

**REPORT OF
THE FORTY-THIRD MEETING OF THE PROGRAM COMMITTEE
OF THE SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER**

Online Meeting
10 - 12 November 2020



**THE SECRETARIAT
SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER**

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EXECUTIVE SUMMARY

The Forty-third Meeting of the Program Committee (43PCM) of the Southeast Asian Fisheries Development Center (SEAFDEC) organized through an online platform on 10-12 November 2020. The Secretary-General of SEAFDEC, in her capacity as the Chairperson of SEAFDEC Program Committee, chaired the Meeting which reviewed the programs implemented by SEAFDEC in 2020 and scrutinized the programs to be implemented in 2021 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 Projects in 2020 and those for implementation in 2021 appears in *Appendix 1*.

The 43PCM noted **Programs under the FCG/ASSP Mechanism**, which comprise sixteen (16) projects that have been categorized under the six (6) SEAFDEC Strategies: 1) Securing the sustainability of fisheries to contribute to food security, poverty alleviation and livelihood of people in the region; 2) Supporting the sustainable growth of aquaculture to complement fisheries and contribute to food security, poverty alleviation and livelihood of people in the region; 3) Ensuring the food safety and quality of fish and fishery products for the Southeast Asian region; 4) Enhancing trade and compliance of the region's fish and fishery products with market requirements; 5) Addressing cross-cutting issues, such as labor, gender and climate change, where related to international fisheries; and 6) Empowering SEAFDEC to strengthen its roles in the region and to improve its services to Member Countries; and three (3) new projects that are scheduled to commence in 2021. In addition, the 43PCM also noted the seven (7) Pipeline Projects, of which SEAFDEC is securing the necessary funding for their implementation. After the deliberations, the 43PCM approved the implementation of the projects in 2020 and those for implementation in 2021, and provided recommendations which are summarized as follows:

Strategy I: Securing the sustainability of fisheries to contribute to food security, poverty alleviation and livelihood of people in the region

(1) Strengthening a Regional Cooperation and Enhancing National Capacities to Eliminate IUU Fishing in Southeast Asia

- TD to continue extending assistance to Viet Nam in the implementation of activities to promote the eACDS, especially on the adoption of eACDS
- TD to streamline the implementation of PSM with the initiative of Thailand under the ASEAN Network for Combating IUU Fishing (AN-IUU) as both activities endeavor to come up with a platform for sharing of information on the implementation of PSM
- TD to support the conduct of training for inspectors working in designated ports in Viet Nam to enable them to conduct inspections in line with the Port State Measures Agreement (PSMA)
- TD to maintain an archive of the vessels' information in the RFVR Database to ensure that such data remains in the system even though the vessels' registration may no longer be valid.
- TD to provide capacity development program to the AMSs on the proposed transfer of responsibility to the AMSs to key in their respective data into the RFVR Database
- SEAFDEC Secretariat and the Departments to develop appropriate indicators and means of verification in its project documents, which should be achievable
- TD to take into consideration the different fisheries conditions in the AMSs on the development of the RFVR less than 24 meters in length, and to find the ways and means of alleviating the burden of the countries in providing the data that would require allocation of additional resources for data collection due to the complexity of gathering the information on small-size vessels
- TD to consider the fact that since most small-size vessels could not operate beyond the respective countries' waters, the development of the RFVR Database for these vessels might not be useful
- TD to organize a consultation meeting among the AMSs with the involvement of RPOA-IUU and the FAO Headquarters, to discuss the way forward for the development of the RFVR Database including its linkage with the RPOA-IUU Watchlist and the FAO Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels (Global Record)

(2) Harmonization and Enhancing Utilization of Fisheries Statistics and Information

- The 43PCM took note of the progress of this project in 2020

(3) Responsible Fishing Technology and Practice

- TD to consider conducting studies on responsible fishing technologies and practices in vulnerable marine areas to ensure that endangered species, particularly dugong are not negatively affected by fishing operations
- TD to consider the request of the Philippines to utilize the SEAFDEC vessel for the conduct of a hydro-acoustic survey of fishing grounds and biomass distribution of small pelagic fishes in Philippine waters
- TD to consider conducting a study on the reduction of the impacts of trawl fishing on the environment as well as studies on alternative fishing gears
- TD to consider conducting a study on eco-friendly fishing gears and vessels

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

- MFRDMD to consider the concern of Thailand on the need for expertise on taxonomic identification of sharks and rays
- MFRDMD to consider working closely with the CTI-CFF on their development of the Regional Plan of Action on Conservation and Management of Sharks (RPOA-Sharks)
- SEAFDEC to provide continued support in the development of the ASEAN Common Position on conservation and management of sharks to be raised at important international events, such as the COP CITES

(5) Sustainable Utilization of Anguillid Eels in the Southeast Asian Region

- SEAFDEC to continue providing technical assistance in addressing the difficulties in identifying the eel species at glass eel stage, and to consider developing a field guide for glass eel species identification
- SEAFDEC to consider including the development of hatchery and aquaculture techniques in its future activities

(6) Sustainable Utilization of Fisheries Resources and Resources Enhancement in Southeast Asia

- The 43PCM took note of the progress of this project in 2020

(7) Fisheries Management Strategies for Pelagic Fish Resources in the Southeast Asian Region

- MFRDMD to identify certain pelagic species for conducting stock assessment as the results could be used as basis for the formulation of management strategies of purse seine fisheries in the future
- MFRDMD to come up with science-based policy documents taking into account the biological and socioeconomic indicators, and in addition to the development of science-based information on fish stocks, to also consider developing guidelines on the management of pelagic fish resources
- MFRDMD to consider seeking the cooperation of certain third-party institutions or external experts to review and promote the utilization of the results of the stock assessment by a wider audience

(8) Management Scheme of Inland Fisheries in the Southeast Asian Region

- IFRDMD to share the information from its research on inland fisheries management conducted in collaboration with the WorldFish Center and the Australian Centre for International Agricultural Research (ACIAR), to enhance the utilization of this project's outputs

(9) Small-scale Fisheries Management for Better Livelihood and Fisheries Resources

- SEAFDEC to consider conveying the results of the Workshop on the FAO SSF Guidelines at relevant international and regional fora, and to continue supporting the AMSs in the implementation of the FAO SSF Guidelines

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

- The 43PCM took note of the progress of this project in 2020

(11) Strengthening the Effective Management of Inland Fisheries and Aquaculture in AMS with GIS and RS Technology

- The 43PCM took note of the progress of this project in 2020

(12) Development of Stock Assessment Methods and Strengthening of Resources Management Measures for Tropical Anguillid Eel in Southeast Asia

- The 43PCM took note of the progress of this project in 2020

Strategy II: Supporting the sustainable growth of aquaculture to complement fisheries and contribute to food security, poverty alleviation and livelihood of people in the region

(13) Sustainable Aquaculture through Cost-Effective Culture Systems, and Prompt and Effective Aquatic Animal Health Management

- The 43PCM took note of the progress of this project in 2020

Strategy III: Ensuring the food safety and quality of fish and fishery products for the Southeast Asian region

(14) Enhancing Food Safety and Competitiveness of Seafood Products

- The 43PCM took note of the progress of this project in 2020

Strategy IV: Enhancing trade and compliance of the region's fish and fishery products with market requirements

- Nil

Strategy V: Addressing cross-cutting issues, such as labor, gender and climate change, where related to international fisheries

(15) Assistance for Capacity Building in the Region to Address International Fisheries-related Issues

- SEAFDEC to consider conducting regional workshops to discuss cross-cutting issues particularly on fisheries subsidies which is currently under negotiation at the World Trade Organization (WTO)
- SEAFDEC to consider conducting a review of the status of international fish trade-related issues at least twice a year considering the dynamics of the changing issues

Strategy VI: Empowering SEAFDEC to strengthen its roles in the region and to improve its services to Member Countries

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

- TD to follow up with the AMSs on enhancing the utilization of the SEAFDEC vessel in the future, as requested by Japan
- TD to continue the conduct of fisheries resources surveys in the Gulf of Thailand in the succeeding years to obtain time series data, and to expand the survey to the Andaman Sea
- TD to consider the conduct of hydro-acoustic survey using the M.V. SEAFDEC 2 in Philippine waters which was proposed to be conducted in 2020 but has been postponed to 2021 due to the COVID-19 situation

New Projects

(17) ASEAN-JICA Food Value Chain Development Project

- The 43PCM approved the project's activities proposed for 2021

(18) ASEAN-JICA Cooperation for Capacity Building on IUU Fishing Countermeasures in Southeast Asia

- The 43PCM approved the projects and activities proposed for 2021

(19) Regional Collaborative Research and Capacity Building for Monitoring and Reduction of Marine Debris from Fisheries in Southeast Asia

- TD to consider addressing the need for capacity building on the collection of information on marine debris
- SEAFDEC to communicate and exchange information with the Asia-Pacific Economic Cooperation (APEC) Secretariat on the issues on marine debris to enhance the activities to be implemented by SEAFDEC under this Project
- SEAFDEC to confirm the establishment of pilot sites in Malaysia for the collection of information on marine debris

The 43PCM endorsed the progress of the **Departmental Programs** in 2020 which comprise ten (10) programs, six (6) of which were implemented by AQD, namely: 1) Quality Seed for Sustainable Aquaculture; 2) Healthy and Wholesome Aquaculture; 3) Maintaining Environmental Integrity through Responsible Aquaculture; 4) Meeting Social and Economic Challenges in Aquaculture; 5) Adapting to Climate Change Impacts; and 6) Collaborative projects with the Philippine Government; three (3) by TD, namely: 1) Promotion on Strengthening of SEAFDEC Visibility and Enhancing Human Capacity Building; 2) Improvement of Fisheries Technology and Reduction of the Impact from Fishing; and 3) SEAFDEC Capacity Development through USAID Sustainable Fish Asia Activity; and one (1) by IFRDMD namely: 1) Modernizing Irrigated Agriculture to Protect and Restore Aquatic Biodiversity and Ecosystem Services in South-East Asia. The 43PCM then provided recommendations on these programs summarized as follows:

1. Aquaculture Department

- To consider sharing with the AMSs the results of its studies on fish diseases and fish feed for commercialization
- To be involved in the development of the Small-scale Aquaculture Guidelines (SSA Guidelines)
- To share with the Member Countries through the SEAFDEC National Coordinators, the information on the Integrated Multi-trophic Aquaculture (IMTA) demonstration projects
- To share with the AMSs the results of its studies on fish feed development so that these could be expanded to commercial scale, and to provide training courses for national fishery officers of the AMSs to enable them to transfer the knowledge to fish farmers

2. Training Department

- The 43PCM noted the progress and achievements of the Departmental Programs of TD

3. Inland Fishery Resources Development and Management Department

- The 43PCM supported the implementation of the proposed Departmental Program of IFRDMD in 2021

The 43PCM took note of the activities of the **Other Programs** implemented in 2020 and approved the proposed activities for 2021 which comprise four (4) programs, three (3) of which were implemented by TD, namely: 1) Implementing the Lower Mekong Fish Passage Initiative in Cambodia, Thailand, and Viet Nam implemented by TD; 2) Gender Dimension in the Value Chain of Small-scale Fisheries & Aquaculture in Southeast Asia; and 3) Implementing the Strategic Action Programme for the South China Sea; one (1) program would implemented by AQD on “Seminar-Workshop on Aquaculture Development in Southeast Asia (ADSEA)”.

(1) Implementing the Lower Mekong Fish Passage Initiative in Cambodia, Thailand, and Viet Nam

- TD to consider working with the DOF of Thailand in monitoring and evaluating the efficiency of fish passage, especially during the spawning seasons of fishes

(2) Gender Dimension in the Value Chain of Small-scale Fisheries and Aquaculture in Southeast Asia

- The 43PCM noted the progress and achievements of this Other Program of TD

(3) Implementing the Strategic Action Programme for the South China Sea

- SEAFDEC Secretariat to send invitation letters to the respective National Coordinators of project participating countries to attend the Second Regional Inception Phase Meeting of the SCS SAP to ensure that they are aware of the Project plan and progress of the implementation of the SCS SAP

The 43PCM also took note of the status of the seven (7) **Pipeline Projects**:

- (1) Sustainable Management of Fisheries, Marine Living Resources and their Habitats in The Bay of Bengal Region for the Benefit of Coastal States and Communities: Support to SEAFDEC Member Countries**
 - The project proposal which has SEAFDEC serving as the Project Executing Agency, was submitted by FAO to the Global Environmental Facility (GEF) for funding support
- (2) GoTFish: Promoting Sustainable Use of the Gulf of Thailand Fishery Resources through the Blue Economy and the Ecosystem Approach to Fisheries**
 - The project proposal is being developed and would be submitted by FAO to GEF for funding support and SEAFDEC will serve as the Project Executing Agency.
- (3) World Bank Project: Piloting the electronic ASEAN Catch Documentation Scheme (eACDS) in Viet Nam**
 - The project proposal is being developed by TD to seek funding support from the World Bank
- (4) Blue Horizon: Ocean Relief through Seaweed Aquaculture in Southeast Asia**
 - The project proposal with SEAFDEC as the Project Executing Agency, was submitted by WWF-US for possible funding support from GEF
- (5) Improving Healthy Ocean Ecosystems through Trawling Best Practices and Fishing Technology Innovations**
 - The project proposal would be developed by TD for possible funding support from GEF
- (6) Proposal on Implementation and Assessment of Fishing Capacity and Zoning System for Southeast Asia**
 - MFRDMD would submit the project proposal for possible funding support from potential donor
- (7) ASEAN Regional Technical Consultation on Aquatic Emergency Preparedness and Response Systems for Effective Management of Transboundary Disease Outbreaks in Southeast Asia – Phase 2**
 - SEAFDEC would submit the project Concept Note to the Japan-ASEAN Integration Fund (JAIF) for funding support

The 43PCM noted the statements sent to SEAFDEC Secretariat by non-member governments and international/regional organizations, namely: The Food and Agriculture Organization of the United Nations/Regional Office for Asia and Pacific (FAO/RAP), INFOFISH, and Mekong River Commission (MRC).

While taking note of the efforts made by the SEAFDEC Secretariat in preparing the publication of the Southeast Asian State of Fisheries and Aquaculture (SEASOFIA) 2022, the 43PCM supported the proposed outline, work plan, and set of questionnaires to gather the necessary inputs from the AMSs. The 43PCM also supported the proposed Study on the Impacts of the Coronavirus-2019 Pandemic on Fisheries Sector of the ASEAN-SEAFDEC Member Countries to be carried out by the SEAFDEC Secretariat.

The 43PCM noted the presentations made by the representative from the Fisheries Agency of Japan (FAJ) that included the Global Target of Marine Protected Area (MPA) in post-2020 Global Biodiversity Framework, and the concern on the proposed revision of targets related to MPA in the Framework inheriting the Aichi Target 11. The 43PCM also noted the proposed amendments of the Regulations on Discharge or Loss of Fishing Gear from Ships Stipulated in Annex V of the MARPOL and requested the SEAFDEC Member Countries to participate in the discussions to be organized by the International Maritime Organization (IMO).

While taking note of the presentation made by the representative from FAJ on the Updates on JTF Budget Requests in Japan, specifically seeking the cooperation of the Member Countries, the 43PCM thanked the Government of Japan for its continued support that contributed to the development of sustainable fisheries in the region, and encouraged the other SEAFDEC Member Countries to convey their acknowledgement of the support of the Government of Japan to SEAFDEC, during the high-level meetings of SEAFDEC and the ASEAN. The 43PCM also noted the presentation made by the representative from FAJ and Marine

Eco-Label Japan Council on the Potential of Marine Eco-Label in eco-labeling the fish and fishery products of the AMSs.

The 43PCM adopted the **Report of the Forty-third Meeting of the SEAFDEC Program Committee** for submission to the 53rd Meeting of SEAFDEC Council, and to the ASEAN through the 23rd Meeting of the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP).

SEAFDEC Programs and Projects for the Year 2020-2021

I. Programs of Activities under FCG/ASSP Mechanism

Strategy/Project Title	Lead Department	2020	2021
Strategy I: Securing the sustainability of fisheries to contribute to food security, poverty alleviation and livelihood of people in the region			
1. Strengthening a Regional Cooperation and Enhancing National Capacities to Eliminate IUU Fishing in Southeast Asia	TD	Y	Y
2. Harmonization and Enhancing Utilization of Fishery Statistics and Information	SEC	Y	Y
3. Responsible Fishing Technology and Practice	TD	Y	Y
4. Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region	MFRDMD	Y	Y
5. Sustainable Utilization of Anguillid Eels in the Southeast Asian Region	IFRDMD	Y	Y
6. Sustainable Utilization of Fisheries Resources and Resources Enhancement in Southeast Asia	TD	Y	Y
7. Fisheries Management Strategies for Pelagic Fish Resources in the Southeast Asian Region	MFRDMD	Y	Y
8. Management Scheme for Inland Fisheries in the Southeast Asian Region	IFRDMD	Y	Y
9. Small-scale Fisheries Management for Better Livelihood and Fisheries Resources	TD	Y	Y
10. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand	TD	Y	Y
11. Strengthening the Effective Management of Inland Fisheries and Aquaculture in AMS with GIS and RS Technology	SEC	Y	Y
12. Development of Stock Assessment Methods and Strengthening of Resources Management Measures for Tropical Anguillid Eel in Southeast Asia	SEC	Y	Y
Strategy II: Supporting the sustainable growth of aquaculture to complement fisheries and contribute to food security, poverty alleviation and livelihood of people in the region			
13. Sustainable Aquaculture through Cost-Effective Culture Systems, and Prompt and Effective Aquatic Animal Health Management	AQD	Y	Y
Strategy III: Ensuring the food safety and quality of fish and fishery products for the Southeast Asian region			
14. Enhancing Food Safety and Competitiveness of Seafood Products	MFRD	Y	Y
Strategy IV: Enhancing trade and compliance of the region's fish and fishery products with market requirements			
Nil			
Strategy V: Addressing cross-cutting issues, such as labor, gender and climate change, where related to international fisheries			
15. Assistance for Capacity Development in the Region to Address International Fisheries-related Issues	SEC	Y	Y
Strategy VI: Empowering SEAFDEC to strengthen its roles in the region and to improve its services to Member Countries			
16. Fisheries Resource Survey & Operational Plan for M.V. SEAFDEC 2	TD	Y	Y

New Proposed Projects for the Year 2021

Project Title	Lead Department	Period
1. ASEAN-JICA Food Value Chain Development Project	SEC	2021-2024
2. ASEAN-JICA Cooperation for Capacity Building on IUU Fishing Countermeasures in Southeast Asia	TD	2021-2024
3. Regional Collaborative Research and Capacity Building for Monitoring and Reduction of Marine Debris from Fisheries in Southeast Asia	SEC	2021-2022

II. Departmental Programs

Programs/Projects	Departments	2020	2021
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. Meeting Social and Economic Challenges in Aquaculture	AQD	Y	Y
5. Adapting to Climate Change Impacts	AQD	Y	Y
6. Collaborative projects with the Philippine Government	AQD	Y	Y
7. Promotion on Strengthening of SEAFDEC Visibility and Enhancing Human Capacity Building	TD	Y	Y
8. Improvement of Fisheries Technology and Reduction of the Impact from Fishing	TD	Y	Y
9. SEAFDEC Capacity Development through USAID Sustainable Fish Asia Activity	TD	Y	Y
10. Modernizing Irrigated Agriculture to Protect and Restore Aquatic Biodiversity and Ecosystem Services in South-East Asia	IFRDMD	Y	Y

III. Other Programs

Programs Title	Departments	2020	2021
1. Implementing the Lower Mekong Fish Passage Initiative in Cambodia, Thailand, and Viet Nam	TD	Y	Y
2. Gender Dimension in the Value Chain of Small-scale Fisheries & Aquaculture in Southeast Asia	TD	Y	Y
3. Implementing the Strategic Action Programme for the South China Sea	TD	Y	Y
4. Seminar-Workshop on Aquaculture Development in Southeast Asia (ADSEA)	AQD	Y	Y

IV. Pipeline Projects

Project Title	Lead Department	Period
1. Sustainable Management of Fisheries, Marine Living Resources and Their Habitats in the Bay of Bengal Region for the Benefit of Coastal States and Communities: Support to SEAFDEC Member Countries	TD	2021-2025
2. GoTFish: Promoting Sustainable Use of the Gulf of Thailand Fishery Resources through the Blue Economy and the Ecosystem Approach to Fisheries	TD	-
3. World Bank Project: Piloting the electronic ASEAN Catch Documentation Scheme (eACDS) in Viet Nam	TD	-
4. Blue Horizon: Ocean Relief through Seaweed Aquaculture in Southeast Asia	AQD	-
5. Improving Healthy Ocean Ecosystems through Trawling Best Practices and Fishing Technology Innovations	TD	-
6. Proposal on Implementation and Assessment of Fishing Capacity and Zoning System for Southeast Asia	MFRDMD	-
7. ASEAN Regional Technical Consultation on Aquatic Emergency Preparedness and Response Systems for Effective Management of Transboundary Disease Outbreaks in Southeast Asia – Phase 2	AQD	-

Remarks:

Y = Program implemented during the year

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LIST OF ACRONYMS

ACDS	ASEAN Catch Documentation Scheme
AHPND	Acute Hepatopancreatic Necrosis Disease
AMAF	ASEAN Ministers on Agriculture and Forestry
AMSs	ASEAN Member States
APFIC	Asia Pacific Fisheries Commission
AQD	SEAFDEC Aquaculture Department
ARs	Artificial Reefs
ASEAN	Association of Southeast Asian Nations
ASSP	ASEAN-SEAFDEC Strategic Partnership
ASWGF	ASEAN Sectoral Working Group on Fisheries
BOBLME	Bay of Bengal Large Marine Ecosystem
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
ETP	Endangered, Threatened and Protected
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FCG	ASEAN-SEAFDEC Fisheries Consultative Group
FEDs	Fish Enhancing Devices
GEF	Global Environmental Facility
GIS	Geographic Information System
IFRDMD	SEAFDEC Inland Fishery Resources Development and Management Department
ILO	International Labour Organization
IOTC	Indian Ocean Tuna Commission
IUCN	The International Union for Conservation of Nature
IUU Fishing	Illegal, Unreported and Unregulated Fishing
JAIF	Japan-ASEAN Intergration Fund
JICA	Japan International Cooperation Agency
JTED	Juvenile and Trash Excluder Devices
JTF	Japanese Trust Fund
MCS	Monitoring, Control and Surveillance
MCs	Member Countries
MFRD	SEAFDEC Marine Fisheries Research Department
MFRDMD	SEAFDEC Marine Fishery Resources Development and Management Department
NACA	Network of Aquaculture Centres in Asia-Pacific
NDFs	Non Detriment Findings
NPOA	National Plan of Action
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
RPOA	Regional Plan of Action
RS	Remote Sensing
RTC	Regional Technical Consultation
SEAFDEC	Southeast Asian Fisheries Development Center
SEASOFIA	Southeast Asian State of Fisheries and Aquaculture
SDGs	Sustainable Development Goals
SOM-AMAF	Senior Officials Meeting of the ASEAN Ministers on Agriculture and Forestry
SOP	Standard Operating Procedure
TAC	Total Allowable Catch
TiLV	Tilapia Lake Virus
TD	SEAFDEC Training Department
UNEP	United Nations Environment Programme
USAID	U.S. Agency for International Development

US-DOI
VMS
WCPFC

U.S. Department of Interior
Vessel Monitoring System
Western and Central Pacific Fisheries Commission

REPORT OF THE FORTY-THIRD MEETING OF THE PROGRAM COMMITTEE OF THE SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER

Online Meeting
10-12 November 20

INTRODUCTION

1. The Forty-third Meeting of the Program Committee (43PCM) of the Southeast Asian Fisheries Development Center (SEAFDEC) was held through an online platform on 10-12 November 2020. The 43PCM was attended by the SEAFDEC Program Committee Members for Brunei Darussalam, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam together with their respective delegations, as well as the SEAFDEC Secretary-General, Deputy Secretary-General, and Department Chiefs together with officers from the SEAFDEC Secretariat and Departments. The List of Participants appears as **Annex 1**.

I. OPENING OF THE MEETING

2. The Secretary-General of SEAFDEC *Ms. Malinee Smithrithee*, in her capacity as Chairperson of the Program Committee, welcomed the participants to the 43PCM. She explained the necessity of conducting this 43PCM through an online platform due to the coronavirus (COVID-19) situation. While recalling the adoption of the “Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030” by the Special Senior Officials’ Meeting of the 41st Meeting of the ASEAN Ministers on Agriculture and Forestry on 5 August 2020 and the 42nd Meeting of the ASEAN Ministers on Agriculture and Forestry on 21 October 2020, as well as by the Senior Official and Minister responsible for fisheries of Japan *ad referendum*, she reiterated the importance of the document to serve as fishery policy frameworks for the countries in the region, and for SEAFDEC to be able to continue its efforts toward achieving the sustainability of fisheries in the coming decade. She further emphasized that the role of the 43PCM is important in scrutinizing the SEAFDEC programs implemented in 2020 and the programs to be undertaken in 2021, and that the outputs would be submitted to the forthcoming meeting of the SEAFDEC Council in 2021 for consideration and approval, as well as to the ASEAN Sectoral Working Group on Fisheries (ASWGF_i) as appropriate through the Twenty-third Meeting of the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) scheduled on 17-18 November 2020. Then, she declared the 43PCM open. Her Opening Remarks appear as **Annex 2**.

II. ADOPTION OF THE AGENDA AND ARRANGEMENTS OF THE MEETING

3. The Agenda which appears as **Annex 3** was adopted.

III. REVIEW OF SEAFDEC PROGRAM IMPLEMENTATION FOR THE YEAR 2020 AND PROPOSED PROGRAMS FOR THE YEAR 2021

4. The 43PCM took note of the progress and achievements of 16 ongoing projects under the FCG/ASSP Mechanism, and reviewed three (3) new projects which are scheduled to commence in 2021. Subsequently, the 43PCM noted the progress and achievements of 10 Departmental Programs, and three (3) Other Programs. In addition, seven (7) Pipeline Projects were also reviewed and noted. The 43PCM was also informed that the recommendations and comments raised on the projects implemented in 2020 and those proposed for 2021 would be incorporated in the projects and submitted to the SEAFDEC Council and higher authorities of the ASEAN for endorsement and/or approval.

3.1 Program under the FCG/ASSP Mechanism

5. The 43PCM noted the progress and achievements of the projects implemented by the SEAFDEC Secretariat and Departments in 2020, and the projects and activities proposed for 2021 under the FCG/ASSP Mechanism (**Annex 4**). While approving the projects and activities proposed for 2021, the 43PCM also suggested the ways to improve the implementation of such projects.

3.1.1 Strategy I: Securing the sustainability of fisheries to contribute to food security, poverty alleviation and livelihood of people in the region

(1) Strengthening a Regional Cooperation and Enhancing National Capacities to Eliminate IUU Fishing in Southeast Asia

6. The Program Committee Member for Viet Nam expressed the appreciation to SEAFDEC for supporting the country's activities on the electronic ASEAN Catch Documentation Scheme (eACDS), and informed the 43PCM that Viet Nam would organize the Workshop on Introduction of eACDS on 16-17 December 2020 to promote the implementation of eACDS in two provinces of Viet Nam. In this regard, she requested SEAFDEC to continue extending assistance to Viet Nam in the implementation of its activities, especially in the adoption of eACDS in the country.

7. The Program Committee Member for Viet Nam also sought clarification on the linkage between the proposed Regional Technical Consultation to Improve the Utilization of Regional Fishing Vessels Record (RFVR) 24 meters in length and over, and the proposed development of a vessel watchlist in the 5-year plan of the project proposal. In response, the representative from TD explained that during the Teleworkshop on Development and Improvement of Regional Tools for Combating IUU Fishing in Southeast Asia organized by TD in August 2020, the Regional Plan of Action to Promote Responsible Fishing Practices including Combating Illegal, Unreported and Unregulated Fishing in the Region (RPOA-IUU) mentioned that the RPOA-IUU has already established its Vessel Watchlist. In order to avoid the duplication of work, SEAFDEC was requested during the abovementioned Teleworkshop to communicate with RPOA-IUU on this matter.

8. Moreover, the Program Committee Member for Viet Nam also reiterated the objectives of the RFVR Database which include supporting the verification of vessel registration/licensing in coordination with Monitoring, Control and Surveillance (MCS) and the Port State Measures (PSM) implementation, thus, the expansion of RFVR to include vessels less than 24 meters in length could pose challenges considering the large numbers of such vessels in the Southeast Asian region. The representative from TD therefore elucidated that during the August 2020 Teleworkshop, the participants from the AMSs expressed the willingness to cooperate on the expansion of the RFVR, and agreed that the RFVR less than 24 meters should include those vessels measuring from 18.00 m to 23.99 m in length.

9. With regards to the activity on the implementation of PSM in the Southeast Asian region, the Program Committee Member for Viet Nam also proposed that the linkage of this activity of SEAFDEC with the initiative of Thailand under the ASEAN Network for Combating IUU Fishing (AN-IUU) should be streamlined as these activities endeavor to come up with a platform for sharing of information on the implementation of PSM. Moreover, she also requested SEAFDEC to support the conduct of training for inspectors working in designated ports in Viet Nam to enable them to conduct inspections in line with the Port State Measures Agreement (PSMA).

10. The Program Committee Member for Malaysia suggested that the RFVR should maintain an archive of the vessels' information to ensure that such data remains in the system even though the vessels' registrations may no longer be valid. On the proposed transfer of responsibility to the respective AMSs for them to key in data to the RFVR Database, this concern should be discussed again among the AMSs as it could overload the countries, like for example in the case that Malaysia which has limited capacity to work on several database systems, *e.g.*, licensing, fishers registration, and Malaysia Fishing Vessels Record (MFVR). Moreover, SEAFDEC was also commended for its effort in promoting the implementation of the eACDS in Malaysia as this has provided inputs during the conduct of training sessions on eACDS for various stakeholders in the country.

11. Regarding the development of appropriate indicators and means of verification in SEAFDEC project documents, which are important for monitoring the progress and impacts of the projects, the Program Committee Member for the Philippines suggested that these should be achievable within the Project's timeframe. He then expressed the concern on the indicator "healthy fisheries resources" under this Project as there is no activity that could lead to achieving such indicator.

12. While supporting the activities that aim to combat IUU fishing in the Southeast Asian region, the Program Committee Member for Thailand expressed the willingness to provide the appropriate resource persons for the relevant SEAFDEC activities and share the country's experiences from the implementation

of PSM in Thailand. In response to the clarification sought on the “promotion on the utilization of RFVR in Thailand” implemented by TD in 2020, the representative from TD clarified that some provinces of Thailand were visited to discuss with their respective officers working on PSM on the utilization of the RFVR to support the implementation of PSM.

13. While expressing support to the implementation of PSM in the Southeast Asian region, the Program Committee Member for Indonesia reiterated that Indonesia has become a party of the PSMA since 2016 and currently is in the final stage of PSM implementation in the country after designating four PSM fishing ports. On the RFVR Database, he also mentioned that Indonesia is actively updating its data and information as part of its commitment to combat IUU fishing, and encouraged the other AMSs to also actively provide their updated data and information for the RFVR Database. Nevertheless, on the development of the RFVR less than 24 meters in length, he raised the concern on the different fisheries conditions among the AMSs, and that SEAFDEC should find the ways and means of alleviating the burden of the countries in providing the data that would require allocation of additional resources for data collection due to the complexity of gathering the information on small-size vessels. Furthermore, he also mentioned that since most of such small-size vessels could not operate beyond the respective countries’ waters, the development of the RFVR Database for these vessels might not be useful.

14. On the eACDS, the Program Committee Member for Indonesia also reiterated that this should not be viewed only as a tool to prevent the entry of IUU fishing products into the supply chain but also to support the enhancement of intra-regional and international trade of fish and fishery products.

15. In order to come up with the clearer framework for the RFVR, the SEAFDEC Secretary-General suggested that TD should organize a consultation meeting among the AMSs with the involvement of RPOA-IUU and the FAO Headquarters, to discuss the ways forward for the development of the RFVR Database including its linkage with the RPOA-IUU Watchlist and the FAO Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels (Global Record).

(2) Harmonization and Enhancing Utilization of Fisheries Statistics and Information

16. The 43PCM took note of the progress of the Project activities implemented in 2020 and approved the proposed activities for 2021 as presented by SEAFDEC Secretariat.

(3) Responsible Fishing Technology and Practice

17. The Program Committee Member for Thailand expressed the country’s gratitude to SEAFDEC for implementing this Project which is crucial for Thailand, especially the studies on the effects of fishing activities and gears on the marine ecosystems, as well as the application and modification of marine engineering technologies. In this regard, TD was requested to consider conducting studies on responsible fishing technologies and practices in vulnerable marine areas, to ensure that endangered species particularly dugong are not negatively affected by fishing operations.

18. The Program Committee Member for the Philippines noted the progress made by TD in upgrading the acoustic equipment of the M.V. SEAFDEC 2, and inquired about the availability of the M.V. SEAFDEC 2 to support the request made by the Philippines in 2019 to utilize the vessel in the conduct of a hydro-acoustic survey of fishing grounds and biomass distribution of small pelagic fishes in Philippine waters. In response, the representative from TD explained that sea trials on the use of the acoustic equipment would be carried out tentatively during the first quarter of 2021 and that the vessel would be ready for hydro-acoustic survey by the middle of 2021.

19. While congratulating TD for the achievements of the Project, the Program Committee Members for Malaysia and Indonesia suggested that TD should also consider conducting a study on the reduction of the impacts of trawl fishing on the environment as well as studies on alternative fishing gears. In response, the representative from TD cited that the discussion based on the survey questionnaire during the online Regional Technical Meeting organized by TD in September 2020 revealed that trawling made the highest negative impacts to the environment. In this regard, TD has been discussing with the International Council for the Exploration of the Sea (ICES) and FAO through the ICES-FAO Working Group on Fishing Technology and Fish Behavior to explore the appropriate fishing technologies that would reduce the impacts of trawling on the sea bottom. In this connection, TD has planned to invite experts from these

organizations to share their knowledge and discuss these issues during the online seminar proposed to be organized in 2021.

20. With regards to the request of the Program Committee Member for Indonesia on the possibility of conducting a study on eco-friendly fishing gears and vessels, the representative from TD mentioned that TD would share the lessons learned from its activity undertaken in 2020 in Thailand on the reduction of manpower in purse seine fisheries. Furthermore, TD is also planning to promote the low impact and fuel efficient (LIFE) fishing and discuss this matter with the Regional Network for the Reduction of the Impact of Fishing in Coastal and Marine Environments in Southeast Asian Waters (IFCOME Network) to seek their suggestions on the promotion of other fishing gears, *e.g.* fishing with luring lights, gillnets, which could affect the quality of shrimp catch.

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

21. With regard to the query of the Program Committee Member for Singapore on whether data collection activities would be undertaken only by the Project's participating countries, the Chief of MFRDMD confirmed that only the Project's participating countries would be involved in the data collection.

22. While agreeing with the activities proposed under this Project, the Program Committee Member for Thailand expressed its concern on the need for expertise on taxonomic identification of sharks and rays, and supported the conduct of surveys on fishers' dependencies, marketing and trade of sharks and rays in the region, which would be accommodated in its National Plan of Action for the Conservation and Management of Sharks (NPOA-Sharks) in 2020-2024. In this connection, the Chief of MFRDMD explained that such surveys had already been undertaken in Java and Sumatera in 2018, and Kalimantan in 2019. The results of such surveys had been publicized in the MFRDMD website, while Volume 2 of the Identification Guide to Sharks, Rays, Skates, and Chimaeras of the Southeast Asian Region produced in collaboration with researchers from Indonesia and Thailand, would be available by the end of November 2020.

23. The Program Committee Member for Indonesia emphasized on the importance of the Project and informed the 43PCM that Indonesia has been implementing the NPOA-Sharks and Rays in 2016-2020, and is currently in the progress of renewing the NPOA-Sharks and Rays for 2021-2025. He also mentioned that the Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI-CFF) is now developing the Regional Plan of Action on Conservation and Management of Sharks (RPOA-Sharks) and suggested that MFRDMD should work closely with the CTI-CFF on this matter. He also requested the SEAFDEC Secretariat to consider providing continued support in the development of the ASEAN Common Position on conservation and management of sharks to be raised at important international events, such as the COP CITES.

(5) Sustainable Utilization of Anguillid Eels in the Southeast Asian Region

24. The Program Committee Member for Indonesia encouraged SEAFDEC to continue supporting the activities on anguillid eels considering that the commodity is now gaining high commercial value. He also expressed the support of Indonesia to SEAFDEC in developing the standard data collection system to address the uncertainty and shortage of eel resources in the future.

25. Considering that some species of anguillid eels have already been listed under the CITES Appendices, the Program Committee for Thailand supported the Project activities and requested SEAFDEC to continue providing technical assistance in addressing the difficulties in identifying the species at glass eel stage, which are being transshipped to Thailand and re-exported in large volumes to other countries, and more particularly in developing a field guide for glass eel species identification.

26. The Chief of AQD reiterated the difficulties in developing the hatchery and aquaculture techniques of anguillid eels, and suggested that future projects on anguillid eels should consider including these components.

(6) Sustainable Utilization of Fisheries Resources and Resources Enhancement in Southeast Asia

27. While expressing the support to this Project, the Program Committee Member for Indonesia requested SEAFDEC to continue developing the application of Fisheries Geographic Information System (FGIS) and Remote Sensing (RS) for the management of the fishery resources and habitats.

(7) Fisheries Management Strategies for Pelagic Fish Resources in the Southeast Asian Region

28. The Program Committee Member for Indonesia expressed the gratitude of Indonesia to MFRDMD for the implementation of the Project and suggested that the Project should identify certain pelagic species in conducting the stock assessment as the results could be used as basis for the formulation of management strategies of purse seine fisheries in the future.

29. The Program Committee Member for the Philippines expressed appreciation to MFRDMD for its efforts in implementing the Project, and suggested that the Project should come up with science-based policy documents taking into account the biological and socioeconomic indicators. In addition to the development of science-based information on fish stocks, the Project should also consider developing guidelines on the management of pelagic fish resources.

30. The Program Committee Member for Thailand expressed the gratitude of Thailand to MFRDMD for conducting stock assessment of transboundary pelagic fish species and suggested that SEAFDEC should consider seeking the cooperation of certain third-party institutions or external experts to review and promote the utilization of the results of the stock assessment by a wider audience.

31. In response to the suggestion of the Program Committee Member for the Philippines, the representative from MFRDMD mentioned that this Project would come up with the current stock status of targeted species and technical advice for the AMSs to manage their respective resources. He also mentioned that MFRDMD is planning to organize the First Core Experts Meeting on Fisheries Management Strategies for Pelagic Fish Resources in the Southeast Asian Region on 24 November 2020 to discuss and seek suggestions from the AMSs on the Project activities and two targeted small pelagic species to be studied through the Project.

(8) Management Scheme for Inland Fisheries in the Southeast Asian Region

32. While the Program Committee Member for Myanmar expressed appreciation to IFRDMD for its efforts in implementing the Project, he cited that Myanmar is currently conducting the research on inland fisheries management in collaboration with the WorldFish Center and the Australian Centre for International Agricultural Research (ACIAR). In this connection, he offered to share the information from this research with IFRDMD.

33. While providing the information that Indonesia collaborated with the FAO and IFRDMD on the conduct of capacity development activities on inland fish taxonomy, the Program Committee Member for Indonesia also mentioned that Indonesia has issued the Ministerial Regulation of MMAF No. 9/2020 on the establishment of Inland Fishery Management Areas, which could be used as basis for conducting activities on the estimation of inland fish stocks in Indonesia.

(9) Small-scale Fisheries Management for Better Livelihood and Fisheries Resources

34. The Program Committee Member for Indonesia expressed the appreciation to SEAFDEC for implementing this Project which focuses on small-scale fisheries and informed the 43PCM that the Ministry of Marine Affairs and Fisheries (MMAF) of Indonesia organized the Regional Workshop on Assessing the Needs of the AMSs in Implementing the FAO SSF Guidelines to Support Access to Markets in collaboration with SEAFDEC, FAO, and ASEAN Secretariat on 16-17 September 2020. He then requested SEAFDEC to consider conveying the results of this Workshop at relevant international and regional fora. He also requested SEAFDEC to continue supporting the AMSs in the implementation of the FAO SSF Guidelines.

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

35. The 43PCM noted that the Project, originally scheduled to be completed in 2020, would be continued until 2022 under a two-year no-cost extension. While the Program Committee for Thailand expressed support for the extension of the Project, the SEAFDEC Secretary-General encouraged the Project's participating countries to complete the implementation of the activities by mid-2022 in order that sufficient time could be spent for Project evaluation and report preparation.

