list-style-type: none"> - Using sails and biofuel/gas as supplemental sources of energy for small boats - Using simple and responsible fishing gears
POA#16 Encourage good and appropriate employment practice in accordance with domestic laws and regulation	<p>Philippines</p> <ul style="list-style-type: none"> - Compliance of Labor Laws in employment of fishers
POA#17 Develop guidelines and enhance capacity of relevant authorities and communities to collaboratively resolve conflict with other stakeholders	<p>Philippines</p> <ul style="list-style-type: none"> - Survey conducted on non-traditional fishing grounds to obtain knowledge and improve potential fisheries resources

MARINE FISHERIES

Plan of Action	Activities
POA#21 Strengthen regional and national policy and legislation to implement measures to combat IUU fishing, including the development and implementation of national plans of action to combat IUU fishing, and promote the awareness and understanding of international and regional instruments and agreements through information	<p>Brunei Darussalam</p> <ul style="list-style-type: none"> - NPOA IUU Fishing formulated through consultation between DOF and other relevant agencies, and the outputs also included plan and coordination work with relevant agencies in strengthening MCS program to combat IUU fishing <p>Malaysia</p> <ul style="list-style-type: none"> - MOU on fisheries between Malaysia and Indonesia drafted

Plan of Action	Activities
dissemination campaigns.	<ul style="list-style-type: none"> - Interpol trained on IUU-fishing <p>Viet Nam</p> <ul style="list-style-type: none"> - NPOA IUU Fishing developed/strengthened to prevent, reduce and eliminate IUU fishing with provisions relating to the management of fishing ports <p>Philippines</p> <ul style="list-style-type: none"> - NPOA IUU Fishing developed - Promotion made for sustainable practices and compliance to importing countries' requirements
POA#22 Establish and strengthen regional and sub-regional coordination on fisheries management and efforts to combat IUU-fishing including development of regional or sub-regional development of MCS network	<p>Malaysia</p> <ul style="list-style-type: none"> - Guidelines on fishing licensing, boat registration, and port state measures to combat IUU-fishing developed - National database center set-up for monitoring fishing boats activities - Capacity built for fishery managers on fisheries management to combat IUU fishing <p>Philippines</p> <ul style="list-style-type: none"> - Measures to prevent IUU-fishing well included and issued
POA#25 Conduct research on the impact of various gear types and methods, including light fishing, trawls and push net, on ecosystem and populations of aquatic animals and also the effects of fishing vessel discharges and waste disposal on marine ecosystem, to promote the use of selective fishing gears and sustainable devices.	<p>Malaysia</p> <ul style="list-style-type: none"> - R&D on reduction of by-catch for <i>Acetes</i> spp. and usage of 38 mm mesh size in trawl net conducted <p>Philippines</p> <ul style="list-style-type: none"> - Studies on impacts of various fishing gears and lights conducted to support policy formulation <p>Thailand</p> <ul style="list-style-type: none"> - Aquatic species restored to natural water bodies to maintain economic abundance <p>Viet Nam</p> <ul style="list-style-type: none"> - Testing conducted on the use of circle hooks to minimize incidental catch of sea turtles - Training program conducted on escaping devices for reduction of unwanted catch
POA#26 Take reference from FAO international guidelines on managing by-catch and reducing discards, where appropriate, to identify and find solution to ASEAN by-catch problems, including the excessive catch of juvenile fish.	<p>Philippines</p> <ul style="list-style-type: none"> - By-catch reduction program implemented, including study on trawl by-catch in the Philippines - Policy on reducing discards (FAO237) enforced - Samar Sea Fisheries Management Plan prepared
POA#27 Optimize the use of inshore waters through resource enhancement program such as promoting the installation of artificial reefs and structures, encouraging coordinated and effective planning for coastal fisheries management programs, undertaking environmental impact assessment studies, restocking of commercially-important fish species, as appropriate, and give priority to human resource development for the implementation of such programs.	<p>Malaysia</p> <ul style="list-style-type: none"> - 20 sites of artificial reefs made of concrete and steel materials were deployed - 2 sites of fishery <i>refugia</i> selected <p>Philippines</p> <ul style="list-style-type: none"> - Monitoring of Payao with Fisheries Observer Program conducted to determine its impact on fisheries resources
POA#28 Ensure inclusion of fisheries objectives in management plans of future MPAs and promote the adoption	<p>Malaysia</p> <ul style="list-style-type: none"> - National coordination and management of fish stock and critical habitats improved

Plan of Action	Activities
and use of <i>refugia</i> concept in line with the ASEAN/SEAFDEC Regional Guideline on the use of Fisheries <i>Refugia</i> in Capture Fisheries Management, where appropriate.	Philippines - Monitoring and exploring the possibility of applying <i>fishery refugia</i> concept to increase productivity of fishing grounds
POA#29 Recognizing the different management approaches that are required, sustainably manage major critical habitats, such as mangrove, coral reefs and sea grasses; and develop and disseminate information and guidance on appropriate tools and interventions.	Philippines - Management of habitats to improve stocks sustainability formulated and implemented
POA#30 Strengthen efforts to address safety at sea, including considerations of working conditions and socio-economic development, and ensure that these considerations are addressed by all concerned authorities while improving monitoring and control of the status of conditions, especially on small fishing boats.	Singapore - Implementation of an advanced Vessel Traffic Information System (VTIS) within the Singapore Strait and Singapore port waters for safer and more efficient navigation Philippines - Provision of safety materials and appropriate boats design sustained Viet Nam - Decisions (Decree) made and implemented for ensuring safety at sea
POA#31 Assess the possible impact of government subsidies on fisheries, particularly the impact on special requirements and the needs of small-scale fisheries in the region.	Philippines - Safety of boats and proper working conditions monitored

INLAND FISHERIES

Plan of Action	Activities
POA#32 Establishment fishery policy and legal framework for ecosystem approach to inland fishery management by integrating fisheries and habitat management that devolves co-management to the local authority and stakeholders, and at the same time strengthens the rights of communities and develops rights-based fisheries.	Malaysia - Fisheries Regulation and National Plan for Integrated Lake and Reservoir Management established, approved at the National Water Resources Council (2012) Viet Nam - Research on inland fishing capacity conducted for further development of management plan for inland fisheries - Environmental friendly fishing gear for inland fisheries developed and promoted - Result-based scientific information used for applying and implementing regulations related to fisheries management, including gear regulation, fishing area/season - Involvement of stakeholders enhanced for the protection and sustainable use of fisheries resources

Plan of Action	Activities
	- Alternative livelihoods (tourism) promoted to reduce fishing pressure and the impact of capture fisheries on the resources and environment
POA#33 Undertake campaigns to promote awareness of importance of freshwater fisheries for local food security, and the importance of rehabilitating and restoring habitats for migratory freshwater fish, restocking indigenous fish species to enhance productivity and encouraging culture-based freshwater fisheries, where appropriate.	<p>Malaysia</p> <ul style="list-style-type: none"> - Awareness of school children, village communities and village working committees on improving fishing opportunity; restocking a depleted fish stock; conservation and reintroduction of endangered species had risen <p>Thailand</p> <ul style="list-style-type: none"> - Important aquatic species maintained in the natural waters through fisheries resources restocking programs
POA#36 Encourage coordinated planning on the use of inland waters, water-bodies and flood plains through (i) resource enhancement program; (ii) inland wetlands and fisheries management programs; (iii) consideration of restocking of locally and/or commercially-important inland fish species; and (v) giving priority to human resources development for the implementation of such programs.	<p>Malaysia</p> <ul style="list-style-type: none"> - Indigenous freshwater fish sanctuaries and protected areas established - Community-based management system (so-called Tagal system practiced by Sabahan local traditional fishers) implemented in Sabah Rivers to improve fish stock for the Kelah fish - National water resources policy and management measures developed through a wide range of consultation processes <p>Viet Nam</p> <ul style="list-style-type: none"> - Method/technology improved to enhance inland fisheries in harmony with other sectors such as rice farming and water resources management - Research on inland fishing capacity conducted for further development of co-management model

AQUACULTURE

Plan of Action	Activities
POA#39 Ensure that national programs and policies on aquaculture address social, economic and environmental aspects of sustainable aquaculture to improve food security, livelihoods, employment and poverty alleviation by (i) providing the mechanisms and enabling environment for good aquaculture practices, efficient markets and fair trade; (ii) strengthening the capacity of small-holders farmers; and (iii) promoting inter-agency collaboration.	<p>Malaysia</p> <ul style="list-style-type: none"> - National policies developed and implemented for transformation and restructuring of freshwater aquaculture; rearrangement of aquaculture activities for SMEs; enhancement of the involvement of young agropreneurs; and promotion of good aquaculture practices - Mobile marketing of agricultural products established with good quality of products and good price for farmers <p>Myanmar</p> <ul style="list-style-type: none"> - Project on sustainable development and mangrove friendly small-scale aquaculture and fisheries implemented → capacity of communities enhanced for co-managing fisheries and aquaculture systems within mangrove ecosystems; formulation and co-management plan and its promotion developed; post-harvest processing of fisheries products and market access improved; and vulnerability of community reduced <p>Philippines</p> <ul style="list-style-type: none"> - National Mariculture Development Program provided livelihood opportunities on mariculture for

Plan of Action	Activities
	<p>fisherfolk in order to accelerate socio-economic growth and food security, provide appropriate infrastructures, equipment and support services to operate cost-effectively and securely as well as develop skills and technical-capable manpower to support the mariculture industry</p> <ul style="list-style-type: none"> - Mangrove Rehabilitation Program implemented through replanting of mangroves in priority areas such as abandoned, underdeveloped and underutilized fishponds under the Fish Pond Lease Agreements (FLAs) and identified key biodiversity areas by the Department of Environment and Natural Resources (DENR), involving also coastal fisherfolk in planting 100 million mangrove propagules within 3 to 4 years of project implementation - Aquaculture Livelihood to be established through the aquasilviculture projects targeting at least 1,000 coastal fisherfolk - Community-Based Multi-species Hatchery to be developed in 62 State Universities and Colleges - Organic Aquaculture Program implemented through the promotion of polyculture production system using indigenous/endemic species under the extensive and semi-intensive systems to produce safe aquaculture products of premium quality - Organic farming protocols known as the Philippine National Standard on Organic Aquaculture developed for the following species: milkfish monoculture using natural food, tilapia monoculture, ulang monoculture, mangrove crab monoculture, giant gourami monoculture, pangasius monoculture, milkfish and crab polyculture, tilapia and ulang polyculture - National Seaweeds Development Program aims to strengthen collaboration/ partnership with private sectors by providing adequate supply of quality seedlings/planting materials to seaweed farmers, livelihood assistance by providing farming implements, and capability building of farmers to become NC II certified by TESDA. The project included the establishment of seaweed nurseries to provide farmers with start-up seedlings, establishment of solar dryers, promotion/development of other seaweed species with market and economic importance (<i>Caulerpa racemosa</i> and <i>Gracilaria</i>), and the development of Philippine Nori Seaweed Industry Program (PhilNori)
<p>POA#40 Develop and implement ASEAN guidelines for environment-friendly and responsible aquaculture and good aquaculture practices that cover (i) the integration of quality and safety management system for products with significant trade potential; (ii) the harmonization for chemical use and food safety in aquaculture; (iii) the development of product traceability systems from farm to market; and (iv) harmonization of the quarantine and inspection/sampling procedure and Sanitary and Phytosanitary (SPS) measures for aquaculture products to secure food safety.</p>	<p>Brunei Darussalam</p> <ul style="list-style-type: none"> - Capacity built for farmers in fulfilling the minimum requirements in biosecurity <p>Malaysia</p> <ul style="list-style-type: none"> - A number of farms are complying with the Malaysian Good Aquaculture Practice - Involvement in developing ASEAN-GAP - Monitoring the use of drugs, antibacterial, etc. to ensure safety food for consumption (Aquaculture Residue Monitoring System – ARMS) - Human resources capabilities for responsible aquaculture enhanced/built <p>Thailand</p> <ul style="list-style-type: none"> - Quality of aquaculture products improved - GAP certification for aquaculture farms developed

Plan of Action	Activities
<p>POA#41 Integrate aquaculture into rural development activities within context of multiple-use of land and water resources through inter-agency coordination in policy formulation, project planning and implementation, stakeholder consultation, extension services and technology transfer, participate in and provide support to regional initiatives that will assess the role of aquaculture in poverty alleviation for better policy formulation.</p>	<p>Malaysia</p> <ul style="list-style-type: none"> - Aquaculture industrial zoning established to increase production and create additional employment - Permanent food production park established - General knowledge and new techniques of fisheries officers improved and obtained through training programs for managing freshwater aquaculture for rural area development <p>Myanmar</p> <ul style="list-style-type: none"> - Project on small-scale aquaculture extension for promotion of livelihood of rural communities implemented (2009-2012) → number of farmers on small-scale aquaculture increased for 5 townships and livelihoods of those increased; and capacity of DOF local officers developed <p>Viet Nam</p> <ul style="list-style-type: none"> - Two (2) model of aquaculture applying VietGAP developed and associated with program on new rural development to improve income of the farmers
<p>POA#42 Implement measures or strategies at national and local levels to (i) monitor and regulate aquaculture operations; (ii) prevent over development; and (iii) ensure that activities are carried out in an environment-friendly manner. This also includes effectively enforcing regulations to avoid conflict in the use of common resources and adopting the concept of environmental capacity as a strategy to prevent aquatic pollution brought about intensification of aquaculture activities.</p>	<p>Brunei Darussalam</p> <ul style="list-style-type: none"> - Measures for waste water management developed based on environment-friendly concept - Specific pathogen-free (SPF) <i>P. Monodon</i> broodstocks and fry produced and commercialized - Production and grow out culture farms of giant freshwater prawn (<i>Macrobrachium rosnbergii</i>) developed - Proper culture and fish husbandry practices introduced through a model farm project for fish cage culture operators - Shrimp production from aquaculture increased through establishment of new shrimp culture areas, offshore cages, and freshwater culture areas - Model shrimp farm producing big size shrimps of over 50 g developed through the introduction of recirculating system - Results from R&D on oyster culture (to be completed in 2016) improved <p>Malaysia</p> <ul style="list-style-type: none"> - Report on environmental impact assessment (EIA) published - Regular monitoring of aquaculture development project implemented - e-Aquaculture established to provide technical advice to farmers concerning site selection, fish handling, diseases and culture management - SPF broodstocks from approved source imported <p>Thailand</p> <ul style="list-style-type: none"> - Transportation and information technology (Green Project) linked - Activities related to carbon footprints prepared - Protein from fish and income from aquaculture increased through the Royal Project - Capacity of farmers enhanced on breeding and others in responding to the needs of farmers resulting in increased aquaculture production <p>Viet Nam</p>