(11) Strengthening the Effective Management of Inland Fisheries and Aquaculture in AMS with GIS and RS Technology

36. While commending SEAFDEC for the implementation of the Project activities, the Program Committee Member for Indonesia hoped that this Project would improve the capacity of human resources in utilizing the Geographic Information System (GIS) and Remote Sensing (RS) technologies and their applications for the management of inland fisheries in Southeast Asia. In this regard, the representative from the SEAFDEC Secretariat mentioned that the Project would organize a regional workshop which would include discussion on the results of the data collection and analysis using the GIS and RS. Furthermore, a practical manual on the applications of these technologies would be produced for dissemination in the AMSs.

(12) Development of Stock Assessment Methods and Strengthening of Resources Management Measures for Tropical Anguillid Eel in Southeast Asia

37. The 43PCM noted the implementation of the Project's activities in 2020 and endorsed the activities proposed for implementation in 2021.

3.1.2 Strategy II: Supporting the sustainable growth of aquaculture to complement fisheries and contribute to food security, poverty alleviation and livelihood of people in the region

(13) Sustainable Aquaculture through Cost-Effective Culture Systems, and Prompt and Effective Aquatic Animal Health Management

38. While expressing support to the proposed survey of AQD on the epidemiology, distribution, occurrence and prevalence of the *Enterocytozoon hepatopenaei* (EHP), including the development of guidelines to protect shrimps from EHP outbreaks in the future, the Program Committee Member for Thailand affirmed the willingness of Thailand to participate in workshops and training programs that would be conducted by AQD including the online sessions to be organized due to the COVID-19 situation.

3.1.3 Strategy III: Ensuring the food safety and quality of fish and fishery products for the Southeast Asian region

(14) Enhancing Food Safety and Competitiveness of Seafood Products

39. The Program Committee Member for Myanmar expressed appreciation and support for this Project which is essential for the SEAFDEC Member Countries.

40. While supporting the implementation of the Project, the Program Committee Member for Thailand raised a concern on the application of High Pressure Processing (HPP) technology which could be costly, and suggested that SEAFDEC should consider introducing more affordable technologies. In response, the Chief of MFRD explained that the Project is intended to enhance the awareness of the AMSs on the HPP technology which is not currently widely adopted in the region, so that the countries could be ready when the technology becomes affordable and prevalent in the future.

3.1.4 Strategy IV: Enhancing trade and compliance of the region's fish and fishery products with market requirements

41. The 43PCM was informed by the SEAFDEC Secretariat that there are no Projects implemented in 2020 and proposed for 2021 under this Strategy.

3.1.5 Strategy V: Addressing cross-cutting issues, such as labor, gender and climate change, where related to international fisheries

(15) Assistance for Capacity Building Development in the Region to Address International Fisheries-related Issues

42. The Program Committee Member for Indonesia requested SEAFDEC to continue conducting regional workshops to discuss cross-cutting issues particularly on fisheries subsidies which is currently under negotiation at the World Trade Organization (WTO). He also suggested that SEAFDEC should consider conducting a review of the status of international fish trade-related issues at least twice a year considering the dynamics of the changing issues.

3.1.6 Strategy VI: Empowering SEAFDEC to strengthen its roles in the region and to improve its services to Member Countries

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

43. The 43PCM noted that the cruise survey on Small Pelagic Resources in Vietnamese Waters which was proposed to be conducted in 2020 was cancelled due to the COVID-19 situation.

44. While making an observation on the low level of utilization of the M.V. SEAFDEC 2 during the past several years, the Program Committee Member for Japan requested the AMSs to enhance the utilization of the vessel in the future. He also informed the 43PCM that the Government of Japan has recently supported the renovation of the vessel as well as the installation of the new scientific echo-sounder, and expressed the concern that if the level of vessel utilization in the future is still low, the Fisheries Agency of Japan (FAJ) would have difficulties in negotiating with the Ministry of Finance of Japan to provide additional support to the vessel's maintenance and improvement.

45. While commending TD for the conduct of fisheries resources survey in the Gulf of Thailand in 2020, the Program Committee Member for Thailand suggested that the survey should be continued in the following years in order to obtain time series data, and that the survey areas should also be expanded to the Andaman Sea. In response, the representative from TD mentioned that a meeting with the Andaman Sea countries to explore the possibility of expanding the survey areas would be organized by TD in the future.

46. While expressing the appreciation to the Government of Japan for supporting the operations of the M.V. SEAFDEC 2, the Program Committee Member for the Philippines reiterated its request for the conduct of hydro-acoustic survey using the M.V. SEAFDEC 2 in Philippine waters which was proposed to be conducted in 2020 but has been postponed to 2021 due to the COVID-19 situation.

47. The SEAFDEC Secretary-General expressed the appreciation of SEAFDEC to the Government of Japan for the support extended for the improvement of the M.V. SEAFDEC 2, particularly the acquisition of the scientific echo-sounder which would be useful for the conduct of fishery resources survey in the respective AMSs.

3.1.7 New Projects

(17) ASEAN-JICA Food Value Chain Development Project

48. In responding to the clarification sought by the Program Committee Member for Malaysia on the missing activities under the Project's Output 1, Output 2, and Output 4, the representative from the SEAFDEC Secretariat explained that while the Project covers agriculture as a whole, SEAFDEC is responsible only for the conduct of fisheries-related activities under Output 3.

(18) ASEAN-JICA Cooperation for Capacity Building on IUU Fishing Countermeasures in Southeast Asia

49. In response to the query raised by the Program Committee Member for Cambodia regarding the identification of pilot sites for conducting the onsite training on eACDS application, the representative from SEAFDEC Secretariat reiterated that the target sites would be established in the current participating

countries of the JTF project on the promotion of eACDS, namely: Brunei Darussalam, Malaysia, Myanmar, and Viet Nam, although an expansion site would be established in Cambodia.

(19) Regional Collaborative Research and Capacity Building for Monitoring and Reduction of Marine Debris from Fisheries in Southeast Asia

50. While expressing support to the implementation of the Project considering that this would enhance the capacity of the Southeast Asian countries in monitoring and reduction of marine debris from fishing activities, the Program Committee Member for Thailand expressed the need for capacity building on the collection of information on marine debris. The 43PCM was also informed that the Department of Fisheries of Thailand is collaborating with the private sector and fisheries associations to implement activities under the Beautiful Ocean Program and collect marine litters during the fishing trips. The results of such program could be shared with this Project.

51. While expressing support to this Project, the Program Committee Member for Japan mentioned that under the Asia-Pacific Economic Cooperation (APEC), the Ocean and Fisheries Working Group developed the Roadmap on Marine Debris in 2019 and its implementation plan in 2020. Considering that marine debris is a highly important issue under the APEC discussion, he requested the SEAFDEC Secretariat to communicate and exchange information with the APEC Secretariat on the issues on marine debris to enhance the activities to be implemented by SEAFDEC under this Project.

52. While expressing support to the Project activities, the Program Committee Member for Indonesia expressed the view that marine debris should include: 1) marine plastics; 2) abandoned, lost or otherwise discarded fishing gears; and 3) solid wastes in fishing ports.

53. In response to the query made by the Program Committee Member for Malaysia on the identification of the pilot sites in Malaysia for the collection of information on marine debris, the Chief of MFRDMD explained that a consultation meeting with Malaysia would be organized to confirm the pilot sites.

3.2 Departmental Programs

54. While considering the progress and achievements attained from the implementation of the SEAFDEC Departmental Programs in 2020 and the proposed programs for 2021 (**Annex 5**), the Program Committee provided recommendations for the improvement in the implementation of the activities, and endorsed the implementation of the proposed programs for 2021.

3.2.1 Aquaculture Department

55. While noting the progress and achievements of the Departmental Programs of AQD in 2020, namely: 1) Quality Seed for Sustainable Aquaculture; 2) Healthy and Wholesome Aquaculture; 3) Maintaining Environmental Integrity through Responsible Aquaculture; 4) Meeting Social and Economic Challenges in Aquaculture; 5) Adapting to Climate Change Impacts; and 6) Collaborative projects with the Philippine Government, the 43PCM also endorsed the implementation of the programs in 2021.

56. While commending AQD for the implementation of the activities under its Departmental Programs, the Program Committee Member for Indonesia highlighted the importance of small-scale aquaculture in food security and poverty alleviation. He also mentioned that Indonesia is working with FAO on the development of freshwater aquaculture focusing on biosecurity governance and on aquaculture feeds for Pangasius, of which AQD was requested to provide technical support. However, the Chief of AQD replied that AQD has not yet developed the feeds for the culture of Pangasius because it is not a priority species in the Philippines. AQD is instead focusing on the development of feeds for endemic freshwater aquaculture species such as catfish.

57. While acknowledging that FAO has already developed and promoted the SSF Guidelines, the Program Committee Member for Indonesia expressed the view that aquaculture would play a crucial role in food security and poverty alleviation in the future. He therefore suggested that the development of the Small-scale Aquaculture Guidelines (SSA Guidelines) should also be considered.

58. The Program Committee Member for Singapore expressed the appreciation of Singapore to AQD for implementing the activity on Maintaining Environmental Integrity through Responsible Aquaculture under its Departmental Programs, and requested AQD to share more information on the Integrated Multi-trophic Aquaculture (IMTA) demonstration projects which would benefit the other Member Countries interested to explore such aquaculture systems. In response, the Chief of AQD mentioned that the required information would be shared with the National Coordinators after the 43PCM.

59. The Program Committee Member for the Philippines expressed the appreciation of the Philippines to AQD for the implementation of collaborative projects with the Government of the Philippines which would be crucial for boosting the aquaculture industry in the country, and looked forward to obtaining the positive results from these projects.

60. While expressing the appreciation to AQD for the implementation of activities under its Departmental Programs, especially on the fish diseases and fish feed for commercial and small-scale aquaculture, the Program Committee Member for Thailand requested AQD to share the results of the relevant studies to the AMSs, so that the success of the projects could also be expanded to commercial scale. He also requested AQD to provide training courses for national fishery officers of the AMSs so that they could transfer the knowledge to the fish farmers. In response, AQD confirmed that the results from the Departmental Programs would be disseminated and reiterated that AQD would continue its efforts on the development of aquaculture even during the COVID-19 pandemic.

3.2.2 Training Department

61. The 43PCM noted the progress and achievements of the Departmental Programs of TD, namely: 1) Promotion on Strengthening of SEAFDEC Visibility and Enhancing Human Capacity Building; 2) Improvement of Fisheries Technology and Reduction of the Impact from Fishing; and 3) SEAFDEC Capacity Development through USAID Sustainable Fish Asia Activity, and also endorsed the programs for implementation in 2021.

62. The Program Committee Member for Thailand expressed the appreciation to TD for supporting the conduct of EAFM training in Phrae, Krabi, and Ranong Provinces where the EAFM plans have also been developed. He also expressed the appreciation to SEAFDEC for its continued support to the conduct of capacity development activities including the training of students from fisheries universities and colleges in Thailand.

3.2.3 Inland Fishery Resources Development and Management Department

63. The 43PCM was informed by the representative from IFRDMD on the Departmental Program on Modernizing Irrigated Agriculture to Protect and Restore Aquatic Biodiversity and Ecosystem Services in South-East Asia. In this regard, the 43PCM supported the implementation of the proposed Departmental Program of IFRDMD in 2021.

3.3 Other Programs

64. The 43PCM noted the progress of implementation of the activities implemented in 2020 and approved the proposed activities for 2021 under the Other Programs (**Annex 6**).

(1) Implementing the Lower Mekong Fish Passage Initiative in Cambodia, Thailand, and Viet Nam

65. The Program Committee Member for Thailand expressed appreciation to SEAFDEC as well as the partner organizations, namely: US-DOI, ACIAR and MRC, for supporting the construction of fish passage in the demonstration site in Udon Thani Province, Thailand. Considering that the fish passage construction has already been completed in 2020, Thailand looked forward to working with SEAFDEC on the monitoring and evaluation of the efficiency of the fish passage especially during the spawning season of fishes.

(2) Gender Dimension in the Value Chain of Small-scale Fisheries & Aquaculture in Southeast Asia

66. The Program Committee Member for Thailand expressed appreciation to SEAFDEC for choosing Thailand as one of the pilot sites for this Project, and hoped that the activities could also be successfully undertaken in other Project sites (*i.e.*, Lao PDR, Myanmar, Philippines).

(3) Implementing the Strategic Action Programme for the South China Sea

67. The Program Committee Member for Thailand sought clarification on the national focal point for the implementation of the Strategic Action Programme (SAP) for the South China Sea (SCS) considering that although Thailand is one of the Project's participating countries and sent representatives to attend the First Inception Phase online meeting on 30 July 2020, the Department of Fisheries of Thailand has not been involved in the meeting. In response, the representative from the SEAFDEC Secretariat explained that the focal points for the implementation SCS SAP come from the environment-related agencies of the participating countries, *i.e.* Department of Marine and Coastal Resources (DMCR) in the case of Thailand.

68. In order to ensure that the SEAFDEC National Coordinators for the Project's participating countries, namely: Cambodia, Indonesia, Philippines, Thailand, and Viet Nam, are aware of the Project plan and progress of the implementation of the SCS SAP, the SEAFDEC Secretary-General informed the 43PCM that SEAFDEC would send invitation letters to the respective National Coordinators to attend the Second Regional Inception Phase Meeting of the SCS SAP to be organized on 4 December 2020.

(4) Seminar-Workshop on Aquaculture Development in Southeast Asia (ADSEA)

69. The 43PCM supported the proposed Workshop on Aquaculture Development in Southeast Asia (ADSEA) to be organized by AQD in 2021 with the objectives of reviewing the aquaculture developments and providing a forum to discuss the strategies for the development of responsible aquaculture in Southeast Asia.

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

70. The 43PCM noted the proposals of the seven pipeline projects which would be submitted to prospective donors for possible funding support.

(5) Sustainable Management of Fisheries, Marine Living Resources and their Habitats in The Bay of Bengal Region for the Benefit of Coastal States and Communities: Support to SEAFDEC Member Countries

71. The 43PCM noted the project "Sustainable Management of Fisheries, Marine Living Resources and their Habitats in The Bay of Bengal Region for the Benefit of Coastal States and Communities: Support to SEAFDEC Member Countries" of which the proposal was submitted by FAO to the Global Environmental Facility (GEF) for funding support (**Annex 7**). Under this proposal, SEAFDEC will serve as the Project Executing Agency.

(6) GoTFish: Promoting Sustainable Use of the Gulf of Thailand Fishery Resources through the Blue Economy and the Ecosystem Approach to Fisheries

72. The 43PCM took note of the project "GoTFish: Promoting Sustainable Use of the Gulf of Thailand Fishery Resources through the Blue Economy and the Ecosystem Approach to Fisheries" of which the proposal is being developed and would be submitted by FAO to GEF for funding support (**Annex 8**). Under this proposal, SEAFDEC will serve as the Project Executing Agency.

(7) World Bank Project: Piloting the electronic ASEAN Catch Documentation Scheme (eACDS) in Viet Nam

73. The 43PCM noted that the proposal for the "World Bank Project: Piloting the electronic ASEAN Catch Documentation Scheme (eACDS) in Viet Nam," is being developed by TD to seek funding support from the World Bank (**Annex 9**).

(8) Blue Horizon: Ocean Relief through Seaweed Aquaculture in Southeast Asia

74. The 43PCM took note the project “Blue Horizon: Ocean Relief through Seaweed Aquaculture in Southeast Asia,” of which the proposal was submitted by WWF-US for possible funding support from GEF (**Annex 10**). Under this proposal, SEAFDEC will serve as the Project Executing Agency.

(9) Improving Healthy Ocean Ecosystems through Trawling Best Practices and Fishing Technology Innovations

75. The 43PCM noted the Concept Note of the project “Improving Healthy Ocean Ecosystems through Trawling Best Practices and Fishing Technology Innovations” (**Annex 11**) of which the proposal would be developed by TD for possible funding support from GEF.

(10) Proposal on Implementation and Assessment of Fishing Capacity and Zoning System for Southeast Asia

76. The 43PCM took note of the project proposal “Implementation and Assessment of Fishing Capacity and Zoning System for Southeast Asia” (**Annex 12**) prepared by MFRDMD, which would be submitted for possible funding support from potential donor.

(11) ASEAN Regional Technical Consultation on Aquatic Emergency Preparedness and Response Systems for Effective Management of Transboundary Disease Outbreaks in Southeast Asia – Phase 2

77. The 43PCM noted the Concept Note of the project “ASEAN Regional Technical Consultation on Aquatic Emergency Preparedness and Response Systems for Effective Management of Transboundary Disease Outbreaks in Southeast Asia – Phase 2” (**Annex 13**) developed by AQD, and that this would be submitted to the Japan-ASEAN Integration Fund (JAIF) for funding support.

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

78. The 43PCM noted the written Statements of the representatives from international and regional organizations and agencies collaborating with SEAFDEC.

79. The Senior Fishery Officer of the FAO Regional Office for Asia and the Pacific (FAO/RAP), *Mr. Simon Funge-Smith*, expressed the appreciation to the long cooperation and collaboration between FAO and SEAFDEC. While recalling the participation of technical officers from FAO to share their expertise at several webinars conducted by SEAFDEC in 2020, he expressed the concern on the COVID-19 pandemic situation that necessitates global and regional inter-governmental organizations to adjust their works especially at the national level due to mobility and travel restrictions. While also reiterating the recent launching of the State of World Fisheries and Aquaculture (SOFIA) in July 2020 that demonstrates the need for effective management of fisheries, he stressed on two FAO regional projects under the International Waters Programme of the Global Environment Facility (GEF) where SEAFDEC is expected to serve as the executing agency, namely: 1) Sustainable Management of the Bay of Bengal Large Marine Ecosystem (BOBLME) Phase II; and 2) Promoting the Blue Economy and Strengthening Fisheries Governance of the Gulf of Thailand through the Ecosystem Approach to Fisheries (GoTFish). Moreover, he also reiterated that some other areas of cooperation between FAO and SEAFDEC, particularly the ongoing projects on “Gender dimension in the value chain of small-scale fisheries and aquaculture in Southeast Asia” and the survey work to assess the abandoned, lost and otherwise discarded fishing gear (ALDFG) in Thailand. He then expressed the commitment of FAO to continue cooperating with SEAFDEC in the realization of sustainable fisheries and aquaculture in Southeast Asia. His Statement appears as **Annex 14**.

80. The Director of INFOFISH, *Ms. Shirlene Maria Anthonyamy*, acknowledged the long-term relationship and growing cooperation between INFOFISH and SEAFDEC; and informed the 43PCM that with the COVID-19 situation, INFOFISH has adapted to new communication technology such as webinars, podcasts, and online trainings to ensure that information dissemination and activities for its Member Countries are uninterrupted. She also highlighted on the recent signing of the MOU between

INFOFISH and SEAFDEC in 2020 which cover wide scopes that include among others, exchange of information, cooperation for joint research and capacity building activities, and participation in each other organization's trainings and other activities. Under such cooperation framework, SEAFDEC in 2020 participated in the INFOFISH Training Webinar on Market Intelligence and Market Analysis, and was invited to join the upcoming Virtual Regional Training Programme on Certification. She then expressed the willingness of INFOFISH to avail of SEAFDEC's assistance during the "Training of Trainers (TOT) on Fish Handling Techniques On-board Fishing Vessels" and the "Online Training of eACDS" to be organized by SEAFDEC; and looked forward to strengthening the cooperation and cooperation between the two organizations in the future. Her Statement appears as **Annex 15**.

81. The Fisheries Management Specialist of the Mekong River Commission (MRC), *Dr. Phattareeya Suanrattanachai*, recalled the signing of MOU between MRC and SEAFDEC on the "Promotion of Sustainable Development of Fisheries and Aquaculture in the Lower Mekong Basin and Southeast Asia" in August 2017 which is aimed at strengthening the regional cooperation and formalizing the relevant collaborative efforts in fostering research and development on inland fisheries in the countries of the Mekong River Basin. Under the MOU, MRC and SEAFDEC in 2017 co-organized the regional consultation workshop to strengthen the institutional platform of the Sub-expert Group on Fisheries, and participated in a regional consultation on development of a Project-Based Action Plan (PBAP) for implementing the Basin-wide Fisheries Management and Development Strategy (BFMS). While informing the 43PCM on the endorsement of PBAP by the MRC Joint Committee in October 2020 with a view to support the full implementation of the BFMS in the next MRC Strategic Planning (2021-2025), she also reiterated the on-going works of MRC in developing two technical guidance for transboundary fisheries management, and for restoring and protecting key important habitats in the Mekong River Basin; and in updating two monitoring programs for fish abundance and diversity monitoring, and fish larval drift monitoring. Her Statement appears as **Annex 16**.

VI. OTHER MATTERS

6.1 Preparation for Southeast Asian State of Fisheries and Aquaculture (SEASOFIA) 2022

82. The 43PCM noted the progress of the preparation made by the SEAFDEC Secretariat for the publication of the Southeast Asian State of Fisheries and Aquaculture (SEASOFIA) 2022 (**Annex 17**), and supported the proposed outline, work plan, and set of questionnaires to gather the necessary inputs from the AMSs.

6.2 Concept Proposal of Study on Impacts of Coronavirus-2019 Pandemic on the Fisheries Sector of the ASEAN-SEAFDEC Member Countries

83. The 43PCM supported the proposed Study on the Impacts of the Coronavirus-2019 Pandemic on Fisheries Sector of the ASEAN-SEAFDEC Member Countries (**Annex 18**) which would be carried out by the SEAFDEC Secretariat.

6.3 30% Global Target of Marine Protected Area in post-2020 Global Biodiversity Framework

84. The 43PCM noted the presentation made by the representative from the FAJ related to the 30% Global Target of Marine Protected Area (MPA) in post-2020 Global Biodiversity Framework (**Annex 19**). The representative from FAJ raised the concern on the proposed revision of targets related to MPA in the Framework inheriting the Aichi Target 11. In particular, he stated that the MPA coverage target, as a global target, should not bind the states individually and a concept of MPA which implies "no take zone", shall be removed from the target of the Conference of the Parties of the Convention on Biological Diversity (CBD). He also encouraged the other SEAFDEC Member Countries to pay close attention to the international discussions regarding the Other Effective Area-based Conservation Measures (OECM), particularly during the 15th Meeting of CBD that would be held in May 2021.

6.4 Amendment to Regulations on Discharge or Loss of Fishing Gear from Ships Stipulated in the MARPOL Annex V

85. The 43PCM noted the proposed amendments of the Regulations on Discharge or Loss of Fishing Gear from Ships Stipulated in Annex V of the MARPOL (**Annex 20**) as presented by the representative from FAJ. In this connection, he requested the SEAFDEC Member Countries to participate in the

discussions to be organized by the International Maritime Organization (IMO) to ensure the feasibility, effectiveness, and practicability of the regulations or measures, and to express their concerns on the possibility that the new regulations could create additional burden on fishers and fisheries-related agencies of the Southeast Asian region, while it is also important to address the issues on marine plastic litters.

6.5 Updates on JTF Budget Requests in Japan and Member States Cooperation

86. The 43PCM noted the presentation made by the representative from FAJ on the Updates on JTF Budget Requests in Japan and Member States Cooperation (**Annex 21**). He asked the SEAFDEC Member Countries to consider highlighting the importance of the contribution of Japan to SEAFDEC during the high-level meetings of SEAFDEC and the ASEAN, and suggested that the current working practices of SEAFDEC on the implementation of JTF programs and activities should be sustained to ensure that the common interest of the Southeast Asian countries and Japan is reflected.

87. The Program Committee Member for Thailand mentioned that the Government of Thailand has been expressing the appreciation of Thailand for the assistance extended by the Government of Japan to SEAFDEC, and mentioned that in 2020, a letter of appreciation would be sent by Thailand to Japan.

88. The Program Committee Member for Indonesia also expressed the appreciation of Indonesia to the Government of Japan for its continued cooperation and support extended to SEAFDEC and its programs, and hoped that Japan would continue supporting SEAFDEC in the future for the benefit of the fisheries sector of the Southeast Asian region.

89. After the deliberation, the SEAFDEC Secretary-General expressed her utmost appreciation to the Government of Japan for its continued support that contributed to the development of sustainable fisheries in the region, and encouraged the other SEAFDEC Member Countries to also convey their acknowledgement of the support of the Government of Japan to SEAFDEC, during the high-level meetings of SEAFDEC and the ASEAN, *e.g.* the ASWGFi, AMAF, or AMAF+3, in order that such support would be well recognized by the AMSs as well as Japan.

6.6 Potential of Marine Eco-Label

90. The 43PCM noted the presentation made by the representative from FAJ and Marine Eco-Label Japan Council on the Potential of Marine Eco-Label (**Annex 22**) in eco-labeling the fish and fishery products of the AMSs, and that marine eco-label is a general term for eco-labels related to fisheries and aquaculture. He explained the importance and usefulness of obtaining marine eco-label recognized by the Global Sustainable Seafood Initiative (GSSI). In addition, as an example of eco-label recognized by GSSI, he also explained that Marine eco-label Japan (MEL) is mainly utilized in Japan and applicable to various fish species, fishing methods, and small-scale fisheries.

91. The Program Committee Member for Thailand expressed the appreciation to Japan for raising the awareness and sharing of experiences on MEL, and requested Japan to provide more detailed information on this initiative. The Program Committee Member for Singapore also expressed appreciation to Japan and requested for more information especially on the MEL certification requirements for aquaculture products. In response, the Program Committee Member for Japan explained that the requested information would be provided including the details of contact persons to SEAFDEC Secretariat for dissemination to the other SEAFDEC Member Countries.

92. In response to the query made by the SEAFDEC Secretary-General on the nature of the MEL as a certification body, the representative from Marine Eco-label Japan Council mentioned that MEL is an independent certification body that complies with the GSSI and the ISO standards.

VII. CONCLUSIONS AND RECOMMENDATIONS OF THE FORTY-THIRD MEETING OF THE PROGRAM COMMITTEE

7.1 Adoption of Report of the Program Committee Meeting

93. The Program Committee adopted the recommendations during its Forty-third Meeting on 12 November 2020. The Program Committee also took note that the Report would be submitted to the Fifty-

third Meeting of SEAFDEC Council and to ASEAN through the 23rd Meeting of the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP).

7.2 Date and Venue of the Forty-fourth Meeting of the Program Committee

94. In considering the date and venue of the Forty-fourth Meeting of the Program Committee, the Chief of Aquaculture Department (AQD) informed the Program Committee that as the 43PCM could not be hosted by AQD due to the COVID-19 situation, AQD would host the Forty-fourth Meeting of the SEAFDEC Program Committee in the Philippines in November 2021. He also informed the 43PCM that AQD would seek the guidance of the SEAFDEC Secretariat in finalizing the schedule and related arrangements for the Forty-fourth Meeting.

VIII. CLOSING OF THE PROGRAM COMMITTEE MEETING

95. In her Closing Remarks, the Chairperson of the Program Committee extended her gratitude to the Program Committee Members and their delegations for their valuable inputs and recommendations for the improvement of the implementation of the projects and activities of SEAFDEC. While also thanking the representatives from the SEAFDEC Secretariat and Departments for their support and cooperation, she reiterated that the adopted outputs of the 43PCM would be subsequently presented to the forthcoming SEAFDEC Council and FCG/ASSP meetings, and then she declared the meeting closed. Her Closing Address appears as **Annex 23**.

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OPENING REMARKS

*By Ms. Malinee Smithrithee
SEAFDEC Secretary-General*

Distinguished Members of the SEAFDEC Program Committee,
Representatives from our Collaborating Partners,
My colleagues from SEAFDEC,

Good morning to all of you!

On behalf of SEAFDEC, I am pleased to welcome all of you, those who are in this room and especially those who are virtually connected, to the Forty-third Meeting of SEAFDEC Program Committee. For us to be able to sustain the conduct of SEAFDEC events even in the midst of COVID-19 pandemic, we are adopting to the new normal to organize the Program Committee Meeting this year by utilizing the online platform.

First of all, I am happy to inform the Program Committee that the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region towards 2030 was adopted by the Special Senior Officials' Meeting of the 41st Meeting of the ASEAN Ministers on Agriculture and Forestry on 5 August 2020 and the 42nd Meeting of the ASEAN Ministers on Agriculture and Forestry on 21 October 2020, as well as by the Senior Official and Minister responsible for fisheries of Japan *ad referendum*. This which would serve as the regional fishery policy frameworks for continue our effort to implement the activities in achieving the sustainability of fisheries.

Due to COVID-19 crisis, travel aboard is restricted, therefore, most of the activities have been adjusted by using on-line platforms, which the progress will be reported in later agendas.

Ladies and gentlemen, please be informed that the outputs of this meeting would be submitted to the forthcoming meeting of SEAFDEC Council for consideration and approval, as well as to the ASEAN Sectoral Working Group on Fisheries or ASWGF_i as appropriate through the Twenty-third Meeting of the FCG/ASSP to be held next week.

We would greatly appreciate the active participation of each and every one as we gather significant recommendations for the sustainable development of fisheries in the Southeast Asian region. With that note, ladies and gentlemen, I now declare the Forty-third Meeting of SEAFDEC Program Committee open. Thank you very much and keep safe.

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 2020 and Proposed Programs for the Year 2021

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

3.1.1 *Strategy I: Securing the Sustainability of Fisheries to Contribute to Food Security, Poverty Alleviation and Livelihood of People in the Region*

- Strengthening a Regional Cooperation and Enhancing National Capacities to Eliminate IUU Fishing in Southeast Asia
- Harmonization and Enhancing Utilization of Fishery Statistics and Information
- Responsible Fishing Technology and Practice
- Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region
- Sustainable Utilization of Anguillid Eels in the Southeast Asian Region
- Sustainable Utilization of Fisheries Resources and Resources Enhancement in Southeast Asia
- Fisheries Management Strategies for Pelagic Fish Resources in the Southeast Asian Region
- Management Scheme of Inland Fisheries in the Southeast Asian Region
- Small-scale Fisheries Management for Better Livelihood and Fisheries Resources
- Establishment and Operation of a Regional System of Fisheries *refugia* in the South China Sea and Gulf of Thailand
- Strengthening the Effective Management of Inland Fisheries and Aquaculture in AMS with GIS and RS Technology
- Development of Stock Assessment Methods and Strengthening of Resources Management Measures for Tropical Anguillid Eel in Southeast Asia

3.1.2 *Strategy II: Supporting the Sustainable Growth of Aquaculture to Complement Fisheries and Contribute to Food Security, Poverty Alleviation and Livelihood of People in the Region*

- Sustainable Aquaculture through Cost-Effective Culture Systems, and Prompt and Effective Aquatic Animal Health Management

3.1.3 *Strategy III: Ensuring the Food Safety and Quality of Fish and Fishery Products for the Southeast Asian Region*

- Enhancing Food Safety and Competitiveness of Seafood Products

3.1.4 *Strategy IV: Enhancing Trade and Compliance of the Region's Fish and Fishery Products with Market Requirements*

- Nil

3.1.5 *Strategy V: Addressing Cross-cutting Issues, such as Labor, Gender and Climate Change, where Related to International Fisheries*

- Assistance for Capacity Building in the Region to Address International Fisheries-related Issues

3.1.6 *Strategy VI: Empowering SEAFDEC to Strengthen Its Roles in the Region and to Improve Its Services to Member Countries*

- Fisheries Resource Survey & Operational Plan for M.V. SEAFDEC 2

3.1.7 *New Project*

Strategy III: Ensuring the Food Safety and Quality of Fish and Fishery Products for the Southeast Asian Region

- ASEAN-JICA Cooperation for Food Value Chain Development Project

Strategy I: Securing the Sustainability of Fisheries to Contribute to Food Security, Poverty Alleviation and Livelihood of People in the Region

- ASEAN-JICA Capacity Building Project on IUU Fishing Countermeasures in Southeast Asia
- Regional Collaborative Research and Capacity Building for Monitoring and Reduction of Marine Debris from Fisheries in Southeast Asia

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 Social and Economic Challenges in Aquaculture
- Collaborative projects with the Philippine Government
 - Fry Sufficiency Program
 - Development of Cost-Efficient Feeds
 - Oplan Balik Sugpo (Operation Black Tiger Prawn Revival)
 - Accelerated Techno-Transfer
 - Manpower Development

3.2.2 *Training Department*

- Promotion on Strengthening of SEAFDEC Visibility and Enhancing Human Capacity Building
- Improvement of Fisheries Technology and Reduction of the Impact from Fishing Activities
- SEAFDEC Capacity Development through USAID Sustainable Fish Asia Activity

3.2.3 *Inland Fishery Resources Development and Management Department*

- Modernizing Irrigated Agriculture to Protect and Restore Aquatic Biodiversity and Ecosystem Services in South-East Asia

3.3 Other Programs

- Implementing the Lower Mekong Fish Passage Initiative in Cambodia, Thailand, and Viet Nam
- Gender Dimension in the Value Chain of Small-scale Fisheries & Aquaculture in Southeast Asia
- Implementing the Strategic Action Programme for the South China Sea
- Seminar-Workshop on Aquaculture Development in Southeast Asia (ADSEA)

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

- 4.1 Sustainable Management of Fisheries, Marine Living Resources and their Habitats in The Bay of Bengal Region for the Benefit of Coastal States and Communities: Support to SEAFDEC Member Countries
- 4.2 GoTFish: Promoting Sustainable Use of the Gulf of Thailand Fishery Resources through the Blue Economy and the Ecosystem Approach to Fisheries
- 4.3 World Bank project: Piloting the electronic ASEAN Catch Documentation Scheme (eACDS) in Viet Nam
- 4.4 Ocean Relief through Seaweed Aquaculture
- 4.5 Improving Healthy Ocean Ecosystems through Trawling Best Practices and Fishing Technology Innovations
- 4.6 Proposal on Implementation and Assessment of Fishing Capacity and Zoning System for Southeast Asia
- 4.7 ASEAN Regional Technical Consultation on Aquatic Emergency Preparedness and Response Systems for Effective Management of Transboundary Disease Outbreaks in Southeast Asia – Phase 2

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

Agenda 6: Other Matters

- 6.1 Outline of SEASOFIA 2022
- 6.2 Study on Impacts of Coronavirus-2019 Pandemic on Fisheries Sector of the ASEAN-SEAFDEC Member Countries
- 6.3 Global Marine Protected Areas (MPA) -2030
- 6.4 Marine Plastic Litters from Fishing Vessels – IMO Meeting
- 6.5 Updating JTF Budget Request Process in Japan
- 6.6 Potential of Marine Eco-label
- 6.7 Others

Agenda 7: Conclusion and Recommendations of the Forty-third Meeting of the Program Committee

- 7.1 Adoption of the Report
- 7.2 Date and Venue of the Forty-fourth Meeting of the Program Committee

Agenda 8: Closing of the Program Committee Meeting

**PROJECTS UNDER THE FISHERIES CONSULTATIVE GROUP
OF THE ASEAN-SEAFDEC STRATEGIC PARTNERSHIP (FCG/ASSP) MECHANISM
FOR THE YEAR 2020-2021**

Projects Categorized under Strategies

Strategy/Project Title	Lead Department	2020	2021	Appendix No.
Strategy I: Securing the sustainability of fisheries to contribute to food security, poverty alleviation and livelihood of people in the region				
1. Strengthening a Regional Cooperation and Enhancing National Capacities to Eliminate IUU Fishing in Southeast Asia	TD	Y	Y	1
2. Harmonization and Enhancing Utilization of Fishery Statistics and Information	SEC	Y	Y	2
3. Responsible Fishing Technology and Practice	TD	Y	Y	3
4. Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region	MFRDMD	Y	Y	4
5. Sustainable Utilization of Anguillid Eels in the Southeast Asian Region	IFRDMD	Y	Y	5
6. Sustainable Utilization of Fisheries Resources and Resources Enhancement in Southeast Asia	TD	Y	Y	6
7. Fisheries Management Strategies for Pelagic Fish Resources in the Southeast Asian Region	MFRDMD	Y	Y	7
8. Management Scheme for Inland Fisheries in the Southeast Asian Region	IFRDMD	Y	Y	8
9. Small-scale Fisheries Management for Better Livelihood and Fisheries Resources	TD	Y	Y	9
10. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand	TD	Y	Y	10
11. Strengthening the Effective Management of Inland Fisheries and Aquaculture in AMS with GIS and RS Technology	SEC	Y	Y	11
12. Development of Stock Assessment Methods and Strengthening of Resources Management Measures for Tropical Anguillid Eel in Southeast Asia	SEC	Y	Y	12
Strategy II: Supporting the sustainable growth of aquaculture to complement fisheries and contribute to food security, poverty alleviation and livelihood of people in the region				
13. Sustainable Aquaculture through Cost-Effective Culture Systems, and Prompt and Effective Aquatic Animal Health Management	AQD	Y	Y	13
Strategy III: Ensuring the food safety and quality of fish and fishery products for the Southeast Asian region				
14. Enhancing Food Safety and Competitiveness of Seafood Products	MFRD	Y	Y	14
Strategy IV: Enhancing trade and compliance of the region's fish and fishery products with market requirements				
Nil				
Strategy V: Addressing cross-cutting issues, such as labor, gender and climate change, where related to international fisheries				
15. Assistance for Capacity Development in the Region to Address International Fisheries-related Issues	SEC	Y	Y	15

Strategy/Project Title	Lead Department	2020	2021	Appendix No.
Strategy VI: Empowering SEAFDEC to strengthen its roles in the region and to improve its services to Member Countries				
16. Fisheries Resource Survey & Operational Plan for M.V. SEAFDEC 2	TD	Y	Y	16

New Projects

Strategy/Project Title	Lead Department	Period	Appendix No.
1. ASEAN-JICA Food Value Chain Development Project	SEC	2021-2024	17
2. ASEAN-JICA Cooperation for Capacity Building on IUU Fishing Countermeasures in Southeast Asia	TD	2021-2024	18
3. Regional Collaborative Research and Capacity Building for Monitoring and Reduction of Marine Debris from Fisheries in Southeast Asia	SEC	2021-2022	19

Y = Program implemented during the year

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2020
AND
PROPOSED ACTIVITIES FOR THE YEAR 2021**

			Project ID: 202101011
Program Category:	Project under the ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title:	Strengthening regional Cooperation and Enhancing National Capacities to Eliminate IUU Fishing in Southeast Asia		
Program Strategy No:	I	Total Period:	2020 - 2024
Lead Department:	Training Department (TD)	Lead Country:	Thailand
Donor/Sponsor:	Japanese Trust Fund (JTF)	Total Project Budget:	USD 450,000
Project Partner(s):	Nil	Budget for 2021:	USD 90,000
Lead Technical Officer:	Kongpathai Saraphaivainch, (TD)	Project Participating Country:	All Members Countries

PART I: PROJECT DESCRIPTION

1. Executive Summary

In the global and regional situation of IUU fishing, SEAFDEC/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 from 2013 to 2019 under the JTF 6. The activities such as development of a regional database on fishing vessels (Regional Fishing Vessels Record: RFVR), regional cooperation to support implementation of Port State Measures (PSM) through capacity development programs, and development and promotion of an electronic ASEAN Catch Documentation Scheme (eACDS) were undertaken. To continue to support the Member Countries for combating IUU fishing as recommended by the Council Meeting, this project titled “Strengthening a regional cooperation and enhancing national capacities to eliminate IUU fishing in Southeast Asia” is implemented under the JTF 6-II for the year 2020-2024. Under the project overall objective “Sustainable utilization and sound management of fisheries resources in the Southeast Asia”, the project expects five outputs; 1) enhancing the RFVR database, 2) strengthening national capacities in the implementation of PSM and MCS, 3) further promoting the eACDS, and 4) coordinating and promoting a national/regional/international network for collaborative activities to combat IUU fishing.

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.

At 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 in Bangkok, Thailand, on 3 August 2016, the ASEAN-SEAFDEC Member Countries declared and planned 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 in the region and internationally.

Moreover, the ASEAN-SEAFDEC Regional Meeting on the Resolution and Plan of Action for ASEAN Region Towards 2030 held in September 2019 at Bangkok, Thailand emphasized on 1) Implement measures to prevent unauthorized fishing and eliminate illegal fishing practices, 2) Strengthen implementation of measures and activities to combat IUU fishing by ensuring compliance with national laws and regulations, and provisions of international instruments; encourage development and implementation of national plans of action to combat IUU fishing; promote inter-agency coordination for

effective implementation of such laws and regulations; and enhance awareness and understanding of applicable international and regional instruments and agreements through information dissemination campaigns, 3) Establish and strengthen regional, sub-regional, and bi-lateral coordination on fisheries management and efforts to combat IUU fishing, 4) Mobilize regional/sub-regional collaboration frameworks and tools for combating IUU fishing, *e.g.* Regional Plan of Action to Promote Responsible Fishing Practices including Combating Illegal, Unreported and Unregulated Fishing (RPOA-IUU); ASEAN Regional Plan of Action on the Management of Fishing Capacity (RPOA-Capacity); Regional Fishing Vessels Record (RFVR); ASEAN Catch Documentation Scheme (ACDS), and the use of technologies to support monitoring and surveillance of fishing activities, *e.g.* Vessel Monitoring System (VMS), traceability systems, 5) Improve the capacity of relevant national authorities and strengthen their functions for regional and bilateral/sub-regional cooperation, to effectively implement the requirements of port State measures and flag State responsibilities, and 6) Apply traceability systems with mechanisms as needed to certify or validate the information for the whole supply chain, and establish regulations and enforcement schemes in line with international standards by harmonizing AMSs’ inspection systems and strengthen port inspections in the process as a means to improve traceability systems.