Plan of Action	Activities
	<ul style="list-style-type: none"> - Decision made for producing fisheries products that can meet requirements of importers, including GAP standard, conserving the environment, and protecting the rights of labor in fisheries - Original broodstock of white shrimp (<i>P. vannamei</i>) for hatchery produced/introduced - Training on management technology of shrimp broodstock conducted
<p>POA#43 Provide government support for R&D on (i) improving existing genetic resources; (ii) assessing the impact of climate change on broodstock management; and (iii) the feeding and disease management of broodstock.</p> <p>POA#44 Promote the production and distribution of specific pathogen-free (SPF) and quality seed through the (i) establishment of certified government or private hatcheries as sources of quality seed; (ii) dissemination of new breeding technologies and techniques for effective distribution and maintenance of genetically improved strains; and (iii) implementation of sound policies that will improve better hatchery management practices, including the responsible collection and use of wild broodstock and seed.</p>	<p>Brunei Darussalam</p> <ul style="list-style-type: none"> - Good quality of seed supply produced for the industry - Production of marine fish at sustainable level increased - Proper culture and fish husbandry practices introduced through a model farm project for fish cage culture operators <p>Malaysia</p> <ul style="list-style-type: none"> - Nucleus Broodstock Center (NBC), and Broodstock Multiplying Center (BMC) established - Genetics of red tilapia improved - Produced SPF of <i>M. rosenbergii</i> broodstock domesticated and genetically improved <p>Singapore (POA#43)</p> <ul style="list-style-type: none"> - Development of fast growing and improved quality fish fry through selective breeding projects - On-going research for: <ul style="list-style-type: none"> i. Vaccines and pharmaceuticals for more effective disease management. ii. The development of new products for the rapid detection of aquaculture diseases
<p>POA#45 Apply concept of aquatic biosecurity by providing support to (i) research for development of domesticated, genetically improved, specific pathogen-free (SPF) cultured species; (ii) the small-scale hatchery operators and farmers so as to enhance their access to healthy broodstock and improve their ability to adopt, at the farm level, the established techniques for aquatic animal health care.</p>	<p>Malaysia</p> <ul style="list-style-type: none"> - Quality broodstock introduced/provided to local farmers through training program on broodstock management - Appropriate technology for small-scale hatchery adopted
<p>POA#47 Encourage good and appropriate employment practices in accordance with domestic laws and regulation.</p>	<p>Malaysia</p> <ul style="list-style-type: none"> - Guidelines on occupational safety and health in accordance with Act 1994 established based on results of survey on safety at workplaces
<p>POA#49 Reduce the risk of negative environmental impacts, loss of biodiversity, and disease transmission by regulating the introduction and transfer of aquatic organisms in accordance with the Regional Guidelines on the Responsible Movement of Live Aquatic Animals and Plants.</p>	<p>Malaysia</p> <ul style="list-style-type: none"> - National committee on risk assessment and importation of alien species established in 2011 - Malaysian Quarantine and Inspection Services established at 52 entry points all over the country for monitoring the transfer of aquatic organisms
<p>POA#50 Continue the national efforts to control serious disease outbreaks by providing government support to (i) R&D to improve the ability to handle new and emerging</p>	<p>Malaysia</p> <ul style="list-style-type: none"> - Disease surveillance program established - Fish disease contingency plan developed

Plan of Action	Activities
diseases and surveillance of transmission of diseases to wild populations; an d(ii) regional initiatives on harmonization of regional disease control standards, disease reporting and implementation of contingency plans to handle new and emerging diseases.	<ul style="list-style-type: none"> - Fish disease notification mechanism established - Disease monitoring on AHPND (previously known as EMS) implemented
POA#51 Further enhance the capabilities in the diagnosis and control of fish diseases within the region through (i) continued support in development of technology and techniques for diseases identification; (ii) promotion of the widespread use of affordable, field-friendly, rapid and standardized diagnostic tests; and (iii) establishment of regional and inter-regional referral systems, including the designation of reference laboratories and timely access to disease control experts within the region.	<p>Brunei Darussalam</p> <ul style="list-style-type: none"> - Periodic surveillance program for diseases in aquaculture farms implemented - Diseases early warning system established leading to increased survival rate of up to 80% - Spread of diseases minimized <p>Malaysia</p> <ul style="list-style-type: none"> - Capacity of the National Fish Health Lab built through training programs - Proficiency Testing (PT) on aquatic animal diseases established - Capacity of farmers, extension staff and state biosecurity staff built through training programs - Reference Lab (NAFISH) established for timely access to disease control experts in the region <p>Thailand</p> <ul style="list-style-type: none"> - Trade agreement established between Member Countries to conduct disease surveillance program for raw products from bivalves, shrimp, and fish in order to minimize losses caused by disease outbreaks
POA#52 Develop regional warning systems on aquatic animal health and diseases to inform other Member Countries of relevant epidemiological events and to raise awareness of new diseases that may pose risks. Build emergency preparedness capacity through rapid and timely responses to reduce potential catastrophic consequences of diseases.	<p>Malaysia</p> <ul style="list-style-type: none"> - Aquatic animal health and occurrences of diseases reported <p>Viet Nam</p> <ul style="list-style-type: none"> - Ongoing project on environmental monitoring for aquaculture, and national program on fisheries diseases (2015 to 2020) carried out
POA#53 Improve the efficient use of aquatic feeds by strictly regulating the quality of manufactured feed and feed ingredients and support continued research for developing suitable alternative protein sources that will reduce the dependence on fish meal and other fish-based products. This effort will include the consideration of ingredients not derived from wild caught fish, encouraging the culture of species requiring no or low fish meal content in their feed and applying effective feeding management practices, taking into account the need for cultural and social acceptance of alterative feed ingredients.	<p>Malaysia</p> <ul style="list-style-type: none"> - R&D in finding suitable alternative protein source to replace fishmeal focusing on locally available ingredients to support fishery production conducted

Plan of Action	Activities
POA#55 Formulate and implement national policies and strategies that will enable the aquaculture sector to mitigate and/or adapt better to the impacts of climate change. These strategies should include providing support to R&D on climate change, increasing resilience, and strengthening the overall capacity of various stakeholder groups and fostering cooperation within the aquaculture sector and with other sectors.	Malaysia <ul style="list-style-type: none"> - National policy on climate change (2010) developed - Results from R&D on climate change to be reported - Water monitoring to assess the effect of climate change on aquaculture conducted - Impact of climate change on water quality, aquaculture production and fish health mitigated
(POA#57) Encourage Member Countries to take a precautionary approach to safeguard the environment from the acceleration of offshore aquaculture, and to consider developing regional guidelines on responsible marine (inshore to offshore) aquaculture.	Malaysia <ul style="list-style-type: none"> - Plan for inshore and offshore aquaculture developed

OPTIMAL UTILIZATION OF FISH AND FISHERY PRODUCTS

Plan of Action	Activities
POA#58 Introduce and provide support for the development and application of technologies that optimize the utilization of catches, reduce post-harvest losses, wastes and discards in commercial and small-scale fisheries and processing operation, through improved processing, facilities and infrastructure development, on-board and on-shore handling, storage, distribution and marketing of fish and fishery products.	Brunei Darussalam <ul style="list-style-type: none"> - Production from the seafood processing industries increased and upgraded - Capacity built for seafood processors on processing technology, safety and quality of seafood products with some processors penetrating the export market - Quality of seafood maintained Malaysia <ul style="list-style-type: none"> - Capacity built for over 8,000 participants (capture, aquaculture, fishery products) during 2012 to 2015 - Fisheries officials trained on fish handling, fish processing - Certification systems for HALAL & MEST developed - Training courses conducted on fish related to public health to upgrade the technical skills and competences of DOF personnel (e.g. HACCP, ISO, Audit, Sampling, etc.) Philippines <ul style="list-style-type: none"> - Technology verification and transfer promoted - Implementation of comprehensive post-harvest and ancillary industries plan - Distribution, upgrading and monitoring of fisheries post-harvest facilities Thailand <ul style="list-style-type: none"> - Research on aquatic products conducted for value-added marine products - Aquaculture farms developed in compliance with good access to green urban agriculture