Following the directions of the “Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030” and declaration, the SEAFDEC Training Department (TD) has been implementing the project of “Strengthening regional cooperation and enhancing national capacities to eliminate IUU fishing in Southeast Asia” under the JTF 6-II for the year 2020-2024

3. Gender Sensitivity of the Project

The project is open and equalized for gender sensitivity. There is no limitation for men and/or women to participate in all activities

4. Project Goal, Outcome, Outputs, Activities, Indicators and Verification

4.1 Logical Framework

GOAL (Overall Objectives)	Indicators	Means of Verification
Sustainable utilization and sound management of fisheries resources in Southeast Asia	<ul style="list-style-type: none"> - Healthy fisheries resources - Regional / sub-regional cooperation in fisheries resources management - Responsible fisheries practice maintained 	<ul style="list-style-type: none"> - Effective and efficient fisheries resources management - Improved regional cooperation in fisheries resources management
OUTCOME	Indicators	Means of Verification
Countermeasures to reduce IUU Fishing in Southeast Asia	<ul style="list-style-type: none"> - Effective and efficient implementation of National Plan of Action on IUU Fishing (NPOA-IUU) - All AMSs developed NPOA-IUU - Regional / sub-regional cooperation to combat IUU fishing 	<ul style="list-style-type: none"> - Implementation plan of NPOA-IUU - NPOA-IUU developed in all AMSs - Improved a regional / sub-regional cooperation in Southeast Asia
OUTPUT 1	Indicators	Means of Verification
Enhancing the utilization and improvement of Regional Fishing Vessels Record (RFVR) Database	<ul style="list-style-type: none"> - Number of users accessing the RFVR Database through the website - Improved RFVR Database 	<ul style="list-style-type: none"> - Increased number of RFVR Database usage/users - Updates of the information for RFVR Database
Activity 1	Indicators: key inputs (Number to conducted, Where, Time)	Means of Verification
Activity 1.1: Regional technical consultation to improve the utilization of RFVR.	<ul style="list-style-type: none"> - Regional technical consultation organized - Expected number of participants from AMSs per meeting 	<ul style="list-style-type: none"> - Consultation report - Number (10) of participants from AMSs per meeting

<p>Activity 1.2: National training to promote RFVR Database to ASEAN Member States (AMSs)</p>	<ul style="list-style-type: none"> - National training conducted - Expected number of participants per training 	<ul style="list-style-type: none"> - Training report - Number (20) of participants from AMSs per training
<p>Activity 1.3: Sub-regional or bilateral meeting to develop the application of RFVR to support the Port State Measures (PSM) requirements (e.g. Myanmar and Thailand)</p>	<ul style="list-style-type: none"> - Sub-regional / bilateral meeting organized - Expected number of participants per meeting 	<ul style="list-style-type: none"> - Meeting report - Number (16) of participants from AMSs per meeting (8 persons from each country)
<p>Activity 1.4 Information, education and communication materials to support the RFVR Database developed</p>	<p>Information, education and communication materials disseminated</p>	<p>-Number of production and dissemination of the materials</p>
<p>OUTPUT 2</p>	<p>Indicators</p>	<p>Means of Verification</p>
<p>Increased number of fisheries inspectors and strengthened implementation of PSM and national capacity development of MCS in Southeast Asia</p>	<ul style="list-style-type: none"> - Expected number (more than 30) of fisheries officers understanding inspection duties of PSM - Smooth implementation of PSM - National capacity on MCS enhanced 	<ul style="list-style-type: none"> - Number of fisheries officers more than 30 understanding inspection duties of PSM - PSM in place - MCS in place
<p>Activity 2</p>	<p>Indicators</p>	<p>Means of Verification</p>
<p>Activity 2.1: Capacity development on port inspection to support the PSM implementation, and introduction on PSM implementation (in general) to non-ratified AMSs and capacity building on MCS</p>	<ul style="list-style-type: none"> - Capacity development trainings conducted - Number of trainings conducted - Expected number of participants per training 	<ul style="list-style-type: none"> - Training reports - Number of trainings, at least 2 times during 5 years - Number of participants, at least 36 persons in total
<p>Activity 2.2: Regional meeting to share information on detecting IUU fishing vessels for preventing the landing of fish and fishery products from IUU fishing vessels at ports in AMSs and/or regional meeting to share information on MCS</p>	<ul style="list-style-type: none"> - Regional meeting organized - Expected number of participants per meeting 	<ul style="list-style-type: none"> - Meeting report - Number (54) of participants in totally
<p>Activity 2.3: Regional workshop on the review of national legal framework and procedures for the implementation of the PSM, including a gap analysis in the respective legal frameworks of the AMSs (together with 2.1)</p>	<ul style="list-style-type: none"> - Regional workshop organized - Expected number of participants per meeting - A gap analysis in legal frameworks conducted 	<ul style="list-style-type: none"> - Workshop report - Number of participants, at least 36 persons in total - Gap analysis report
<p>OUTPUT 3</p>	<p>Indicators</p>	<p>Means of Verification</p>
<p>Application of the electronic ASEAN Catch Documentation System (eACDS) and other tools for traceability to eliminate IUU fisheries products in AMSs</p>	<ul style="list-style-type: none"> - Application of eACDS and other tools for traceability to eliminate IUU fisheries products developed - Elimination of IUU fisheries products enhanced through the implementation of eACDS in AMSs 	<ul style="list-style-type: none"> - eACDS applications - Effective actions by AMSs

Activity 3	Indicators: key inputs (Number to conducted, Where, Time)	Means of Verification
Activity 3.1: Continued coordination, facilitation, development and expansion of eACDS in AMSs, particularly for Viet Nam, Malaysia, Myanmar and <i>etc.</i>	eACDS further promoted	Implementation of eACDS
Activity 3.2: Regional workshop to exchange information on fisheries catch documentation and traceability in AMSs	- Regional workshop organized - Expected number of participants per workshop	- Workshop report - Number of participants, at least 30 persons in total
OUTPUT 4	Indicators	Means of Verification
National/regional/international network for collaborative activities to eliminate IUU fishing	Cooperation/collaboration with national/regional/international organizations enhanced	- Number of joint activities - Number of national/regional/international meetings
Activity 4	Indicators	Means of Verification
Activity 4.1: Coordination with international/regional/national organizations (<i>e.g.</i> FAO, Regional Fisheries Management Organizations (RFMOs), Regional Fisheries Bodies (RFB) and national agencies) in and beyond the region to support AMSs in implementation of relevant activities to eliminate IUU fishing	- List of international/regional/national organizations to collaborate on eliminating of IUU fishing developed - Number of relevant activities implemented in coordination with international/regional/national organizations - Number of reports or presentations on project activities to eliminate IUU fishing in the international/regional/International forum disseminated	- List of international/regional/national organizations - List of implemented activities - Reports or presentations on project activities
Activity 4.2: Participation in national/regional/international meetings relevant to combating IUU fishing	- Participation of SEAFDEC staff in national/regional/international meetings - Expected number of meetings 1 participation per year	- Meeting reports - Number of meetings, at least 5 participation in total

4.2 Project Implementation Plan for 2020 – 2024

Activities	2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Activity 1:																				
Activity 1.1																				
Activity 1.2																				
Activity 1.3																				
Activity 1.4																				
Activity 2:																				
Activity 2.1																				
Activity 2.2																				
Activity 2.3																				
Activity 3:																				
Activity 3.1																				

Activities	2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Activity 3.2																				
Activity 4:																				
Activity 4.1																				
Activity 4.2																				

4.3 Activity, Sub-activity and Proposed Budget for 2020-2024

Activity	Sub-Activity	Y1 2020	Y2 2021	Y3 2022	Y4 2023	Y5 2024
Activity 1:	Activity 1.1: Regional Technical Consultation to Improve the Utilization of Regional Fishing Vessel Record 24 meters, and developing the Watch List	20,000	10,000	10,000	10,000	10,000
	Activity 1.2: (Option) National training to promote Regional Fishing Vessels Record Database to AMSs	-	-	-	-	-
	Activity 1.3: (Option) Sub-regional or bilateral meeting to develop the application of RFVR to support PSM requirements (e.g. Myanmar and Thailand)	-	-	-	-	-
	Activity 1.4 Information, Education and Communication materials to support RFVR Database	-	-	-	-	-
Activity 2:	Activity 2.1: Capacity Building on Port Inspection to Support PSM Implementation and Introduction on PSM implementation (in general) to non-ratify AMSs, and capacity building on MCS	-	20,000	-	20,000	-
	Activity 2.2: Regional Meeting to share information on detecting IUU fishing vessels for preventing the landing of fish and fishery products from IUU fishing vessels at MCs' ports both PSMA ratify and non-ratify MCs, and/or regional meeting to share information on MCS	20,000	-	20,000	-	20,000
	Activity 2.3: Workshop on the review and collect the national legislation and procedures in relation with implementation of PSM includes gaps analysis in the respective legal frameworks of the AMSs (together with 2.1)	-	-	-	-	-
Activity 3:	Activity 3.1: Facilitation and development eACDS for Viet Nam, Malaysia, Myanmar and etc. (in collaboration with MFRDMD)	47,000	57,000	57,000	57,000	37,000
	Activity 3.2: Regional Workshop on exchange information on fisheries catch documentation and traceability	-	-	-	-	20,000

Activity	Sub-Activity	Y1 2020	Y2 2021	Y3 2022	Y4 2023	Y5 2024
Activity 4:	Activity 4.1: Coordination with International organization e.g. FAO, Regional Fisheries Management Organizations (RFMOs), Regional Fisheries Bodies (RFB) and National agencies in and beyond region in order to support AMSs on implementation of activities to eliminate IUU fishing.	-	-	-	-	-
	Activity 4.2: Participation in a national / regional / international meeting relevant to combating IUU fishing activities.	3,000	3,000	3,000	3,000	3,000
Sub-total budget		90,000	90,000	90,000	90,000	90,000

PART II: ACHIEVEMENT OF 2019 PROJECT IMPLEMENTATION

1. Project Achievements in the Present Year (2020)

Due to the Covid-19 pandemic, the implementation of the planned activities in 2020 were adjusted and re-scheduled as follows;

- Promotion on utilization of RFVR database for Thailand;
- Organization of the Teleseminar on Way Forward for Combating IUU Fishing in Southeast Asia, 24-26 August 2020. The way forward for combating IUU fishing in Southeast Asia was discussed;
- Organization of the Teleworkshop on Development and Improvement of Regional Tools for Combating IUU fishing in Southeast Asia”, 27-28 August 2020. Achievements: (i) work plan and timeframe for transferring works on data key-in by the participating countries was agreed; and (ii) ideas and comments to explore possible development of a new dataset of RFVR database for vessels size less than 24 meters for effective implementation of PSM were discussed and concluded.
- Organization of the Introductory Workshop on eACDS as requested by Cambodia, 18 February 2020, participants included staff of Fisheries Administration (FIA) and relevant agencies in Phnom Penh, Cambodia.
- Organization of 3 online trainings for Brunei Darussalam, Malaysia, and Viet Nam on the use of eACDS application version 2, including a trial of eACDS application by each country.

2. Activities and Budget in the Present Year

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Output 1:								
Activity 1.1	VI	237	226	22	21	48	75	624
Activity 1.2	III	0	7	2	5	0	0	2,202
Output 2:								
Activity 2.2	Implementation together with activity 1.1							
Output 3:								
Activity 3.1	I	0	6	9	7	0	0	0
	II	7	24	9	7	0	0	1,192
	III	4	20	1	1	0	1	8,815
	V	8	8	12	9	0	0	0

3. Expected Outcome/Outputs and Achievements in the Present Year

Activities	Expected Outcome/Outputs	Results/Achievements
Outcome	Countermeasures to reduce IUU Fishing in Southeast Asia	
Output 1:	Enhancing the utilization and improvement of Regional Fishing Vessels Record (RFVR) Database	
Activity 1.1	<ul style="list-style-type: none"> Way Forward for Combating IUU Fishing in Southeast Asia Way forward for the RFVR for vessels 24 meters in length and over including the RFVR for vessels less than 24 meters in length 	<ul style="list-style-type: none"> Teleseminar on Way Forward for Combating IUU Fishing in Southeast Asia was organized on 24-26 August 2020. Teleworkshop on Development and Improvement of Regional Tools for Combating IUU fishing in Southeast Asia was organized on 27-28 August 2020
Activity 1.2	<ul style="list-style-type: none"> Promotion on utilization of RFVR in Thailand 	<ul style="list-style-type: none"> Understanding and more utilization of RFVR by relevant authorities in Thailand
Output 2:	Increased number of fisheries inspectors and strengthened implementation of PSM, and national capacity development of MCS in Southeast Asia	
Activity 2.2	Update status, actions and needs for PSM and MCS implementation in ASEAN	<ul style="list-style-type: none"> Teleworkshop on Development and Improvement of Regional Tools for Combating IUU fishing in Southeast Asia was organized on 27-28 August 2020 Status, actions and needs for the effective and efficient implementation of PSM and MCS
Output 3:	Application of the electronic ASEAN Catch Documentation System (eACDS) and other tools for traceability to eliminate IUU fisheries products in AMSs	
Activity 3.1	<ul style="list-style-type: none"> eACDS application version 2 for Brunei Darussalam, Malaysia, Myanmar and Viet Nam Understanding on the use of eACDS application version 2 at least in the part of Catch Declaration (CD) and/or Movement Document (MD) 	<ul style="list-style-type: none"> Online training on the use of eACDS version 2 was organized for each country Trail on the use of eACDS in Brunei Darussalam, Malaysia, Myanmar and Viet Nam for traceability

4. List of Publications in 2020

Publications	Type of Media	Attached e-file
1. Brochure on promotion of RFVR	Brochure	http://hdl.handle.net/20.500.12067/1565
2. Report on Teleseminar on way forward for combating IUU fishing in Southeast Asia	Document	http://hdl.handle.net/20.500.12067/1564
3. Report on Teleworkshop on Development and Improvement of Regional Tools for Combating IUU fishing in the Southeast Asia	Document	Ongoing
4. Introduction of eACDS application	VDO	Ongoing
5. Manual on eACDS application version 2	Document	Ongoing to upload to TD repository

5. Evaluation on Workshops/Training Courses by Participants of AMSs

Activities	Evaluation
Output 1:	
Activity 1.1	Not available
Output 3:	
Activity 3.1	The online trainings on the use of eACDS version 2 were organized for Brunei Darussalam, Viet Nam and Malaysia. Therefore, online evaluations were conducted via Google Form. There were 19 respondents in total. The results of evaluation indicated that most participants understood on the lecture how to use eACDS (85.7%). 57.1 % of satisfaction of the participants on the total period of training (2 days) and duration of the training per day (3 hrs.), and 74.1% of satisfaction on practical use of eACDS.

6. Major Impacts/Issues

- Due to Covid-19 pandemic, implementation of the planned activities was adjusted and re-scheduled from face-to-face to be teleworkshop or/and online training. However, the results of online meetings/trainings were not as expected like normal fact-to-face meetings/trainings.
- The information on the RFVR database has been updated twice per year based on the information submitted by the project participating countries.
- The participating countries agreed to key-in data into the current RFVR database by their respective countries, timeframe and work plan to transfer the work of data input were agreed at the teleworkshop.
- The participating countries of the RFVR database agreed that a new dataset of RFVR database for vessels size smaller than 24 meters (range of 18-23.99 meters) should be developed considering effective implementation of activities on combat IUU fishing. The results from discussion during the teleworkshop on this matter will be submitted and discussed in the forthcoming the 43rd PCM and subsequently to the 53rd Council Meeting.

Note: all participation in project activities are open to men and women where there are no specific gender issues in the implementation of the project activities.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2021

1. Project Summary in 2021

In 2021, the project continues to undertake the improvement activities of Regional Fishing Vessel Record 24 meters in length and over focussing on transferring work for key-in data by their respective participating countries, including development a platform on updating information by the participating countries, dashboard for summarizing general information using information from the RFVR database, and expansion of the work on RFVR database for the vessels size smaller than 24 meters. To support the participating countries on the implementation of PSM, the Regional Training to support implementation of PSM for inspectors will be organized. The project also continues to finalize works on eACDS with Brunei Darussalam, and follow-up works with development of Viet Nam, Malaysia and Myanmar. Moreover, TD will keep coordination with relevant technical partner agencies. To enhance capacities and update information on IUU fishing, the SEAFDEC staff will participate in international/regional meetings/workshops relevant to IUU fishing.

2. Outcome, Outputs and Activities and Proposed Budget

Proposed Activity	Description	Proposed Budget
Outcome	Countermeasures to reduce IUU Fishing in Southeast Asia	
Output 1:	Enhancing the utilization and improvement of Regional Fishing Vessels Record (RFVR) Database	
Activity 1.1: Regional Technical Consultation to Improve the	The Regional Meeting on Development and Improvement of RFVR Database will be organized in Thailand in collaboration with other AMSs, aiming to develop a new set of RFVR database for fishing vessels less than 24 meters in length. Discussion on future activities of RFVR database 24 meter in length and over will include transferring data key-in	10,000

Proposed Activity	Description	Proposed Budget
Utilization of Regional Fishing Vessel Record 24 meters, and developing the Watch List	and updating by their respective countries. Nation Focal Point for RFVR database will be invited to participate in the Meeting. <i>Estimation budget</i> • Airfare and transportation (10 persons) 2,750 USD • Accommodation (4 nights) 2,400 USD • DSA (3 days) 2,100 USD • Meeting package and etc. 2,750 USD	
Output 2:	Increased number of fisheries inspectors and strengthened implementation of PSM and MCS in Southeast Asia	
Activity 2.1: Capacity development on port inspection to support the PSM Implementation, and the introduction on the PSM implementation (in general) to non-ratified AMSs, and capacity building on MCS	The Regional Training Course to support implementation PSM for port inspectors will be organized to capacity building skill and experience on PSM inspection for AMSs. <i>Estimation budget</i> • Airfare and transportation (20 persons) 5,500 USD • Accommodation (4 nights) 4,800 USD • DSA (3 days) 4,200 USD • Training package, and etc. 5,500 USD	20,000
Output 3	Application of the electronic ASEAN Catch Documentation System (eACDS) to eliminate IUU fisheries products in AMSs	
Activity 3.1: Facilitation and development eACDS for Viet Nam, Malaysia and Myanmar.	SEAFDEC/TD will continue to facilitate utilization and improvement of eACDS application for fisheries officers of Brunei Darussalam, Viet Nam, Malaysia, Myanmar, and its expansion through organization of a series of trainings on the use of eACDS applications for relevant target groups <i>Viet Nam</i> • Airfare and transportation (4 prs) 2,900 USD • Accommodation (4 nights) 1,120 USD • DSA (5 days) 1,000 USD • Meeting cost, and etc. 1,980 USD Total 7,000 USD Grand Total for 2 times 14,000 USD <i>Malaysia</i> • International and transportation (4 prs) 2,700 USD • Accommodation (4 nights) 1,280 USD • DSA (5 days) 1,400 USD • Meeting cost, and etc. 1,620 USD Total 7,000 USD Grand Total for 3 times 21,000 USD <i>Myanmar</i> • Airfare and transportation (4 prs.) 2,300 USD • Accommodation (3 nights) 840 USD • DSA (5 days) 1,000 USD • Training cost, and etc. 1,860 USD Total 6,000 USD Grand total for 2 times 12,000 USD <i>Brunei Darussalam and expansion country 10,000 USD</i>	57,000

Proposed Activity	Description	Proposed Budget
Output 4	National/ regional/ international network for collaborative activities to eliminate IUU fishing	
Activity 4.2: Participation in a national / regional / international meeting relevant to combating IUU fishing activities	<p>To cooperate with other organizations, and also build capacity of the countries to update information on relevant IUU trend, the project staff will participate in international meeting/ workshop with relevant to combat IUU fishing.</p> <ul style="list-style-type: none"> • <i>Airfare and transportation</i> 1,010 USD • <i>Accommodation (3 nights)</i> 210 USD • <i>DSA (4 days)</i> 280 USD <p style="text-align: right;"><i>Total</i> 1,500 USD</p> <p style="text-align: right;"><i>Grand total for 2 times</i> 3,000 USD</p>	3,000

3. Implementation Plan of Activities in 2021

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1.1												
Activity 2.1												
Activity 3.1												
Activity 4.2												

4. Expected Activity Results in 2021

Planned activity	Expected Activity Results
Activity 1: Regional Fishing Vessels Record (RFVR)	
Activity 1.1 Regional workshop on RFVR focusing on developing a platform on updating information for AMSs themselves is organized	<ul style="list-style-type: none"> • Development of a platform updating information for AMSs • Information prepared and updated to avoid information error
Activity 2: Regional Cooperation to support implementation of PSM and MCS	
Activity 2.1 Regional workshop to support MCS implementation is organized for enhancing national capacities for the relevant authorities of AMSs	<ul style="list-style-type: none"> • Understanding, skill and experience enhanced on the MCS implementation • Cooperation between partners to support the implementation of MCS
Activity 3: Electronic ASEAN Catch Documentation Scheme (eACDS)	
Activity 3.1 Facilitation and development eACDS for Viet Nam, Malaysia and Myanmar. SEAFDEC/TD will continue to facilitate and improve eACDS application for Brunei Darussalam, Viet Nam, Malaysia, Myanmar and other countries through organizing a training on the use of eACDS application for the target groups	<ul style="list-style-type: none"> • Successful trial and improvement of eACDS in Brunei Darussalam, Viet Nam, Malaysia and Myanmar • Improved understanding on the use of eACDS application
Activity 4: Strengthen on Coordination with international/regional/national organizations	

Planned activity	Expected Activity Results
<p>Activity 4.2 Participation in a national / regional / international meeting relevant to combating IUU fishing. To cooperate with other organizations, strengthen national capacities and update information on IUU-related. Project staff will participate in international meeting/workshop relevant to IUU fishing.</p>	<ul style="list-style-type: none"> • Strengthened network to combat IUU fishing • Strengthened cooperation with partners to combat IUU fishing in the region • Shared and exchanged information on combating IUU fishing in the region

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2020
AND
PROPOSED ACTIVITIES FOR THE YEAR 2021**

			Project ID: 202006007
Program Category:	Project under the ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title:	Harmonization and Enhancing Utilization of Fishery Statistics and Information		
Program Strategy No:	I	Total Period:	2020 - 2024
Lead Department:	Secretariat (SEC)	Lead Country:	Nil
Donor/Sponsor:	Japanese Trust Fund (JTF)	Total Project Budget:	USD 230,000
Project Partner(s):	FAO	Budget for 2021:	USD 54,000
Lead Technical Officer:	Saivason Klinsukhon (SEC)	Project Participating Country(ies):	All Member Countries

PART I: PROJECT DESCRIPTION

1. Executive Summary

Fishery statistics and information are essential for policy planning and management of fisheries toward the sustainability. This project therefore focuses on supporting the on-going efforts of SEAFDEC in the regional compilation of fishery statistics in ASEAN Member States (AMSs), taking into consideration of the newly agreed statistics standards developed and recently adopted by FAO in 2019. This would ensure that fishery statistics submitted by AMSs for the regional compilation comply with the requirements at global level.

In addition to fishery statistics, the project supports the utilization of various data and information to generate information that could provide better knowledge on the status and trends of fisheries and aquaculture in the region. The information on fishery and aquaculture related issues confronted in the region would be published in the third issue of the publication “Southeast Asian State of Fisheries and Aquaculture (SEASOFIA)” produced by SEAFDEC every 5-year (the first issue in 2012, second in 2017, and third in 2022). Furthermore, the project would support enhancing the visibility of SEAFDEC initiatives undertaken through SEAFDEC programs and projects, which would be also published in the SEAFDEC Special Publication “Fish for the People” (three issues per year, since 2002).

2. Background and Justification

SEAFDEC has been undertaking initiatives in compiling fishery statistics from the Member Countries bordering the South China Sea Areas since 1978. Harmonization of data is an important issue in order to facilitate the exchange and compilation of statistics at various levels, *i.e.* regional and international levels. SEAFDEC developed the “Regional Framework for Fishery Statistics of Southeast Asia”, *i.e.* on the “standard definitions and classifications” to be harmonized with the international standards and on “area of coverage” and “statistical usage” to be consistent with the areas of competence of SEAFDEC. The framework has been using for the compilation of fishery statistics from the Southeast Asian countries to SEAFDEC since 2008.

Nevertheless, after 2008, there were still more development of new standards by the Coordinating Working Party (CWP) on Fishery Statistics. In August 2017, SEAFDEC organized the “Regional Technical Consultation (RTC) on Fishery Statistics and Information in Southeast Asia”, where the Southeast Asian countries were updated with the recent development by the CWP of new global frameworks related to fishery statistics. During the RTC, the initial recommendations were provided to the participants on the new CWP standards. It was agreed that after the adoption of the new CWP standards (*i.e.* at the 26th Session of the Coordinating Working Party (CWP) on Fishery Statistics in 2019), SEAFDEC should organize a meeting among the members of the ASEAN Network on Fishery Statistics to revise the Regional Framework for Fishery Statistics of Southeast Asia. Other areas for improving regional

fishery statistics were also discussed and agreed upon during the RTC, e.g. inclusion of statistics on fish trade and fish processing. This project is planned to support for revising the Regional Framework for Fishery Statistics for Southeast Asia with the new global frameworks related to fishery statistics, as well as inclusion of other areas that are important to provide information on the status of the fisheries sector in the region. “Fish for the People” would be incorporated under this project.

In addition, SEAFDEC published its publications entitled “Southeast Asian State of Fisheries and Aquaculture (SEASOFIA)” in 2012 and 2017, aiming to make use of statistics, other data and information to provide better understandings on the fisheries sector of the region. In order to continue the momentum of enhancing the utilization of fishery statistics, this project would facilitate the preparation and production of the next SEASOFIA in 2022. Furthermore, there is also a need to sustain the initiative on production of Special Publication.

The Project supports the 2020 Resolution on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020, #6 “Enhance regional fishery information systems and mechanisms to facilitate sharing, exchange and compilation of statistics and information 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”.

3. Gender Sensitivity of the Project

The nature of project implementation in general is not gender sensitive; however, the revised Regional Framework for Fishery Statistics of Southeast Asia and SEASOFIA 2022 could incorporate the gender aspect in the activity.

4. Objectives, Outcome, and Output of the Project

4.1 Logical Framework

GOAL (Overall Objectives, Impact)	Indicators	Means of Verification
Utilization of fishery statistics data and information for policy planning and management of fisheries toward sustainability	Fishery statistics data and information on the status and trends served as references for policy planning and fisheries management	Number of references made to the Fishery Statistics Bulletin, SEASOFIA 2022, and “Fish for the People”
OUTCOME	Indicators	Means of Verification
SEAFDEC fishery statistics data improved in line with the revised Regional Framework for Fishery Statistics of Southeast Asia	Data items reported based on the revised Regional Framework for Fishery Statistics of Southeast Asia	Number of data items reported by AMSs for the SEAFDEC Statistics Bulletin
OUTPUT 1	Indicators	Means of Verification
Regional Framework for Fishery Statistics of Southeast Asia revised	Revised Regional Framework for Fishery Statistics of Southeast Asia is harmonized with the new global standards	Adoption of the Regional Framework by AMSs
ACTIVITY 1	Indicators; key Inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 1.1: Monitoring the development of global fishery statistics standards and participation in the relevant fora in the development and finalization of global frameworks on fishery statistics	SEAFDEC staff participated in the relevant international meetings (e.g. FAO CWP on Fishery Statistics), and information on regional standards shared	Meeting Reports
Activity 1.2: Regional Technical Consultation(s) to gather inputs for revising the regional Framework for Fishery Statistics	<ul style="list-style-type: none"> • Regional Technical Consultation organized • Revised Regional Framework drafted 	<ul style="list-style-type: none"> • Consultation report(s) • Number of global standards accommodated in the revised Regional

<p>of Southeast Asia</p> <p><i>Remarks: A series of RTC to be organized to update the Statistics Framework:</i></p> <p><i>Year 1: Overall workplan, Part of General Note, Marine and Inland Capture Production, and Export and Import of Fishery Commodities</i></p> <p><i>Year 2: Part of Aquaculture and Producer Price</i></p> <p><i>Year 4: Finalizing the revision of regional framework</i></p> <p><i>Year 5: Monitoring the new questionnaires</i></p>	<ul style="list-style-type: none"> Expected number (40 persons) of participants 	<p>Framework</p> <ul style="list-style-type: none"> Revised Regional Framework (draft) Number (40 persons) of participants
<p>Activity 1.3:</p> <p>Production and dissemination of the revised Regional Framework for Fishery Statistics of Southeast Asia</p>	<p>The revised Regional Framework published and disseminated in 2024</p>	<p>Number of production and dissemination of the revised Regional Framework</p>
<p>OUTPUT 2</p>	<p>Indicators</p>	<p>Means of Verification</p>
<p>Latest information on the status and trends of fisheries and aquaculture in the region disseminated to the public through the SEAFDEC publication “Southeast Asian State of Fisheries and Aquaculture 2022 (SESOFIA 2022)”</p>	<p>SEASOFIA 2022 published as reference material on the status and trends of fisheries and aquaculture in the region</p>	<p>SEASOFIA 2022</p>
<p>ACTIVITY 2</p>	<p>Indicators: key inputs (Number to be conducted, Where, Time)</p>	<p>Means of Verification</p>
<p>Activity 2.1:</p> <p>Consultations among SEAFDEC Departments to develop the outline and identify contributors for SEASOFIA 2022</p>	<p>The Consultation conducted in 2020</p>	<ul style="list-style-type: none"> Consultation reports Outlines of SEASOFIA 2022
<p>Activity 2.2:</p> <p>Departments of input articles and consultations for finalizing the articles for SEASOFIA 2022</p>	<p>Consultation conducted in 2021 to finalize draft articles</p>	<ul style="list-style-type: none"> Consultation reports Draft articles for SEASOFIA 2022
<p>Activity 2.3:</p> <p>Production and dissemination of SEASOFIA 2022</p>	<p>SEASOFIA 2022 published and disseminated in 2022</p>	<p>Number of production and dissemination of SEASOFIA 2022</p>
<p>OUTPUT 3</p>	<p>Indicators</p>	<p>Means of Verification</p>
<p>Information on fisheries issues and relevant regional initiatives disseminated to public through the SEAFDEC publication “Fish for the People”</p>	<p>Information on fisheries issues and relevant regional initiatives disseminated</p>	<p>SEAFDEC publication “Fish for the People”</p>
<p>ACTIVITY 3</p>	<p>Indicators: key inputs (Number to be conducted, Where, Time)</p>	<p>Means of Verification</p>
<p>Activity 3.1:</p> <p>Preparation, production and dissemination of the publication “Fish for the People”</p>	<p>“Fish for the People” published and disseminated in three times per year (April, August, and December)</p>	<p>Number of production and dissemination of “Fish for the People”</p>

4.2 Project Implementation Plan for 2020 - 2024

Activities	2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Output 1:																				
Activity 1.1																				
Activity 1.2																				
Activity 1.3																				
Output 2:																				
Activity 2.1																				
Activity 2.2																				
Activity 2.3																				
Output 3:																				
Activity 3.1																				

Remark: * As the conduct of in-person meeting is not possible due to the Covid-19 pandemic, the consultation will be postponed to the 2nd Quarter of 2021.

4.3 Proposed Budget for 2020 - 2024

(Unit: USD)

Output	Activities	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Year 5 (2024)
Output 1	Activity 1.1	4,000	4,000	4,000	4,000	4,000
	Activity 1.2	25,000	25,000	-	25,000	25,000
	Activity 1.3	-	-	-	-	5,000
Output 2	Activity 2.1	10,000	-	-	-	-
	Activity 2.2	-	10,000	-	-	-
	Activity 2.3	-	-	10,000	-	-
Output 3	Activity 3.1	15,000	15,000	15,000	15,000	15,000
Sub-Total		54,000	54,000	29,000	44,000	49,000

PART II: PROJECT ACHIEVEMENTS IN 2020

1. Project Achievements in the Present Year (2020)

In 2020, SEAFDEC continued coordination with the Member Countries and relevant organization to support submission of national statistics for regional/international compilation. Specifically, SEAFDEC attended in the 28th Session of Asia and Pacific Commission on Agricultural Statistic (10-14 February 2020 in Bali, Indonesia) to share view situation on fishery statistics of the region.

Due to the Covid-19 situation, the Regional Technical Consultation of Fishery Statistics originally scheduled in the 2nd Quarter of 2020 was postponed and is expected to organize in 2021. It should be noted the difficulties in conducting this RTC through teleconference as the discussion is on the detailed items of statistics.

In addition, the preparation of publication on Southeast Asian State of Fisheries and Aquaculture (SEASOFIA) 2022 also started in August 2020 with the First Inter-Departmental Consultation on Preparation of SEASOFIA 2022 on 6-7 August 2020 to develop the draft outline and agreed on required inputs and workplan of publication. Subsequently, the Second Inter-Departmental Consultation on Preparation of SEASOFIA 2022 was also organized on 1 October 2020 to finalize the draft outline, workplan, and the set of questionnaires.

Furthermore, based on the project implementations, the outputs, outcomes and results of the projects were published through the SEAFDEC publications such as "Fish for the People", in order to enhance its visibility to the Member Countries and other readers at regional and international levels.

2. Activities and Budget in the Present Year

Activities	Type of activity	Number of Participants						Budget Spent * (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Output 1:								
Activity 1.1 Participation in the relevant fora in relation to development and finalization of global frameworks on fishery statistics	VI. Others			1				1,707
Activity 1.2 Conduct Regional Technical Consultation to gather inputs for revision of the Regional Framework for Fishery Statistics for Southeast Asia	IV. Policy development activities							(estimated 25,000**)
Output 2:								
Activity 2.1 Conduct of consultations among SEAFDEC Departments to develop outline and identify contributors	III. Information activities			33	27			770
Output 3:								
Activity 3.1 Preparation, production and dissemination of publication on Fish for the People	III. Information activities							15,000

* Budget spent as of October 2020

** As the conduct of in-person meeting is not possible due to COVID-19, the consultation will be postponed to organize in Quarter 2 of 2021

3. Expected Outcome/Outputs and Achievements in the Present Year

Activities	Expected Outcome/Outputs	Results/Achievements
Outcome		
Output 1:		
Activity 1.1	Information on the fishery statistics in the region shared with FAO during the APCAS Meeting	Strengthened cooperation between SEAFDEC and the Member Countries and relevant organizations on fishery statistics matters
Activity 1.2	Report of the RTC containing recommendations for revision of the Regional Frameworks on Fishery Statistics	Agreements among AMSs and SEAFDEC on revision of the Regional Frameworks on Fishery Statistics that also reflected the new global standards on fishery statistics
Output 2:		
Activity 2.1	Draft outline of SEASOFIA 2022, agreement on contributors, workplan, and set of questionnaires	The SEAFDEC Secretariat and Departments had common understanding on inputs to be prepared by their respective Departments
Output 3:		
Activity 3.1	Three issues of "Fish for the People" produced and disseminated to readers	Strengthened the information dissemination of results from SEAFDEC programs and projects through "Fish for the People"

4. List of Publications in

Publications	Type of Media	Attached e-file
1. Report of the 1 st Inter-Departmental Consultation on Preparation of SEASOFIA 2022	Technical Report	PDF
2. Report of the 2 nd Inter-Departmental Consultation on Preparation of SEASOFIA 2022	Technical Report	PDF
3. Fish for the People Vol.18 No.1-3	Magazine	PDF

5. Evaluation on Workshops/Training Courses by Participants of AMSs

Activities	Evaluation
Output 1:	
Activity 1.1	No existing current method/mechanism to evaluate this activity
Activity 1.2	Suggested revision of the Regional Framework for Fishery Statistics for Southeast Asia that could serve as reference for revision of the framework
Output 2:	
Activity 2.1	The draft outline of SEASOFIA 2022 that include the updated issue at current situation.
Output 3:	
Activity 3.1	Number of publications disseminated to the Member Countries and other relevant international, regional, and national organizations

6. Major Impacts/Issues

- Coordination for and participation in the meeting enabled SEAFDEC to be updated and shared on the status and availability of fishery statistics in the Member Countries
- The draft outlines of SEASOFIA 2022 were developed by concerned officers of SEAFDEC who were encouraged to make use of findings from the project implementation and other sources of information to generate information on the status and trends of fisheries and aquaculture to serve as basis to support the sustainable management of fisheries
- The Special Publication “Fish for the People” would further promote sustainable fisheries for food security in the Southeast Asian region through the contributions of various authors who have experiences and works in the region on sustainable development of fisheries and aquaculture. Key issues and challenges as well as way forwards to promote sustainable development of fisheries for specific topic were publicized through this publication recognizing the fact that undertaking responsible fisheries is crucial in ensuring the sustainability of fisheries in Southeast Asia.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2021

1. Project Summary in 2021

In 2021, SEAFDEC will continue to coordinate with the Member Countries and relevant organizations including the participation in relevant regional/international fora to keep up with the new development in relation to fishery statistics. Specifically, FAO has made a significant progress in developing several new standards and definitions on fishery statistics in the past few years. Therefore, the 2nd Regional Technical Consultation will be organized under this project to keep the AMSs informed of such development and to seek views from AMSs on the workplan for updating the Regional Framework of Fishery Statistics in Southeast Asia accordingly, as well as to discuss some areas for improvement/incorporation in the Fishery Statistics Bulletin. In preparation for the third issue of SEASOFIA in 2022, the draft outlines of the publication in consultation with the SEAFDEC Departments will be submitted to the 53rd Meeting of SEAFDEC Council; and the draft inputs articles of this publication will be also submitted to the 44th Meeting of SEAFDEC Program Committee for consideration. Furthermore, three issues of Special Publication “Fish for the People” will be produced and disseminated in the year 2021 to promote initiatives and activities undertaken by SEAFDEC to the wide audience.