Plan of Action	Activities
POA#59 Promote the production of and preserve the diversity of traditional fish products by assisting producers to secure stable supplies of quality raw materials, meet food safety requirements and to improve product identity, nutritive value and marketing. In the process, promote local fishery products.	Philippines <ul style="list-style-type: none"> - Technical assistance program (training on food safety requirements for GMP/SSOP/HACCP and HALAL certifications) and information campaign (IEC material dissemination) - Participation to trade fairs and international seafood fora
POA#60 Develop traceability system with mechanism as needed to certify or validate the information, for the whole supply chain, and establish regulations and enforcement schemes in line with international standards. Align Member Countries' inspection systems and incorporate strengthened port inspections in the process as a means to improve inspection systems.	Malaysia <ul style="list-style-type: none"> - Traceability system for ornamental and food fish established - Traceability system for all stages in the supply chain (2011 to present) established - e-Biosecurity system for fish (2012 to present) - e-Permit for live fish movement at the entry/exit point (2013 to present) - Certification of processing plants Philippines <ul style="list-style-type: none"> - Traceability system and enforcement scheme in various productions of the whole supply chain of fish and fishery products
POA#61 Strengthen fish quality and safety management systems that support competitive position of ASEAN fish products in the world market, including moving towards ISO/IEC 17025 accreditation of national fish inspection laboratories, strengthening capacity and acknowledging the recognized national laboratories, risk analysis and equivalence agreement such as the Mutual Recognition Agreement (MRA) and promote the implementation of the quality and safety management systems among small and medium enterprises in the ASEAN region.	Malaysia <ul style="list-style-type: none"> - 6 lab accredited with ISO/IEC 17025 - National Reference Lab for fish health established Philippines <ul style="list-style-type: none"> - Upgrading facilities and services of laboratories, implementation of risk-based inspection and recognition scheme for testing laboratories - Technical skills of laboratory analysts enhanced Thailand <ul style="list-style-type: none"> - Inspection and certification of fishery products for standard and monitoring from farm to table including certification quality of marine products for export
POA#62 Encourage relevant control agencies in applying appropriate legislation and coordinated activities regarding the handling, processing, distribution, storage, marketing, quality and safety of fish and fishery products.	Malaysia <ul style="list-style-type: none"> - Cooperation between Central Competent Authority with Competent Authority on fish and fisheries products established through the conduct of Market Access Group Meeting Philippines <ul style="list-style-type: none"> - Codes of practices on proper handling, processing, storage, and distribution of fish/fishery products implemented - Mandatory accreditation of cold storage warehouse implemented - Assurance of fish/fishery products safety and quality
POA#63 Promote and conduct training programs and develop training materials to upgrade technical skills and competencies of personnel in the public and private sectors on fisheries post-harvest technology and food safety management system.	Philippines <ul style="list-style-type: none"> - Capacity building program and technology disseminated to BFAR regional offices, industries, other stakeholders on various fisheries post-harvest technologies, GMP, SSPO/HACCP and HALAL Certifications to maintain access in the global market

Plan of Action	Activities
<p>POA#66 Develop standard and guidelines for aquaculture products handling and transportation, hygienic vessel design and construction, and include training of fish handling as part of the requirement for issuance of permits at all vessel crews, and encourage new workers to enter the industry where needed.</p>	<p>Malaysia</p> <ul style="list-style-type: none"> - Malaysia Good Aquaculture Practice Guidelines developed and implemented - Hygiene on Board Guidelines developed and implemented - Posters on animal diseases of susceptible characteristics published. - Harmonization of Malaysia GAP Guidelines with those of the ASEAN conducted <p>Philippines</p> <ul style="list-style-type: none"> - Formulation and establishment of standards and guidelines for handling, transport of fishery and aquaculture products
<p>POA#67 Strengthen cooperation among Member Countries to implement international standards with regards to trade on fish and fishery products within the ASEAN region</p>	<p>Singapore</p> <ul style="list-style-type: none"> - Participation as Lead Country for the development of regional initiatives such as, <ol style="list-style-type: none"> i. ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain ii. ASEAN Catch Document Scheme (ACDS)

FISH TRADE

Issues/Activities	Countries
<p>POA#68 Establish regional/ASEAN standards applicable for fishery and aquaculture products that are in line with international requirements and applicable to the region. Harmonize standards, technical regulations and conformity assessment procedures as inputs for the establishment of the ASEAN Policy Guidelines on Standards and Conformance, to increase the competitiveness of fishery products on regional and international markets.</p>	<p>Malaysia</p> <ul style="list-style-type: none"> - ASEAN-GAP standard implemented - Live fish movement well controlled (since 2011) in accordance with the Guidelines on responsible movement of live food finfish - Chemical use in aquaculture well controlled in accordance with the Guidelines on the use of chemicals in aquaculture (since 2014) - Importation of live finfish well controlled (since 2010) in accordance with the WTO notification of import requirements for live fish - Development of branding of fish and fishery products including Halal requirements encouraged
<p>POA#69 Strengthen cooperation among Member Countries to work towards common positions reflecting international fish trade related fora, such as WTO, FAO, OIE, Codex Alimentarius Commission, CITES.</p>	<p>Malaysia</p> <ul style="list-style-type: none"> - Inputs on Malaysia's position provided at relevant international meetings (SEAFDEC, CODEX, OIE, CITES, ASWGF, RCEP-SWGS, FTA, and others)
<p>POA#71 Assist small-scale producers to comply with standards on safety and quality of fish and fishery products by providing support programs including training.</p>	<p>Malaysia</p> <ul style="list-style-type: none"> - Training on fisheries biosecurity measures conducted for educating stakeholders to fulfill biosecurity
<p>POA#74 Encourage implementation of appropriate international standard and strengthen program relevant to</p>	<p>Malaysia</p> <ul style="list-style-type: none"> - Capacity built for Officials on techniques for biotoxin analysis

Issues/Activities	Countries
Sanitary and Phytosanitary (SPS) measures, Technical Barriers to Trade (TBT) measures, R&D, as well as capacity building and awareness raising on fish trade-related issues, and information dissemination recognizing the different status of development in Member Countries.	
POA#75 Strengthen risk assessment and R&D related to the use of GMO products in fisheries and aquaculture, including food safety issues.	Malaysia - Discussion made with GMO meeting under Department of Biosafety – NRE on the use of GMO products in fisheries and aquaculture and share information and lessons learned

REGIONAL AND INTERNATIONAL POLICY FORMULATION

Issues/Activities	Countries
POA#76 Increase participation and involvement of Member Countries in International fora and technical commitment such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), <i>Codex Alimentarius Commission</i> , Food and Agriculture Organization of the United Nations (FAO), Office International des Epizooties (OIE), Regional Fisheries Bodies (REBs), and World Trade Organization (WTO); and promote ASEAN interest, recognizing that fisheries policies of relevance to the ASEAN region are increasingly discussed and agreed upon the global level.	Brunei Darussalam - National fishery policy developed based on regional management policy Malaysia - Inputs provided to various international fora to reflect Malaysia's position

RESULTS FROM THE HIGH-LEVEL CONSULTATION ON REGIONAL COOPERATION IN SUSTAINABLE FISHERIES DEVELOPMENT TOWARDS THE ASEAN ECONOMIC COMMUNITY: COMBATING IUU FISHING AND ENHANCING THE COMPETITIVENESS OF ASEAN FISH AND FISHERY PRODUCT

Executive Summary

SEAFDEC in collaboration with the ASEAN-SEAFDEC Member Countries gathered inputs based on a series of relevant technical consultations organized by SEAFDEC; and convened the “Stakeholders Consultation on Regional Cooperation in Sustainable Fisheries Development Towards the ASEAN Economic Community” on 1-2 March 2016 in Bangkok, Thailand to compile the views and inputs of the representatives from relevant private sector and governmental agencies responsible for fisheries. Based on such technical inputs, the draft Joint Declaration was developed during the “Drafting Committee Meeting” subsequently held on 3-4 March 2016. The draft Joint Declaration was then reviewed and endorsed by the SEAFDEC Council at its 48th Meeting for submission to the ASWGF Meeting at its 24th Meeting in June 2016, after which it would be circulated to the countries to obtain internal endorsement process before its final adoption at the High-level Consultation.

The High-level Consultation on Regional Cooperation in Sustainable Fisheries Development Towards the ASEAN Economic Community: Combating IUU Fishing and Enhancing the Competitiveness of ASEAN Fish and Fishery Products was organized in collaboration with the Department of Fisheries on 3 August 2016, at the “Centara Grand & Bangkok Convention Centre” at Central World in Bangkok, Thailand. The consultation adopted the Joint ASEAN-SEAFDEC Declaration on Regional Cooperation for Combating Illegal, Unreported and Unregulated (IUU) Fishing and Enhancing the Competitiveness of ASEAN Fish and Fishery Products. The results of the Consultation and the adopted Joint ASEAN-SEAFDEC Declaration is appeared in the **Appendix 1**.

Required Consideration by the Meeting

The 39th Meeting of the SEAFDEC Program Committee is requested to take note results of the High-level Consultation and adoption of the “Joint ASEAN-SEAFDEC Declaration on Regional Cooperation for Combating IUU Fishing and Enhancing the Competitiveness of ASEAN Fish and Fishery Products”. The Program Committee is also invited to advise and comments to all ASEAN Member States in implementation of the Joint Declaration as well as to SEAFDEC in regional program to support the implementation by AMSs.

**Joint ASEAN-SEAFDEC Declaration
on Regional Cooperation for Combating Illegal, Unreported and Unregulated (IUU) Fishing and
Enhancing the Competitiveness of ASEAN Fish and Fishery Products**

WE, the Senior Officials of ASEAN-SEAFDEC Member Countries met on the occasion of the “High-level Consultation on Regional Cooperation in Sustainable Fisheries Development Towards the ASEAN Economic Community: Combating IUU Fishing and Enhancing the Competitiveness of ASEAN Fish and Fishery Products,” in Bangkok, Thailand on 3 August 2016;

Recognizing the provisions in international instruments such as the United Nations Convention on the Law of the Sea (UNCLOS, 1982), Agenda 21, which was adopted at the UN Conference on Environment and Development (UNCED, 1992), the FAO Code of Conduct for Responsible Fisheries (CCRF, 1995), and the Regional Plan of Action to Promote Responsible Fishing Practices including Combating IUU Fishing in the Region (RPOA-IUU, 2007);

Guided by the ASEAN Charter, which aims to ensure sustainable development for the benefit of present and future generations and to place the well-being, livelihood and welfare of the people at the center of the ASEAN community building process;

Bearing in mind that fisheries in the Southeast Asian region had developed rapidly during the last decade contributing significantly to the improved economy and food security of the region, however, IUU fishing is a serious concern and threatens the sustainability of the region’s fisheries management and conservation measures, fishery resources and aquatic ecosystems, as well as economic viability and food security;

Aware of the existing national, regional and international initiatives in combating IUU fishing undertaken by the ASEAN Member States (AMSs), relevant Regional Fisheries Management Organizations (RFMOs), and other regional and international organizations;

Recalling the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region adopted by the ASEAN-SEAFDEC Ministers and Senior Officials responsible for fisheries during the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020 “Fish for the People 2020: Adaptation to a Changing Environment” held in June 2011;

Conscious of the need to meet food safety and quality requirements; such as through implementing the ASEAN Guidelines for the Use of Chemicals in Aquaculture and Measures to Eliminate the Use of Harmful Chemicals, ASEAN Good Aquaculture Practice (GAqP), ASEAN Shrimp GAP, and continue developing ASEAN standards in line with relevant regional and international instruments such as the Codex Alimentarius Commission and the Agreement of Sanitary and Phytosanitary (SPS) Measures;

Taking into consideration the importance of working conditions of labor in fisheries sector as outlined in the International Labour Organization (ILO), International Maritime Organization (IMO), Food and Agriculture Organization of the United Nations (FAO), and the ASEAN Declaration on the Protection and Promotion of the Rights of Migrant Workers;

HEREBY DECLARE OUR INTENT, without prejudice to the sovereign rights, obligations, and responsibilities of ASEAN-SEAFDEC Member Countries under relevant international laws and arrangements, to combat IUU fishing in the Southeast Asian region and enhance the competitiveness of ASEAN fish and fishery products by:

1. Strengthening Monitoring, Control and Surveillance (MCS) programs under national laws and regulations for combating IUU fishing and enhancing cooperation among relevant national agencies within the country for effective implementation of laws and regulations for combating IUU fishing;

2. Intensifying capacity building and awareness-raising programs, including information, education and communication campaigns;
3. Enhancing traceability of fish and fishery products from capture fisheries through the implementation of the “ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain,” and “ASEAN Catch Documentation Scheme for Marine Capture Fisheries”;
4. Enhancing traceability of aquaculture products, through the implementation of all ASEAN GAPs with certification scheme based on regulations of respective countries, and traceability systems that are harmonized with those of major importing countries;
5. Managing fishing capacity with a view to balance fishing efforts taking into account the declining status of the fishery resources in the Southeast Asian region, and establishing conservation measures based on scientific evidence;
6. Promoting the implementation of port State measures through enhanced inter-agencies and regional cooperation in preventing the landing of fish and fishery products from IUU fishing activities from all foreign fishing vessels, and encouraging the use of the “Regional Fishing Vessels Record (RFVR)”;
7. Enhancing regional cooperation in managing trans-boundary fisheries resources through regional, sub-regional, and bilateral arrangements in combating IUU fishing, particularly poaching by fishing vessels, transshipment and transportation of fish and fishery products across borders of respective countries;
8. Regulating the quality and safety of ASEAN fish and fishery products all throughout the supply chain to meet standards and market requirements as well as acceptability by importing countries, and development and promotion of ASEAN seal of excellence/label;
9. Addressing issues on labor (safe, legal and equitable practices) in the fisheries sector in the Southeast Asian region through strengthened cooperation among relevant national agencies within the country as well as establishing regional, sub-regional and bilateral cooperation and collaboration via relevant ASEAN platforms, and helping to support the development and implementation of relevant labor guidelines for the fisheries sector;
10. Enhancing close collaboration between the AMSs and relevant RFMOs in combating IUU fishing; and
11. Undertaking collective efforts in developing preventive and supportive measures to strengthen rehabilitation of resources and recovery of fish stocks to mitigate the impacts of IUU fishing.

WE HEREBY DECLARE AND ENCOURAGE THAT

This Joint ASEAN-SEAFDEC Declaration on Regional Cooperation for Combating IUU Fishing and Enhancing the Competitiveness of ASEAN Fish and Fishery Products be implemented by the ASEAN-SEAFDEC Member Countries; and that AMSs and SEAFDEC with support from donors and collaborating partners, strengthen their efforts to implement programs to combat IUU fishing and enhancing the competitiveness of ASEAN fish and fishery products.

This Joint Declaration is adopted on 3 August 2016. In attendance during the adoption are:

- 1) *Pg. Kamalrudzaman bin Pg. Haji Md Ishak*, Senior Special Duties Officer, Policy and Planning Division, Ministry of Primary Resources and Tourism, Brunei Darussalam
- 2) *Dr. Kao Sochivi*, Deputy Director General, Fisheries Administration, Kingdom of Cambodia
- 3) *Dr. Achmad Poernomo*, Senior Advisor to the Minister for Public Policy, Ministry of Marine Affairs and Fisheries, Republic of Indonesia
- 4) *Mr. Hideki Moronuki*, Senior Fisheries Negotiator, Fisheries Agency, Japan

- 5) *Mr. Xaypladeth Choulamany*, Director General, Department of Planning and Cooperation, Ministry of Agriculture and Forestry, Lao People's Democratic Republic
- 6) *Datuk Hj. Ismail bin Abu Hassan*, Director General, Department of Fisheries, Malaysia
- 7) *Mr. Khin Maung Maw*, Director General, Department of Fisheries, Republic of the Union of Myanmar
- 8) *Mr. Sammy A. Malvas*, Regional Director, Bureau of Fisheries and Aquatic Resources, Republic of the Philippines
- 9) *Dr. Tan Lee Kim*, Deputy Chief Executive Officer (Corporate and Technology), Agri-Food & Veterinary Authority, Republic of Singapore
- 10) *Dr. Theerapat Prayurasiddhi*, Permanent Secretary, Ministry of Agriculture and Cooperatives, Kingdom of Thailand
- 11) *Mrs. Nguyen Thi Trang Nhung*, Deputy Director, Department of Science, Technology and International Cooperation, Fisheries Administration, Socialist Republic of Viet Nam

PREPARATION FOR SOUTHEAST ASIAN STATE OF FISHERIES AND AQUACULTURE (SEASOFIA) 2017

1. Background

Information on the status and trends of fisheries is widely recognized as crucial in serving as basis for sustainable development and management of fisheries. SEAFDEC throughout the past decades had undertaken several activities to compile various forms of fishery-related data and information, *e.g.* regional fishery statistics based on the national statistics data provided by the Southeast Asian countries, as well as other data and information from different SEAFDEC programs/projects. In order to ensure that the outputs from these initiatives could be integrated or digested into information that support the development and management for sustainable fisheries of the region, SEAFDEC in 2010 undertook a pilot exercise in developing the publication on “The Southeast Asian State of Fisheries and Aquaculture” or “SEASOFIA”. Such endeavor was meant to provide platform for compilation of synthesized data and information generated from various programs of activities, while incorporating other data and information available in the region, in order to provide better understanding on the status and trends of fisheries and aquaculture of the region. The first SEASOFIA was published in 2012.