2. Outcome, Outputs and Activities and Proposed Budget

(Unit: USD)

Proposed Activities	Descriptions	Proposed Budget												
Outcome	SEAFDEC fishery statistics data improved in line with the revised Regional Framework for Fishery Statistics of Southeast Asia													
Output 1:	Regional Framework for Fishery Statistics for Southeast Asia revised													
Activity 1.1	<p>Participation in the relevant for a in relation to development and finalization of global frameworks on fishery statistics</p> <p>SEAFDEC will participate in the international/regional fora to update the development of global frameworks related to fishery statistics, and to support the revision of the Regional Framework of Fishery Statistics for Southeast Asia with the new global frameworks.</p> <p>Estimate expenditures:</p> <table> <tr> <td>- Travel costs</td> <td>USD 2,300</td> </tr> <tr> <td>- Daily subsistence allowances</td> <td>USD 700</td> </tr> <tr> <td>- Accommodation</td> <td>USD 500</td> </tr> <tr> <td>- Others</td> <td>USD 500</td> </tr> <tr> <td>Sub-total:</td> <td>USD 4,000</td> </tr> </table>	- Travel costs	USD 2,300	- Daily subsistence allowances	USD 700	- Accommodation	USD 500	- Others	USD 500	Sub-total:	USD 4,000	4,000		
- Travel costs	USD 2,300													
- Daily subsistence allowances	USD 700													
- Accommodation	USD 500													
- Others	USD 500													
Sub-total:	USD 4,000													
Activity 1.2	<p>Organization of Regional Technical Consultation to gather inputs for revising the Regional Framework for Fishery Statistics for Southeast Asia</p> <p>The first RTC (postponed from 2020 which could not be conducted due to COVID-2019) will be conducted in 2021 with the participation of representatives from the ASEAN Member States to seek views and inputs for updating the Regional Framework of Fishery Statistics in Southeast Asia (<i>Year1: Overall workplan, Part of General Note, Marine and Inland Capture Production, and Export and Import of Fishery Commodities</i>). The Second RTC which was originally scheduled in 2021 will be postpones to 2022. It is expected that the RTC will come up with revision of the statistics frameworks that enhance regional and global compilation of future fishery statistics in the future.</p> <p>Remarks: the first RTC will be organized in Thailand (for 3 days)</p> <p>Estimate expenditures:</p> <table> <tr> <td>- Traveling costs (1 prs. from each AMS and 1 prs. from each SEAFDEC Department)</td> <td>USD 7,000</td> </tr> <tr> <td>- Daily subsistence allowances</td> <td>USD 7,000</td> </tr> <tr> <td>- Accommodation</td> <td>USD 6,000</td> </tr> <tr> <td>- Meeting package (40 prs.)</td> <td>USD 3,800</td> </tr> <tr> <td>- Others</td> <td>USD 1,200</td> </tr> <tr> <td>Sub-total:</td> <td>USD 25,000</td> </tr> </table>	- Traveling costs (1 prs. from each AMS and 1 prs. from each SEAFDEC Department)	USD 7,000	- Daily subsistence allowances	USD 7,000	- Accommodation	USD 6,000	- Meeting package (40 prs.)	USD 3,800	- Others	USD 1,200	Sub-total:	USD 25,000	25,000 (from 2020 budget)
- Traveling costs (1 prs. from each AMS and 1 prs. from each SEAFDEC Department)	USD 7,000													
- Daily subsistence allowances	USD 7,000													
- Accommodation	USD 6,000													
- Meeting package (40 prs.)	USD 3,800													
- Others	USD 1,200													
Sub-total:	USD 25,000													
Output 2:	SEAFDEC publication “Southeast Asian State of Fisheries and Aquaculture 2022”													
Activity 2.2	<p>Conduct consultations among SEAFDEC Departments to develop inputs articles for finalizing the articles for SEASOFIA 2022</p> <p>The consultations will be organized with the participation of SEAFDEC Departments with the aims to develop inputs articles for finalizing the articles for SEASOFIA 2022 before submission to 44PCM and Department Chiefs’ Meeting for consideration.</p>	10,000												

Proposed Activities	Descriptions	Proposed Budget
	Estimated expenditures: - Traveling costs USD 4,000 (1pr from each SEAFDEC Department) - Daily subsistence allowances USD 2,500 - Accommodation USD 2,000 - Meeting package (30 prs.) USD 1,000 - Others USD 500 Sub-total: USD 10,000	
Output 3:	SEAFDEC publication “Fish for the People”	
Activity 3.1	Preparation, production and dissemination of publication on Fish for the People Three issues of SEAFDEC Special Publication “Fish for the People” will be produced and disseminated Estimated expenditures: - Printing (3 issues) USD 11,000 - Mailing USD 4,000 Sub-total: USD 15,000	15,000

3. Implementation Plan of Activities in 2021

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Output 1:												
Activity 1.1												
Activity 1.2												
Output 2:												
Activity 2.2												
Outputs 3:												
Activity 3.1												

4. Expected Activity Results in 2021

Planned activity	Expected Activity Results
Activity 1 Monitoring of development of global fishery statistics and conduct regional fora to discuss on harmonization of Regional Framework for Fishery Statistics for Southeast Asia	
Activity 1.1 Participation in the relevant fora in relation to development and finalization of global frameworks on fishery statistics	<ul style="list-style-type: none"> Strengthened coordination between SEAFDEC, the Member Countries and organizations on statistics-related matters Updated on the recent development by the CWP of new global frameworks related to fishery statistics
Activity 1.2 Conduct of Regional Technical Consultation to gather inputs for revision of the Regional Framework for Fishery Statistics of Southeast Asia	<ul style="list-style-type: none"> The revision part of General Note, Marine and Inland Capture Production, and Export and Import of Fishery Commodities for the Regional Framework of Fishery Statistics for Southeast Asia

Planned activity	Expected Activity Results
Activity 2 Preparation and production of publication “Southeast Asian State of Fisheries and Aquaculture 2022”	
Activity 2.1 Conduct of consultation among SEAFDEC Departments to develop inputs article for SEASOFIA 2022	<ul style="list-style-type: none"> • Draft publication “SEASOFIA 2022”
Activity 3 Preparation and production of publication “Fish for the People”	
Activity 3.1 Preparation, production, and dissemination of publication on Fish for the People	<ul style="list-style-type: none"> • Three issues of Special Publication “Fish for the People” produced and disseminated

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2020
AND
PROPOSED ACTIVITIES FOR THE YEAR 2021**

			Project ID: 202001014
Program Categories:	Project under the ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title:	Responsible Fishing Technology and Practice		
Program Strategy No:	I	Total Duration:	2020 - 2024
Lead Department:	Training Department (TD)	Lead Country:	Thailand
Donor/Sponsor:	Japanese Trust Fund (JTF)	Total Donor Budget:	USD 300,000
Project Partner:	Nil	Budget for 2021:	USD 60,000
Project leader:	Taweekiet Amornpiyakrit (TD)	Involved Country:	All Members Countries

PART I: OVERALL PROJECT DESCRIPTION

1. Executive Summary

To meet the needs of responsible fishing technology and practices in the region, SEAFDEC has promoted a series of the selective fishing devices such as ‘Turtle Excluder Devices (TEDs)’ for shrimp trawling, to ensure a harmless catch of marine turtles and to release them safely and properly since 1998. Subsequently, in 2000, SEAFDEC has continued to promote the use of the ‘Juvenile and Trash Fishes Excluder Devices (JTEDs)’ in trawl fisheries and circle hooks in tuna longlining to address the problems on releasing juveniles and immature fish and to selectively harvest the target catch while reducing the level of unwanted catch in form of juveniles and immature and trash fish. During 2012-2015, SEAFDEC had collaborated with FAO to implement the project entitled “Strategies for Trawl Fisheries By-catch Management” and the project entitled “Conducting Energy Audits for Thai Trawler” in 2015.

SEAFDEC is continuing to promote the sustainable utilization of marine and coastal fisheries resources and the ecosystems to avoid significant adverse impacts. The utilization of marine resources by application of the environmentally friendly fishing gear and practices should be further developed and applied in order to enhance marine biodiversity and to secure fish for the people as well as to improve the ocean health of the SEAFDEC Member Countries. Furthermore, taking into consideration, the efforts to prevent and significantly reduce marine debris will be exerted.

In addition, most of the capture methods used for fishing are, however, heavily depending on the utilization of fossil fuels or petroleum. For many important fisheries, the high consumption of fuel constitutes a major constraint to their economic viability but also represents a significant source of greenhouse gas emissions. In general, active fishing gear like trawls and dredges can greatly impact the environment and require more amounts of fuel than other passive fishing gear as traps and hooks or other stationary fishing gear.

To facilitate the adoption of the concept *Low Impact and Fuel Efficient (LIFE) Fishing* as responsible fishing technology, the SEAFDEC Training Department (TD) would apply technological improvements (e.g. LED in light fishing, Marking of fishing gear, Deck machinery and its auxiliary devices) for appropriate fishery machinery onboard fishing vessels over the traditional fishing vessels. With such technological improvements, the changes in behavior and fishing practices can greatly result in more responsible fishing manners, mitigating damages to aquatic ecosystems, reducing emissions and lowering fuel costs, and contribute to more economical and sustainable utilization of fisheries resources and to better human well-being and livelihood of the fisherfolks in the Southeast Asian region.

Through technical meeting/workshop/survey/research/study, the project aims to; 1) promote responsible fishing technology and practices to mitigate fishing impacts to marine ecosystem, 2) promote marine engineering technologies and their applicability on enhancing the capability of fuel consumption efficiency and safety in fishing operations, and 3) enhance human resource capacities on fish handling techniques

onboard fishing vessels. It is also envisaged that the fishing and marine engineering technologies will be improved at national and regional levels as well as enhanced in human resources capacities in the Southeast Asian region.

2. Background and Justification

Southeast Asia is one of the world's most biologically diverse, economically productive and potentially vulnerable marine zones. The fishery production in the region exhibited a continuously increasing trend in terms of volume in 2012-2016. Marine fisheries greatly contribute to high quality seafoods and create employment and income for livelihood of the fisherfolks, specifically in marine capture fisheries. Presently, marine fisheries resources in the Southeast Asian region are heavily exploited. It is vital that marine resources must be harvested responsibly and sustainably, and the future fisheries development is governed by the availability of sustainable fish stock. Indisputably, fishing activities can sometimes adversely impact the marine environments through excessive removals of ecologically and economically valuable species, and also by a direct physical contact with critical habitats, *e.g.* bottom trawls. In addition, most of the capture methods used for fishing is, however, heavily dependent on the utilization of fossil fuels or petroleum. For many important fisheries, the high consumption of fuel constitutes a major constraint to their economic viability but also represents a significant source of greenhouse gas emissions. In general, active fishing gear like trawls and dredges can greatly impact the environment and more amounts of fuel required than other passive fishing gear as traps and hooks or other stationary fishing.

In line with the draft Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030 and corresponding the United Nations' Sustainable Development Goals 14 (Life Below Water: Conserve and sustainably use the oceans, seas and marine resources), SEAFDEC maintains its continuation in promoting the sustainable utilization and protection of marine and coastal fisheries resources and the ecosystems to avoid significant adverse impacts. The utilization of marine resources and environmentally friendly fishing gear and practices should be further developed and applied in order to maintain biodiversity and to secure fish for the people as well as to improve ocean health and to enhance the contribution of marine biodiversity to the development of the SEAFDEC Member Countries. Furthermore, taking into consideration, the efforts to prevent and significantly reduce marine debris will be exerted.

The program of activities under this project will be implemented based upon the current situation on the environmental impact of fishing gear and practices in the Southeast Asian region and national activities to mitigate those impacts to the marine ecosystem. The program of activities also includes research studies and the application and modification of marine engineering technologies on enhancing capability of fuel consumption efficiency and safety in fishing operations, reducing the emission of green-house gas and enhancing the safety-at-sea in fishing operations. Regional technical consultations and meetings along with the field practices will be periodically conducted to update the situation, share experiences, monitor the project implementation with the Member Countries. Network establishment towards the national initiatives to improve/apply the fishing technologies for supporting fisheries management will also be made.

The project will be implemented by SEAFDEC/TD in collaboration with responsible national agencies of the Member Countries, relevant organizations, institutions and other international partnerships (*e.g.* FAO, UN Environment, GEF, etc.) at both regional and national levels. Human resource development through the staff exchange, expert dispatchment and participation in the relevant meetings/workshops will be conducted.

3. Gender Sensitivity of the Project

The project will blend knowledge, skill and experience of senior researchers with the innovative idea of junior researchers to apply new/modern technologies to the project. Project involves men and women with neutral and equalized opportunities.

4. Project Goal, Outcome, Outputs, Activities, Indicators and Verification

4.1 Logical Framework

GOAL (Overall Objectives)	Indicators	Means of Verification
Sustainable utilization and sound management to minimize impact of fisheries resources and marine ecosystem by strengthening responsible fishing technology and practice in Southeast Asia	Proportion of SEAFDEC Member Counties managed their fisheries by application of technologies to reduce impact in fishing technologies, optimized fuel consumption, enhance safety on fishing operation and handling techniques onboard fishing vessel	Report of the technologies to reduce impact in fishing technologies, optimized fuel consumption, safety on fishing operation and handling techniques onboard fishing vessel, presented in the Regional Technical Meeting
OUTCOME	Indicator	Means of Verification
Strategic actions for improving low impact fishing technologies are promoted by Governments and other stakeholders	Fisheries management by introducing technologies to reduce impact in fishing technologies, optimized fuel consumption, safety on fishing operation and handling techniques onboard fishing vessel	Fisheries regulation or measure apply technologies to reduce impact in fishing technologies, optimized fuel consumption, safety on fishing operation and handling techniques onboard fishing vessel, presented in the Regional Technical Meeting
OUTPUT 1	Indicators	Means of Verification
Fishing technologies (<i>i.e.</i> fishing gear, fishing accessories, fishing practice) improved at national and regional level to reduce negative impacts to marine ecosystem	<ul style="list-style-type: none"> - At least 3 Member Countries (MCs) have activities, research/training, by introducing of concept Low Impact and Fuel Efficient (LIFE) fishing technologies in their fishing operations in 5 years - IFCOME network to follow up the national initiative to improve/apply low impact fishing technologies to support fisheries management 	<ul style="list-style-type: none"> - Report of the research or training activities/programs developed and conducted in SEAFDEC MCs and presented in the Regional Technical Meeting - Report on the research or study on the fishing technologies (<i>i.e.</i> fishing gear, fishing accessories, fishing practice) improved at national and regional level to reduce negative impacts to marine ecosystem - Number (60 persons) of fishing gear technologists will be members of IFCOME network
ACTIVITY 1	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 1.1: Regional Technical Meeting to identify and information gathering of environmental impacts fishing gear and practices in Southeast Asia and national activities/legislation to reduce/mitigate impacts of fishing gear and practices to marine ecosystem	<ul style="list-style-type: none"> - Inception meeting on the Regional Technical Meeting to identify and information gathering of environmental impacts fishing gear and practices in Southeast Asia and national activities/ legislation to reduce/mitigate impact of impacts fishing gear and practices to ecosystem - Project end-meeting on the Regional Technical Meeting to identify and information gathering of environmental impacts fishing 	<ul style="list-style-type: none"> - Meeting report(s) on the Regional Technical Meeting - Three (3) Member Countries (MCs) have activities, research/ training, by introducing of concept Low Impact and Fuel Efficient (LIFE) fishing technologies in their fishing operations in 5 years - Number (60 persons) of fishing gear technologists will be members of IFCOME network.

	gear and practices in Southeast Asia and national activities/ legislation to reduce/mitigate impact of impacts fishing gear and practices to ecosystem	List of them are appear in the Regional Technical Meeting reports
Activity 1.2: Research/study/survey on the appropriate technique to reduce/mitigate environmental impacts of fishing gear and practices to marine ecosystem	Two (2) Research/study/survey on the appropriate technique to reduce/mitigate environmental impacts of fishing gear and practices to marine ecosystems, <i>e.g.</i> light fishing, stationary fishing gear, marking of fishing gear, etc.	<ul style="list-style-type: none"> - Scientific reports on the techniques to mitigate the environmental impacts of fishing gear and practices to marine ecosystem - Publication in journal or magazine
Activity 1.3: Human resources development on techniques to reduce bycatch and discards, and mitigate impacts to habitat and vulnerable species	Regional technical training / workshop on techniques to reduce bycatch and discards, and mitigate impacts to habitat and vulnerable species	<ul style="list-style-type: none"> - Report on the regional technical training / workshop on techniques to reduce bycatch and discards, and mitigate impacts to habitat and vulnerable species - Number of participants of SEAFDEC Member Countries participated in the meeting - Series of publication used in regional technical training
Activity 1.4: Information dissemination on the fishing techniques, <i>i.e.</i> fishing gear, fishing accessories and fishing practices, to reduce bycatch and discards, and mitigate impacts to vulnerable species	Publication on the Regional technical meeting or training, research study and report on the fishing gear, fishing accessories and fishing practices, to reduce bycatch and discards, and mitigate impacts to vulnerable species	<ul style="list-style-type: none"> - A series of publication on the fishing techniques, <i>i.e.</i> fishing gear, fishing accessories and fishing practices, to reduce bycatch and discards, and mitigate impacts to vulnerable species to disseminate through SEAFDEC website - Presentation or abstract or scientific paper presented in the national regional or international symposium/conference
OUTPUT 2	Indicators	Means of Verification
Marine engineering technologies (<i>i.e.</i> fuel efficiency, and greenhouse gas reduction and safety of fishing operation at sea) improved at national and regional level	<ul style="list-style-type: none"> - At least 3 MCs have research/training activities on marine engineering techniques to improve fuel utilization and safety in fishing operation - Sixty (60) fisheries officers has been trained on the marine engineering techniques to improve fuel utilization and safety in fishing operation 	Report in the project end meeting on the Regional Technical Meeting on the fuel consumption and/or safety in fishing operation in Southeast Asia

ACTIVITY 2	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
<p>Activity 2.1: Regional technical meeting on information gathering of the fuel consumption in fishing operation and/or safety on fishing operation of major fishing operation in Southeast Asia (2020 and 2024)</p>	<ul style="list-style-type: none"> - Inception meeting on the Regional Technical Meeting on the fuel consumption and/or safety in fishing operation in Southeast Asia in 2020 - Project end meeting on the Regional Technical Meeting on the fuel consumption and/or safety in fishing operation in Southeast Asia in 2024 	<ul style="list-style-type: none"> - Report on the regional technical meetings - Number (60 persons) of marine engineer will be member of IFCOME network
<p>Activity 2.2: Research/study/survey on the appropriate technique to manage the fuel consumption, carbon emission and/or safety on fishing operation</p>	<p>Two (2) Research/study/survey on the appropriate technique to manage the fuel consumption and/or safety in fishing operation</p>	<ul style="list-style-type: none"> - Report on the regional technical training / workshop on techniques to reduce bycatch and discards, and mitigate impacts to habitat and vulnerable species - Number of participants of SEAFDEC Member Countries participated in the meeting - Series of publication used in regional technical training
<p>Activity 2.3: Human resources development on techniques to manage the fuel consumption, carbon emission and/or safety on fishing operation</p>	<p>One (1) Regional technical training / workshop on techniques to manage the fuel consumption, carbon emission and/or safety on fishing operation</p>	<ul style="list-style-type: none"> - Report on the regional technical training / workshop on techniques to manage the fuel consumption, carbon emission and/or safety on fishing operation - Number of participants of SEAFDEC Member Countries-participated in the training/workshop - Series of publication used in regional technical training/ workshop
<p>Activity 2.4: Information dissemination on techniques to manage the fuel consumption, carbon emission and/or safety on fishing operation</p>	<p>Publication or report on the regional technical meeting, training, research study on the techniques to manage the fuel consumption, carbon emission and/or safety on fishing operation</p>	<ul style="list-style-type: none"> - Series of publication on the fishing techniques, <i>i.e.</i> fuel consumption, carbon emission and/or safety on fishing operation - Presentation in the national regional or international symposium/conference
OUTPUT 3	Indicators	Means of Verification
<p>Regional and national human resources in fish handling techniques onboard fishing vessels improved</p>	<ul style="list-style-type: none"> - At least 3 MCs will be promoted fish handling onboard fishing vessels and drafting the training program in their fisheries. - Sixty (60) fisheries officers has been trained applicable fish 	<p>Report in the project end meeting</p>

	handling on board fishing vessel training package for promotion in SEAFDEC MCs	
ACTIVITY 3	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 3.1: human resource development on fish handling techniques onboard fishing vessels (Trainer level)	Three (3) regional training of trainers (TOT) on fish handling techniques onboard fishing vessels	<ul style="list-style-type: none"> - Report on the regional training of trainers (TOT) on fish handling techniques onboard fishing vessels - Number of participants of SEAFDEC Member Countries participated in the training/workshop - Series of publication used in regional technical training/workshop
Activity 3.2: Human resource development on fish handling techniques onboard fishing vessels (National Scale)	Two (2) National training courses on the fish handling onboard fishing vessels	<ul style="list-style-type: none"> - Report on the regional training of trainers (TOT) on fish handling techniques onboard fishing vessels - Number of participants of SEAFDEC Member Countries participated in the training/workshop - Series of publication used in regional technical training/workshop
Activity 3.3: Information dissemination on fish handling techniques onboard fishing vessels	Publication on the Regional technical meeting or training report	<ul style="list-style-type: none"> - Series of publication on the fishing techniques, <i>i.e.</i> fuel consumption, carbon emission and/or safety on fishing operation - Presentation in the national regional or international symposium/conference

4.2 Project Implementation Plan for 2020 – 2024

Activities	2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Output 1:																				
Activity 1.1																				
Activity 1.2																				
Activity 1.3																				
Activity 1.4																				
Output 2:																				
Activity 2.1																				
Activity 2.2																				
Activity 2.3																				
Activity 2.4																				

Activities	2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Output 3:																				
Activity 3.1																				
Activity 3.2																				
Activity 3.3																				

Proposed Budget for 2020 - 2024

(Unit: USD)

Output	Activities	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Year 5 (2024)
Output 1	Activity 1.1	20,000	-	-	-	20,000
	Activity 1.2	-	20,000	20,000	-	-
	Activity 1.3	-	-	-	20,000	-
	Activity 1.4	(Budget with Activity 1.1)	(Budget with Activity 1.2)	(Budget with Activity 1.2)	(Budget with Activity 1.3)	(Budget with Activity 1.1)
Output 2	Activity 2.1	20,000	-	-	-	20,000
	Activity 2.2	-	20,000	20,000	-	-
	Activity 2.3	-	-	-	20,000	-
	Activity 2.4	(Budget with Activity 2.1)	(Budget with Activity 2.2)	(Budget with Activity 2.3)	(Budget with Activity 2.4)	(Budget with Activity 2.1)
Output 3	Activity 3.1	20,000	-	20,000	-	20,000
	Activity 3.2	-	20,000	-	20,000	-
	Activity 3.3	(Budget with Activity 3.1)	(Budget with Activity 3.2)	(Budget with Activity 3.1)	(Budget with Activity 3.2)	(Budget with Activity 3.1)
Sub-Total		60,000	60,000	60,000	60,000	60,000

PART II: PROJECT ACHIEVEMENTS IN 2020

1. Project Achievements in the Present Year (2020)

Under the Covid-19 pandemic, the overall planned project activities were impacted due to international travel restrictions (all modes). Since the preparation for all processes to implement the new proposed plan of activities required some time to align among all other project activities within the Department, therefore, most of the activities were shifted to the 3rd and 4th quarters of 2020. Alternatively, an online platform to conduct any events (e.g. workshop, meeting, training) has been applied.

For the year 2020, the project intended to complete all proposed activities within the 4th quarter. The online training entitled “Regional Training of Trainers (TOT) on Fish Handling Techniques Onboard Fishing Vessels” was successfully organized on 3-7 August 2020 by SEAFDEC/TD and cordially attended by 8 Member Countries. The participants of the training course enhanced their knowledge and experiences through the online platform on the improvement of fish handling techniques, reduction of post-harvest losses, hygiene and good practice of fish handling onboard. Additionally, participants had an opportunity to update the information on the current situation and problems relevant to fish handling in the respective Member Countries through the country presentations. The participants expressed their satisfaction with this training course to fulfill their expectations as well as good management and arrangement of the online training in overall aspects.

The Online Regional Technical Meeting on Reducing Negative Impact to Ecosystem, Optimizing Energy and Fuel Consumption, and Enhancing Safety in Fishing Practices in Southeast Asia (Merged Activities 1.2 and 2.1) was organized on 21 and 28 September 2020, and attended by the international resource persons from the FAO and the National Research Institute of Fisheries Engineering (NRIFE), Japan and the SEAFDEC Member Countries. The meeting experienced and enhanced knowledge on the updated situation on the global issues on fishing technology (*i.e.* bycatch, discards, marine debris as the ALDFG, ghost fishing, impact on biodiversity and ecosystem), world status of safety at sea for fishing practices and innovative technology and energy efficiency from the international keynote speakers. Through the questionnaires and the discussions made at the meeting, the Member Countries identified the issues and challenges of fishing gear and practices to the environment, potential fishing gear modification/trial to reduce/mitigate impact to ecosystem and the potential marine engineering techniques to improve fuel utilization and safety in fishing operations in the Southeast Asian region. Regarding fisheries engineering, the Member Countries considered human resource development (HRD) programs on energy saving and optimizing energy. Specifically, a training course for trainers and information dissemination and sharing were also paid attention (*i.e.* a simplified pamphlet translated into local language for local fishers).

The following activities will be implemented in the 4th quarter of 2020.

Activity 1.2

1.2.1 Preliminary Investigation to Estimate the Abandoned, Lost and Discarded Traps (Pots) and Gillnets (ALDFG) along the Coasts of Thailand (to be carried out in November-December 2020. Project transfer from year 2019)

1.2.2 Improvement of the Scientific Echo-sounder for Fishery Resource Survey of M.V. SEAFDEC 2 (Under procurement process)

Activity 1.4 Information dissemination on the fishing techniques

- A preliminary report on the estimation the Abandoned, Lost and Discarded Traps (Pots) and Gillnets (ALDFG) along the Coasts of Thailand (on-going)

Activity 2.2 Research/study/survey on the appropriate technique to manage the fuel consumption, carbon emission and/or safety on fishing operation

- Trawl fishing gear equipment demonstration (On-going in October-December 2020)

Activity 2.4 Information dissemination on techniques to manage the fuel consumption, carbon emission and/or safety on fishing operation

- Report of the online meeting (On-going)

Activity 3.3 Information dissemination on fish handling techniques onboard fishing vessels

- Report of the online meeting (On-going)

2. Activities and Budget in the Present Year

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Output 1:								
Activity 1.1	R, T, P							660 (to be organized)
Activity 1.2.1	R							15,180 (to be organized)

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Activity 1.2.2	C, R, T							70,000 (to be organized)
Activity 1.4	I							(Shared with Act.1.1)
Output 2:								
Activity 2.1	R, T, P							660 (to be organized)
Activity 2.2	C, T							33,000
Activity 2.4	I							(Shared with Act.2.1)
Output 3:								
Activity 3.1	T	4	19		3	1	1	415 (completed)
Activity 3.3	I							(Shared with Act.3.1)

3. Expected Outcome/Outputs and Achievements in the Present Year

Activities	Expected Outcome/Outputs	Results/Achievements
Outcome	Strategic actions for improving low impact fishing technologies are promoted by Governments and other stakeholders	
Output 1:	Fishing technologies (<i>i.e.</i> fishing gear, fishing accessories, fishing practice) improved at national and regional level to reduce negative impacts to marine ecosystem	
Activity 1.1 (<i>Merged with Activity 2.1</i>) Regional Technical Meeting to identify and information gathering of environmental impacts fishing gear and practices in Southeast Asia and national activities/legislation to reduce/mitigate impacts of fishing gear and practices to marine ecosystem (Online meeting)	<ol style="list-style-type: none"> Twenty-five (25) fisheries officers understand the update and trend of situation and information of environmental impacts fishing gear and practices in the global and regional, and national activities/ legislation to reduce/mitigate impacts of fishing gear and practices to marine ecosystem in Southeast Asia A record of two (2) VDO clip presentations on the Regional Technical Meeting A list of regional researchers as network of fishing technologists at international and regional levels A list of issues of fishing gear and practices impact to environmental impacts fishing gear and practices in Southeast Asia identified by SEAFDEC Member Countries Recommendations from the MCs on future activities to be implemented by SEAFDEC to support the MCs during 2021-2024 	<ol style="list-style-type: none"> Through the online meeting, Sixteen (16) fisheries officers enhanced knowledge, updates and trends on the global issues on fishing technology (<i>i.e.</i> bycatch, discards, marine debris as the ALDFG, ghost fishing, impact on biodiversity and ecosystem). Issues and challenges of fishing gear and practices to environment identified by MCs Two (2) VDO clips of the keynote presentations as a result of the Regional Technical Meeting on Fishing Technology, one (1) VDO clip presentation on the questionnaire summary, and wrap up report of the keynote presentation A list of researchers/fishing technologists network at the international and regional levels A list of emerging issues of fishing

Activities	Expected Outcome/Outputs	Results/Achievements
		<p>gear and practices having negative impacts to the environment as identified by MCs.</p> <p>5. Recommendations made by the MCs on future activities to be implemented by SEAFDEC to support the MCs in 2020-2024</p>
<p>Activity 1.2 <i>Sub-Activity 1.2.1</i> Preliminary Investigation to Estimate the Abandoned, Lost and Discarded Traps (Pots) and Gillnets (ALDFG) along the Coasts of Thailand</p> <p><i>Sub-Activity 1.2.2</i> Fishing gear and research equipment demonstration</p>	<ol style="list-style-type: none"> 1. A Back-to-Office report will be completed in 2020 and a preliminary research report will be completed in 1st quarter 2021 (Sub-Activity 1.2.1) 2. Set of data from the survey to write national report to estimate the Abandoned, Lost and Discarded Traps (Pots) and Gillnets (ALDFG) along the Coasts of Thailand 3. New scientific echo sounder installed onboard M.V. SEAFDEC 2 (Sub-Activity 1.2.2) 	<p>Expected results (Activities to be implemented in November-December 2020)</p> <ol style="list-style-type: none"> 1. A draft Back-to-Office report of the Preliminary survey on the ALDFG (Pots, Traps, Gillnets) along the coasts of Thailand will be completed in 1st Quarter of 2021 (Sub-Activity 1.2.1, to be implemented in November-December 2020) 2. A data set as a result of the survey to write national report to estimate the ALDFG (for Thailand case) 3. A new scientific echosounder SIMRAD EK-80 installed onboard M.V. SEAFDEC 2 (Sub-Activity 1.2.2, under procurement process)
<p>Activity 1.4 Information dissemination on the fishing techniques, <i>i.e.</i> fishing gear, fishing accessories and fishing practices, to reduce bycatch and discards, and mitigate impacts to vulnerable species</p>	<ol style="list-style-type: none"> 1. Two (2) VDO clip presentations on the Regional Technical Meeting (On-going) 2. A list of publication <ol style="list-style-type: none"> i. Report on the Regional Technical Meeting to identify and information gathering of environmental impacts fishing gear and practices in Southeast Asia and national activities/legislation to reduce/mitigate impacts of fishing gear and practices to marine ecosystem (On-going) ii. BTO report of Preliminary Investigation to Estimate the Abandoned, Lost and Discarded Traps (Pots) and Gillnets (ALDFG) along the Coasts of Thailand (On-going) iii. Technical Report TD/RES/139 Relationship of the Characteristics of Trawl Net, Otter Board, and Trawler of Thailand (Published) 	<ol style="list-style-type: none"> 1. Three (3) VDO clips of the keynote presentations as a result of the Regional Technical Meeting on Fishing Technology <ol style="list-style-type: none"> i. Prof. Dr. Pingguo He (FAO/Univ. Massachusetts, USA, “Greening Fishing Technology for Sustainable Fisheries and Healthy Ecosystems”) ii. Mr. Jonathan J. Lansley (FAO, “FAO’s Voluntary Guidelines on the Marking of Fishing Gear”) iii. One (1) VDO clip presentation on the questionnaire summary and wrap up report of the keynote presentations 2. List of publication <ol style="list-style-type: none"> i. Report on the Regional Technical Meeting to identify and information gathering of environmental impacts fishing gear and practices in Southeast Asia and national activities/legislation to reduce/mitigate impacts of fishing gear and practices to marine ecosystem (On-going, will be completed in the 1st

Activities	Expected Outcome/Outputs	Results/Achievements
		Quarter of 2021) ii. BTO report of Preliminary Investigation to Estimate the Abandoned, Lost and Discarded Traps (Pots) and Gillnets (ALDFG) along the Coasts of Thailand (On-going, will be completed in the 1 st Quarter of 2021) iii. Technical Report TD/RES/139 Relationship of the Characteristics of Trawl Net, Otter Board, and Trawler of Thailand (Published)
Output 2:	Marine engineering technologies (<i>i.e.</i> fuel efficiency, and green-house gas reduction and safety of fishing operation at sea) improved at national and regional levels	
Activity 2.1 (Merged with Activity 1.1) Regional technical meeting on information gathering of the fuel consumption in fishing operation and/or safety on fishing operation of major fishing operation in Southeast Asia (Online meeting)	<ol style="list-style-type: none"> 1. Twenty-five (25) fisheries officer understand the update and trend of situation and information of environmental impacts fishing gear and practices in the global and regional, and national activities/ legislation to reduce/mitigate impacts of fishing gear and practices to marine ecosystem in Southeast 2. A record of two (2) VDO Clip presentations on the Regional Technical Meeting (On-going) 3. A list of a network of fisheries engineers at international and regional levels (On-going) 4. A list of issues of fishing activities on the fuel consumption in fishing operation and/or safety on fishing operation of major fishing operation in Southeast Asia (On-going) 5. Recommendations from the MCs on future activities to be implemented by SEAFDEC to support the MCs during 2021-2024 	<ol style="list-style-type: none"> 1. Through the online meeting, Sixteen (16) fisheries officers enhanced knowledge, updates and trend of on the global issues on world status of safety at sea for fishing practices and Innovative technology and energy efficiency, identified potential fishing gear modification/trial to reduce/mitigate impact to ecosystem and the potential marine engineering techniques to improve fuel utilization and safety in fishing operations in SEA region 2. Three (3) VDO clips of the keynote presentations as a result of the Regional Technical Meeting on Fishing Technology and one (1) VDO clip presentation on the questionnaire summary and wrap up report of the keynote presentation <ol style="list-style-type: none"> i. Dr. Raymon Van Anrooy (FAO, “World Status of Safety at Sea for Fishing Practices”) ii. Dr. Jun Miyoshi (NRIFE, Japan “World status and innovative technology of energy efficiency”) iii. One (1)VDO clip presentation on the questionnaire summary and wrap up report of the keynote presentation 3. A list of a network of fisheries engineers at international and regional levels 4. A list of issues of fishing activities on the fuel consumption in fishing

Activities	Expected Outcome/Outputs	Results/Achievements
		operation and/or safety on fishing operation of major fishing operation in Southeast Asia as identified by MCs
<i>Sub-Activity 2.2</i> Fishing gear and research equipment demonstration	1. SEAFDEC Trawler equipped with the deck machineries to reduce manpower and enhance safety at sea onboard	SEAFDEC Trawler equipped with the deck machineries to reduce manpower and enhance safety at sea onboard (on-going)
Activity 2.4 Information dissemination on techniques to manage the fuel consumption, carbon emission and/or safety on fishing operation	1. Two (2) VDO clip presentations on the Regional Technical Meeting (On-going) 2. Report on the Regional Technical Meeting to identify and information gathering of environmental impacts fishing gear and practices in Southeast Asia and national activities/legislation to reduce/mitigate impacts of fishing gear and practices to marine ecosystem (On-going)	1. Two (2) VDO clips of the keynote presentations as a result of the Regional Technical Meeting on Fishing Technology and One (1) VDO clip presentation on the questionnaire summary and wrap up report of the keynote presentation i. Dr. Raymon Van Anrooy (FAO, “World Status of Safety at Sea for Fishing Practices”) ii. Dr. Jun Miyoshi (NRIFE, Japan “World status and innovative technology of energy efficiency”) iii. One (1)VDO clip presentation on the questionnaire summary and wrap up report of the keynote presentation 2. Report on the Regional Technical Meeting to identify and information gathering of environmental impacts fishing gear and practices in Southeast Asia and national activities/legislation to reduce/mitigate impacts of fishing gear and practices to marine ecosystem (On-going, will be completed in the 1 st Quarter of 2021)
Output 3:	Regional and national human resources in fish handling techniques onboard fishing vessels improved	
Activity 3.1 Regional training of trainers (TOT) on fish handling techniques onboard fishing vessels (Online training)	1. Twenty-five (26) participants from 10 SEAFDEC Member Countries enhance their knowledge and information on the Fish Handling Techniques Onboard Fishing Vessels 2. VDO Clips on the regional training of trainers (ToT) on fish handling techniques onboard fishing vessels was produced. (in progress for editing) 3. Report of the Regional Training of Trainers (ToT) 4. A list of participants as a network of the trainers	1. Through the online training of trainers and country presentation, twenty-six (26) participants from 8 Member Countries (except Lao PDR and Singapore) enhanced their knowledge and experiences on fish handling techniques onboard fishing vessels 2. VDO clips on the regional training of trainers (ToT) on fish handling techniques onboard fishing vessels were produced (In progress for editing) 3. Report of the Regional Training of Trainers (ToT) (in progress for

Activities	Expected Outcome/Outputs	Results/Achievements
		editing) 4. List of participants as a network of the trainers
Activity 3.3 Information dissemination on fish handling techniques onboard fishing vessels	<ol style="list-style-type: none"> 1. Report on the Regional Training of Trainers (TOT) on Fish Handling Techniques Onboard Fishing Vessels 2. A series of VDO clip on the regional training of trainers (TOT) on fish handling techniques onboard fishing vessels (5 episodes, in progress for editing) 	<ol style="list-style-type: none"> 1. Report of the training course (in progress from editing) 2. A series of VDO clips on the regional training of trainers (ToT) on fish handling techniques onboard fishing vessels (5 episodes, in progress for editing)

4. List of Publications in 2020

Publications	Type of Media	Attached e-file
Meeting reports on Regional Technical Meeting to identify and information gathering of environmental impacts fishing gear and practices in Southeast Asia and national activities/legislation to reduce/mitigate impacts of fishing gear and practices to marine ecosystem and Regional technical meeting on information gathering of the fuel consumption in fishing operation and/or safety on fishing operation of major fishing operation in Southeast Asia	P	To be completed
Recommendations from the MCs on future activities implemented by SEAFDEC to support the MCs	P	Completed
Training report on the Regional training of trainers (ToT) on fish handling techniques onboard fishing vessels (Online)	T	To be completed
Report on the Preliminary Investigation to Estimate the Abandoned, Lost and Discarded Traps (Pots) and Gillnets (ALDFG) along the Coasts of Thailand	R	To be completed
Report on the Trawl fishing gear equipment demonstration	R	To be completed
VDO Clip presentations on the Regional Technical Meeting environmental impacts fishing gear and practices (Resource persons) <ol style="list-style-type: none"> 1. Conservation in Marine Capture Fisheries (Pingguo He, Dr., University of Massachusetts - Dartmouth School for Marine Science & Technology) 2. The Voluntary Guideline on Marking of Fishing Gear (Jonathan Lansley, Mr., Fishery Industry Officer, Fishing Operations and Technology Branch, FAO HQs) 	VDO	To be uploaded
VDO Clip presentations on the Regional Technical Meeting the fuel consumption in fishing operation and/or safety on fishing operation (Resource persons) <ol style="list-style-type: none"> 1. Safety at Sea (Raymon Van Anrooy, Mr., Fishery and Aquaculture Officer, Fishing Operations and Technology Branch, FAO HQs) 2. Optimize Energy and Fuel Consumption, and Enhance Safety in Fishing Practices in Southeast Asia (Jun Miyoshi, Dr., Senior Researcher, National Research Institute of Fisheries Engineering (NRIFE), Japan) 	VDO	To be uploaded
A series of VDO clips on the regional training of trainers (TOT) on fish handling techniques onboard fishing vessels (3-7 August 2020)	VDO	To be uploaded

5. Evaluation on Workshops/Training Courses by Participants of AMSs

Activities	Evaluation
Output 1:	
Activity 1.1	Sixteen (16) participants were fisheries officers from eight (8) SEAFDEC Member Countries participated in the meeting. The Participants from Lao PDR and Indonesia did not participate in the meeting and did not submit the feedback (questionnaire). Meanwhile, Singapore submitted the feedback but did not participate in the online meeting. The Participants expressed their satisfaction for the smooth arrangement and management of the meeting and fulfilled their expectation on the updated situation of global issues on fishing technology and fisheries engineering. They actively participated in the meeting and discussion. MCs expressed interest in research/study/awareness building enhancement as recommended by MCs. Time allocation for presentations and discussion should probably be extended since the keynote presentations were interesting. The meeting through the online platform can be an alternative under the COVID-19 pandemic.
Activity 1.2	With reference to the meeting, MCs expressed much interest in research / study / awareness building enhancement.
Activity 1.4	-
Output 2:	
Activity 2.1	Sixteen (16) participants were fisheries officers from eight (8) SEAFDEC Member Countries participated in the meeting. The Participants from Lao PDR and Indonesia did not participate in the meeting and did not submit the feedback (questionnaire). Meanwhile, Singapore submitted the feedback but did not participate in the online meeting. The Participants expressed their satisfaction for the smooth arrangement and management of the meeting and fulfilled their expectation on the updated situation of global issues on fishing technology and fisheries engineering. They actively participated in the meeting and discussion. MCs expressed interest in research/study/awareness building enhancement as recommended by MCs. Time allocation for presentations and discussion should probably be extended since the keynote presentations were interesting. The meeting through the online platform can be an alternative under the COVID-19 pandemic.
Activity 2.2	<p>The acquired new SEAFDEC's vessel-M.V. Plalung (a multi-purpose coastal training and research vessel) has met the primary requirements as it is a medium-sized vessel which can accommodate a number of crews and researchers onboard and to serve as a model vessel for demonstration of the following items;</p> <ul style="list-style-type: none"> -Multi-gear fishing vessel <i>e.g.</i> trawl, gillnet, trap, falling net -Oceanographic survey <i>e.g.</i> water sampling, sediment sampling -Fish sampling by various types of gear equipped -Labor saving equipment and devices (Deck machinery <i>e.g.</i> a trawl net drum) -Refrigerating system (For catch quality preservation) -Safety equipment (Life buoy, swimming ring, fire extinguisher) <p>For better performance and condition of the vessel, the project would further improve the fuel efficiency of the hydraulic power source to support the fishing gear hauling devices as well as the re-furnishing of the living cabins onboard.</p>
Activity 2.4	-
Output 3:	
Activity 3.1	More than 80% of the participants of the Online Regional Training of Trainers (ToT) on Fish Handling Techniques Onboard Fishing Vessels expressed their satisfaction to gain the expected knowledge in attending this online training program. The 5-day training duration and the organized month was appropriate. In over-all aspects, the online training was well-organized.