While taking into consideration the usefulness of the SEASOFIA especially as a tool in providing a platform for integrating regional data and information and in coming up with information to support policy planning and management of fisheries, the SEAFDEC Council during its 44th Meeting agreed that the SEASOFIA could be published on a regular basis, *i.e.* every 5 years. It was also suggested that future production of the publication should be done in close coordination with other agencies that produce similar publications in order to avoid possible redundancies of the contents. Specifically, the SEASOFIA could focus on the analysis of the specificity of fisheries in the Southeast Asian region and could include the reasons behind the changing trends of fishery production in respective Southeast Asian countries. An analysis of the respective countries’ policy directions and management policies, as well as of over-exploitation or under-exploitation of stocks should also be included in the publication. In order to minimize production costs and enhance dissemination, the publication could be produced in electronic format, *e.g.* in CD-ROM format or make the publication accessible through the SEAFDEC website.

2. Progress in preparation

In line with the directives given by the SEAFDEC Council, the Secretariat undertook steps to prepare the next SEASOFIA to be published in 2017. The outline of the publication was discussed among SEAFDEC Departments through the 16th Meeting of SEAFDEC information Staff Program (ISP) (in 2015), and proposed to the 38th SEAFDEC Program Committee Meeting (in 2015) and 48th SEAFDEC Council Meeting (in 2016).

Recommendations from the 38th PCM

- The National Coordinators were requested to facilitate providing the necessary information to ensure that the inputs into the SEASOFIA reflect the real picture of fisheries and aquaculture in the region.

Recommendations from the 38th CM

- Comment on topics of SEASOFIA
 - Part I. Status and Trends of Capture Fisheries and Aquaculture in SEA
 - Topic 1. Global Production and Utilization of Fish – to include demand for fish
 - Topic 3. Production from Marine Capture Fisheries – to include production of seaweeds; number of vessels by fleet and number of fisherfolks
 - Topic 5. Production from Aquaculture – to include production of seaweeds and crocodile
 - Topic 7. Fish Trade – to include trade among the Member Countries

Part II. Issues and Challenges

Topic 7. Vulnerability of Fisheries to Climate Change – to change to “Vulnerability of Fisheries to Climate Change and Natural Disasters”

Topic 8. Fisherfolks, and Workers in Fishing Activities (onboard) – to remove ‘onboard’ and include gender issues and women workers in fisheries

Add Competition on use of water resources with other sectors

Part III. Outlook of Fisheries and Aquaculture

Topic 1. Outlook of Fisheries and Aquaculture – to include combating IUU fishing

- While noting that statistics and data to be used in the publication of SEASOFIA 2017 would cover the 15-year period from 2000 to 2014, the AMSs would be requested to provide the most updated data on specific issues that are important, for the Secretariat to accommodate as appropriate.

- To ensure full cooperation from countries in providing inputs to the publication, SEAFDEC was requested to issue official communications to the Council Directors, requesting for the submission of article inputs on topics that may be requested by SEAFDEC.

Taking into consideration recommendations from the 38th PCM and the 48th CM, preparation of inputs was undertaken by SEAFDEC Secretariat and concerned Departments, and the draft based on the currently available inputs was compiled/harmonized for comment by the PCM

The structure of the publication, and progress in preparation of inputs appears as follows:

Topic	Contributor	Status
Part I. Status and Trends of Capture Fisheries and Aquaculture in SEA		
1. Global Production and Utilization of Fish	Sec/IPC Office	✓ Additional information was requested from countries (through letter dated 3 November 2016) for: - Number of fishing vessels of the Southeast Asian countries from 2000 to 2014 - Number of Fishers in the Southeast Asian region (2014 or latest available) - Crocodile Aquaculture in the Southeast Asian Region (2000-2014)
2. Fishery Production of Southeast Asia		
3. Marine Capture Fisheries Production of Southeast Asia		
3.1 Economically Important Species		
3.1.1 Tunas		
3.1.2 Small Pelagic Species		
3.1.3 Demersal Fish Species		
3.1.4 Crustaceans and Mollusks		
3.2 Status of Fishing Vessels		
3.3 Status of Fishers and Fish Farmers		
4. Inland Capture Fisheries Production of Southeast Asia		
5. Aquaculture Production of Southeast Asia		
5.1 Mariculture		
5.2 Brackishwater Aquaculture		
5.3 Freshwater Aquaculture		
5.4 Others (Crocodile culture)		
6. Fish Processing Industry		
7. Fish Trade		
7.1 Global Trading of Fish and Fishery Products		
7.2 Southeast Asian Export-Import of Fish and Fishery Products		
Part II. Issues and Challenges in Sustainable Fisheries Development of the Southeast Asian Region		
1. Marine Fishery Resources	SEC/PPC Office	✓
1.1 Important Pelagic Fishery Resources		
1.1.1 Tunas		
1.1.2 Scads	MFRDMD	✓
1.1.3 Mackerels		Write-up still incomplete
1.1.4 Anchovies		
1.1.5 Sardines		

Topic	Contributor	Status
1.2 Important Demersal Fishery Resources 1.2.1 Species as Raw Materials for Surimi	Sec/PPC Office	X Information was requested from countries on: Surimi processing plants and its capacity; Total quantity of raw materials by species; and Surimi products from each processing plants (2006-2015)
1.2.2 Live Reef Food Fish Species	MFRDMD	✓
1.3 Deep Sea/Offshore Fisheries Resources 1.3.1 Status and Trend	TD	X
1.3.2 Deep sea shrimps	Sec/PPC Office	X
1.3.3 Oceanic squids	Sec/PPC Office	X
1.4 Challenges and Future Direction	Secretariat	X
2. Inland Fishery Resources		
2.1 Status, Issues and Concerns 2.1.1 Inland Fisheries for Food Security and Poverty Alleviation	IFRDMD and Sec/IPC Office	✓
2.1.2 Data/Information Collection on Inland Fisheries		
2.1.3 Impacts of Water Barrier Construction on Inland Fisheries		
2.1.4 Complexity of Inland Capture Fisheries and Linkages with Other Sectors		
2.1.5 Inland Fisheries Compared with Aquaculture		
2.2 Challenges and Future Direction 2.2.1 Improvement of Data Collection and Dissemination		
2.2.2 Habitat Conservation and Restoration		
2.2.3 Application of Fish Passage to Mitigate the impacts of cross-river obstacles		
2.2.4 Mitigating the Impacts of Freshwater Aquaculture		
3. Species Under International Concern		
3.1 Sharks and Rays	MFRDMD and Sec/PPC Office	✓
3.2 Eels	IFRDMD	✓
3.3 Sea Turtles	MFRDMD	X
3.4 Sea Cucumbers	AQD	✓
3.5 Seahorses	AQD	✓
3.6 Coral Reef Ornamental Species	MFRDMD, TD, PPC Office	X
3.7 Challenges and Future Direction	Secretariat	X
4. Utilization of Fishery Resources		
4.1 Status, Issues and Concerns 4.2 Way Forward	MFRD	✓ Inputs available only on traceability of aquaculture products
5. Fishery Management		