6. Major Impacts/Issues

Under the severe outbreak of the Covid-19 pandemic across the Southeast Asian states and the world, the management and arrangement of the program activities as proposed and planned have been rescheduled and adjusted during the country's lockdown period (as officially announced by Thailand's Government, 1st Quarter). To maintain the implementing plan, the project alternatively applied a survey questionnaire to acquire necessary information for updating the situation of the fishing technology and marine engineering in the SEAFDEC Member Countries instead and to use as inputs for those 2 proposed regional technical meetings. Instead of a face-to-face meeting, a two-day online meeting has been organized to provide a platform for discussions among SEAFDEC, representatives from MCs and the international resource persons on fishing technology and fisheries engineering.

Regarding the proposed training course on the Regional Training of Trainers (ToT) on Fish Handling Techniques Onboard Fishing Vessels, alternatively, an online training was successfully conducted by SEAFDEC/TD as attended by the SEAFDEC Member Countries through the Google Meet and Google Class Platforms. The participants were satisfied with the overall training course and the online platform.

As far as the Covid-19 pandemic still exists, either a meeting or training event would be organized via the online platform. While for the research activities such as field survey, on-site training in Thailand, the implementation would be considered case by case based on safety and country's measures. Overseas travelling is temporarily pending.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2021

1. Project Summary in 2021

In 2021, the project will continue to implement the planned activities as briefly described below:

1.2 Research/study/survey on the appropriate technique to reduce/mitigate environmental impacts of fishing gear and practice to marine ecosystem

The activity will continue to improve appropriate technique to reduce/mitigate environmental impacts of fishing gear and practices to marine ecosystem as a result of the Regional Technical Meeting to identify and information gathering of environmental impacts fishing gear and practices in Southeast Asia and national activities/legislation to reduce/mitigate impacts of fishing gear and practices to marine ecosystem. Possible activities would include an ALDFG study in Southeast Asia and fishing gear selectivity.

1.3 Human resource development program on fishing technology by using online technology

- a) The online seminar entitled "Knowing our fishing gear" (twice a year)
- b) The online workshop/seminar on the Impact of towing fishing gear *i.e.* trawl and dredge to fisheries resources and ecosystem
- c) Regional Technical Meeting on the ALDFG research in Southeast Asia

1.4 Information sharing (video clip, article, research paper) with referring to Activities 1.2 and 1.3

Three (3) new Activities 2.2, 2.3 and 3.2 would be initiated in 2021 as follows.

2.2 Research/study/survey on appropriate technique to manage the fuel consumption, carbon emission and/or safety on fishing operation

The activity will continue to improve appropriate technique to manage the fuel consumption, carbon emission and/or safety on fishing operation as a result of Regional Technical Meeting to identify and information gathering of environmental impacts fishing gear and practices in Southeast Asia and national activities/legislation to reduce/mitigate impacts of fishing gear and practices to marine ecosystem.

2.3 Human resource development program on deck machineries and hauling devices to reduce manpower in fishing vessels and enhance safety in fishing operations will be organized online. Utilization of new M.V. Plalung as model vessel to improve deck machinery

2.4 Information sharing (video clip, article, research paper) with referring to Activities 2.2 and 2.3

3.2 Human resource development on fish handling techniques onboard fishing vessels (national scale)

HRD training programs on fish handling would be organized to enhance the knowledge and experience of the participants but focusing more on practical work on the freshness analysis in the laboratory by the participants.

2. Outcome, Outputs and Activities and Proposed Budget

(Unit: USD)

Proposed Activities	Descriptions	Proposed Budget
Outcome	Strategic actions for improving low impact fishing technologies are promoted by Governments and other stakeholders	
Output 1:	Fishing technologies (<i>i.e.</i> fishing gear, fishing accessories, fishing practice) improved at national and regional level to reduce negative impacts to marine ecosystem	
Activity 1.2	<p>Research on the appropriate technique to reduce/mitigate environmental impacts of fishing gear and practices to marine ecosystems. Possible activities on the appropriate technique to reduce/mitigate environmental impacts of fishing gear and practices to marine ecosystem will be identified based on the results from Regional Technical Meeting to identify and information gathering of environmental impacts fishing gear and practices in Southeast Asia (28 Sept 2020), <i>e.g.</i> fishing gear selectivity, ALDFG study in Southeast Asia.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Travel costs: USD 5,500 - DSA: USD 5,000 - Accommodation: USD 5,500 - Others: USD 4,000 Sub-total: USD 20,000 	20,000
Activity 1.3	Human resource development program on fishing technology by using online technology. The online seminar entitled “Know our fishing gear” will be organized twice a year (twice/year).	
Activity 1.4	Information dissemination	Shared with Act. 1.2, 1.3
Output 2:	Marine engineering technologies (<i>i.e.</i> fuel efficiency, and green-house gas reduction and safety of fishing operation at sea) improved at national and regional level	
Activity 2.2	<p>Plan of activities would be based on the results of the questionnaires (Reducing Negative Impact to Ecosystem, Optimizing Energy and Fuel Consumption, and Enhancing Safety in Fishing Practices in Southeast Asia) as replied by the MCs, and be used as a guideline for the implementation of the project for 2021-2024.</p> <p>One of the possible activities on the promotion of the appropriate technique to reduce/mitigate post-harvest loss by demonstration of compact refrigerating system onboard fishing vessels as a pilot project planned by SEAFDEC for a purpose to maintain the good quality of catches. This activity has not been implemented yet.</p> <p>Expected expenditures:</p>	20,000

Proposed Activities	Descriptions	Proposed Budget
	- Travel costs: USD 5,500 - DSA: USD 5,000 - Accommodation: USD 5,500 - Others: USD 4,000 Sub-total: USD 20,000	
Activity 2.3	a) Human resource development program on deck machineries and hauling devices to reduce manpower in fishing vessels and enhance safety in fishing operations will be possible to organize online. Utilization of new M.V. Plalung as model vessel to improve deck machinery b) Human resource development to modify the refrigerating system equipped onboard fishing vessel by the utilization of the new M.V. Plalung as model vessel to improve cold storage onboard	
Activity 2.4	Information dissemination	Shared with Act. 2.1 and 2.2
Output 3:	Regional and national human resources in fish handling techniques onboard fishing vessels improved	
Activity 3.2	HRD training program on fish handling (Focusing more on practical work on the freshness analysis in the laboratory by the participants, based on COVID-19 situation) Expected expenditures: - Travel costs: USD 5,500 - DSA: USD 5,000 - Accommodation: USD 5,500 - Materials: USD 3,000 - Others: USD 1,000 Sub-total: USD 20,000	20,000
Activity 3.4	Information dissemination	Shared with 3.2

3. Implementation Plan of Activities in 2021

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Output 1:												
Activity 1.2												
Activity 1.3												
Activity 1.4												
Output 2:												
Activity 2.2												
Activity 2.3												
Activity 2.4												
Output 3:												
Activity 3.2												
Activity 3.4												

4. Expected Activity Results in 2021

Planned activity	Expected Activity Results
Activity 1	
Activity 1.2	
<p>Sub-activity 1.2.1 Research study on the specific fishing gear selectivity as a result from the Regional Technical Meeting to identify and information gathering of environmental impacts fishing gear and practices in Southeast Asia</p> <p>Sub-activity 1.2.2 Desk study on the Preliminary Investigation to Estimate the Abandoned, Lost and Discarded Traps (Pots) and Gillnets (ALDFG) along the Coasts of Thailand</p>	<p>1.2.1 Report on the fishing gear selectivity research. The target fishing gear will be selected as a result from the Regional Technical Meeting to identify and information gathering of environmental impacts fishing gear and practices in Southeast Asia and national activities/legislation to reduce/mitigate impacts of fishing gear and practices to marine ecosystem</p> <p>1.2.2 Complete report on the Preliminary Investigation to Estimate the Abandoned, Lost and Discarded Traps (Pots) and Gillnets (ALDFG) along the Coasts of Thailand</p>
<p>Activity 1.3 Human resource development program on fishing technology by using online technology.</p> <p>a) The online seminar entitled “Knowing our fishing gear” will be organized twice a year</p> <p>b) The online workshop/seminar on the Impact of towing fishing gear <i>i.e.</i> trawl and dredge to fisheries resources and ecosystem.</p> <p>c) The Online Regional Technical Meeting on the ALDFG research in Southeast Asia</p>	<ul style="list-style-type: none"> - Enhanced knowledge and built awareness of participants - Training report - Number of participants from SEAFDEC Member Countries in the meeting - A series of publications used in the regional technical training/workshop
<p>Activity 1.4 Information dissemination</p>	<ul style="list-style-type: none"> - Study report on fishing gear selectivity research according to the activity 1.2.1 - Report on the Preliminary Investigation to Estimate the Abandoned, Lost and Discarded Traps (Pots) and Gillnets (ALDFG) along the Coasts of Thailand
Activity 2	
<p>Activity 2.2 Research/study/survey on the appropriate technique to reduce/mitigate environmental impacts of fishing gear and practices to the marine ecosystem</p>	<ul style="list-style-type: none"> - SEAFDEC Member Countries obtained knowledge and awareness building on low carbon emission to the environment by minimizing the contribution of the fisheries sector to greenhouse gas emission, which emphasizes on promoting energy efficiency - SEAFDEC Member Countries obtained knowledge and awareness building on measures for the safety of fishing vessels by considering regional/national specificity - Improved safety fishing operations, application of power saving devices for fishing operations, improved facilities onboard, improved refrigerating system

Planned activity	Expected Activity Results
<p>Activity 2.3 a) Human resource development program on deck machineries and hauling devices to reduce manpower in fishing vessels and enhance safety in fishing operations will be possible to organize online. Utilization of new M.V. Plalung as model vessel to improve deck machinery b) Human resource development to modify the <i>refrigerating system equipped onboard</i> fishing vessel by utilization of new M.V. Plalung as model vessel to improve cold storage onboard</p>	<ul style="list-style-type: none"> - Enhanced knowledge and built awareness of participants - Training report - Number of participants from SEAFDEC Member Countries in the meeting - A series of publications used in the regional technical training/workshop
<p>Activity 2.4 Information dissemination</p>	<p>Shared results/findings of the survey</p>
<p>Activity 3</p>	
<p>Activity 3.2 Human resource development on fish handling techniques onboard fishing vessels</p>	<ul style="list-style-type: none"> - Twenty (20) participants from 10 SEAFDEC Member Countries enhanced human resource capacities on the reduction of post-harvest losses which would help reinforce extension and promotion activities in their respective countries - Clip VDO on the regional training program
<p>Activity 3.4 Information dissemination</p>	<p>Shared results/findings of the survey</p>

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2020
AND
PROPOSED ACTIVITIES FOR THE YEAR 2021**

			Project ID: 202004005
Program Category:	Project under the ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title:	Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region		
Program Strategy No:	I	Total Period	2020 - 2024
Lead Department:	Marine Fishery Resources Development and Management Department (MFRDMD)	Lead Country:	Malaysia
Donor/Sponsor:	Japanese Trust Fund (JTF)	Total Project Budget:	USD 225,000
Project Partner(s):	Training Department (TD) and Secretariat (SEC)	Budget for 2021:	USD 40,000
Lead Technical Officer:	Wahidah Mohd Arshaad (MFRDMD)	Project Participating Country:	Cambodia, Indonesia, Malaysia, Myanmar, Thailand, Philippines and Viet Nam

PART I: PROJECT DESCRIPTION

1. Executive Summary

In the last few decades, the increase in shark landing to meet the demand for fins and other downstream products of sharks and rays has caused a decrease in several shark and ray resources worldwide. In order to ensure the survival and sustainable utilization of these resources, many governments in the Southeast Asian region have taken several important steps to mitigate the decreasing of the resources. SEAFDEC has undertaken the important step of formulating the Regional Plan of Action (RPOA-Sharks) for the conservation and management of sharks and rays in the region. RPOA-Sharks emphasizes the needs to manage and exploit the shark resources at sustainable level and at the same time safeguarding the livelihood of the fishers in the region. Although sharks and rays are not the targeted fishes for the most fisheries in the region, any decision made on regulating the international trade by listing several common species in CITES Appendix II will affect the livelihood of traditional fishers and traders. Therefore, the governments need to collect landing and biological data on these species and to prepare management plans when needed. Identification of elasmobranchs (sharks & rays) species is fundamental to 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 the 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

Information on biodiversity of sharks and rays varies across the Southeast Asian region. Indonesia recorded the highest diversity with 114 species from seven orders and 27 families followed by the Philippines with 96 species (nine orders and 27 families), Thailand 76 species (8 orders and 21 families), Viet Nam 70 species (7 orders and 23 families), Malaysia 68 species (7 orders, 19 families), Myanmar 64 species (8 orders and 19 families), Brunei Darussalam 45 species (6 orders and 15 families), and Cambodia with 26 species from 5 orders and 10 families. Many species still need to be confirmed and were most probably misidentified. In general, data collections and shark and ray studies are limited in many countries in the region such as in Brunei Darussalam, Myanmar, Cambodia and Viet Nam. Only a few countries such as Indonesia, Malaysia and Thailand have historical data and more comprehensive studies on this group of fishes. Most countries in this region are still recording the landing of sharks and rays by group (sharks and rays) not up to species level. Some countries still do not include sharks and rays landing in their national statistics. Other information such as biological data, stock structure, spatial and temporal distribution of sharks and rays are still lacking in some countries.

Since the landing of sharks and rays recorded commonly less than 2% of the total marine landing (except in Indonesia normally more than 5% relative to bony fishes), most countries did not allocate specific funding or budgets to conduct data collection up to species level, special training on taxonomy or specific research on sharks and rays resources. Landing sites are also scattered and there are too many private landing sites in some countries. Most countries are also facing lack of expertise and competent officers in elasmobranch taxonomy as well as references in their national languages.

However, the pressure on international trade of sharks and rays is growing. Until 2017, 11 species of sharks and 18 species of rays were listed under CITES. They are basking shark (*Cetorhinus maximus*), whale shark (*Rhincodon typus*), oceanic whitetip shark (*Carcharhinus longimanus*), porbeagle shark (*Lamna nasus*), scalloped hammerhead shark (*Sphyrna lewini*), smooth hammerhead shark (*Sphyrna zygaena*), great hammerhead shark (*Sphyrna mokarran*), great white shark (*Carcharodon carcharias*), silky shark (*Carcharhinus falciformis*), pelagic thresher (*Alopias pelagicus*), bigeye thresher (*A. superciliosus*), and thresher shark (*A. vulpinus*). All those shark species were listed in Appendix II. For rays, all six species of sawfishes (family Pristidae) were listed in Appendix I, all nine species of mobula rays and all three species of manta rays in Appendix II. However, some species such as scalloped hammerhead shark (*Sphyrna lewini*), mobula rays and thresher sharks are considered as common species in some countries in the region such as in Indonesia. In CoP-18 CITES held at Geneva in 2019, two species of Mako sharks (*Isurus oxyrinchus* and *Isurus paucus*) and all species of guitarfishes (*Glaucostegus* spp.) and wedgefishes (*Rhinidae* spp.) were adopted to be included in Appendix II CITES. In this regard, the countries need to conduct Non-Detrimental Findings (NDFs) study by species if the products of those species are for the export purpose. To fulfill NDFs requirements and other management purposes, the countries need to collect landings, biological, socio-economic and trade data on these CITES listed species and to prepare management plans when needed. Expertise on identification, landings, and biological data needs to be strengthened. In addition, information on the utilization of sharks and rays are very useful in order to enhance understanding on importance of the socio-economy of sharks and rays in the Southeast Asian region.

These activities correspond to the 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. Gender Sensitivity of the Project

This is a gender-sensitive project where women and men are given an equal opportunity to be involved. Gender-sensitive indicators will be analyzed from socio-economic survey data, and capacity development programs will be conducted. The development of socio-economic survey questionnaires will include gender-sensitive questions. The sex disaggregated data will also be collected for all activities implemented.

4. Project Goal, Outcome, Outputs, Activities, Indicators and Verification

4.1 Logical Framework

GOAL (Overall Objectives, Impact)	Indicators	Means of Verification
Sustainable Utilization of Sharks and Rays in the Southeast Asian region.	- Incomes of workers (e.g. fishers, traders, processors, etc.) related in the fishery industry will not decrease through sustainable fishery production - Number of AMSs incorporating the	- Historical bycatch data on sharks and rays provided by enumerators - Data from socio-economic surveys of workers (e.g. fishers,

	management advice on resource utilization in their national policies	traders, processors, etc.) related in the fishery industry in the Southeast Asia - NPOA and NDF
OUTCOME	Indicators	Means of Verification
Stock assessments and management advice for Sharks and Rays in the Southeast Asia region	<ul style="list-style-type: none"> - Number of stock assessments and number of publications for shark and ray management - ASEAN Member States (AMSs) implement the strategic program for improving landing data, biological information, marketing and trade channels as well as fishers' livelihood - Well arrangement of fisheries statistics for important species through correct identification by enumerators and easily accessed electrical materials - Establishment of National/state repositories 	<ul style="list-style-type: none"> - Conference presentations, publications, technical reports and scientific papers - Government made policies or regulations on the conservation and management based on the latest available information
OUTPUT 1	Indicators	Means of Verification
Capacity development in taxonomy, new species/record identifications and management of major shark species	<ul style="list-style-type: none"> - About 40 experts well trained during 4 on-site trainings (10 persons/training: north-Viet Nam, Philippines, Yangon and Kalimantan) and one workshop (for 16 persons/workshop) conducted - Improved fisheries, customs and knowledge of enforcement officers in identification of CITES listed species during inspection at sea and ports. - Effective fishery management of important species through clarification of their genetic structures. - Clarification of genetic structure for major shark species in the Southeast Asian region 	<ul style="list-style-type: none"> - Conference presentations - SOP (Standard Operating Procedure), - Technical reports and scientific papers
ACTIVITY 1	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 1.1: One training course and workshop on chondrichthyans taxonomy and biology	A five-day Regional training will be conducted at MFRDMD in 2022	<ul style="list-style-type: none"> - Training report - At least 2 participants of participating Member Countries and TD
Activity 1.2: On-site training on taxonomy and biology at selected landing sites	Four-day trainings will be conducted in 5 countries (<i>i.e.</i> Cambodia, Indonesia, Philippines Myanmar, and Viet Nam), and shared, exchanged and improved the data and information collections in 2021, 2022 and 2023	<ul style="list-style-type: none"> - Training reports - At least 10 local officers at each training
Activity 1.3: Meetings on chondrichthyans research and Access and Benefit Sharing in the region	Regional meetings will be organized by MFRDMD to compile and sharing information in 2020 and 2024	<ul style="list-style-type: none"> - Meeting reports - At least 2 participants of participating Member Countries, TD and Secretariat

Activity 1.4: Publication of up-dated guidebook on identification of chondrichthyans in the region	One new guidebook will be published to update latest information including new species and new records in the region in 2024	Guidebook in the last year of the project (2024)
Activity 1.5: Supporting data collection at least one site in Indonesia, Malaysia, Myanmar, Philippines, Viet Nam and Thailand (Proposed by TD and MFRDMD)	Targeting at least one site/year from 2020, 2021,2022, 2023 and 2024	Long-term landing data very useful for estimating stock and biomass using models like Bayesian Surplus Production model and Bayesian State Space Surplus Production Model
Activity 1.6: Training workshops on sharks for stock assessment models (Proposed by TD)	Four-day training workshops in 2021 and 2023.	- Workshop reports - Participants of participating Member Countries, TD and Secretariat
OUTPUT 2	Indicators	Means of Verification
Confirmation of stock structures for at least two common species of sharks/rays and one CITES listed species in participating countries (shared-stock or separate stocks)	Biomass at least two common species estimated from 2022	Information on biomass of six common species in participating countries
ACTIVITY 2	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 2.1: Study of stock structures of selected species of sharks and rays by genetic markers	12 populations for mtDNA studies in 3 species (<i>Chiloscyllium hasseltii</i> , <i>Carcharhinus sorrah</i> and <i>Sphyrna lewini</i>) in the 4 regions (WCPM, ECPM, Kota Kinabalu and Tawau)	- Study report - Report presented at international fora and published
OUTPUT 3	Indicators	Means of Verification
Development of socio-economic studies in the northern part of Viet Nam, Western part of Myanmar and Celebes Island or Kalimantan Indonesia using methods such as Multifactor Partitioning Analysis	Enhancement of legal exports on products of sharks and rays in the SAE region through development of NDF documents.	Government transparencies in marketing and trade control of CITES listed species and endangered species
ACTIVITY 3	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 3.1: Survey on fishers' dependencies, marketing and trade of sharks and rays in the region/country visited	5 regions covered: mid-Viet Nam, north-Viet Nam, Irrawaddy, Mindanao (Sulu and Sulawesi Seas) and Bali in years 2021, 2022 and 2023	- Survey report - Information on marketing trade and channels of sharks and rays in participating countries - Development of NDF documents for selected CITES listed species especially considered as common in this region such as <i>Sphyrna lewini</i> , <i>Alopias pelagicus</i> , <i>Alopias</i>

		<i>superciliosus, Carcharhinus falciformes, Mobula japanica and M. thurstoni</i> 2. Development of NDF documents for selected CITES listed species especially considered as common in this region such as <i>Sphyrna lewini, Alopias pelagicus, Alopias superciliosus, Carcharhinus falciformes, Mobula japanica and M. thurstoni</i>
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4.2 Project Implementation Plan for 2020 – 2024

Activities	2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Output 1:																				
Activity 1.1																				
Activity 1.2																				
Activity 1.3																				
Activity 1.4																				
Activity 1.5																				
Activity 1.6																				
Output 2:																				
Activity 2.1																				
Output 3:																				
Activity 3.1																				

4.3 Proposed Budget for 2020 - 2024

(Unit: USD)

Output	Activities	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Year5 (2024)
Output 1	Activity 1.1			25,000		
	Activity 1.2		5,000	5,500	8,000	
	Activity 1.3	25,000				26,000
	Activity 1.4					2,000
	Activity 1.5	5,000	5,000	5,000	5,000	6,000
	Activity 1.6		21,500		22,000	
Output 2	Activity 2.1	10,000	10,000	10,000	10,000	10,000
Output 3	Activity 3.1		3,000	3,000	3,000	
Sub-Total		40,000	44,500	48,500	48,000	44,000

PART II: PROJECT ACHIEVEMENTS IN 2020

1. Project Achievements in the Present Year (2020)

Sub-activity 1.3: MFRDMD will arrange the 1st Core Expert Meeting to introduce JTF 6-II project on sharks and rays from 2020 to 2024 to all participating AMSs; to present the results of the JTF 6 project conducted from 2015-19; and to develop appropriate on-site trainings proposal to improve national information collection on sharks and rays in participating countries. Considering the situation of the COVID-19 pandemic, MFRDMD will hold the meetings via virtual by adhering to the standard protocol provided by SEAFDEC Secretariat on 25th November 2020.

Sub-activity 1.5:

Monthly landing data collection on sharks and rays up to species in Perak (Larut Matang) and Sabah (Kota Kinabalu and Tawau) are continued. A workshop on landing data collection was organized at MFRDMD on 24-27 August 2020. Six participants from the Department of Sabah, one research officer from Fishery Research Institute, one contract staff and six industrial training students from local university had attended this workshop. Participants were trained to record landing data and guided to identify sharks and rays according to order, family, genus and species using several references published by MFRDMD, as well as photographic techniques for taxonomy used.

Sub-activity 2.1:

Chiloscyllium hasseltii, *Carcharhinus sorrah* and one CITES listed species *Sphyrna lewini* were selected for confirmation stock structure study. The first trip of sample collection was conducted at Kuantan on 9-13 August 2020. Thirty-nine samples of *Chiloscyllium hasseltii*, 35 samples of *Carcharhinus sorrah* and only one sample of *Sphyrna lewini* were collected. Sampling will be conducted at Perak and Sabah (Kota Kinabalu and Tawau) before the end of 2020. New primer sets to amplify DNA mitochondrial Cytochrome b, and D-loop regions were designed and optimized. The required tools and kits were purchased and analysis of samples collected is in progress.

2. Activities and Budget in the Present Year

Activities	Type of activity	Number of Participants						Budget Spent (USD) as of June 30
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Output 1:								
Activity 1.3 Meetings on chondrichthyans research and access and benefit sharing in the region	Meeting via video conference	14		5	5	1	1	499
Activity 1.5 Supporting data collection at least one site in Indonesia, Malaysia, Myanmar, Philippines, Viet Nam and Thailand (Proposed by TD and MFRDMD)	Data collection and compilation			2	5		5	3,634
Output 2:								
Activity 2.1 Study of stock structures of selected species of sharks and rays by genetic markers	Samples collection and DNA molecular analysis			3	1			22

3. Expected Outcome/Outputs and Achievements in the Present Year

Activities	Expected Outcome/Outputs	Results/Achievements
Outcome		
Output 1:		
Activity 1.3 Meetings on chondrichthyans research and access and benefit sharing in the region	<ul style="list-style-type: none"> 1st CEM will be organized Meeting report will be published and disseminated to AMSs 	MFRDMD will conduct the 1 st CEM on “Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian region” via video conference on 25 th November 2020. This meeting aims to introduce the project to all participating AMSs and to discuss future plans of this project for the next 4 years. The meeting report will be produced and disseminated once available.
Activity 1.5 Supporting data collection at least one site in Indonesia, Malaysia, Myanmar, Philippines, Viet Nam and Thailand (Proposed by TD and MFRDMD)	<ul style="list-style-type: none"> Sharks and rays landing data at least at one site in Indonesia, Malaysia, Myanmar, Philippines, Viet Nam and Thailand 	Sharks and rays landing data at species level are collected every month in Perak (Larut Matang) and Sabah (Kota Kinabalu and Tawau). Other information collected include biology, marketing destination and price.
Output 2:		
Activity 2.1 Study of stock structures of selected species of sharks and rays by genetic markers	<ul style="list-style-type: none"> Purchase of the equipment, chemical, disposable laboratory consumables and kits Specimens collection PCR and DNA sequence analysis 	The first trip on sample collection was conducted at Kuantan on 9-13 August 2020. Thirty-nine samples of <i>Chiloscyllium hasseltii</i> , 35 samples of <i>Carcharhinus sorrah</i> and only one sample of <i>Sphyrna lewini</i> were collected. Sampling will be conducted for Perak and Sabah (Kota Kinabalu and Tawau) before the end of 2020. New primer sets to amplify DNA mitochondrial Cytochrome b, and D-loop regions were designed and optimized. The required tools and kits were purchased and analysis of samples collected is in progress.

4. List of Publications in 2020

Publications	Type of Media	Attached e-file
1. Study on Species Composition of Sharks and Rays During Monsoon Season 2018/2019 at Kuala Pahang, Pahang. Paper was presented at the Fisheries Research Institute seminar via video conference on 2 nd June 2020.	Scientific paper	PDF

5. Evaluation on Workshops/Training Courses by Participants of AMSs

Activities	Evaluation
Output 1:	
Activity 1.3	None
Activity 1.5	None
Output 2:	
Activity 2.1	None

6. Major Impacts/Issues

Under the situation of the COVID-19 pandemic, MFRDMD was unable to carry out some of the activities as originally planned in 2020. MFRDMD adjusted and rescheduled the original plan according to the standard protocol provided by the SEAFDEC Secretariat.

Sub-activity 1.3

The 1st CEM in the third quarter of 2020 will be held via a virtual meeting.

Sub-activity 1.5

- (1) According to the COVID-19 pandemic, the Government of Malaysia had implemented the Movement Control Order (MCO) from 18 March – 9 Jun 2020. No data collected during this period.
- (2) The assigned enumerator at Perak had resigned in June 2020. The collecting data only can be continued if a new enumerator is appointed.

Sub-activity 2.1

Collecting the specimens of *Sphyrna lewini* for DNA analysis is quite difficult because this species is CITES listed.

This project activities enhanced cooperation between women and men. Main technical officers played a crucial role for implementing the activities and were assisted by both women and men with equal opportunity to participate during the project implementation.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2021

1. Project Summary in 2021

In 2021, MFRDMD will conduct one on-site training on taxonomy and biology at selected landing sites to enhance human resource capacities in elasmobranch taxonomy and biology as well as technique in data collection of sharks and rays up to species level. A training workshop on sharks for stock assessment models like Bayesian Surplus Production model and Bayesian State Space Surplus Production Model will be also organized. TD and MFRDMD will continue to support landing data collections in selected participating countries. This project also continues the study on stock structures of 2 shark species (*Chiloscyllium hasseltii* and *Carcharhinus sorrah*) and one CITES listed species (*Sphyrna lewini*). A survey on fishers' dependencies, marketing and trade of sharks and rays will be conducted in mid-Viet Nam. The objectives of this activity are to assess the dependencies of fishers; the impacts on socio-culture-economy of fishers after several sharks and rays species listed in CITES; the major actors in domestic marketing of sharks and rays especially CITES listed species; the trade channels and practices for sharks and rays; and the international trade of sharks and rays at the study areas.

2. Outcome, Outputs and Activities and Proposed Budget

		(Unit: USD)
		Total: 44,500
Proposed Activities	Descriptions	Proposed Budget
Outcome	Stock assessments and management advice for sharks and rays in the Southeast Asia region	
Output 1:	Capacity development in taxonomy, new species/record identifications and management of major shark species	
Activity 1.2 On-site training on taxonomy and biology at selected landing sites	MFRDMD will organize one on-site training on taxonomy and biology at selected landing sites in Pontianak, Indonesia. Estimated expenditures: - Hotel accommodation: \$ 300 - DSA & Terminal allowances: \$ 330 - Airfare: 3 prs x \$600 = \$ 1,800 - DSA for local delegate: \$ 140 - Airfare for one local delegate: \$ 300 - Hotel accommodation for one local delegate: \$100 - Samples: \$ 1,370 - Meeting-related costs and miscellaneous: \$ 660 Sub-total: USD 5,000	5,000
Activity 1.5 Supporting data collection at least one site in Indonesia, Malaysia, Myanmar,	During the JTF 6, TD has supported data collections in Indonesia, Malaysia, Myanmar, Viet Nam and Thailand. Data should be collected continuously for at least five years for CPUE and stock assessments. In this regard during the JTF 6-	5,000

Proposed Activities	Descriptions	Proposed Budget
Philippines, Viet Nam and Thailand (Proposed by TD and MFRDMD)	<p>II project, at least one site from Malaysia will be sponsored for landing data collection until 2024.</p> <p>Estimated expenditures: - Enumerators: USD 5,000 Sub-total: USD 5,000</p>	
<p>Activity 1.6 Training workshops on sharks for stock assessment models (Proposed by TD)</p>	<p>The training on sharks for stock assessment models will be organized to analyze the data collected during the JTF 6 activities.</p> <p>Estimated expenditures: Travel Costs (MCs+TD+Instructor): - Airfare: (7 countries + TD + Sect + 2 Instructors); (Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Thailand, Viet Nam and TD): \$ 4,950 - DSA & terminal allowances: \$ 3,520 - Accommodations: \$ 3,080 - Allowance instructor: \$ 800 Travel Costs (MFRDMD): - Airfare: \$ 910 - DSA & terminal allowances: \$ 1,810 - Accommodations (officers): \$ 2,660 - Transport (rental): \$ 500 - Meeting Arrangements: - Meeting package: \$ 1,400 - Meeting-related costs: \$ 1,200 - Communications and miscellaneous: \$ 670 Sub-total: USD 21,500</p>	21,500
Output 2:	Confirmation of stock structures for at least two common species of sharks/rays and one CITES listed species in participating countries (shared-stock or separate stocks)	
<p>Activity 2.1 Study of stock structures of selected species of sharks and rays by genetic markers</p>	<p>MFRDMD will continue sample analysis using DNA molecular markers.</p> <p>Estimates expenditures: Research Expenses: - Consumable equipment supplies: \$ 3,500 - Extraction kit: \$ 600 - Hire of supporting staff: \$450 x 1 pr x 6 months = \$2,700 Consultant Fees: - Sequencing: \$20 x 160 samples = \$ 3,200 -Sub-total: USD10,000</p>	10,000
Output 3:	Development of socio-economic studies in the northern part of Viet Nam, Western part of Myanmar and Celebes Island or Kalimantan Indonesia using methods such as Multifactor Partitioning Analysis	

Proposed Activities	Descriptions	Proposed Budget
Activity 3.1 Survey on fishers' dependencies, marketing and trade of sharks and rays in the region/country visited	<p>The overall objective of the survey is to collect information on socio-culture-economic, marketing and trade data.</p> <p>Estimated expenditures:</p> <p>Travel Costs (MFRDMD):</p> <ul style="list-style-type: none"> - Airfare: \$ 1,000 - DSA & terminal allowances: \$ 660 - Accommodations: \$ 700 <p>Travel Costs (Local):</p> <ul style="list-style-type: none"> - DSA: \$ 250 - Accommodations: \$ 350 - Miscellaneous: \$ 40 <p>Sub-total: USD 3,000</p>	3,000

3. Implementation Plan of Activities in 2021

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Output 1:												
Activity 1.2												
Activity 1.5												
Activity 1.6												
Output 2:												
Activity 2.1												
Output 3:												
Activity 3.1												

4. Expected Activity Results in 2021

Planned activity	Expected Activity Results
Activity 1	
Activity 1.2. On-site training on taxonomy and biology at selected landing sites	<ul style="list-style-type: none"> • The training enhanced human resource capacities in elasmobranch taxonomy and biology as well as technique in data collections of sharks and rays up to species level. • At least 10 local officers attended the training.
Activity 1.5. Supporting data collection at least one site in Indonesia, Malaysia, Myanmar, Philippines, Viet Nam and Thailand (Proposed by TD and MFRDMD)	<ul style="list-style-type: none"> • Status of data collections up to species level, marketing, and trade information as well as issues on CITES-related sharks and rays in the region.
Activity 1.6. Training workshops on sharks for stock assessment models (Proposed by TD)	<ul style="list-style-type: none"> • One workshop report • One participant from each participating member country, TD and Secretariat attended. • The training enhanced human resource capacities on stock assessment models for sharks and rays
Activity 2	
Activity 2.1. Study of stock structures of selected species of sharks and rays by genetic markers	<ul style="list-style-type: none"> • Purchase of the equipment, chemical, disposable laboratory consumables, kit and samples for genetic structure study of 3 shark species. • Findings from PCR and DNA sequence analysis

Planned activity	Expected Activity Results
Activity 3	
<p>Activity 3.1 Survey on fishers' dependencies, marketing and trade of sharks and rays in the region/country visited</p>	<ul style="list-style-type: none"> • The survey identified: <ol style="list-style-type: none"> i) marketing and trade in mid-Viet Nam; ii) major factors in the marketing and trade of sharks and rays at study areas; iii) marketing channels and practices for sharks and rays in selected areas; iv) basic information on socio economy and trade data for preparation of NDFs for Viet Nam if required.

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2020
AND
PROPOSED ACTIVITIES FOR THE YEAR 2021**

			Project ID: 202005003
Program Category:	Project under the ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title:	Sustainable Utilization of Anguillid Eels in the Southeast Asia Region		
Program Strategy No:	I	Total Period:	2020 – 2024
Lead Department:	Inland Fishery Resources Development and Management Department (IFRDMD)	Lead Country:	Nil
Donor/Sponsor:	Japanese Trust Fund (JTF)	Total Project Budget:	USD 225,000
Project Partner(s):	Nil	Budget for 2020:	USD 45,000
Lead Technical Officer:	Toshiya Suzuki (IFRDMD)	Project Participating Country:	All Members Countries

PART I: PROJECT DESCRIPTION

1. Executive Summary

This project aims at keeping the sustainable management and utilization of anguillid eel fisheries resources in the Southeast Asian region through the strategic program of sustainable eel resources management. There are two main activities under the project. The first one is for sustainable eel fisheries resources and to standardize the data collection system in Southeast Asia. The second is to map the genetic population structure of tropical eels in Southeast Asia based on mtDNA approach.

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 zones 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 150g from Indonesia's territory. The similar policies to prohibit the 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 Southeast Asian region. Therefore, the region needs a policy to balance between the utilization and the sustainability of tropical eel resources. At the same time, it is necessary to consider that there is a limited knowledge on tropical eel species in this region.

In the JTF6 Phase 1 (2015-2019), IFRDMD conducted its activities to establish and strengthen a regional network for improving the management and conservation of anguillid eel fisheries resources and environment in the region. IFRDMD also focused on the capacity development in the Member Countries for improving the management of anguillid eel fisheries.

In the fisheries management, the information on genetic population structure or stocks are very important because it can identify the source and sink populations and the potential for the replenishment of depleted stocks. Further, molecular genetic techniques have become more widespread in oceanic systems and in fisheries management due to the ability to identify distinct stocks, genetic health and connectivity between stocks. Genetic study with an objective to identify genetic population structure of the tropical eels (*Anguilla* spp. except *Anguilla bicolor*) in Southeast Asia will be conducted under the project for five years (2020-2024). The marker (mtDNA) will be used in this study.

IFRDMD will be further engaged in promoting the sustainable management and utilization of anguillid eel resources in the Southeast Asian region. The activities will be conducted for improving the sustainable eel fisheries and standardizing the data collection system, and clarifying the eel genetic population structure in Southeast Asia.

3. Gender Sensitivity of the Project

This project is sensitive to gender issues. The market chain on anguillid eel resources is closely related to the woman's activities for supporting their livelihood. Mostly the consolidators and collectors of anguillid eel in certain countries are female. They also support the data collection as enumerators. Therefore, in the 2020-2024 study, it needs to strengthen their empowerment through this project.

4. Project Goal, Outcome, Outputs, Activities, Indicators and Verification

4.1 Logical Framework

GOAL (Overall Objectives, Impact)	Indicators	Means of Verification
Sustainable fisheries resources to support the food security and livelihood	The livelihood of fishers is secured and stable, fishery diversity is maintained	Historical catch data on anguillid eel provided by enumerators
OUTCOME	Indicators	Means of Verification
Strategic program of Sustainable Eel resources management in Southeast Asia	AMS implement the Strategic program of Sustainable Eel resources management in Southeast Asia	Government adopts the document and makes a policy/regulations
OUTPUT 1	Indicators	Means of Verification
Sustainable eel fisheries and standardize data collection system in Southeast Asia	Developing sustainable and standardized data collection system	Government adopts the system
Activity 1.1: Conducting a survey to collect the data of catch and CPUE of Anguillid eel fisheries	A survey conducted	Survey report
Activity 1.2 Conducting a survey to collect the biological data of Anguillid eel fisheries	A survey conducted	Survey report
Activity 1.3: Conducting a regional workshop organized at IFRDMD for making the Field guide to identify the Anguillid eel	Regional workshop is organized at IFRDMD for making the Field guide to identify the Anguillid eel	Field guide to identify the Anguillid eel
OUTPUT 2	Indicators	Means of Verification
Genetic population structure of tropical eels in Southeast Asia	Genetic data of tropical eels in Southeast Asia	Genetic study report
ACTIVITY 2	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 2.1: Conducting a survey to collect tissue sample of tropical eels in Southeast Asia	A survey conducted	Survey report
Activity 2.2: Conducting genetic analyses in laboratory	A laboratory analysis conducted	Report on laboratory analysis

OUTPUT 3	Indicators	Means of Verification
Successful project management through regular monitoring and evaluation	Project achievement.	Report of results and evaluation
ACTIVITY 3	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 3.1: Project monitoring and evaluation lead by Project Leader undertaken	<ul style="list-style-type: none"> - Progress meetings twice a year to confirm the improving of each activity. - The evaluation at the end of year by experts. - Hiring one assistant to carry out the project effectively. 	Semi-annual and annual progress reports, and their evaluation results

4.2 Project Implementation Plan for 2020 – 2024

Activities	2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Output 1:																				
Activity 1.1																				
Activity 1.2																				
Activity 1.3																				
Output 2:																				
Activity 2.1																				
Activity 2.2																				
Output 3:																				
Activity 3.1																				

4.3 Proposed Budget for 2020 - 2024

(Unit: USD)

Output	Activities	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Year 5 (2024)
Output 1	Activity 1.1	16,000	16,000	16,000	16,000	8,000
	Activity 1.2	10,000	10,000	10,000	10,000	4,000
	Activity 1.3	-	-	-	-	14,000
Output 2	Activity 2.1	11,000	9,000	9,000	9,000	9,000
	Activity 2.2	3,500	5,500	5,500	5,500	5,500
Output 3	Activity 3.1	4,500	4,500	4,500	4,500	4,500
Sub-Total		45,000	45,000	45,000	45,000	45,000

PART II: PROJECT ACHIEVEMENTS IN 2020

1. Achievements of the Project Implementation for the present year 2020

In 2020, some of the planned activities could not be undertaken because of the Covid-19 pandemic issues, and needed to adjust the activities. The project on the sustainable utilization of anguillid eel in the Southeast Asia region was planned with conducting a survey for collecting the catch and biological data (Activity 1.1 and Activity 1.2). The data was collected from January to March from Indonesia sites, but no data received from April to August, while the data from the Philippines were collected from January to May 2020. The survey was conducted in August. The data of December 2019 and January 2020 were analyzed, and the biological data were collected, such as length-weight relationship and growth condition.

Further in Activities 2.1 and 2.2, the genetic survey was planned to identify the genetic population structure of tropical anguillid eels in Southeast Asia by using an mtDNA marker. In 2020, 148 samples for the target fish of *A. marmorata* were analyzed. The samples were from Indonesia, consisting of 20 samples from Bengkulu; 25 samples from Palabuhan Ratu; 39 samples from Palu; 21 samples from Poso; 14 samples from Kendari. The samples from Viet Nam were received by the IFRDMD laboratory, and are in the process of morphometric checking. The process of collecting the sample cannot be undertaken in Myanmar while the samples from the Philippines will be sent to IFRDMD after the Covid-19 pandemic under control.

Under Activity 3, the semi-annual meeting was conducted in August 2020, and the annual meeting will be held at the end of 2020 to confirm the progress and improvement of each activity. The achievement of the study will be evaluated by experts at the end of 2020.

2. Information of Present Year Activity including Involved Stakeholders

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Output 1:								
Activity 1.1	Conducting a survey to collect the data of catch and CPUE of Anguillid eel fisheries	2	2	3	2	3	13	14,170
Activity 1.2	Conducting a survey to collect the biological data of Anguillid eel fisheries	0	0	3	2	1	10	7,539
Output 2:								
Activity 2.1	Conducting a survey to collect tissue sample of tropical eels in Southeast Asia	3	3	2	3	0	2	4,309
Activity 2.2	Conducting genetic analyses in laboratory	0	0	2	0	3	0	282.03
Output 3:								
Activity 3.1	Project monitoring and evaluation lead by Project Leader undertaken							

3. Achievements and Expected Outcomes/Outputs of the Activity

Planned activity	Expected outcome/output	Achievements
Activity 1:		
Activity 1.1: Conducting a survey to collect the data of catch and CPUE of Anguillid eel fisheries	Database of catch and CPUE of Anguillid eel fisheries survey report	- Database of catch and CPUE of Anguillid eel fisheries (Indonesia: Bengkulu (January and March 2020), Poso (January - February 2020), Palabuhan Ratu (January - February 2020), Cilacap (January - March 2020), and the Philippines: Cagayan (January - May 2020)) - Submit an article to the "Fish for the People" magazine
Activity 1.2: Conducting a survey to collect the biological data of Anguillid eel fisheries	Survey report	Survey report of the August 2020 field trip

Planned activity	Expected outcome/output	Achievements
Activity 2:		
Activity 2.1: Conducting a survey to collect tissue sample of tropical eels in Southeast Asia	Report of collection eel tissue sample from the field	The samples collected in the Philippines were unable to be sent to IFRDMD due the restrictions under the Covid-19 pandemic.
Activity 2.2: Conducting genetic analyses in laboratory	- Report of laboratory work - Submit to Journal	- Submit a paper to Journal - The samples from Viet Nam were received by the IFRDMD laboratory and are on the process of morphometric checking

4. List of Completed Publications and Others (e.g. technical report, VDO, presentation file, etc.)

List of completed publications for the year 2020	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	
Activity 1.1: Conducting a survey to collect the data of catch and CPUE of Anguillid eel fisheries	Note: the implementation of the planned activities has been delayed due to the Covid-19 pandemic.
Activity 1.2: Conducting a survey to collect the biological data of Anguillid eel fisheries	Note: the implementation of the planned activities has been delayed due to the Covid-19 pandemic.
Activity 2	
Activity 2.1: Conducting a survey to collect tissue sample of tropical eels in Southeast Asia	Note: the implementation of the planned activities has been delayed due to the Covid-19 pandemic.
Activity 2.2: Conducting genetic analyses in laboratory	Note: the implementation of the planned activities has been delayed due to the Covid-19 pandemic.

6. Major Impacts/Issues

1. It has been considered that a good manual of DACOFA to guide the enumerators how to use and practice for the application is developed by IFRDMD.
2. It is expected to further improve the internet connection speed in each country for transferring data and organizing a visual meeting/training, etc.
3. Due to the Covid-19 pandemic, the implementation of the planned activities has been adjusted and re-scheduled.
 - The field surveys were postponed due to the Covid-19 pandemic.
 - The sample transfers process to IFRDMD depending on the COVID19 situation.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2021

1. Project Summary in 2021

Although the survey activities could not be undertaken as planned due to the Covid-19 pandemic in 2020, the project activities will recommence with conducting a survey for collecting the catch and biological data (Activity 1.1 and Activity 1.2) in 2021. The survey will contribute to the sustainable eel fisheries and standardize the data collection system in the Member Countries.

Under Activities 2.1 and 2.2, a genetic survey will be continued to identify the genetic population structure of tropical anguillid eels in Southeast Asia by using a mtDNA marker. The samples and/or tissues of *Anguilla marmorata* will be collected and analyzed in the selected Member Countries (*i.e.* Indonesia, Philippines, Viet Nam, and Myanmar).

Under Activity 3, a meeting will be conducted twice a year to confirm the progress and improvement of each activity. The achievement of the study will be evaluated by experts at the end of 2021.

2. Outcome, Outputs and Activities and Proposed Budget

(Unit: USD)

Proposed Activities	Descriptions	Proposed Budget
Outcome	Strategic program of Sustainable Eel resources management in Southeast Asia	
Output 1	Sustainable eel fisheries and standardize data collection system in Southeast Asia	26,000
Activity 1.1	Conducting a survey to collect the data of catch and CPUE of Anguillid eel fisheries. The Surveys will be conducted in Indonesia and Philippines for updating status and collecting the data of catch and effort of Anguillid eel fisheries Estimated expenditures: - Enumerator fee (2 countries): USD 16,000 Sub-total: USD 16,000	16,000
Activity 1.2	Conducting a survey to collect the biological data of Anguillid eel fisheries. The survey to collect the biological data (<i>i.e.</i> length-weight, reproduction biology, otolith) of Anguillid eel will be conducted in the Philippines. Estimated expenditures: - Transportation to AMS: USD 4,000 - Accommodation fees: USD 3,000 - Local transport: USD 400 - DSA: USD 2,300 - Office expenditures and contingency: USD 300 Sub-total: USD 10,000	10,000
Output 2	Genetic population structure of tropical eel in Southeast Asia	14,500
Activity 2.1	Conducting a survey to collect tissue samples of tropical eel. This budget will be used for the collection eel tissue samples of Indonesia (Bali and Kalimantan) and purchase samples from Viet Nam. The samples from regional countries (Philippines and Myanmar) will be collected simultaneously with the survey activity of biological data of Anguillid eel fisheries. Estimated expenditures: - Purchase samples from Viet Nam: USD 1,000 Bali, Indonesia: - Transportation to Bali, local transport and rent car: USD 1,663 - Accommodation fees: USD 847	9,000

Proposed Activities	Descriptions	Proposed Budget
	- Eel samples: USD 438 - DSA: USD 667 - Office expenditures and contingency: USD 385 Kalimantan, Indonesia: - Transportation to Kalimantan, local transport and rent car: USD 1,663 - Accommodation fees: USD 847 - Eel samples: USD 438 - DSA: USD 667 - Office expenditures and contingency: USD 385 Sub-total: USD 9,000	
Activity 2.2	Conducting laboratory work to analyze genetic population structure of tropical eel. There are two activities. The first activity is laboratory work for the extraction, PCR, electrophoresis, and sequencing. The second activity is to analyse the data. Estimated expenditures: - Sequence analysis: USD 5,500 Sub-total: USD 5,500	5,500
Output 3	Successful project management through regular monitoring and evaluation	4,500
Activity 3.1	Conducting a survey to collect the biological data of Anguillid eel fisheries. The survey to collect the biological data of Anguillid eel will conduct in Indonesia and Philippines. Kind of biological data are such as length-weight, reproduction biology, otolith. Estimated expenditures: - Travel cost of 2 evaluators (share): USD 2,200 - Meeting costs (share): USD 300 - Salary of Assistant (share): USD 2,000 Sub-total: USD 4,500	4,500

3. Implementation Plan of Activities in 2021

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Output 1:												
Activity 1.1												
Activity 1.2												
Output 2:												
Activity 2.1												
Activity 2.2												
Output 3:												
Activity 3.1												

4. Expected Activity Results in 2021

Planned activity	Expected Activity Results
Output 1 Sustainable eel fisheries and standardized data collection system in Southeast Asia	
Activity 1.1 Conducting a survey to collect the data of catch and CPUE of Anguillid eel fisheries	<ul style="list-style-type: none"> • Database of catch and CPUE of Anguillid eel fisheries • Survey report

Planned activity	Expected Activity Results
Activity 1.2 Conducting a survey to collect the biological data of Anguillid eel fisheries	<ul style="list-style-type: none"> • Survey report
Output 2 Genetic population structure of tropical eels in Southeast Asia	
Activity 2.1 Conducting a survey to collect tissue samples of tropical eels in Southeast Asia	<ul style="list-style-type: none"> • Report on eel tissue sample collected from the field
Activity 2.2 Conducting genetic analyses in the laboratory	<ul style="list-style-type: none"> • Report of laboratory work • Submit to Journal
Output 3 Successful project management through regular monitoring and evaluation	
Activity 3.1 Project monitoring and evaluation led by Project Leader undertaken	<ul style="list-style-type: none"> • Progress meetings twice a year to confirm the improving of each activity • Meeting reports • Evaluation at the end of year by experts • One Assistant hired to carry out the project operations and administration effectively

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2020
AND
PROPOSED ACTIVITIES FOR THE YEAR 2021**

			Project ID: 202001012
Program Category:	Project under the ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title:	Sustainable Utilization of Fisheries Resources and Resources Enhancement in Southeast Asia		
Program Strategy No:	I	Total Period:	2020 - 2024
Lead Department:	Training Department (TD)	Lead Country:	Nil
Donor/Sponsor:	Japanese Trust Fund (JTF)	Total Project Budget:	USD 400,000
Project Partner(s):	Nil	Budget for 2021:	USD 80,000
Lead Technical Officer:	Sukchai Arnupapboon (TD)	Project Participating Country(ies):	All Members Countries

PART I: PROJECT DESCRIPTION

1. Executive Summary

The fisheries play significant roles in socio-economics of the world. Marine productions provide a primary source of protein to people and also contribute the livelihood to many sectors, *i.e.* fishers, traders, etc. Many Southeast Asian countries are among the highest producers of fisheries products in the world. However, during the past several decades, the growing international, regional and national demands for marine products have led to the continued development and modernization of fishing technology. Unfortunately, this increased demands and the corresponding technology response have resulted in the over-exploitation of many fisheries resources in the world.

To avoid the Southeast Asian fisheries catch becoming its downward trend and promote sustainable fisheries, over the past decade SEAFDEC has provided technical support to explore the under-utilized offshore fisheries resources, enhance fisheries resources and develop a plan of action in regional and national level through various programs, *e.g.* technical meetings, workshops, training courses and research studies on fisheries resource exploration, fisheries abundance, stock assessment as well as artificial habitat installation.

To support and encourage the SEAFDEC Member Countries, SEAFDEC has implemented the project entitled “Sustainable Utilization of Marine Fisheries Resources and Resource Enhancement in Southeast Asia” since 2020 and it will terminate 2024. The key activities for this project include organizing the regional consultation meetings and capacity development training courses, conducting research surveys, developing the application of Fisheries Geographic Information System (FGIS) and Remote Sensing (RS) as well as enhancing fisheries resources and its habitat. It is expected that the livelihood for marine fishers are secured and stable through the sustainable utilization of marine fisheries resources and resource enhancement in the Southeast Asian region.

2. Background and Justification

Over half of the world’s people obtain a significant source of protein from seafood. In Southeast Asia, this proportion is significantly higher. The Southeast Asian region is blessed with the high productivity of fisheries resources because of the rich ecosystems such as dense mangrove forests and seagrass beds sustained by the rich effluence of nutrients from land. However, over several decades, fisheries in Southeast Asia have exceeded its point of sustainability. Some of the commercially important fisheries resources in the region have declined due to various factors *e.g.* overfishing, illegal fishing, use of destructive fishing practices and environmental degradation.

As reflecting the decline of fisheries resources in Southeast Asia, SEAFDEC has conducted a series of activities to promote sustainable fisheries for fishers and fishing communities in the region. For example, SEAFDEC under the JTF6 conducted two (2) activities, such as the “*Off-shore Fisheries Resource Exploration in Southeast Asia*” and the “*Promotion of Sustainable Fisheries Resources Enhancement Measures in Critical Habitats/Fishing Grounds in Southeast Asia*” over the last 7 years. These are in line with the United Nations’ Sustainable Development Goals 14 (Conserve and Sustainably Use the Oceans, Seas and Marine Resources for Sustainable development). Based on the lesson learnt regarding promoting sustainable fisheries, it has revealed that effective strategies and management as well as science-based knowledge on marine resources are a prerequisite for the sustainable utilization and enhancement of fisheries resources. In this connection, continuing to support and encourage the SEAFDEC Member Countries is ongoing challenges in the sustainable utilization of fisheries resources through the project entitled “Sustainable Utilization of Marine Fisheries Resources and Resource Enhancement in Southeast Asia” under the JTF 6-II.

3. Gender Sensitivity of the Project

The project is not gender-sensitive but neutral and equalized.

4. Project Goal, Outcome, Outputs, Activities, Indicators and Verification

4.1 Logical Framework

GOAL (Overall Objectives)	Indicators	Means of Verification
Sustainable utilization of marine fisheries resources in Southeast Asia	<ul style="list-style-type: none"> - The livelihood for marine fishers is secure and stable - Responsible fisheries practice is maintained 	Catch and socio-economic data on marine fisheries in Southeast Asia
OUTCOME	Indicators	Means of Verification
Strengthened management of marine fisheries resources in Southeast Asia through improved technical capacities	<ul style="list-style-type: none"> - Management of marine fisheries resources improved - Scientific research reports 	Comments and recommendations from the Member Countries at SEAFDEC Program Committee Meeting (PCM)
OUTPUT 1	Indicators	Means of Verification
Technical capacities of human resources (<i>i.e.</i> junior fisheries officers and researchers) to conduct marine fisheries resources and oceanographic research/survey improved in Southeast Asia	<ul style="list-style-type: none"> - Number of competent researchers and effective marine fisheries resources and oceanographic research/survey 	<ul style="list-style-type: none"> - Good data collections and analysis - Appropriate survey plan - Appropriate sampling gear and oceanographic equipment
ACTIVITY 1	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 1.1: Regional training on design of sampling gear for onboard fisheries resources survey (Year 2020)	<ul style="list-style-type: none"> - One regional training on design of sampling gear for onboard fisheries resources research survey conducted - Expected number (11) of persons trained 	<ul style="list-style-type: none"> - Training report - Number (11) of participants

Activity 1.2: Regional training on fisheries oceanographic (Year 2021)	<ul style="list-style-type: none"> - One regional training on oceanographic equipment for fisheries resources survey conducted - Expected number (11) of persons trained 	<ul style="list-style-type: none"> - Training report - Number (11) of participants
Activity 1.3: Regional training on research cruise planning for marine fisheries resources and oceanographic survey (Year 2022)	<ul style="list-style-type: none"> - One regional training on research cruise planning for marine fisheries resources and oceanographic survey conducted - Expected number (11) of persons trained 	<ul style="list-style-type: none"> - Training report - Number (11) of participants
Activity 1.4: Regional training on data collection and fisheries resources stock assessment (Year 2023)	<ul style="list-style-type: none"> - One regional training on data collection and fisheries resources stock assessment conducted - Expected number (11) of persons trained 	<ul style="list-style-type: none"> - Training report - Number (11) of participants
Activity 1.5: Research and human resources development on microplastic and marine debris in Southeast Asia (Year 2024)	<ul style="list-style-type: none"> - One regional training on marine debris and microplastic conducted - Expected number (10) of persons trained - Two marine debris and microplastic survey conducted in ASEAN water 	<ul style="list-style-type: none"> - Training report - Number (10) of participants
Activity 1.6: IEC materials for regional trainings	<ul style="list-style-type: none"> - IEC materials for regional trainings developed and utilized in the above-mentioned trainings 	<ul style="list-style-type: none"> - IEC materials (<i>i.e.</i> handbooks, textbooks, SOPs, references, etc.)
OUTPUT 2	Indicators	Means of Verification
Technical knowledge, technical skills and field experience of SEAFDEC staff and Member Countries' researchers improved	<ul style="list-style-type: none"> - Participation in research/survey cruises and a regional/international - Meeting 	<ul style="list-style-type: none"> - Successful research cruises - Active participation in research/survey and meeting - Good data collections and analysis
ACTIVITY 2	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 2.1: Participation of SEAFDEC staff or/and Member Countries' researchers in a research/ survey cruise	<ul style="list-style-type: none"> - SEAFDEC staff and Member Countries researchers 15 persons participated in 5 research/survey cruises in 5 years (3 persons/year) 	<ul style="list-style-type: none"> - Cruise reports - Scientific/research papers and articles

Activity 2.2: Participation of SEAFDEC staff or/and Member Countries' researchers in a regional / international meeting on fisheries resources and stock assessment	<ul style="list-style-type: none"> - SEAFDEC staff and Member Countries researchers 5 persons participated in regional / international meetings 5 meeting in 5 years (1 person/year) 	<ul style="list-style-type: none"> - Report on meeting participation
OUTPUT 3	Indicators	Means of Verification
Research cruise plan for research/training vessels of SEAFDEC and Member Countries developed	<ul style="list-style-type: none"> - Research cruise plan developed 	<ul style="list-style-type: none"> - Research cruise plan - Comments and recommendations from a research vessel Captain and Chief Researcher
ACTIVITY 3	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 3.1 Technical consultation meeting to develop a research cruise plan for research/ training vessels of SEAFDEC and Member Countries	<ul style="list-style-type: none"> - Five technical consultation meetings to develop a research cruise plan for research / training vessels of SEAFDEC and Member Countries organized (one meeting in every year) - Expected total number (20) of participants. (each year 4 persons) 	<ul style="list-style-type: none"> - Meeting reports - Research cruise plan - Number (20) of participants
OUTPUT 4	Indicators	Means of Verification
Scientific knowledge to support fisheries management on transboundary fisheries resources in Sub-region	<ul style="list-style-type: none"> - Sub-region has updated the status of transboundary fisheries resources in Southeast Asia 	<ul style="list-style-type: none"> - Report of the status of transboundary fisheries resources in Southeast Asia
ACTIVITY 4	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 4.1: Sub-regional Consultation Workshop on Developing a Plan of Activity for Transboundary Fisheries Resources	<ul style="list-style-type: none"> - Updated information on the transboundary fisheries resource issues - Plan of activity - Expected number (15) of participants 	<ul style="list-style-type: none"> - Workshop reports - Technical reports
Activity 4.2: Participation in a national / regional / international seminar	<ul style="list-style-type: none"> - Expected number (at least 2) of oral presentation by SEAFDEC MCs researcher - Expected number (10) of participants 	<ul style="list-style-type: none"> - Seminar report - Presentation handout
Activity 4.3: Training courses or technical meeting	<ul style="list-style-type: none"> - Four events (training courses or technical meeting) will be conducted - Expected number (24) of participants 	<ul style="list-style-type: none"> - Training Report - Meeting report

OUTPUT 5	Indicators	Means of Verification
Application of Fisheries Geographic Information System (FGIS) and Remote Sensing (RS) for monitoring marine fisheries resources and environment in Southeast Asia	- Application of Fisheries Geographic Information System (FGIS) and Remote Sensing (RS) for monitoring marine fisheries resources and environment developed	- Application of Fisheries Geographic Information System (FGIS) and Remote Sensing (RS) for monitoring marine fisheries resources and environment
ACTIVITY 5	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 5.1: Regional consultation workshop or training course or technical meeting on utilization of FGIS and RS to improve fisheries management (Year 2020-2024)	- Four (4) events (regional training course or technical meeting) on utilization of FGIS and RS organized - Expected number (20) of participants	- Training report - Technical reports
Activity 5.2: Participation in a national / regional / international meeting to disseminate the FGIS and RS to improve fisheries management in SEA	- SEAFDEC participated in the five (5) trainings, meetings, or seminar	- Back to office report
OUTPUT 6	Indicators	Means of Verification
Resource enhancement through the installation of artificial habitat	- Resource enhancement is assessed	- Impact assessment on fisheries resources and marine environment
ACTIVITY 6	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 6.1: Regional Consultation Workshop on Developing a Plan of Activities for Resources Enhancement in Southeast Asian region	- One regional Consultation Workshop organized - Expected number 20 participants	- Workshop reports - Draft Plan of Activities on resources enhancement in the Southeast Asian region, 2021-2023
Activity 6.2: Training course/ Workshop/ Meeting/ Research Study (Year 2021-2023)	- Three events (Training course/ workshop) regarding fisheries resources conducted in the 2 nd , 3 rd and 4 th year - At least one research study is published	- Training Reports - Workshop reports - Published research study
Activity 6.3: Seminar on the Resources enhancement in Southeast Asia (Year 2024)	- One seminar to share the knowledge of fisheries resources enhancement among Southeast Asian researchers is conducted - Expected number 20 participants	- Seminar report - Technical report

4.2 Project Implementation Plan for 2020 – 2024

Activities	2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Output 1:																				
Activity 1.1			■																	
Activity 1.2						■														
Activity 1.3										■										
Activity 1.4														■						
Activity 1.5			■			■				■				■					■	
Activity 1.6				■				■				■				■				■
Output 2:																				
Activity 2.1			■				■				■				■					■
Activity 2.2			■				■				■				■					■
Output 3:																				
Activity 3.1			■			■					■				■				■	
Output 4:																				
Activity 4.1			■																	
Activity 4.2							■				■				■					■
Activity 4.3			■				■				■				■					■
Output 5:																				
Activity 5.1			■				■				■				■					■
Activity 5.2			■				■				■				■				■	
Output 6:																				
Activity 6.1			■																	■
Activity 6.2						■	■	■		■	■	■								
Activity 6.3															■					

4.3 Proposed Budget for 2020 - 2024

(Unit: USD)

Output	Activities	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Year 5 (2024)
Output 1	Activity 1.1	15,000				
	Activity 1.2		15,000			
	Activity 1.3			15,000		
	Activity 1.4				15,000	
	Activity 1.5	5,000	5,000	5,000	5,000	20,000
	Activity 1.6					
Output 2	Activity 2.1	5,000	2,500	2,500	2,500	2,500
	Activity 2.2	2,500	2,500	2,500	2,500	2,500
Output 3	Activity 3.1 (i, ii, iii)	5,000	5,000	5,000	5,000	5,000
Output 4	Activity 4.1	15,000				
	Activity 4.2		15,000	15,000	15,000	
	Activity 4.3					15,000
Output 5	Activity 5.1	12,000	12,000	12,000	12,000	12,000
	Activity 5.2	3,000	3,000	3,000	3,000	3,000
Output 6	Activity 6.1	17,500				
	Activity 6.2		20,000	20,000	20,000	
	Activity 6.3					20,000
Sub-Total		80,000	80,000	80,000	80,000	80,000

PART II: PROJECT ACHIEVEMENTS IN 2020

1. Project Achievements in the Present Year

The project aimed to strengthen the management of marine fisheries resources in Southeast Asia through improving technical capacities. In 2020, four main activities were undertaken including 1) human resource development through the training course on “Sampling Gear Design for Onboard Fisheries Research Survey”, 2) development of research cruise plan for research vessels of SEAFDEC and its Member Countries, 3) participation of the Member Countries on a distance seminar on “Collaborative Research on Marine Fisheries and Environment in the Gulf of Thailand by M.V. SEAFDEC 2”, 4) three consultation workshops to develop a plan of activities on “transboundary fisheries resources”, “GIS and RS for fisheries management” and “resource enhancement”.

There were 20 trainees attending the training course. They improved their knowledge to support onboard fisheries resource surveys. A cruise survey on small pelagic fish in the Vietnamese Water planned in 2020 has been postponed to 2021 due to the Covid-19 pandemic.²⁹ video presentations as a result of collaborative research in the Gulf of Thailand were published and provided to the Member Countries. In consultation with the Member Countries, a plan of activities in 2021-2014 on transboundary fisheries resources, GIS and RS for fisheries management, and resource enhancement was developed.

2. Activities and Budget in the Present Year

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Output 1:								
Activity 1.1	T	8	14	3	5		1	tbc
Activity 1.5	T, O			1				tbc
Output 2:								
Activity 2.2	R, I	50		17	25	100		tbc
Output 3:								
Activity 3.1 (i, ii, iii)	C, R	1	6		4			tbc
Output 4:								
Activity 4.1	O, T, R	4	12	9	9			tbc
Output 5:								
Activity 5.1	O, T, R	14	5	11	6			tbc
Output 5:								
Activity 6.1	O, T, R	7	13	2	8			tbc
Activity 6.2	R, I							tbc

Note: Budget spent is confirmed by the TD Financial Section. Exact budget spent will be reported in the 53rd Council Meeting.

3. Expected Outcome/Outputs and Achievements in the Present Year

Activities	Expected Outcome/Outputs	Results/Achievements
Output 1:		
Activity 1.1	Capacity development of fisheries officers/researchers on sampling gear design for onboard fisheries resource surveys	<ul style="list-style-type: none"> - 19 trainees enhanced knowledge and practical skills on sampling gear design for onboard fisheries resource surveys - 8 training videos on sampling gear design for onboard fisheries resources survey were published on the SEAFDEC/TD website

Activities	Expected Outcome/Outputs	Results/Achievements
Activity 1.5	Capacity development of SEAFDEC researchers on micro-plastic analysis	Microplastic samples in the Gulf of Thailand analyzed
Output 2:		
Activity 2.2	Capacity development of fisheries officers/researchers on fisheries resources and oceanographic survey	Expected 29 video clip presentations (research topics) as materials of the Information Extension and Communication of the Collaborative Research Survey on Marine Fisheries Resources and Environment in the Gulf of Thailand by M.V. SEAFDEC 2
Output 3:		
Activity 3.1	i. Survey cruise plan in the Vietnamese water	Agreement between SEAFDEC and Viet Nam on pelagic resource survey (Cruise survey postponed to the next year because of the Covid-19 pandemic)
	ii. Survey Plan on the collaborative research survey in the Gulf of Thailand in 2020	A plan on the collaborative research survey in the Gulf of Thailand in 2020 was approved
	iii. Cruise plan of M.V. SEAFDEC 2 to compare the catch per unit effort of fisheries resources by trawling between research vessels of SEAFDEC/TD and the Department of Fisheries Thailand	Survey plan of M.V. SEAFDEC 2 to compare the catch per unit effort of fisheries resources by trawling between research vessels of SEAFDEC/TD and the Department of Fisheries Thailand approved
Output 4:		
Activity 4.1	Plan of activities for 2021-2024	Workshop report and plan of activities for 2021-2024 in consultation with the Member Countries
Output 5:		
Activity 5.1	Plan of activities for year 2021-2024	Workshop report and a plan of activities for 2021-2024 in consultation with the Member Countries
Output 6:		
Activity 6.1	Plan of activities for year 2021-2024	Workshop report and a plan of activities for 2021-2024 in consultation with the Member Countries
Activity 6.2	Environmental and socio-economic impacts of the FEDs (Fish Enhancing Devices) in the coastal areas (postponed from 2019)	Research report on the environmental and socio-economic impacts of the FEDs in the coastal areas

4. List of Publications in 2020

Publications	Type of Media	Attached e-file
1. 8 Training VDO for fishing technique and design for fishery resource survey by gillnet, longline and trawl net	VDO	(E-Presentation)
2. 29 VDO Clip Presentations regarding the survey results for collaborative survey in the Gulf of Thailand	VDO	(E-Presentation)
3. Training report on Regional training on design of sampling gear for onboard fisheries resources survey	Hard copy	(E-Copy)
4. Consultation workshop report on Developing a Plan of Activity	Hard copy	(E-Copy)

Publications	Type of Media	Attached e-file
for Transboundary Fisheries Resources		
5. Consultation workshop report on the Utilization of Fisheries Geographic Information System (FGIS) and Remote Sensing (RS) to Improve Fisheries Management in Southeast Asia	Hard copy	(E-Copy)
6. Consultation workshop report on Developing a Plan of Activities for Resources Enhancement in Southeast Asian region	Hard copy	(E-Copy)
7. Research report on the Environmental and Environmental and Socioeconomic Impact of the FEDs (Fish Enhancing Devices) in Coastal Area	Hard copy	(E-Copy)

5. Evaluation on Workshops/Training Courses by Participants of AMSs

Activities	Evaluation
Output 1:	
Activity 1.1	Report on the regional training on design of sampling gear for onboard fisheries resources survey (Year 2020) is summarized.
Activity 1.5	SEAFDEC Researcher participated in the microplastic individual training program to support the marine debris and microplastic research program in Southeast Asia
Output 2:	
Activity 2.2	Participation of SEAFDEC staff or/and Member Countries' researchers in a regional/international meeting on fisheries resources and stock assessment. Activity is under consideration.
Output 3:	
Activity 3.1	Vietnamese delegates agreed to postpone further discussions when M.V. SEAFDEC 2 can support the Government of Viet Nam on a marine resources survey in the following years or whenever the situation of the Covid-19 is under control. Discussions with the relevant researchers resulted to postpone the planned cruise in 2020 to the first quarter of 2021 due to the weather and sea conditions during the Northeast Monsoon season (October – December 2020) Discussions with the Department of Fisheries Thailand confirmed that the planned cruise of the fisheries research vessel of DOF Thailand would be postponed to early 2021
Output 4:	
Activity 4.1	Report on the Regional Consultation Workshop on the Utilization of Fisheries Geographic Information System (FGIS) and Remote Sensing (RS) to Improve Fisheries Management in Southeast Asia including a summary of the questionnaire results. The consultation results will be presented in the 43 rd PCM.
Output 5:	
Activity 5.1	Report on the Sub-regional Consultation Workshop on Developing a Plan of Activity for Transboundary Fisheries Resources including a summary of the questionnaire results. The consultation results will be presented in the 43 rd PCM.
Output 6:	
Activity 6.1	Teleconference Regional Consultation Workshop the Developing a Plan of Activities for Fisheries Resources Enhancement in Southeast Asian Region including a summary of the questionnaire results. The consultation results and expected activities in 2021-2024 will be presented in the 43 rd PCM.
Activity 6.2	The survey on the impact of FEDs installation was completed. Data was sent to SEAFDEC for reference. Report is under preparation.

6. Major Impacts and Issues

Fisheries resource survey is an integral part for developing a management plan at local, national and regional level. Even though there are many fisheries officers and researchers who could conduct the fishing practice in the Southeast Asian countries, national capacities for developing a plan for fisheries resource survey effectively and correctly are still very limited. Under this project, the capacity of researchers from the SEAFDEC Member Countries on the design of sampling gear for onboard fisheries resource surveys was improved, and they could apply to develop a fisheries resource cruise survey in their respective countries.

Additionally, the activities for 2021-2024 regarding i) transboundary fisheries resource, ii) RS and GIS for fisheries management and iii) resource enhancement were developed in consultation with the Member Countries. All these activities are tools for supporting sustainable fisheries management and also strengthening the collaboration among the countries in Southeast Asia.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2021

1. Project Summary in 2021

Effective fisheries resources management must be in place to maintain the fisheries resources. The planned activities emphasized on improving the sustainable fisheries management in the Southeast Asian countries. In 2021, the following project activities will be undertaken.

- 1) Build capacity of researchers from the Member Countries
 - Marine debris and microplastic survey and analysis
 - Application of FGIS and RS for monitoring fisheries resources and environment
 - Fisheries resources enhancement
 - Support researchers of the Member Countries to participate in the onboard survey
- 2) Encourage the Member Countries to carry out a fisheries and marine environment survey
- 3) Strengthen a collaborative research survey
 - Learning the development process of a collaborative survey through a joint seminar on the Collaborative Research Survey on Marine Resource and Marine Environment in the Gulf of Thailand sub-region
- 4) Disseminate project result
 - Support SEAFDEC's staff and researchers from the Member Countries for participating in a seminar, meeting or workshop

2. Outcome, Outputs and Activities and Proposed Budget

(Unit: USD)		
Proposed Activities	Descriptions	Proposed Budget
Outcome	Strengthened management of marine fisheries resources in Southeast Asia through improved technical capacities	
Output 1	Technical capacities of human resources (<i>i.e.</i> junior fisheries officers and researchers) to conduct marine fisheries resources and oceanographic research/survey improved in Southeast Asia	
Activity 1.5	Regional training course on microplastic and marine debris in Southeast Asia Regional training on microplastic and marine debris is designed for the researchers who study the marine environment and pollution. The training course focuses on updating the situation and management and teaching a survey and analytical technique. Trainees from SEAFDEC Member Countries will be invited. Estimated expenditures: - Travel costs: USD 10,000 - Daily subsistence allowances: USD 2,500 - Accommodation: USD 4,500	20,000

Proposed Activities	Descriptions	Proposed Budget
	- Resource Persons: USD 1,000 - Others (e.g. stationary, refreshments, etc.): USD 2,000 Sub-total: USD 20,000	
Output 2	Technical knowledge, technical skills and field experience of SEAFDEC staff and Member Countries' researchers improved	
Activity 2.1	Participation of SEAFDEC staff or/and the Member Countries' researchers in a research/survey cruise This activity will support a few researchers of SEAFDEC or/and the Member Countries for participating in the research cruise to improve their research skills and obtain the experience in the fisheries resource exploration. Estimated expenditures: - Traveling costs: USD 1,000 - Daily subsistence allowances: USD 1,000 - Accommodation: USD 200 - Others: USD 300 Sub-total: USD 2,500	2,500
Activity 2.2	Participation of one (1) SEAFDEC staff or/and the Member Countries in a regional or international meeting on fisheries resources and stock assessment This activity will support researchers of the SEAFDEC Member Countries and SEAFDEC/TD technical staff(s) to participate in an international / regional / national meeting /workshop / symposium to promote the results of fisheries resources exploration or stock assessment study in Southeast Asia. Estimated expenditures: - Traveling costs: USD 500 - Daily subsistence allowances: USD 500 - Accommodation: USD 1,000 - Others: USD 500 Sub-total: USD 2,500	2,500
Output 3	Research cruise plan for research/training vessels of SEAFDEC and the Member Countries developed	
Activity 3.1	Technical consultation meeting to develop a research cruise plan for research/training vessels of SEAFDEC and the Member Countries a) This activity will support fisheries officer(s) of the SEAFDEC Member Countries to participate in a technical consultation meeting to develop a national research cruise plan for research/training vessels of SEAFDEC and the Member Countries.	5,000

Proposed Activities	Descriptions	Proposed Budget
	<p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Accommodation: USD 1,000 - Local transportation: USD 500 - Others (e.g. stationary, refreshments, etc.): USD 500 Sub-total: USD 2,000 <p>b) Two (2) SEAFDEC researchers will visit the Member Countries and participate in a technical consultation meeting to develop a research cruise plan for research/training vessels of SEAFDEC and the Member Countries</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Traveling costs: USD 1,000 - Daily subsistence allowances: USD 500 - Accommodation: USD 1,000 - Others: USD 500 Sub-total: USD 3,000 	
Activity 3.2	<p>Collaborative research survey in the Gulf of Thailand in 2021</p> <p>a) Marine Fisheries Resources, Environment and Marine Debris Research Survey in the Gulf of Thailand (62 Stations, 47 days) postponed from 2020</p> <p>b) Cruise of M.V. SEAFDEC 2 to compare the catch per unit effort of fisheries resources by trawling between research vessels of SEAFDEC/TD and the Department of Fisheries Thailand (6 days) postponed from 2020</p>	tbc
Output 4	Scientific knowledge to support the fisheries management on transboundary fisheries resources in the sub-region	
Activity 4.2	<p>a) Participation in a regional marine science seminar in Bangkok, Thailand.</p> <p>SEAFDEC will support researchers from the Gulf of Thailand and Sulu-Sulawesi Seas sub-regional countries to participate in a marine science seminar. This activity encourages researchers to learn the process of collaborative survey development and exchange views on the results of the survey. Fourteen (14) participants of the SEAFDEC Member Countries will participate in a seminar.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Traveling costs: USD 7,000 - Daily subsistence allowances: USD 3,000 - Accommodation: USD 4,000 - Others (e.g. stationary, refreshments, etc.): USD 1,000 Sub-total: USD 15,000 <p>b) Online Regional Technical Meeting to improve the management of <i>Thunnus tongol</i> in the Gulf of Thailand</p> <p>SEAFDEC/TD will organize the Online Regional Technical Meeting to improve the management of <i>Thunnus tongol</i> in the Gulf of Thailand</p>	15,000

Proposed Activities	Descriptions	Proposed Budget
	to update the management and investigate needs of the Member Countries	
Activity 4.3	Participation in a national/regional/international meeting to disseminate the survey results and management on the transboundary fisheries resources (Budget is allocated with for Activities 4.1)	
Output 5	Application of Fisheries Geographic Information System (FGIS) and Remote Sensing (RS) for monitoring marine fisheries resources and environment in Southeast Asia	
Activity 5.1	<p>Regional training course on the utilization techniques of FGIS and RS to improve fishing ground exploration and fisheries management in Southeast Asia.</p> <p>SEAFDEC/TD will organize the regional training on the utilization techniques of FGIS and RS to improve fishing ground exploration and fisheries management in Southeast Asia. Ten (10) Participants of the SEAFDEC Member Countries will participate in the training course to improve their knowledge and enhance experience to apply GIS and RS to support the fisheries management.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Traveling costs: USD 6,000 - Daily subsistence allowances: USD 1,500 - Accommodation: USD 2,000 - Resource Persons: USD 1,000 - Others (e.g. stationary, refreshments, etc.): USD 1,500 Sub-total: USD 12,000 	12,000
Activity 5.2	<p>Participation in a national/regional/international meeting to disseminate the project activities and results.</p> <p>Two (2) researchers of SEAFDEC will participate in a meeting or workshop or training on the utilization techniques of FGIS and RS to improve fishing ground exploration and fisheries management in Southeast Asia.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Traveling costs: USD 1,500 - Daily subsistence allowances: USD 500 - Accommodation: USD 500 - Others: USD 500 Sub-total: USD 3,000 	3,000
Output 6	Resource enhancement through the installation of artificial habitat	
Activity 6.1	<p>Regional training course on Fisheries Resource Enhancement</p> <p>SEAFDEC/TD will organize a regional training course on rebuilding fisheries resources. Participants of the SEAFDEC Member Countries will attend the meeting to develop and improve their knowledge and experience.</p>	20,000

Proposed Activities	Descriptions	Proposed Budget
	Estimated expenditures: - Traveling costs: USD 12,000 - Daily subsistence allowances: USD 3,000 - Accommodation: USD 3,000 - Resource Persons: USD 1,000 - Others (e.g. stationary, refreshments, etc.): USD 1,000 Sub-total: USD 20,000	

3. Implementation Plan of Activities in 2021

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Output 1:												
Activity 1.5												
Output 2:												
Activity 2.1												
Activity 2.2												
Output 3:												
Activity 3.1												
Output 4:												
Activity 4.2												
Output 5:												
Activity 5.1												
Activity 5.2												
Output 6:												
Activity 6.1												

4. Expected Activity Results in 2021

Planned activity	Expected Activity Results
Output 1:	
Activity 1.5 Research and human resources development on microplastic and marine debris in Southeast Asia	<ul style="list-style-type: none"> Human resource development on microplastic and marine debris which will support the SEAFDEC Member Countries to monitor the pollution situation on microplastic and marine debris as well as collect information to develop a strategy to combat microplastic and marine debris
Output 2:	
Activity 2.1 Participation of SEAFDEC staff or/and the Member Countries' researchers in a research/ survey cruise	<ul style="list-style-type: none"> Technical staff of TD and the Member Countries join a cruise survey e.g. M.V. SEAFDEC 2 and other National Research Vessels
Activity 2.2 Participation of SEAFDEC staff or/and Member Countries' researchers in a regional / international meeting on fisheries resources and stock assessment	<ul style="list-style-type: none"> Technical staff of TD participate in an international symposium or meeting to promote the results of the sustainable utilization of fisheries resources and resources enhancement in Southeast Asia
Output 3:	
Activity 3.1 Technical consultation meeting to develop a research cruise plan for research/ training vessels of	<ul style="list-style-type: none"> Support survey plan development, monitor and evaluation progress of fisheries resource survey in the Southeast Asian countries Report on the status of marine fisheries resources in the Gulf

SEAFDEC and the Member Countries	<p>of Thailand</p> <ul style="list-style-type: none"> • Baseline data and present status of marine debris and its related subject <i>e.g.</i> mesoplastic and microplastic situation in the Gulf of Thailand for scientific reference • Number of skilled and experienced scientists and researchers on marine fisheries resources and environment of SEAFDEC Member Countries • List of scientists and researchers as network of marine fisheries resources and environmental scientists in the Gulf of Thailand • Report on the comparison on the catch per unit effort of fisheries resources by trawling between research vessels of SEAFDEC Training Department and the Department of Fisheries Thailand operated in the Gulf of Thailand
Output 4:	
Activity 4.2 Participation in a national / regional / international seminar	<ul style="list-style-type: none"> • Researchers from the Gulf of Thailand and Sulu-Sulawesi Seas sub-regional countries learn the process of collaborative survey development and results of the collaborative research survey on marine resources and marine environment • Online Regional Technical Meeting (RTM) to improve the management of <i>Thunnus tongol</i> in the Gulf of Thailand • Report on the RTM on the updated <i>Thunnus tongol</i> fisheries management and needs of the Member Countries in the Gulf of Thailand
Activity 4.3 Training courses or technical meeting	<ul style="list-style-type: none"> • Technical staff of TD participate in a workshop or meeting to promote the results of activities, Transboundary Fisheries Resource
Output 5:	
Activity 5.1 Regional consultation workshop or training course or technical meeting on utilization of FGIS and RS to improve fisheries management	<ul style="list-style-type: none"> • Human resource development regarding the utilization techniques of FGIS and RS to improve fishing ground exploration and fisheries management in Southeast Asia • Workshop/training report
Activity 5.2 Participation in a national / regional / international meeting to disseminate the FGIS and RS to improve fisheries management in Southeast Asia	<ul style="list-style-type: none"> • One (1) or two (2) researcher(s) of SEAFDEC participate in a meeting or workshop or training on the utilization techniques of FGIS and RS to improve fishing ground exploration and fisheries management in Southeast Asia • Report on the participation in a regional/international meeting, workshop or training on the utilization techniques of FGIS and RS to improve fishing ground exploration and fisheries management
Output 6:	
Activity 6.1 Regional Consultation Workshop on Developing a Plan of Activities for Resources Enhancement in the Southeast Asian region	<ul style="list-style-type: none"> • Human resource development regarding Resource Enhancement which will help a livelihood of fishers in the SEAFDEC Member Countries.