Topic	Contributor	Status
5.1 Management of Fishing Capacity and Combating IUU Fishing	Sec/PPC Office and TD	X
5.1.1 Management of Fishing Capacity		
5.1.2 Fishing Vessel Registration and Fishing Licensing		
5.1.3 Traceability of Capture Fisheries		
5.1.4 Port State Measures		
5.1.5 MCS Systems and Networking Strengthening Regional		
5.1.6 Cooperation for Combating IUU Fishing		
5.2 Management of Inland Capture Fisheries	IFRDMD	✓
5.3 Responsible Fishing Practices		
5.3.1 By Catch Reduction and Management	TD	X
5.3.2 Optimizing Energy Use in Fisheries and Reducing Carbon Emission	TD	✓
5.4 Community-based Fishery Management Approach	TD	✓
5.5 Ecosystem Approach to Fisheries Management	TD	✓
5.6 Habitats Protection and Coastal Fishery Resources Enhancement	TD	✓
5.7 Challenges and Future Direction	Secretariat	X
6. Aquaculture Development		
6.1 Control and Prevention of Present and Emerging Transboundary Aquatic Animal Diseases	AQD	✓
6.2 Overcoming the Fish Meal Dependence in Aquaculture	AQD	✓
6.3 Producing and Distributing Good Quality Seed	AQD	✓
6.4 Producing Safe and Quality Aquaculture Products	AQD	✓
6.5 Addressing Environmental Concern Due to Intensification of Aquaculture and Climate Change	AQD	✓
7. Vulnerability of Fisheries to Climate Change and Natural Disasters		
7.1 Vulnerability of Coastal and Inland Communities and impacts on important habitats	Secretariat	✓
7.2 Impacts of Climate Variability and Climate Change on Capture Fisheries		
7.3 Impacts of Climate Change on Aquaculture Development		
7.4 Adaptation and Mitigation Strategies to Balance Impacts of Climate Variability and Climate Change		
7.5 Reducing Carbon Footprints from Fisheries and Aquaculture		
8. Fisherfolks, and Workers in Fishing Activities		
8.1 Labor in the Southeast Asian Fishing Industry	Secretariat	✓
8.2 Safety at Sea, Working Condition and Safety On-board of Fishing Vessels	TD	✓

Topic	Contributor	Status
9. Competition on Use of Water Resources with Other Sectors	IFRDMD and Sec/IPC Office	✓
Part III. Outlook of Fisheries and Aquaculture for the Southeast Asian Region		
Outlook of Fisheries and Aquaculture for the Southeast Asian Region	Secretariat	✓
Part IV. Appendices		
Part V. References		
Part VI. Acknowledgement		

✓ Draft text prepared

X Inputs not available from Departments

3. Workplan and timeframe

Activity	2015			2016												2017			
	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A
- Submission of proposed outline to 38 th PCM and DCM	■	■																	
- Submission of proposed outline to 48 th CM							■												
- Preparation of inputs from contributors			■	■	■	■	■	■	■	■	■	■	■	■					
- Harmonization and finalization of the draft													■	■					
- Submission of draft to 39 th PCM																			
- Accommodating comment from Member Countries																■	■		
- Preparation of layout and publishing																	■	■	■
- Publication available for the 49 th Council Meeting																			■

4. Required Consideration by the Meeting

- 1) To take note of the draft Southeast Asian State of Fisheries and Aquaculture (SEASOFIA) 2017 based on the currently available inputs, and provide comment for improvement of the publication; and
- 2) To provide additional inputs/comments by the end of December 2016, particularly on:
 - a. Information on the reasons behind the changing trends of fishery production in respective countries, major changes in country's directions and management policies, and other information that are necessary and should be added
 - b. Additional information as required by SEAFDEC (through letter to CD), *i.e.* on number of fishing vessels and fishers, crocodile culture, and surimi industry

**CONCEPT PROPOSAL:
SPECIAL EVENT TO COMMEMORATE 50th ANNIVERSARY OF SEAFDEC**

1. Background

SEAFDEC was established on 28 December 1967, and was currently mandated “to develop and manage the fisheries potential of the region by rational utilization of the resources for providing food security and safety to the people and alleviating poverty through transfer of new technologies, research and information dissemination activities.” As by 2017, SEAFDEC would commemorate its Golden Jubilee, the SEAFDEC Council agreed during the 48th Meeting of the SEAFDEC Council held in 2016 that the event would be organized separately from the 49th Meeting of the SEAFDEC Council (which would be hosted by Brunei Darussalam). In addition, the Council Director for Thailand offered to host the 50th Anniversary of SEAFDEC tentatively in November 2017. As during the 48th Council Meeting, the Council also supported the proposal for production of the Coffee-table-book to commemorate the anniversary of SEAFDEC, it is therefore planned that the book would be published and launched during this anniversary event.

Furthermore, as SEAFDEC was requested during the “High-level Consultation on Regional Cooperation in Sustainable Fisheries Development Towards the ASEAN Economic Community: Combating IUU Fishing and Enhancing the Competitiveness of ASEAN Fish and Fishery Products” held on 3 August 2016 to consider providing discussion forum for ASEAN Member States to discuss on the possibility of developing the Common ASEAN Fisheries Policy, this occasion would also be mobilized to facilitate discussion among the Member Countries on this matter, *e.g.* through conduct of the “High-level Consultation on Development of Common ASEAN Fisheries Policy” (tentative title).

2. Objectives

- 1) To commemorate the 50th Anniversary of SEAFDEC, and provide forum for unification of officials and people that are significant to SEAFDEC organization.
- 2) To seek view from SEAFDEC Council on roadmap for development of common ASEAN Fisheries Policy.

3. Expected Outputs

- 1) Unification of officials and people engaged in SEAFDEC throughout its establishment;
- 2) Enhanced visibility of SEAFDEC through launching of the Coffee-Table-Book to commemorate the 50th Anniversary of SEAFDEC; and
- 3) Directives *e.g.* agreed roadmap, for development of Common ASEAN Fisheries Policy.

4. Date and Venue

Special event to commemorate the “50th Anniversary of SEAFDEC” is tentatively scheduled on 15-16 November 2017 in Pattaya, Thailand.

5. Expected Participants

It is expected that the 50th Anniversary of SEAFDEC would be attended by:

- 1) SEAFDEC Council Directors, together with delegates from fisheries authority of the respective ASEAN-SEAFDEC Member Countries;
- 2) SEAFDEC: Secretary-General, Deputy Secretary-General, Department Chiefs and senior officers from SEAFDEC Secretariat and Departments;
- 3) Representatives from other organizations; and
- 4) Other guests, *e.g.* former Secretary-General and senior officials of SEAFDEC (*only for anniversary celebration*).

6. Provisional Agenda

15 November 2017

9.00-15.00	High-level Consultation on Development of Common ASEAN Fisheries Policy (Tentative title)
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16 November 2017

09.00	Departure from the pier (on-board the M.V. SEAFDEC)
09.00-15.00	Programs on-board the M.V. SEAFDEC (for maximum 50 guests, the program to be further elaborated)
15.00	Arrival to the pier
18.00-21.00	50 th SEAFDEC Anniversary Celebration Procedural Matter - Video presentation - Welcome Remarks by the SEAFDEC Council Director for Thailand - Remarks by Chairperson of SEAFDEC Council - Remarks by the SEAFDEC Secretary-General - Launching of the Coffee-table Book Reception Dinner

7. Estimated Expenditures

Estimated expenditures for the conduct of the event appear as **Appendix 1**.

Remarks: Respective countries would be requested to shoulder participation of national delegates to the event, while SEAFDEC would shoulder meeting costs and cost for the participation of SEAFDEC Secretariat, Departments and other guests.

Expenditures to be responsible by SEAFDEC shall be covered by the Minimum Regular Contribution (MRC) (*e.g.* component on priority activities urgently required by the Member Countries); while some expenditure would also be covered by the DOF Thailand as host of the SEAFDEC anniversary event.

8. Required Consideration by the Meeting

To take note of the plan for conduct of the 50th SEAFDEC Anniversary event in November 2017, and provide suggestion on activities to be included as part of the event.

Estimated Expenditures for the 50th SEAFDEC Anniversary (2 days)

	USD
1. Airfare	7,350
- SEAFDEC Departments (12 persons)	7,350
2. DSA	8,520
- SEAFDEC Departments (12 prs X 70 US\$ x 2 days)	1,680
- SEAFDEC Secretariat and TD (30 prs x 60 US\$ x 3 days)	5,400
- RFPNs (8 prs x 60 US\$ x 3 days)	1,440
3. Terminal Fee (40 US\$/person)	480
- SEAFDEC Departments (12 persons)	480
4. Accommodation (100 US\$/night)	15,300
- SEAFDEC Departments (12 rooms x 3 nights)	3,600
- Formal SG and Seniors Officials (15 rooms x 2 nights)	3,000
- SEAFDEC Secretariat & TD (25 rooms x 3 nights)	7,500
- RFPNs (4 rooms x 3 nights)	1,200
5. Meeting Package (100 prs x 40 US\$)	4,000
- Symposium (1 day)	4,000
6. Dinner	5,000
- Symposium (100 prs x 50 US\$)	5,000
- Anniversary (150 prs x 80 US\$)	<i>DOF Thailand</i>
7. Cruising M.V. SEAFDEC	10,250
- DSA staff (15 prs x 10 US\$ x 3 days)	450
- Fuel	7,500
- Insurance (60 prs x 5 US\$ x 1day)	300
- Lunch & Refreshment	1,000
- Others	1,000
8. Souvenirs	2,000
- Symposium	1,000
- Anniversary (for CDs, Delegates)	<i>DOF Thailand</i>
- Anniversary (for other guests)	1,000
9. Performance	700
- Symposium	700
- Anniversary	<i>DOF Thailand</i>
10. Materials	1,500
11. Transportation	1,000
- Transportation ((for CDs, Delegates))	<i>DOF Thailand</i>
- Transportation (for other guests)	1,000
12. Miscellaneous	1,000
Total	57,100

**CONCEPT PROPOSAL:
TOWARD THE DEVELOPMENT OF ASEAN COMMON FISHERIES POLICY**

1. BACKGROUND

Under the ASEAN-SEAFDEC collaborative mechanism established since 1999, SEAFDEC has extended technical assistance to the ASEAN Member States toward sustainable fisheries development. Several regional fisheries policy frameworks were developed in close consultation between ASEAN and SEAFDEC, *i.e.* the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region (adopted in 2001); Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020 (adopted in 2011). In line with the Resolution and Plan of Action, several fisheries cooperative frameworks were also developed by SEAFDEC in collaboration with AMSs to facilitate cooperation toward the unification of the ASEAN community. Recently during the High-level Consultation organized on 3 August 2016, where the ASEAN-SEAFDEC Member Countries adopted the “Joint ASEAN-SEAFDEC Declaration on Regional Cooperation for Combating Illegal, Unreported and Unregulated (IUU) Fishing and Enhancing the Competitiveness of ASEAN Fish and Fishery Products,” the SOM representative of Thailand also inquired on the possibility for SEAFDEC to facilitate a regional dialogue among the Southeast Asian countries that would consider the possibility of developing common fisheries policy for the ASEAN.

Under the ASEAN mechanism, activities under wide-range of fisheries disciplines have been undertaken under the ASEAN Fisheries Consultative Forum (AFCF) mechanism established in 2008. Furthermore in 2015, the ASEAN Economic Community was realized with the adoption of Vision and Strategic Plan (2016-2025) with seven Strategic Thrusts including fisheries. In line with this, the Strategic Plan of Action (SPA) for ASEAN Cooperation on Fisheries (2016-2010) was developed and subsequently adopted by the ASEAN Ministers on Agriculture and Forestry (AMAF) at the 38th AMAF Meeting on 6 October 2016 in Singapore. During the 38th AMAF Meeting, the Meeting also encouraged AMSs to develop the “ASEAN Common Fisheries Policy” in order to strengthen collective efforts for sustainable and responsible fisheries and food security in the ASEAN region towards the unification of ASEAN Community.

In recognition of the emerging needs of the AMSs, SEAFDEC therefore plans to proceed in providing forum for AMSs to discuss on the possibility and prospect for development of the “ASEAN Common Fisheries Policy.” A series of consultation could be convened in 2017 to facilitate such discussion; and considering that SEAFDEC is also planning to organized its 50th Anniversary in November 2017 in Thailand, with the participation of the SEAFDEC Council Directors and officials from the SEAFDEC Member Countries, the result of the aforementioned discussion consultation(s) could be tabled for consideration by the SEAFDEC Council during the “Special Event” which shall be convened back-to-back with the 50th Anniversary of SEAFDEC.

2. OBJECTIVES OF THIS CONCEPT PROPOSAL

The objectives of this concept proposal are not only to provide the better understanding on Common Fisheries Policy (CFP) based on the good practices by EU, but also for SEAFDEC to explore the possibility, and seek recommendations and directives from ASEAN Member States on the development of ASEAN Common Fisheries Policy through the SEAFDEC forum/meetings including Conferences for 50th Year of the Anniversary of SEAFDEC Establishment.

3. INDICATIVE WORKPLAN AND TIMEFRAME

39 th PCM (2016)	Informing on the concept proposal, and seeking recommendations from the Program Committee
19 th FCG/ASSP Meeting (2016)	Informing on the concept proposal, including recommendations from SEAFDEC Program Committee, and seeking further recommendations from the FCG/ASSP Meeting
Jan-March 2017	Development of proposal with more detailed workplan for submission to the SEAFDEC Council, taking into consideration the recommendations from the PCM and FCG/ASSP Meeting
Jan- February 2017	Inception Meeting on Development of the ASEAN Common Fisheries Policy will be co-organized by DOF/Thailand in collaboration with SEAFDEC
49 th SEAFDEC Council Meeting (2017)	Informing the SEAFDEC Council on the proposal and workplan, and seeking directives from the Council on the development of ASEAN Common Fisheries Policy
25 th ASWGFi Meeting (2017)	Informing the ASWGFi on the proposal and workplan, accommodating directives from the Council; and seeking directives from the ASWGFi on development of ASEAN Common Fisheries Policy, identification of the needs for establishment of Institution for CFP, common legislation, and international treaty, and etc.
July-October 2017	Organizing forum for AMSs to discuss, <i>i.e.</i> on Roadmap for Development of ASEAN Common Fisheries Policy.
Special Event (back-to-back, prior to 50 th SEAFDEC Anniversary) (November 2017)	<p>Special SEAFDEC Conference for 50th Anniversary of SEAFDEC on “ASEAN Common Fisheries Policy”, various key notes speakers from international Organizations, EU, Donors and Stakeholders are selected to provide views on ASEAN Common Fisheries Policy and directive toward 2030.</p> <p>The results from the discussion forum will be addressed for consideration by ASEAN-SEAFDEC Member Countries through SEAFDEC Council, ASSP mechanism, ASWGFi and high level ASEAN Ministers of Agriculture and Fisheries (AMAF)</p>

4. REQUIRED CONSIDERATION BY THE MEETING

The 39th PCM is requested to take note the results and advise from 38th AMAF. The meeting is also invited to provide recommendations toward the development of ASEAN Common Fisheries Policy, particularly on: subjects/activities/program, structures and working mechanisms, and regional legal instruments toward development of CFP for ASEAN.

CLOSING REMARKS

*By Dr. Kom Silapajarn,
SEAFDEC Secretary-General*

Distinguished Members of the SEAFDEC Program Committee,
SEAFDEC Senior Officials,
Representatives from our Collaborating Partners,
Ladies and Gentlemen, Good Evening!

After what seems to be a very long three-day deliberation on the SEAFDEC programs and important issues, we have come to the end of the Thirty-ninth Meeting of SEAFDEC Program Committee. On behalf of the SEAFDEC Secretariat and Departments, I would like to express our sincere gratitude to all of you for providing us with meaningful ideas, comments and suggestions on the various aspects that we have discussed, and for your other contributions that make this Meeting achieve its objectives. I would also like to thank our staff from the Inland Fishery Resources Development and Management Department (IFRDMD) and the Secretariat for diligently working behind the scene to make this Meeting successful.

As you are already aware of, the recommendations that we have just adopted especially with respect to the programs of SEAFDEC would be presented to the next Meeting of the FCG/ASSP. The output of such Meeting would be subsequently presented to the forthcoming SEAFDEC Council Meeting for final endorsement and approval, and inclusion in the overall activities of SEAFDEC. We are therefore very thankful to all of you for providing us with significant advice and proper guidance leading to the achievement of the objectives of this Meeting.

Finally, Ladies and Gentlemen,

While our meeting is coming to an end, please allow me to extend our wishes to those who will leave this traditional arts and cultural heritage city before the FCG/ASSP Meeting, for you to have safe journey back to your homes. For the others, I will see you during the FCG/ASSP Meeting from tomorrow until Friday. Finally, I wish you all the best and every success in fulfilling the challenges that have been entrusted to us towards the sustainability of fisheries in our region. With that Ladies and Gentlemen, I now declare the Thirty-ninth Meeting of the Program Committee closed.

Thank you.