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2020
AND
PROPOSED ACTIVITIES FOR THE YEAR 2021**

Project ID: 202004006			
Program Category:	Project under the ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title:	Fisheries Management Strategies for Pelagic Fish Resources in the Southeast Asian Region		
Program Strategy No:	I	Total Period	2020 - 2024
Lead Department:	Marine Fishery Resources Development and Management Department (MFRDMD)	Lead Country:	Malaysia
Donor/Sponsor:	Japanese Trust Fund (JTF)	Total Project Budget:	USD 280,000
Project Partner(s):	Nil	Budget for 2021:	USD 60,500
Lead Technical Officer:	Mohammad Faisal bin Md Saleh (MFRDMD)	Project Participating Country:	Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Thailand and Viet Nam

PART I: PROJECT DESCRIPTION

1. Executive Summary

This project aims to evaluate the pelagic fish resources in the Southeast Asian region in order to establish the sustainable management strategy for the pelagic fisheries. The transboundary fishes like mackerel, tuna and anchovies, which are the major targeted species chosen for this project based on the abundance of those species in the ASEAN Member States (AMSs), require efficient fisheries management strategies of their stocks. This project also involves the genetic component of the targeted one pelagic species in the Southeast Asian region (SEA region) and is developing a life-history study of the targeted species through the age determination analysis. The information on the life history of major neritic tunas in the region was uninvestigated in most of the AMSs.

MFRDMD is the responsible SEAFDEC Department for this project to manage and coordinate all project activities with the financial support from the Government of Japan (JTF). Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Thailand and Viet Nam are involved throughout this project in providing information and samples required. This project entitled “Fisheries Management Strategies for Pelagic Fish Resources in the Southeast Asian Region” is being proposed to aim at;

1. To evaluate the current status of two small pelagic species through stock assessment and risk assessment studies.
2. To evaluate the current status of two neritic tuna species through stock assessment and risk assessment studies.
3. To clarify the stock structure for neritic tuna species in the SEA region.
4. To carry out the life-history study for neritic tuna species in the SEA region.

As the keys to the fishery management and policies, stock assessments and risk assessments are considered as important starting points in providing the best scientific information to support the sustainable management of pelagic fishes in the SEA region.

2. Background and Justification

The previous JTF projects namely JTF 2 and JTF 6 undertook research on major targeted pelagic fishes in the SEA region with the different goals. The JTF 2 project aimed to ascertain the migration route and existence/absence of sub-populations of small pelagic fishes in the SEA region. Meanwhile, the JTF 6 project, which aimed to develop the reliable management strategies for purse seine fisheries in the SEA region, collected the fundamental information on purse seine fisheries (catch and effort data, biological data of species caught by purse seine gear) associated to the multispecies situation of pelagic fishes in the SEA region. Further study is required to acquire more extensive information and data for the assessment and management of four dominant pelagic species in the SEA region. In line with the previous programmes as well as to strengthen the initiatives taken, thus there is a need to carry out the stock assessment (SA) and risk assessment (RA) for the pelagic fishery. This new project targets two neritic tuna species and two small pelagic species that dominated the catch in each AMS in the SEA region.

The transboundary fish *i.e.* tunas, anchovies and mackerels are the economically important pelagic species that are high consumptions within the AMSs, as well as dominated the fishery exports of the AMSs to other regions of the world. In 2014, the neritic tuna contributed approximately 40% of the region's total marine tuna production, with the value of around USD 1 million (SEASOFIA 2017). Shorthead anchovy (*Encrasicholina heteroloba*) and Indian anchovy (*Stolephorus indicus*) are two dominant anchovies in the SEA region. Nevertheless, *Encrasicholina punctifer* dominated the landing in the northern part (Kelantan) of the East Coast of Peninsular Malaysia (Mohammad Faisal, 2016). Throughout 2002-2013, the production values (in US Dollars) of anchovies in the South China Sea fluctuated but gradually increased, while in the Andaman Sea the values appeared to be stable and consistent (SEAFDEC 2002-2013). Mackerels contributed approximately 60% to the total small pelagic species production in 2014. *Rastrelliger* spp. contributed nearly 77% to the region's total mackerel production, with Indonesia as the largest producer (Fishery Statistical Bulletin of Southeast Asian 2014, SEAFDEC 2016a).

This project corresponds to the Resolution No. 10 of the ASEAN-SEAFDEC Conference in 2011; strengthened knowledge/science-based development and management of fisheries through enhancing the national capacity in the collection and sharing of fisheries data and information.

3. Gender Sensitivity of the Project

This is a gender-sensitive project where women and men are given equal opportunity to be involved. Gender-sensitive indicators will be analyzed from fisheries data, and capacity development programs will be conducted. Fisheries data which integrate gender information through quantitative and qualitative aspects will be analyzed. The sex disaggregated data will also be collected for all activities implemented.

4. Project Overall Objectives/Targets, Outcomes, Outputs, Indicators and Activities

4.1 Logical Framework

GOAL (Overall Objectives, Impact)	Indicators	Means of Verification
Sustainable Utilization of Pelagic Fishes in the SEA region	Incomes of workers (<i>e.g.</i> fishers, traders, processors, etc.) related in the pelagic fishery industry will increase through sustainable fishery production	Official statistical data on fisheries and data from socio-economic surveys of workers (<i>e.g.</i> fishers, traders, processors, etc.) related in the fishery industry in Southeast Asia
OUTCOME	Indicators	Means of Verification
Efficient Management Strategies for Small Pelagic Fishes and Neritic Tunas in the SEA region are adopted by governments and fishers	Number of AMSs incorporating the management advice on resource utilization in their national policies	FMPs (Fishery Management Plans) for pelagic fishes by each AMS

OUTPUT 1	Indicators	Means of Verification
Stock Assessments and Risk Assessments for small pelagic fishes in the SEA region	Number of assessments for small pelagic fish in SCS and AS (for targeted species, <i>i.e.</i> anchovies and mackerels/scads)	Conference presentations and technical reports
ACTIVITY 1	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 1.1: Stock Assessments and Risk Assessments for small pelagic fishes in the SEA region	Number of targeted species in the region (anchovies and mackerels/scads)	Practical workshop and country/technical report
Activity 1.2: Workshops for small pelagic fishes in the SEA region	2 workshops (1 internal workshop and 1 regional workshop)	Workshop reports
Activity 1.3: Meetings for small pelagic fishes in the SEA region	3 Core Expert Meetings	Meeting reports
OUTPUT 2	Indicators	Means of Verification
Stock Assessments and Risk Assessments for major neritic tuna species in the SEA region	Number of assessments at least 2 major species of neritic tuna in SCS and AS to be carried out	Conference presentations and technical reports
ACTIVITY 2	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 2.1: Stock Assessments and Risk Assessments for neritic tunas in the SEA region	Number of targeted species in the region (at least two)	Practical workshop and country/technical report
Activity 2.2: Clarification of the stock structure for one neritic tuna species in the SEA region	- Number of targeted species in the region (one species) - Number of samples and number of sampling sites - Number of molecular markers used	Genetic workshop and scientific paper
Activity 2.3: Life-history study for major neritic tuna species in the SEA region	Number of specimens studied for tuna in ECPM (Tok Bali/Kuantan): 1 stock - in Tok Bali/Kuantan	Practical workshop and technical report
Activity 2.4: Workshops for major neritic tuna species in the SEA region	4 workshops including stock assessment and genetic (2 internal workshops and 2 regional workshops)	Workshop reports

4.2 Project Implementation Plan for 2020-2024

Activities	2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Output 1: Stock Assessments and Risk Assessments for small pelagic fishes in the Southeast Asian region																				
Activity 1.1																				
Activity 1.2																				
Activity 1.3																				
Output 2: Stock Assessments and Risk Assessments for major neritic tuna species in the Southeast Asian region																				
Activity 2.1																				
Activity 2.2																				
Activity 2.3																				
Activity 2.4																				

4.3 Proposed Budget for 2020-2024

(Unit: USD)

Output	Activities	Year 1	Year 2	Year 3	Year 4	Year 5
		(2020)	(2021)	(2022)	(2023)	(2024)
Output 1:	Activity 1.1					
Stock Assessment and Risk Assessments for small pelagic fishes in the Southeast Asian region	Stock Assessments and Risk Assessments for small pelagic fishes	5,550	8,050	5,550	8,900	5,550
	Activity 1.2		18,000			
	Workshops for small pelagic fishes					
	Activity 1.3					
	Meetings for small pelagic fishes	25,000		25,000		25,000
Output 2:	Activity 2.1					
Stock Assessments and Risk Assessments for major neritic tuna species in the Southeast Asian region	Stock Assessments and Risk Assessments for neritic tunas	3,450	5,950	3,450	6,900	3,450
	Activity 2.2					
	Clarification of the stock structure for one neritic tuna species	9,000	9,000	13,000	10,000	5,000
	Activity 2.3					
	Life-history study for major neritic tuna species	17,000	6,500	4,500	6,200	2,000
	Activity 2.4					
	Workshops for major neritic tuna species		13,000		20,000	15,000
Sub-Total		60,000	60,500	51,500	52,000	56,000

PART II: PROJECT ACHIEVEMENTS IN 2020

1. Project Achievements in the Present Year

MFRDMD had continuously directed the collaboration from the Member Countries and relevant organizations to conduct regional studies on shared stocks entitled “Fisheries Management Strategies for Pelagic Fish Resources in the Southeast Asian Region” under the JTF 6-II. In connection to the JTF6 Phase I project, MFRDMD has initiated some activities aiming to evaluate the pelagic fish resources in the SEA region in order to establish the sustainable management strategy for the pelagic fisheries.

In 2020, the project focused on collecting and compiling the regional information for a stock and risk assessment study by gathering information on catch and effort data for targeted small pelagic and kawakawa from all the 8 AMSs. MFRDMD has arranged the 1st Core Expert Meeting to introduce the project to all participating AMSs and to discuss the current status of targeted pelagic species in the SEA region on 24th November. On 2nd December, the 6th SWG of Neritic Tunas will be held as well as a part of this project. The SWG meeting aims to follow-up the program and the progress of works implemented over the past years, update information on the revised TOR, to share the results on a series of regional programs on "Assessment on Stock Status and Total Catch Available for Neritic Tunas in Southeast Asia", and to discuss on future work plan of activities of SWG Neritic Tunas. Considering the situation of the COVID-19 pandemic, MFRDMD will hold all the meetings via video conference by adhering to the standard protocol provided by the SEAFDEC Secretariat. The meeting report will be produced and disseminated once available.

Aside, the clarification of the genetic structure of kawakawa as well as its life history is carried out through the genetic structure study and age determination analysis (otolith analysis). Necessary equipment and samples for those studies was purchased.

As for the life-history study of major neritic tuna species, a pilot study for age determination of *Euthynnus affinis* through otolith analysis was successfully conducted in 2020. Otoliths were extracted from samples of *E. affinis* which were collected from January to October 2020. These otoliths were then embedded in epoxy resin before being sectioned in precision sectioning saw, mounted on glass slides and lastly, observed under microscope in order to determine the number of rings present on the otolith. Each complete ring may represent a year in the individual life span respectively. At the same time, three (3) demonstrations were organized, to assist an officer from extracting, embedding, sectioning, mounting and reading processes. Further discussions were also carried out between MFRDMD and one resource person to validate results from pilot study.

2. Activities and Budget in the Present Year

Activities	Type of activity	Number of Participants						Budget Spent (USD) as of June 30
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Output 1:								
Activity 1.1 Stock Assessment and Risk Assessment for small pelagic fishes in the Southeast Asian region	Data collection and compilation			3	3			2,989
Activity 1.3: Meetings for small pelagic fishes in the Southeast Asian region	Meeting via video conference	18		5	8		2	1,127
Output 2:								
Activity 2.1: Stock Assessment and Risk Assessment for neritic tunas	Data collection and compilation			3	3			0

Activities	Type of activity	Number of Participants						Budget Spent (USD) as of June 30
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
in the Southeast Asian region								
Activity 2.2: Clarification of stock structure for one neritic tuna species in the Southeast Asian region	Genetic structure study for kawakawa			3	1			1,965
Activity 2.3: Life-history study for major neritic tuna species in the Southeast Asian region	Pilot study for otolith analysis of kawakawa			3	3	2	2	14,634

3. Expected Outcome/Outputs and Achievements in the Present Year

Activities	Expected Outcome/Outputs	Results/Achievements
Outcome		
Output 1: Stock Assessment and Risk Assessment for small pelagic fish in the Southeast Asian region		
Activity 1.1: Stock Assessment and Risk Assessment for small pelagic fishes in the Southeast Asian region	<ul style="list-style-type: none"> Two small pelagic fish will be chosen Compilation of catch and effort data of targeted two small pelagic species for stock and risk assessment 	Two small pelagic fish will be chosen during the 1 st CEM which will be held on 24 th November 2020. Questionnaire templates will be shared among the AMSs after the 1 st CEM. This questionnaire is designed to gather information especially on catch and effort data. In the meantime, regional information on catch and effort data for selected small pelagic species was continuously collected and compiled from sources available.
Activity 1.3: Meetings for small pelagic fishes in the Southeast Asian region	<ul style="list-style-type: none"> Updated current status of targeted small pelagic fisheries in South China Sea and Andaman Sea 1st CEM will be organized 6th SWG of Neritic Tunas will be organized Meeting report will be published and disseminated to AMSs 	<p>The 1st CEM will be conducted on “Fisheries Management Strategies for Pelagic Fish Resources in the Southeast Asian Region” via video conference on 24th November 2020. This meeting aims to introduce the project to all participating AMSs, to discuss the current status of targeted pelagic species and to choose two small pelagic fish in the SEA region. The meeting will also discuss the future plans of this project for the next 4 years. The meeting report will be produced and disseminated once available.</p> <p>The 6th SWG on Neritic Tunas Stock Assessment in the Southeast Asian Waters will be conducted by MFRDMD via video conference on 2nd December 2020. This meeting aims to follow-up the program and the progress of works implemented over the past years, update information on the revised TOR and to share the results on a series of regional programs on "Assessment on Stock Status and Total Catch</p>

Activities	Expected Outcome/Outputs	Results/Achievements
		Available for Neritic Tunas in Southeast Asia". The meeting will also discuss future plans of this project especially on the fund resources. The meeting report will be produced and disseminated once available.
Output 2: Stock and Risk Assessment for major neritic tuna species in the Southeast Asian region		
Activity 2.1: Stock Assessment and Risk Assessment for neritic tunas in the Southeast Asian region	<ul style="list-style-type: none"> Two neritic tuna species will be chosen Compilation of landing data of two targeted neritic tuna species from AMSs 	Two neritic tuna species will be chosen during the 1 st CEM which will be held on 24 th November 2020. Questionnaire templates will be shared among the AMSs after the 1 st CEM. This questionnaire is designed to gather information especially on catch and effort data. In the meantime, regional information on catch and effort data for selected neritic tuna species was continuously collected and compiled from sources available.
Activity 2.2: Clarification of stock structure for one neritic tuna species in the Southeast Asian region	<ul style="list-style-type: none"> Purchase of the equipment, chemical, disposable laboratory consumables, kit and samples for genetic structure study of one neritic tuna in SEA region Findings from PCR and Fragment analysis 	A total no. of 710 Kawakawa samples from 15 locations collected throughout Southeast Asia during the SEAFDEC-Sweden project will be analysed for this activity. New primer sets of DNA mitochondrial Cytochrome b and D-loop were designed and optimized. The required tools and kit were purchased and analysis of samples in progress.
Activity 2.3: Life-history study for major neritic tuna species in the Southeast Asian region	<ul style="list-style-type: none"> Purchase of the equipment, chemical, disposable laboratory consumables, kit and samples for otolith analysis of one neritic tuna species Pilot study (trial) for otolith study of one neritic tuna species 	The pilot study of age determination for <i>E. affinis</i> will be completed in December 2020. Overall, 420 samples were collected from January to October 2020. Three (3) demonstrations were organized to assist one officer from extracting, embedding, sectioning, mounting and reading otolith. Lastly, discussions between MFRDMD and one resource person will be undertaken to validate results from the pilot study. A technical report will be prepared to provide insights into the ageing and age structure of <i>E. affinis</i> in the northeast Malaysia waters.

4. List of Publications in 2020

Publications	Type of Media	Attached e-file
1. Mohammad Faisal Md. Saleh, Wahidah Mohd Arshaad, Raja Bidin Raja Hassan, Katoh Masaya, Abdul Razak Latun, Nurul Nadwa Abdul Fatah and Khairiah Jaafar. <i>Towards the Sustainable Management of Purse Seine Fisheries in Southeast Asia</i> . (Fish for the People, Vol. 18 No.1, 2020).	Technical article	PDF
2. Wahidah Mohd Arshaad, Adam Luke Pugas, Nik Zuraini Nawawi, Nur Ayuni Ariffin and Masaya Katoh. <i>Genotyping of</i>	Scientific paper	PDF

Publications	Type of Media	Attached e-file
<i>microsatellite markers to study genetic structure of the longtail tuna, Thunnus tonggol in the Southeast Asian Region.</i>		

5. Evaluation on Workshops/Training Courses by Participants of AMSs

Activities	Evaluation
Output 1:	
Activity 1.1	None
Activity 1.3	
Output 2:	
Activity 2.1	None
Activity 2.2	
Activity 2.3	

6. Major Impacts/Issues

Delay of quarterly reports on expenditures and progress report for co-finance calculation

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2021

1. Project Summary in 2021

Explain the activities that plan to implement in 2021.

In 2021, MFRDMD will continue directing the collaboration from the participating AMSs and relevant organizations to gather comprehensive and reliable information on catch and effort for targeted small pelagic fish and neritic tunas. This information is vital to conduct regional studies on stock assessments and risk assessments of shared stocks in the SEA region. In this regard, MFRDMD will arrange two workshops for Stock Assessment and Risk Assessments for small pelagic fishes in Southeast Asia which are one internal workshop and one regional workshop. As for neritic tunas, a regional workshop on Stock Assessments and Risk Assessments for two neritic tuna species in the SEA region will be conducted. Through these workshops, it is expected that the participating AMSs will give their full commitments to gather comprehensive and reliable information on catch and effort. Opinions and recommendations from the participating AMSs on the project future plans are highly appreciated and will be considered.

This project also continues the study on the clarification of the genetic structure of kawakawa as well as develops its life history through the age determination analysis (otolith analysis). Necessary equipment and samples for those studies will be purchased.

For a life-history study of major neritic tuna species, 60 individuals of *E. affinis* will be collected per month from January to December 2021. The additional number of samples are proposed due to fragility of the otolith itself. To ensure adequate number of samples for reading stages and subsequently, statistical analysis, 60 individuals of *E. affinis* will be collected each month.

MFRDMD also proposes two (2) discussions in 2021. One (1) session is for reading of otolith, and another session is for result validation. Through these sessions, it is expected to gain further understanding of the aging and age structure of *E. affinis* in the east coast waters of peninsular Malaysia and also obtain information for fishery stock assessment purposes.

2. Outcome, Outputs and Activities and Proposed Budget

(Unit: USD)
Total: 60,500

Proposed Activities	Descriptions	Proposed Budget
Outcome	Efficient Management Strategies for Small Pelagic Fishes and Neritic Tunas in the Southeast Asia region are adopted by governments and fishers	
Output 1:	Stock Assessments and Risk Assessments for small pelagic fishes in the Southeast Asian region	
Activity 1.1: Stock Assessments and Risk Assessments for small pelagic fishes in the Southeast Asian region	SEAFDEC/MFRDMD will collect and compile regional information of targeted small pelagic species from AMS for stock assessment and risk assessment study. Estimated expenditures: Research Expense: - Hire of supporting staff: \$ 595 x 1 prs x 6 months = \$ 3,570 - Communication: \$ 1,500 - Stationery: \$ 360 - Deputy chief expenses: \$ 2,620 Sub-total: USD 8,050	8,050
Activity 1.2: Workshops for small pelagic fishes in the Southeast Asian region	MFRDMD will organize a regional workshop to discuss and update on the current status of targeted pelagic species in the South China Sea and Andaman Sea as well as sharing information and knowledge of genetic study of the targeted neritic tuna species. Representatives from each participating member country will be invited to the workshop. Estimated expenditures: Meeting Expenses Travel Costs: ○ Member Countries - Airfare: \$ 3,600 *(1 pr. from participating 7 AMSs, 2 prs. From Malaysia) - Land transport: \$ 200 *(2 prs from Malaysia) - DSA: \$ 1,260 - Accommodation: \$ 2,310 ○ SEC/TD - Airfare: \$ 400 - DSA: \$ 140 - Accommodation: \$ 210 ○ MFRDMD - Airfare: \$ 960 - DSA: \$ 1,005 - Accommodation: \$ 1,400 - Local transportation: \$ 345 ○ Resource Person: - Airfare: \$ 700 - DSA: \$ 300 - Accommodation: \$ 210 - Terminal Allowances: \$ 760 Meeting Costs: - Stationery and others: \$ 300 Publication: - Publication of Meeting Report: \$ 900 Sub-total: USD 15,000	18,000

Proposed Activities	Descriptions	Proposed Budget
	<p>MFRDMD will organize an internal workshop to discuss and update on the current status of targeted pelagic species in the South China Sea and Andaman Sea as well as sharing information and knowledge of genetic study of the targeted neritic tuna species. Representatives from MFRDMD and resource persons will be invited to the workshop.</p> <p>Estimated expenditures: Meeting Expenses Travel Costs: ○ MFRDMD - DSA: \$ 915 - Accommodation: \$ 1,320 - Local transportation: \$ 336 ○ Resource Person (local): -DSA: \$ 200 - Accommodation: \$ 165 Meeting Costs: - Stationery: \$ 64 Sub-total: USD 3,000</p>	
Output 2:	Stock Assessments and Risk Assessments for major neritic tuna species in the Southeast Asian region	
Activity 2.1: Stock Assessments and Risk Assessments for neritic tunas in the Southeast Asian region	<p>MFRDMD will collect and compile regional information of targeted species from AMSs for stock assessment and risk assessment study.</p> <p><Estimates> Research Expenses: - Hire of supporting staff: \$ 595 x 1 person x 6 months = \$ 3,570 - Deputy chief expenses: \$ 2,380 Sub-total: USD 5,950</p>	5,950
Activity 2.2: Clarification of the stock structure for one neritic tuna species in the Southeast Asian region	<p><Estimates> Research Expenses: - Consumable equipment supplies: \$ 2,500 - Extraction kit: \$ 600 - Hire of supporting staff: \$ 450 x 1 person x 6 months = \$ 2,700 Consultant Fees: - Sequencing: \$ 3,200 Sub-total: USD 9,000</p>	9,000
Activity 2.3: Life-history study for major neritic tuna species in the Southeast Asian region	<p><Estimates> Research Expenses: - Samples (\$ 7.5 x 60 individuals x 12 months): \$ 5,400 - Precision Sectioning Saw Maintenance Fee (1x): \$ 500 - Two (2) discussions with resource person: \$ 300 - Consumable items: \$ 300 Sub-total: USD 6,500</p>	6,500
Activity 2.4: Workshops for major neritic tuna species in the Southeast Asian region	<p>MFRDMD will organize a regional workshop to discuss and update on the current status of two neritic tunas species in the South China Sea and Andaman Sea as well as sharing information and knowledge of genetic study of the targeted neritic tuna species. Representatives from each participating member country will be invited to the workshop.</p> <p>Estimated expenditures: Meeting Expenses Travel Costs: Member Countries - Air fare: \$ 2,800</p>	13,000

Proposed Activities	Descriptions	Proposed Budget
	*(1 pr. from participating 7 AMSs) - Land transport: \$ 200 *(2 prs from Malaysia) - DSA \$ 1,120 - Accommodation: \$ 1,890 o SEC - Airfare: \$ 400 - DSA: \$ 140 - Accommodation: \$ 210 o MFRDMD - Airfare: \$ 840 - DSA: \$ 900 - Accommodation: \$ 1,260 - Local transportation: \$ 300 o Resource Person: - Airfare: \$ 700 - DSA: \$ 300 - Accommodation: \$ 210 - Terminal Allowance: \$ 640 Meeting Costs: - Stationery and others: \$ 290 Publication: - Publication of Meeting Report: \$ 800 Sub-total: USD13,000	

3. Implementation Plan of Activities in 2021

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Output 1: Stock Assessments and Risk Assessments for small pelagic fishes in the Southeast Asian region												
Activity 1.1												
Activity 1.2												
Output 2: Stock Assessments and Risk Assessments for major neritic tuna species in the Southeast Asian region												
Activity 2.1												
Activity 2.2												
Activity 2.3												
Activity 2.4												

4. Expected Activity Results in 2021

Planned activity	Expected Activity Results
Activity 1	
Activity 1.1. Stock Assessments and Risk Assessments for small pelagic fishes in the Southeast Asian region	<ul style="list-style-type: none"> • Compilation of catch and effort data of targeted two small pelagic species from AMSs for stock and risk assessment
Activity 1.2. Workshops for small pelagic fishes in the Southeast Asian region	<ul style="list-style-type: none"> • Updated current status of targeted small pelagic fisheries in South China Sea and Andaman Sea • 1 internal workshop • 1 regional workshop
Activity 2	
Activity 2.1. Stock Assessments and Risk Assessments for neritic tunas in the Southeast Asian region	<ul style="list-style-type: none"> • Compilation of catch and effort data kawakawa from AMSs for stock and risk assessment

Planned activity	Expected Activity Results
Activity 2.2. Clarification of the stock structure for one neritic tuna species in the Southeast Asian region	<ul style="list-style-type: none"> • Purchase of the equipment, chemical, disposable laboratory consumables, kit and samples for genetic structure study of kawakawa in SEA region • Findings from PCR and DNA sequence analysis
Activity 2.3. Life-history study for major neritic tuna species in the Southeast Asian region	<ul style="list-style-type: none"> • Age determination and validation for at least 360 individuals of <i>E. affinis</i>. • 1 technical report on age structure of <i>E. affinis</i> in the east coast of peninsular Malaysia.
Activity 2.4. Workshops for major neritic tuna species in the Southeast Asian region	<ul style="list-style-type: none"> • Updated current status of two targeted neritic tuna species in South China Sea and Andaman Sea • 1 regional workshop

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2020
AND
PROPOSED ACTIVITIES FOR THE YEAR 2021**

			Project ID: 202005004
Program Category:	Project under the ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title:	Management Scheme of Inland Fisheries in the Southeast Asian Region		
Program Strategy No:	I	Total Period:	2020 - 2024
Lead Department:	Inland Fishery Resources Development and Management Depart (IFRDMD)	Lead Country:	Myanmar
Donor/Sponsor:	Japanese Trust Fund (JTF)	Total Project Budget:	USD 230,00
Project Partner(s):	Nil	Budget for 2021:	USD 50,000
Lead Technical Officer:	Arif Wibowo (IFRDMD)	Project Participating Country:	All Member Countries

PART I: PROJECT DESCRIPTION

1. Executive Summary

This project is a sustainable management and utilization of fisheries resources in the Southeast Asian region. There are two main activities on the project. The first program is aimed at improving the fishers' livelihood program. The second one is fish catch data and information is assembled. The activities for the first aim consist of development of guidelines for international fisheries management and dissemination to governments and other relevant agencies in Southeast Asia. While for the second aim, the activities consist of establishment of a catch database and profiles of freshwater fish biodiversity, and also published a manual for fish biological characteristics collecting/sampling.

2. Background and Justification

Inland fisheries are economically important at the national and local level because of their social and economic contribution to income for rural communities. The dynamics of the inland fishery are strongly related to seasonal rainfall patterns in which the rainy season is followed by the dry season. It should be noted however that the data on production from inland fisheries is very limited considering that inland fisheries operations are small-scale, very seasonal, and mostly carried out by part-time fisheries, and where production is meant for domestic consumption and thus, is usually not recorded at landing sites (SEAFDEC, 2017). Nevertheless, the countries have been trying to exert efforts in improving their systems of compiling the data and information on inland fisheries as the sub-sector that has the potential to enhance the food sufficiency of the region in the future.

In the five-year program in 2015-2019, IFRDMD conducted the establishment and strengthened the regional networking for improving the fisheries management and the conservation of fisheries resources/environment in inland waters of the region. Gathering the data and information on present status of inland fisheries in ASEAN Member States (AMSs) were carried out by referring to literature, web sites, interview, and field surveys. Enhancing the capacity building in AMSs for the improvement of management of inland fisheries was also the focus of IFRDMD's work.

Considering the continuous activity, SEAFDEC/IFRDMD will be responsible for keeping the sustainable management and utilization of inland fisheries resources in the Southeast Asian region. Millions of people work full or part time in fisheries activities. They are dependent on increasingly depleted and degraded resources, due to overcapacity, resource access conflicts, and inadequate resource management. Improving the fishers' livelihood is the strategic program to secure their lives and ensure the diversity is maintained. The activity will be conducted by gathering the historical bycatch data on freshwater fish provided by enumerators and collecting data on socio-economic status of fishers in the freshwater fish production in Southeast Asia. Moreover, in order

to evaluate and monitor the status of fish stocks for exploitation, management activities, and environmental impact, it is therefore necessary for countries in the Southeast Asian region to update the fish resources status. Catch database could be a tool for monitoring the present status of fisheries itself and also the fish resources.

3. Gender Sensitivity of the Project

Women have also assumed in a leading role in inland fisheries, with their participation along value chain (production and marketing) much more than in capture fisheries. The national policy has opened up space on gender equality. Yet, in implementing the policy, women have been limited from taking part in decision making. Therefore, some projects in the 2020-2024 are committed to promote gender equality in the Southeast Asian's fisheries sector.

4. Project Goal, Outcome, Outputs, Activities, Indicators and Verification

4.1 Logical Framework

GOAL (Overall Objectives, Impact)	Indicators	Means of Verification
Sustainable management and utilization of inland fisheries resources in the Southeast Asian region	The livelihood of fishers is secured and stable, and the inland fishery diversity is maintained	1. Historical bycatch data on freshwater fish provided by enumerators 2. Data on socio-economic status of fishers in the freshwater fish production in Southeast Asia
OUTCOME	Indicators	Means of Verification
Strategic program for improving fishers' livelihood	AMSs implement the strategic program for improving fishers' livelihood	Government adopts the document and makes a policy or regulation
OUTPUT 1	Indicators	Means of Verification
Policy and recommendations of the inland fisheries management in Southeast Asia	Guideline on inland fisheries management in Southeast Asia is developed and disseminated to governments and other relevant agencies	Government reports and publications or issue policy and regulations based on the guidelines
ACTIVITY 1	Indicators; key Inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 1.1: Organizing stakeholders' meetings between representatives of relevant Government agencies, fishers, local communities, etc. in AMSs	Meetings are conducted in 6 countries (<i>i.e.</i> Cambodia, Indonesia, Lao PDR, Myanmar, Thailand and Viet Nam), and obtaining the present status of data and information on inland fisheries management	Database from 6 countries
Activity 1.2: Conducting trainings on data and information in AMSs	Trainings are conducted in 6 countries (<i>i.e.</i> Cambodia, Indonesia, Lao PDR, Myanmar, Thailand and Viet Nam), and sharing, exchanging and improving the data and information collections	Training in 6 countries
Activity 1.3: Organizing a regional workshop	Regional workshop is organized by IFRDMD to promote the importance of inland fisheries for the livelihood	Workshops

Activity 1.4: Organizing Forum Group Discussion in AMSs	Forum Group Discussions are organized in 6 countries (<i>i.e.</i> Cambodia, Indonesia, Lao PDR, Myanmar, Thailand and Viet Nam) to promote the importance of inland fisheries for the livelihood	Forum Group Discussion
Activity 1.5: Conducting a writeshop for drafting publications	A writeshop is organized in 6 countries to draft publications of each AMS	Articles
OUTPUT 2	Indicators	Means of Verification
Fish catch data and information assembled	Catch database and profiles of freshwater fish biodiversity are established, and fish biological characteristics collecting/sampling manual book is published	Catch database and freshwater fish biodiversity profiles, and collecting/sampling manual
ACTIVITY 2	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 2.1: Conducting a survey to assess the status of inland fisheries	Surveys are conducted in 6 countries (<i>i.e.</i> Cambodia, Indonesia, Lao PDR, Myanmar, Thailand, and Viet Nam) for updating status of inland fisheries	Survey reports
Activity 2.2: Conducting data monitoring in target countries	Data monitoring is conducted in 4 countries (<i>i.e.</i> Indonesia, Cambodia, Thailand, and Myanmar)	Database from 4 countries
Activity 2.3: Drafting the profiles of freshwater fish biodiversity in AMSs	The profiles are drafted and published	Booklet and poster on the profiles of freshwater fish biodiversity
OUTPUT 3	Indicators	Means of Verification
The project management to lead to success	Project achievement.	Report of result and evaluation.
ACTIVITY 3	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 3.1 Coordination by the project leader	Progress meetings held twice a year to confirm the improving of each activity. The evaluation at the end of year by experts. Hiring one assistant to carry out the project effectively.	Semi-annual and annual progress report, and their evaluation results.

4.2 Project Implementation Plan for 2020 - 2024

Activities	2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Output 1:																				
Activity 1.1	■	■	■	■	■	■														
Activity 1.2							■	■	■	■	■	■								
Activity 1.3																			■	
Activity 1.4													■	■	■	■	■	■		
Activity 1.5			■			■			■	■			■	■						
Output 2:																				
Activity 2.1		■				■	■			■	■			■						

Activities	2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Activity 2.2																				
Activity 2.3																				
Output 3:																				
Activity 3.1																				

4.3 Proposed Budget for 2020 – 2024

(Unit: USD)

Output	Activities	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Year 5 (2024)
Output 1	Activity 1.1	16,680	8,100			
	Activity 1.2		8,100	13,875		
	Activity 1.3					13,875
	Activity 1.4				14,100	6,375
	Activity 1.5	3,570	3,600	6,375	6,600	
Output 2	Activity 2.1	13,025	17,200	16,875	3,600	
	Activity 2.2	7,225	3,600	3,375	5,100	6,375
	Activity 2.3				11,100	13,875
Output 3	Activity 3.1	4,500	4,500	4,500	4,500	4,500
Sub-Total		45,000	45,000	45,000	45,000	45,000

PART II: PROJECT ACHIEVEMENTS IN 2020

1. Project Achievements in the Present Year

IFRDMD has conducted 4 sub-activities under two main activities (Activity 1 and 2) in 2020. Under these sub-activities, IFRDMD conducted field surveys, collecting data, training* and meeting with several representatives from AMSs**. The study site for 2020 has been focusing and implementing only in Indonesia *i.e.* Riau and South Sumatra Province. IFRDMD collected data of fish biology, fishery activity and socio-economic in both provinces. Through the surveys, interviews, and information gathered through literature, discussions and internet, the present situation and issues were assessed and shared for further taking any measures on inland capture fisheries in AMSs.

*This training is conducted in September and December, while **a virtual meeting was conducted in September.

2. Activities and Budget in the Present Year

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Output 1:								
Activity 1.1 Organizing stakeholders' meetings between representatives of relevant Government agencies, fishers, local communities, etc. in AMSs (Riau 10-13 Feb; South Sumatra 23 and 29 June; South Sumatra 23 July)	Research	1	2	5	17	4	44	4,317

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSS		SEAFDEC		Others		
		F	M	F	M	F	M	
Activity 1.5 Conducting a writeshop for drafting publications	Training							-
Activity 1.6 Building demonstration plot as a model for floodplain fishery management and conservations	Research	10	10	20	20	15	15	20,000
Output 2:								
Activity 2.1 Conducting a survey to assess the status of inland fisheries (Riau 10-13 Feb; South Sumatra 23 June and 23 July)	Research	1	2	1	3	1	32	1,963
Activity 2.2 Conducting data monitoring in target countries (Riau 10-13 Feb; South Sumatra 23 June and 23 July)	Research	1	2	1	3	1	13	760
Output 3:								
Activity 3.1	Coordination							-

*Only the research/activities that have been conducted till 23 July are written.

3. Expected Outcome/Outputs and Achievements in the Present Year

Activities	Expected Outcome/Outputs	Results/Achievements
Outcome		
Output 1:		
Activity 1.1 Organizing stakeholders' meetings between representatives of relevant Government agencies, fishers, local communities, etc. in AMSS	Seeking and identifying present status of habitat conservation managements in AMS and promoting the fisheries management model in a floodplain ecosystem	- Some major components and features on habitat conservation in AMS were identified by referring the result of literatures and questionnaire - A pilot model for a fisheries management model in a flood plain ecosystem was set up, which its name SPEECTRA (Special Area for Conservation and Fish <i>Refugia</i>). Fisheries activities were monitored around that area every month - IFRDMD participated in animation/info graphics trainings in September 2020
Activity 1.5 Conducting a writeshop for drafting publications	Capacity building drafting publications (institutional documents)	Trainings are conducted in September and December 2020
Activity 1.6	Building demonstration plot as a model for floodplain fishery management and conservations	- A pilot model for a fisheries management was set up on a flood plain ecosystem "SPEECTRA: Special Area for Conservation and Fish <i>Refugia</i>) - Fisheries activities were monitored around the area every month

Activities	Expected Outcome/Outputs	Results/Achievements
Output 2:		
Activity 2.1 Conducting a survey to assess the status of inland fisheries	Finding appropriate tools and studying for resources enhancement measures applicable to AMS	<ul style="list-style-type: none"> - DACOFA (Data Collection for Fishery Activities) android- based application was developed. This tool could make the fishers easily and quickly on inputting data. The guidelines for using DACOFA were prepared - The management of big data on One Data system was discussed with MMAF (Ministry of Marine Affairs and Fisheries). The development on mobile android program was discussed - IFRDMD participated in the training on mobile android programming
Activity 2.2 Conducting data monitoring in target countries	Surveying for fisheries data collection	<ul style="list-style-type: none"> - The data of fisheries activity were collected in Kampar River, Riau Indonesia by using form until December 2020. 10 enumerators were hired and the data were sent by an electronic mail. - The data of fisheries activities were collected in Muara Enim, South Sumatra Indonesia by using form and DACOFA. Three enumerators were hired. The data will be collected until December 2020.
Output 3:		
Activity 3.1 Coordination by the project leader	Project document	All research and information dissemination were coordinated and assisted by the project leader. Semi-annual meeting is held in August to confirm the progress of respective activities and sub-activities. Project achievements are summarized at the end of year. Annual progress report will be prepared.

4. List of Publications in 2020

Publications	Type of Media	Attached e-file
<p>1. The guideline of DACOFA (in Indonesian)</p> <p>Author: Dina Muthmainnah, Sevi Sawestri, and Arya Nugraha.</p> <p>Schedule: August: 1st draft September: 2nd draft October: publish</p>		

5. Evaluation on Workshops/Training Courses by Participants of AMSs

Activities	Evaluation
Output 1:	
Activity 1.1 Organizing stakeholders' meetings between representatives of relevant Government agencies, fishers, local communities, etc. in AMSs.	There was no evaluation from the participants of AMS.
Activity 1.5 Conducting a writeshop for drafting publications.	There was no evaluation from the participants of AMS.

Activities	Evaluation
Activity 1.6 Building demonstration plot as a model for floodplain fishery management and conservations	There was no evaluation from the participants of AMS.
Output 2:	
Activity 2.1 Conducting a survey to assess the status of inland fisheries.	There was no evaluation from the participants of AMS.
Activity 2.2 Conducting data monitoring in target countries.	There was no evaluation from the participants of AMS.
Output 3:	
Activity 3.1 Coordination by the project leader.	There was no evaluation from the participants of AMS.

6. Major Impacts and Issues

1. It needs to find out the critical issues regarding habitat conservation to achieve the sustainable use of freshwater fish resources.
2. It needs to find out the tools/methods regarding the fish stock measurement to achieve the sustainable use of freshwater fish resources.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2021

1. Project Summary in 2021

This project is a sustainable management and utilization of fisheries resources in the Southeast Asian region. There are two main activities and 5 sub-activities on the project. The first program aims at improving the fishers' livelihood program, while the second one is to assemble fish catch data and information. Myanmar and Thailand will be the site location in 2021. The activities for Output 1 consist of seeking and identifying the major component of conservation management, and also some training. While the activities for Output 2 consist of collecting catch data and profiles of freshwater fish biodiversity.

2. Outcome, Outputs and Activities and Proposed Budget

		(Unit: USD)
Proposed Activities	Descriptions	Proposed Budget
Outcome	Strategic program for improving fishers' livelihood.	
Output 1:	Policy and recommendations of the inland fisheries management in Southeast Asia.	
Activity 1.1	Organizing stakeholders' meetings between representatives of relevant Government agencies, fishers, local communities, etc. in AMSs (in Myanmar, Thailand, and Indonesia) Estimated expenditures: - Transportation to AMs : USD 6,371 - Accommodation fees: USD 1,989 - Local transport: USD 146 - DSA: USD 1,881 - Meeting package: USD 713 - Office expenditures and contingency: USD 500 Sub-total: USD 11,600	11,600

Proposed Activities	Descriptions	Proposed Budget
Activity 1.2	<p>Conducting trainings on data and information in AMSs (in Thailand).</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Transportation to AMSs: USD 2,000 - Accommodation fees: USD 270 - Local transport: USD 200 - DSA: USD 550 - Meeting package: USD 300 - Office expenditures and contingency: USD 280 Sub-total: USD 3,600 	3,600
Activity 1.5	<p>Conducting a write-shop for drafting publications (in Thailand).</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Transportation to AMs: USD 2,000 - Accommodation fees: USD 270 - Local transport: USD 200 - DSA: USD 550 - Meeting package: USD 300 - Office expenditures and contingency: USD 280 Sub-total: USD 3,600 	3,600
Activity 1.6	<p>Monitoring and evaluation program for SPECTRA system, demonstration plot as a model for floodplain fishery management and conservation</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> -Transportation to AMSs: USD 2,000 - Accommodation fees: USD 270 - Local transport: USD 200 - DSA: USD 550 - Meeting package: USD 300 - Office expenditures and contingency: USD 280 Sub-total: USD 3,000 	3,000
Output 2:	Fish catch data and information assembled.	
Activity 2.1	<p>Conducting a survey to assess the status of inland fisheries (in Myanmar, Thailand, and Indonesia).</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Transportation to AMSs: USD 7,886 - Accommodation fees: USD 1,989 - Local transport: USD 2,111 - DSA: USD 2,871 - Meeting package: USD 415 - Office expenditures and contingency: USD 1,928 Sub-total: USD 15,200 	15,200
Activity 2.2	<p>Conducting data monitoring in target countries (conduct together with Activity 2.1; location in Myanmar, Thailand, and Indonesia).</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Enumerators: USD 6,500 - Meeting package: USD 800 - Office expenditures and contingency: USD 1,200 Sub-total: USD 8,500 	8,500

Proposed Activities	Descriptions	Proposed Budget
Output 3:	The project management to lead to success.	
Activity 3.1	<p>Progress meetings held twice a year to confirm the improving of each activity. The evaluation at the end of year by experts. Hiring one assistant to carry out the project effectively.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Travel cost of 2 evaluators (share): USD 2,200 - Meeting costs (share): USD 300 - Salary of Assistant (share): USD 2,000 Sub-total: USD 4,500 	4,500

3. Implementation Plan of Activities in 2021

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Output 1:												
Activity 1.1												
Activity 1.2												
Activity 1.5												
Activity 1.6												
Output 2:												
Activity 2.1												
Activity 2.2												
Output 3:												
Activity 3.1												

4. Expected Activity Results in 2021

Planned activity	Expected Activity Results
Activity 1	
Activity 1.1 Organizing the stakeholder meeting between representatives of relevant Government agencies, fishers, local communities, etc. in Myanmar and Thailand	Database from Myanmar and Thailand
Activity 1.2 Conducting data collection trainings in Myanmar and Thailand	Training
Activity 1.5 Conducting a write-shop for drafting publications (in Myanmar and Thailand)	Training
Activity 1.6 Monitoring and evaluation program for SPEECTRA system, demonstration plot as a model for floodplain fishery management and conservation	Publication
Activity 2	
Activity 2.1. <ul style="list-style-type: none"> • Conducting a survey to assess the biodiversity of inland fisheries in Myanmar and Thailand. • Technical meeting for developing the implementation work plan of activities in the pilot site (SPEECTRA, South Sumatra, Indonesia) 	<ul style="list-style-type: none"> • Database from Myanmar and Thailand • Technical meeting report

Planned activity	Expected Activity Results
<p>Activity 2.2</p> <ul style="list-style-type: none"> • Conducting data monitoring in Myanmar and Thailand. It will be conducted together with activity 2.1 • Trial Data Collection for Fishery (DACOFA) application in Thailand 	<ul style="list-style-type: none"> • Database from Myanmar and Thailand
Activity 3	
<p>Activity 3.1 The project leader will coordinate and assist all researches and dissemination</p>	<ul style="list-style-type: none"> • Progress meetings conducted twice a year to confirm the improving of each activity • The evaluation at the end of year by experts • One Assistant hired to carry out the project operations and administration effectively

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2020
AND
PROPOSED ACTIVITIES FOR THE YEAR 2021**

			Project ID: 202001013
Program Category:	Project under the ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title:	Small-scale Fisheries Management for Better Livelihood and Fisheries Resources		
Program Strategy No:	I	Total Period:	2020 - 2024
Lead Department:	Training Department (TD)	Lead Country:	Nil
Donor/Sponsor:	Japanese Trust Fund (JTF)	Total Project Budget:	USD 305,000
Project Partner(s):	Nil	Budget for 2021:	USD 65,000
Lead Technical Officer:	Panitnard Weerawat (TD)	Project Participating Country:	All Member Countries

PART I: PROJECT DESCRIPTION

1. Executive Summary

In the Southeast Asia region, the problems faced by small-scale fisherfolks are complex and diverse. The main issues are lack of appropriate fisheries management framework, awareness and knowledge of how to apply a fisheries management tool, dependence on middlemen, lack of stakeholders (including women)’ acknowledgement, and catch decrease due to the competitions with commercial or illegal fishing and degradation of the environment and fishing grounds. Given the already low income of small-scale fishers and the high number of household members, this social group has serious difficulties to keep its traditional occupation. Appropriate local and comprehensive management plan for small-scale fisheries (SSF) must provide adequate solutions to the main problems. One of the main objectives in such a management plan is to support small-scale fishers for improving their income generation while sustaining the nearshore fisheries resources.

This project aims in the sustainable management of SSF for improving the livelihood and well-being of fishers in Southeast Asia. There will be continuing efforts in strengthening the human resource development and further promoting the Ecosystem Approach to Fisheries Management (EAFM) under the project. The lesson learnt based on the application of the EAFM will be shared and used for developing regional recommendations on the effective implementation of the EAFM in the region. The capability development in support of the implementation of the FAO’s Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines) for improving the livelihood and well-being of small-scale fishers will be carried out.

And, a study on the status of fisheries socio-economic assistance and on gender assessment will be conducted in the region. The regional cooperation in fisheries socio-economic development and approach/process should be further strengthened in conjunction with the action plans for supporting the livelihood and well-being of small-scale fishers in Southeast Asia. Furthermore, the gender integration and empowerment in sustainable fisheries management in the Member Countries in Southeast Asia which include fisheries management processing and value chain will be promoted through the regional and national training courses and human resource development programs in the five-year project period.

2. Background and Justification

In reference to the United Nations’ Sustainable Development Goals (SDG) 14 “Life below Water”, it has been stated clearly that SSF is a vital source of livelihoods for millions, particularly in developing countries, and provides food and nutrition for billions. Large industrial fleets dominate fisheries management efforts and political interests. Policies need to refocus on addressing the needs and challenges of SSF. The SSF Guidelines, adopted by the FAO Member Countries in 2014, provide the global consensus on the principles, good practices, and guidance to ensure that small-scale fisheries are sustainable for small-scale fishers, fish workers, and their community and society at large. The SSF Guidelines advocate the need for good collaboration among government agencies, small-scale fishery organizations, fishing communities and other stakeholders. SEAFDEC

has been taking on the challenge in the region in support of the implementation of the SSF Guidelines, and actions on the SDGs.

In the “ASEAN-SEAFDEC Resolution on Sustainable Fisheries for Food Security for the ASEAN Region towards 2020” as well as the “Strategic Plan of Action on ASEAN Cooperation on Fisheries 2016-2020”, it is stated that the supply of fish and fishery products in the region needs to be sustained to improve food security, facilitate poverty alleviation, and improve the livelihoods of people depending on the harvesting, farming and marketing of fish and fishery products. National fisheries policy, legal and institutional frameworks need to be improved to further support small-scale fishers/farmers with providing alternative livelihood opportunities and implementing the effective management of fisheries through the EAFM which aims at increasing the social and economic benefits to all stakeholders. For better livelihood and resources management in SSF, the project will be implemented for the next five years.

3. Gender Sensitivity of the Project

The project supports gender integration through the activities. Throughout the project, women and men will participate in regional/national training courses on fisheries management and value chain to enhance their capacities. At the national level, gender concept and analysis will be further promoted as important tool.

4. Project Goal, Outcome, Outputs, Activities, Indicators and Verification

4.1 Logical Framework

GOAL (Overall Objectives, Impact)	Indicators	Means of Verification
Sustainable management of small-scale fisheries (SSF) for improving the livelihood and well-being of fishers in Southeast Asia	- Livelihood and well-being of small-scale fishers are improved and secured - Healthy fisheries resources in Southeast Asia	- Data on socio-economic status of fishers in Southeast Asia - Data on fisheries resources in SSF
OUTCOME	Indicators	Means of Verification
Strategic programme for sustainable fisheries management in SSF	ASEAN Member States (AMSs) implement the strategic programme for sustainable fisheries management	Government adopts strategic programme and made a policy or regulations
OUTPUT 1	Indicators	Means of Verification
Ecosystem Approach to Fisheries Management (EAFM) is in place in selected pilot sites in the Member Countries	Fisheries management which include human wellbeing become more strengthened in selected pilot sites through the implementation on EAFM	- Pilot learning site of Tonle Sap - Pilot learning site of sub-transboundary species Thailand-Myanmar
ACTIVITY 1	Indicators; key Inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 1.1: Regional training or workshop to strengthen participants in Small-scale Fisheries Management for Better Livelihood and Fisheries Resources	- Regional training/workshop conducted in 2020 - Number of participants attend in the workshop	- Workshop report
Activity 1.2: Effective implementation of EAFM as key tool in the pilot sites	EAFM introduced and effectively implemented in the pilot sites Learning site 1: Ranong-Koh Song Thailand -Myanmar Learning site 2: Tonle Sap, Cambodia	- EAFM for Ranong-Koh Song, Thailand-Myanmar and Tonle Sap, Cambodia - e-EAFM materials updated
Activity 1.3: Review of the EAFM implementation results in the pilot sites and the development of Regional Plan of Actions (RPOA) on EAFM	- EAFM implementation results reviewed in the pilot sites - Write-shop for drafting Regional Recommendation on EAFM implementation and application	- Review report on EAFM implementation results - EAFM promotion materials - Regional Recommendation on EAFM implementation and application
OUTPUT 2	Indicators	Means of Verification
Capability development in the	- Survey and capacity development	-

implementation of the SSF guidelines for improving the livelihood and well-being of small-scale fishers	<p>activities conducted</p> <ul style="list-style-type: none"> - Effective implementation of the SSF guidelines for improving the livelihood and well-being of small-scale fishers - Livelihood and well-being of small-scale fishers secured and stable 	<p>urvey report</p> <ul style="list-style-type: none"> - improved technical capacities and knowledge of SEAFDEC staff and government officials as well as fishers in SSF
ACTIVITY 2	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 2.1: Study on the status of fisheries socio-economic assistance, and gender assessment particularly in line with the implementation of the SSF guidelines in Southeast Asia	<ul style="list-style-type: none"> - Study on the status of fisheries socio-economic assistance and gender assessment conducted in the Member Countries in 2021 - Survey questionnaires will be developed, and interviews conducted 	<ul style="list-style-type: none"> - Study report on the status of fisheries socio-economic assistance - Survey questionnaires
Activity 2.2: Strengthening a regional cooperation in fisheries socio-economic development and developing appropriate approach/process in support of the implementation of the SSF guidelines in Southeast Asia	<ul style="list-style-type: none"> - Regional cooperation in fisheries socioeconomic development - Participation in international/regional meetings 	<ul style="list-style-type: none"> - Regional cooperation network - Improved regional cooperation - Meeting reports
Activity 2.3: Regional workshops on action plans for supporting the livelihood and well-being of small-scale fishers in the Southeast Asia	<ul style="list-style-type: none"> - Two regional workshops will be organized in Thailand in 2021 and 2023 - 2 participants from each member country - About 25 participants are expected to be participated in each workshop 	<ul style="list-style-type: none"> - Workshop reports - About 25 participants participate in each workshop, (total of 50 participants for 2 workshops) - Action plans for supporting livelihood and well-being of small-scale fishers - Appropriate budget allocated for workshop participations
OUTPUT 3	Indicators	Means of Verification
Further promotion of the gender integration and empowerment in sustainable fisheries management in the Member Countries in Southeast Asia	<ul style="list-style-type: none"> - Gender integration and empowerment promoted through trainings and intervention (e.g. fish processing and value-adding) - Training programme developed 	<ul style="list-style-type: none"> - Number of trainings and its program - Number of new projects on gender integration and empowerment - Number of new activities in fish processing and value adding
Activity 3	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 3.1: Capacity development on gender integration in SSF which include fisheries management processing and value chain through regional/national training courses	<ul style="list-style-type: none"> - Two regional and three national training courses on gender integration in SSF in Southeast Asia - Regional training/workshop conducted in Thailand in 2020 and 2014, 2 participants from each member country are expected to participate. Expected number of participants is 25 persons/each course and bring to 50 participants in total of two regional courses. - Two national training courses in inland and coastal fisheries will be 	<ul style="list-style-type: none"> - Training course reports - Regional training/workshop report - About 25 Number of regional and national training courses, bring to 50 training participants for two regional courses and 50 participants for 2 national training courses - Appropriate budget allocated for training participations - Report on the success of women and other

	<p>conducted in 2021, 2022 and 2023 expected number of participants is 25 persons per each course, bringing to 75 persons in total of national training participants.</p> <p>- Technical advice to and follow-ups of the on-going co-management activities in Lao PDR</p>	<p>disadvantaged stakeholders in the fisheries management process and value chain</p> <p>- New national or local programs/activities to ensure the opportunity for women and disadvantaged groups</p> <p>- Technical report on co-management activities in Lao PDR</p>
<p>Activity 3.2: Participation in the relevant international/regional forum and national activities/trainings</p>	<p>- Participation of SEAFDEC EAFM core team members and other staff in international/regional forum and national activities/trainings</p> <p>- International/regional cooperation strengthened</p>	<p>- Meeting reports</p> <p>- Back-to-Office reports</p> <p>- Newsletter articles</p>

4.2 Project Implementation Plan for 2020 – 2024

Activities	2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Output 1																				
Activity 1.1																				
Activity 1.2																				
Activity 1.3																				
Output 2																				
Activity 2.1																				
Activity 2.2																				
Activity 2.3																				
Output 3																				
Activity 3.1																				
Activity 3.2																				

4.3 Proposed Budget for 2020 – 2024

(Unit: USD)

Output	Activities	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Year 5 (2024)
Output 1	Activity 1.1	15,000	12,000	0	0	0
	Activity 1.2	15,000	16,000	43,000	28,000	38,000
	Activity 1.3	8,500	500	500	500	500
Output 2	Activity 2.1	4,000	4,000	4,000	4,000	4,000
	Activity 2.2	1,000	1,000	1,000	1,000	1,000
	Activity 2.3	0	15,000	0	15,000	0
Output 3	Activity 3.1	15,000	15,000	10,000	10,000	15,000
	Activity 3.2	1,500	1,500	1,500	1,500	1,500
Sub-total		60,000	65,000	60,000	60,000	60,000

PART II: PROJECT ACHIEVEMENTS IN 2020

1. Project Achievements in the Present Year

In 2020, the project aimed to continue to strengthen the human resource capability through the implementation of the Ecosystem Approach to Fisheries Management (EAFM) into the real situation as the learning sites in Tonle Sap, Cambodia, and Ranong-Koh Song of Thailand-Myanmar. However, due to the COVID 19 situation in the region, the project activities were adjusted, and still focusing on the three main activities components. The project developed the EAFM plan for the inland fisheries in Phaer Province of Thailand and the draft EAFM plan for the learning site in Ranong Province, as well as a selected site and a set of socio-economic data/information for the leaning site of Tonle Sap Lake, Cambodia.

2. Activities and Budget in the Present Year

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Output 1: Implementation of the EAFM in the pilot learning sites								
Activity 1.1	Regional training or workshop to strengthen participants in SSF Management for Better Livelihood and Fisheries Resources							
	A. The seminar in effective methods to promote fisheries resource management in small scale fisheries	5	12	28	39	-	-	415
	B. SEAFDEC /NOAA Capacity Building on EAFM Management tools	-	2	6	5	1	2	300
Activity 1.2	Effective implementation of the EAFM in the pilot sites.							
	A. The initial tele meeting on appropriate project site of the inland EAFM implementation in Tonle Sap Lake	-	5	5	1			None
	B. Support the livelihood and poverty alleviation which is related to the inland EAFM plan in Phrea province	12	20	2	-	-	-	8,000
	C. The initial meeting on identification of FMU for Ranong province	15	25	2	1	-	-	1,500
	D. EAFM training and key stakeholders meeting on develop FMU map and identify problems of the FMU (Ranong-Thailand)							6,000
	E. Develop the EAFM plan (Ranong-Thailand)							6,000
	F. Support the livelihood and poverty alleviation which is related to the EAFM plan (Ranong-Thailand)							15,000
Activity 1.3	Review of the EAFM implementation results in the pilot sites							
	A. Publication of the booklet on the EAFM lesson learned from the learning sites							3,705

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
	B. Conduction of a one day's consultation workshop for Regional Recommendation on EAFM implementation							9,080
Output 2: Capability development in the implementation of SSF guidelines for improving the livelihood and well-being of small-scale fishers								
Activity 2.1	Study on the status of fisheries socio-economic assistance, particularly in micro finance, credit, and insurance in the Member Countries in line with the implementation of the SSF guidelines in Southeast Asia							
	A. The data collection on socio-economic carry out in the project area of Ranong province with gender integration as well as the issue of micro credit							4,000
Activity 2.2	Strengthening a regional cooperation in fisheries socio-economic development and developing appropriate approach/process of fisheries micro finance, credit and insurance for small-scale fishers							
	A. In house training on micro finance and fisheries insurance							1,000
Output 3: Further promotion of the gender integration and empowerment in sustainable fisheries management in SEA and gender empowerment to promote alternative livelihood								
Activity 3.1	Capacity development on gender integration in SSF which include fisheries management processing and value chain through regional training course							
	A. Data collecting and information gathering on the value chain through regional training							5,000
Activity 3.2	Participation in the relevant international/regional forum and national activities/trainings							None

3. Expected Outcome/Outputs and Achievements in the Present Year

Activities	Expected Outcome/Outputs	Results/Achievements
Outcome	Sustainable fisheries management through the application of EAFM and promotion of gender equity in small scale and artisanal fisheries in MCs	
Output 1:	Implementation of the EAFM in the pilot learning sites	
Activity 1.1	Regional training or workshop to strengthen participants in Small-scale Fisheries Management for Better Livelihood and Fisheries Resources	

Activities	Expected Outcome/Outputs	Results/Achievements
	A. The seminar in effective methods to promote fisheries resource management in small scale fisheries	The lesson learned and experiences on the implementation of CBRM/Co-management and effective approaches to fisheries resources management in SSF were shared with the SEAFDEC Members Countries, SEAFDEC staff and other stakeholders to ensure effective implementation of similar projects in the future
	B. SEAFDEC/NOAA Capacity Building on EAFM Management tools	SEAFDEC/TD's EAFM team strengthened its capacities in selecting fisheries management tools for the EAFM plan
Activity 1.2	Effective implementation of the EAFM in the pilot sites.	
	A. The initial tele meeting on appropriate project site of the inland EAFM implementation in Tonle Sap Lake (two tele meetings)	Boeng Tonle Chhmar, Northeast of the Tonle Sap, was selected as the EAFM learning site
	B. Support the livelihood and poverty alleviation which is related to the inland EAFM plan in Phrea province	Community members learned and gained knowledge on alternative livelihood, fisheries processing, and mobile hatchery
	C. The initial meeting on identification of FMU for Ranong province	Baan Had Sai Krow, Ranong Province, was selected as the EAFM learning site
	D. EAFM training and key stakeholders meeting on develop FMU map and identify problems of the FMU (Ranong-Thailand)	Activities was carried out y will be on 14-18 September 2020 at Ranong Province
	E. Develop the EAFM plan (Ranong-Thailand)	Activities were carried out on 6-8 September 2020 at Ranong Province
	F. Support the livelihood and poverty alleviation which is related to the EAFM plan (Ranong-Thailand)	Activities will be conducted in November 2020 at Ranong Province
Activity 1.3	Review of the EAFM implementation results in the pilot sites	
	A. Conduction of a one day's consultation workshop for Regional Recommendation on EAFM implementation	Activities will be conducted in conjunction with the Regional EAFM training in 2021 at Krabi Province
Output 2:	Capability development in the implementation of SSF guidelines for improving the livelihood and well-being of small-scale fishers	
Activity 2.1	Study on the status of fisheries socio-economic assistance, particularly in the area of micro finance, credit and insurance in the Member Countries in line with the implementation of the SSF guidelines in Southeast Asia	
	A. The data collection on socio-economic carry out in the project area of Ranong province with gender integration as well as the issue of micro credit	Activities were carried out in October 2020
Activity 2.2	Strengthening a regional cooperation in fisheries socio-economic development and developing appropriate approach/process of fisheries micro finance, credit and insurance for small-scale fishers	

Activities	Expected Outcome/Outputs	Results/Achievements
	A. Inhouse training on micro finance and fisheries insurance	Activities will be conducted in November 2020
Output 3:	Further promotion of the gender integration and empowerment in sustainable fisheries management in SEA and gender empowerment to promote alternative livelihood	
Activity 3.1	Capacity development on gender integration in SSF which include fisheries management processing and value chain through regional training course	
	A. Data collecting and information gathering on the value chain through regional training	Activities will be conducted in November 2020
Activity 3.2	Participation in the relevant international/regional forum and national activities/trainings	

4. List of Publications in 2020

Publications	Type of Media	Attached e-file
1. Publication on the lesson learned and experiences on the implementation of CBRM/Co-management and effective approaches to fisheries resources management in small-scale fisheries	Hard copy and electronic file	
2. Publication of EAFM in Southeast Asia Region <ul style="list-style-type: none"> • EAFM in Thahton Township, Mon State, Myanmar • EAFM in Baan Nainang, Krabi Province, Thailand • EAFM in Trapeang Ropov, Kampot and Prey Nup 2, Preah Sihanouk Provinces, Cambodia • EAFM in Visayan Sea, Philippines • Regional summary of EAFM implementation in learning sites 	Hard copy and electronic files	

5. Evaluation on Workshops/Training Courses by Participants of AMSs

Activities	Evaluation
Output 1:	Implementation of the EAFM in the pilot learning sites
Activity 1.1	Conduct of the regional workshop on the topic in relevance to SSF Management for Better Livelihood and Fisheries Resources
	A. The tele-seminar in effective methods to promote fisheries resource management in SSF Evaluation result: Seminar was conducted via online mode
	B. SEAFDEC/NOAA Capacity Building on EAFM Management tools Evaluation result: More than 85 % of the participants fulfilled their expectation in gaining knowledge on the EAFM management tools
Activity 1.2	Implementation of the EAFM in the pilot learning sites A. The initial tele-meeting on appropriate project site of the inland EAFM implementation in Tonle Sap Lake Evaluation result: The meeting was part of the work in progress B. Support the livelihood and poverty alleviation which is related to the inland EAFM plan in Phrea Province Evaluation result: More than 75 % of the participants fulfilled their expectation in gaining knowledge C. The initial meeting on identification of FMU for Ranong province Evaluation result: The meeting was part of the work in progress
Activity 1.3	Review of the EAFM implementation results in the pilot sites

Activities	Evaluation
Output 2:	Capability development in the implementation of SSF guidelines for improving the livelihood and well-being of small-scale fishers
Activity 2.1	Study on the status of fisheries socio-economic assistance, particularly in micro finance, credit, and insurance in the Member Countries in line with the implementation of the SSF guidelines in Southeast Asia
Activity 2.2	Strengthening a regional cooperation in fisheries socio-economic development and developing appropriate approach/process of fisheries micro finance, credit, and insurance for small-scale fishers
Output 3:	Further promotion of the gender integration and empowerment in sustainable fisheries management in SEA and gender empowerment to promote alternative livelihood
Activity 3.1	Capacity development on gender integration in SSF which include fisheries management processing and value chain through regional training course
Activity 3.2	Participation in the relevant international/regional forum and national activities/trainings

6. Major Impacts/Issues

The main problem of the project implementation in 2020 was the Covid-19 pandemic in the region, which affected the implementation of the planned activities. In the Covid-19 situation, the tele-meeting was organized, but limited the discussions and results. The project adjusted the work schedule to implement some activities on transboundary fisheries management of Thailand-Myanmar. At the Thailand site, the project activities were fully implemented while the e-mail communications continued with the Myanmar site. Regarding the gender dimension in case of the inland EAFM in Phrae Province, it was observed that women did not actively participate in the meeting discussions, but there was good cooperation/collaboration to work between men's and women's groups.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2021

1. Project Summary in 2021

In 2021, the project will continue the work activities to achieve the project goal that is the sustainable management of SSF for improving the livelihood and well-being of fishers in Southeast Asia, through the improvement of data collections on socio-economic status of fishers and healthy coastal fisheries resources in Southeast Asia. Three main activities will be carried out, 1) EAFM is in place in the learning sites, and the work activities at each learning site is implemented by the EAFM core team in each country, 2) Capacity development of the SSF team of SEAFDEC/TD and key officers of the Member Countries in the implementation of the SSF guidelines for improving the livelihood and well-being of the small-scale fishers, and 3) Further promotion of the gender integration and empowerment in sustainable fisheries management in the Member Countries in Southeast Asia.

2. Outcome, Outputs and Activities and Proposed Budget

(Unit: USD)

Proposed Activities	Descriptions	Proposed Budget
Outcome	Sustainable fisheries management through the application of EAFM and promotion of gender equity in small scale and artisanal fisheries in MCs	
Output 1:	Implementation of the EAFM in the pilot learning sites	
Activity 1.1	Conduct of the regional workshop on the topic in relevance to SSF Management for Better Livelihood and Fisheries Resources	
	Regional training courses on EAFM Management tools will be conducted by SEAFDEC/TD in Thailand in 2021. About 23 participants (about 2 persons from each Member Countries) who are the EAFM trainers of the Member Countries will be invited for the training.	12,000
	Estimated expenditures: - Travel costs for participants: USD 5,000	

Proposed Activities	Descriptions	Proposed Budget
	<ul style="list-style-type: none"> - Daily subsistence allowances: USD 4,500 - Accommodation at TD's dormitory: USD 1,250 - Meeting package: USD 1,250 Sub-total: USD 12,000 	
Activity 1.2	Effective implementation of the EAFM in the pilot sites.	
	<p>Collaboration with DOF/Thailand and DOF/Myanmar in the implementation of the transboundary EAFM for Ranong-Koh Song (Thailand-Myanmar) will be continued.</p> <p>The necessary steps to develop the transboundary EAFM for Myanmar-Thailand will be carried out (in Thailand for the Ranong-Koh Song Thailand-Myanmar learning site).</p> <p>Estimated expenditures: Learning site in Ranong-Koh Song Thailand-Myanmar</p> <ul style="list-style-type: none"> - Travel costs for staff and participants: USD 2,000 - Daily subsistence allowances: USD 2,500 - Accommodation in Ranong Province: USD 1,250 - Meeting package: USD 2,250 Sub-total: USD 8,000 	8,000
	<p>Collaboration with FiA/Cambodia and FAO in implementing the inland EAFM for Boeng Tonle Chhmar, Northern part of the Tonle Sap Lake, Cambodia, will be continued.</p> <p>Estimated expenditures: Learning site in Tonle Sap lake</p> <ul style="list-style-type: none"> - Travel costs for staff and participants: USD 600 - Daily subsistence allowances: USD 1,000 - Accommodation in Cambodia: USD 650 - Meeting package: USD 5,750 Sub-total: USD 8,000 	8,000
Activity 1.3	Review of the EAFM implementation results in the pilot sites	
	<p>Evaluation on the results of the EAFM implementation in Myanmar, Thailand, Cambodia, and Lao PDR.</p> <p>The review of the implementation results and way forwards of the learning sites in Myanmar, Cambodia and Thailand will be carried out through the questionnaire. The report will be published.</p> <p>Estimated expenditures: - Report preparation and printing costs: USD 500</p> <p>Sub-total: USD 500</p>	500
Output 2:	Capability development in the implementation of SSF guidelines for improving the livelihood and well-being of small-scale fishers	
Activity 2.1	<p>Study on the status of fisheries socio-economic assistance, particularly in micro finance, credit and insurance in the Member Countries in line with the implementation of the SSF guidelines in Southeast Asia.</p> <p>The data collection will be carried out in selected countries (or the same countries with Activity 1.2 / Activity 3.1).</p> <p>Estimated expenditures: - Travel costs for SEAFDEC staff: USD 1,500 (airfare 250\$ x 3prs + car rental 150\$ x 5days)</p> <ul style="list-style-type: none"> - Daily subsistence allowances: USD 1,200 (SEAFDEC:50\$ x 3prs x 6days+DOF: 20\$ x 3prs x 5days) - Accommodation for SEAFDEC staff: USD 750 (50\$ x 3prs x 5nights) 	4,000

Proposed Activities	Descriptions	Proposed Budget
	- Materials and others for data collection and analysis: USD 550 Sub-total: USD 4,000	
Activity 2.2	Strengthening a regional cooperation in fisheries socio-economic development and developing appropriate approach/process of fisheries micro-finance, credit and insurance for small-scale fishers. SEAFDEC's staff will participate in the relevance meeting / workshop in order to gain knowledge and information on fisheries micro-finance and insurance for small-scale fishers. Estimated expenditures: - Travel costs for SEAFDEC staff: USD 400 - Daily subsistence allowances: USD 300 - Accommodation: USD 300 Sub-total: USD 1,000	1,000
Activity 2.3	Regional workshop on action plans for supporting the livelihood and well-being of small-scale fishers in the Member Countries. SEAFDEC will conduct a regional workshop in Thailand which objects to strengthen knowledge on the topics related to the livelihood and well-being of small-scale fishers and also expects an action plan for supporting livelihood and wellbeing of small-scale fishers in Southeast Asia. Estimated expenditures: - Travel costs for participants: USD 6,000 - Daily substance allowances: USD 5,000 - Accommodation at TD's dormitory: USD 1,250 - Meeting package: USD 2,750 Sub-total: USD 15,000	15,000
Output 3	Further promotion of the gender integration and empowerment in sustainable fisheries management in Southeast Asia, and gender empowerment to promote alternative livelihood	
Activity 3.1	Capacity development on gender integration in SSF which includes fisheries management processing and value chain through regional training course	
	Regional training/workshop on gender in fisheries. SEAFDEC will conduct a regional workshop in Thailand which objects to obtain and share information and knowledge on gender integration in SSF, especially to promote the SEAFDEC gender analysis toolkit for participants to understand how to integrate into their fisheries projects. There will be 25 participants invited: 2 from each member country (20 persons) and 5 persons from SEAFDEC. Estimated expenditures: - Travel costs for participants: USD 6,000 - Daily subsistence allowances: USD 5,400 - Accommodation Cambodia: USD 1,800 - Meeting package: USD 1,800 Sub-total: USD 15,000	15,000
Activity 3.2	Participation in the relevant international/regional forum and national activities/trainings to gain knowledge and information on gender integration in SSF, promoting alternative livelihood and value chain. Estimated expenditures: - Travel costs for SEAFDEC staff: USD 700 - Daily subsistence allowances: USD 400 - Accommodation: USD 400 Sub-total: USD 1,500	1,500

3. Implementation Plan of Activities in 2021

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Output 1:												
Activity 1.1												
Activity 1.2												
Activity 1.3												
Output 2:												
Activity 2.1												
Activity 2.2												
Activity 2.3												
Output 3:												
Activity 3.1												
Activity 3.2												

4. Expected Activity Results in 2021

Planned activity	Expected Activity Results
Activity 1 Implementation of the EAFM in the pilot learning sites	
Activity 1.1. Conduct a regional workshop on SSF Management for Better Livelihood and Fisheries Resources A. Conduct a regional training course on EAFM management tools	<ul style="list-style-type: none"> Participants strengthened in the EAFM management tools Report of the training
Activity 1.2. Effective implementation of the EAFM in the pilot sites A. Continue in collaboration with DOF/Thailand and DOF/Myanmar in implementing the transboundary EAFM for Ranong-Koh Song (Thailand-Myanmar) B. Continue in collaboration with FiA/Cambodia and FAO in implementing inland EAFM for Boeng Tonle Chhmar, Northern part of the Tonle Sap Lake	<ul style="list-style-type: none"> Transboundary EAFM plan for Thailand-Myanmar EAFM plan for Boeng Tonle Chhmar, Northern part of the Tonle Sap Lake, Cambodia
Activity 1.3. Review of the EAFM implementation results in the pilot sites	
A. Evaluation on the results of the EAFM implementation in Myanmar, Thailand, Cambodia, and Lao PDR	<ul style="list-style-type: none"> A set of the evaluation results of the EAFM implementation in Myanmar, Thailand, Cambodia and Lao PDR
Activity 2 Capability development in the implementation of SSF guidelines for improving the livelihood and well-being of small-scale fishers	
Activity 2.1. Study on the status of fisheries socio-economic assistance, particularly in micro finance, credit and insurance in the Member Countries in line with the implementation of the SSF guidelines in Southeast Asia	<ul style="list-style-type: none"> Survey report on the status of fisheries socio-economic assistance, particularly in micro finance, credit and insurance in the Member Countries in line with the implementation of the SSF guidelines in Southeast Asia
Activity 2.2. Strengthening a regional cooperation in fisheries socio-economic development and developing appropriate approach/process of fisheries micro finance, credit, and insurance for small-scale fishers	<ul style="list-style-type: none"> Strengthen collaboration with other sectors concerning to the fisheries socio-economic development Strengthen knowledge/understanding of the project staff on the fisheries socio-economic development
Activity 2.3. Regional workshop on action plans for supporting the livelihood and well-being of small-scale fishers in the Member Countries (postponed from act. in 2020 to 2021)	<ul style="list-style-type: none"> Workshop report About 25 participants participated in the workshop Action plan for supporting livelihood and wellbeing of small-scale fishers

Planned activity	Expected Activity Results
Activity 3 Further promotion of the gender integration and empowerment in sustainable fisheries management in SEA and gender empowerment to promote alternative livelihood	
Activity 3.1 Capacity development on gender integration in SSF which includes fisheries management and value chain through a regional training course A. Regional training/workshop on gender in fisheries	<ul style="list-style-type: none"> • Training/Workshop report • About 25 participants participated in the workshop
Activity 3.2 Participation in the relevant international/regional forum and national activities/trainings	<ul style="list-style-type: none"> • Meeting reports • Back to office reports

PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2020
AND
PROPOSED ACTIVITY FOR YEAR 2021

			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 No:	I	Total Duration:	2016-2020 (in the process to get approval from GEF for 2-years no-cost extension)
Lead Department:	TD	Lead Country:	NONE
Donor/Sponsor:	Global Environment Facility	Total Donor Budget: (Co-finance Budget)	USD 3,000,000 (USD 13,717,850)
Project Partner:	United Nations Environment	Budget for 2021:	USD 745,000
Project Director:	Somboon Siriraksophon	Project Participating Countries	Cambodia, Indonesia, Malaysia, Philippines, Thailand, and Viet Nam

PART I: OVERALL PROJECT DESCRIPTION

1. Executive Summary

The fisheries *refugia* approach has triggered a common interest in Southeast Asia as a good Area-based Management practice. The concept integrates several tools to achieve sustainable fisheries and conservation of critical habitat. The bottom-up approach from the local community to the national policy level is a hallmark. The acceptance from stakeholders for the establishment and operation of fisheries *refugia* together with the developed management frameworks for their *refugia* is critical to the project success. At present, three of six countries, namely Cambodia, Thailand, and Malaysia, are the champions in creating the Fisheries *Refugia* in their countries, while other three countries speed up to meet the progress in 2021. The present achievements are not only the approved two Fisheries *Refugia* for blue swimming crab in Kep and short mackerel in Koh Kong Provinces/Cambodia by the government, but the good practices and showcases are on fisher-fork engagements on releasing of blue swimming crab in Thailand, linking the science and management for spiny lobster *Refugia* in Malaysia, engagement of stakeholder in drafting of the Management Plan and National Guideline in Philippines, and endorsed Regional Action Plan for the Management of Short-mackerel by SEAFDEC.

Unfortunately, due to the COVID-19 impacts during a period from March to present, all participating countries and the Project Coordinating Unit faced difficulty in implementing the project, particularly technical activities at the *refugia* sites. Working from home focusing on desk reviews and work are an option during the said period. However, Viet Nam and Indonesia just started the project implementation in late 2019 hence many activities, including baseline surveys at the sites are on hold. It is hard to predict how long the Covid-19 circumstances will continue to impact the project hence putting the project at higher risk of delivering in a timely fashion.

To meet the target objectives, six participating countries, SEAFDEC/PCU and UNEP agreed in principle to extend the project for 2 years from 2021 to 2022.

2. 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 are 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 2022, 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 2022, 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.

3. Background and Justification

The South China Sea is a global center 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 Program for the South China Sea. Key anticipated results included: 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 inter-governmentally 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.

Linkage to the UNDAF (UN Development Assistance Framework)

The project engaged all relevant stakeholders at the community and high levels in both fisheries and environmental sectors, taking into accounts the gender equality and mainstreaming in fisheries, towards the understanding and implementation of fisheries *refugia* concept which aimed for sustainability in fisheries, ocean health and improved livelihood of the people in the coastal areas of 6 ASEAN Member States along the South China Sea and Gulf of Thailand. These are all aligned to the national and regional sustainability development priorities in relation to fisheries and marine environment aspects.

Contribution to the UN SDG14 (Sustainable Development Goals)

Illegal, unreported and unregulated (IUU) fishing activities have recently become a high priority in the international fisheries management agenda including SDG-14. The project however determined that fighting against the IUU fishing alone may not directly impact and enhance fish stock. In other words, application of fisheries *refugia* concept given its emphasis on management measures at local community level could help not only enhance fish stock and support a healthy marine ecosystem but also reduce the pressure from IUU fishing activities at national level. While the project is instrumental in increasing the cooperation within the SCS and GOT sub-region in management of fish stocks including transboundary stock, the IUU Fishing issues are directly linked to the project as one of key threats to fish *refugia*. The project directly contributes to the SDG Target 14: particularly SDG Indicators 14.2, 14.4, 14.a, 14b, and 14c.

4. Project Overall Objectives/Targets, Outcomes, Outputs, Indicators and Activities

4.1 Targets, Outcome, Output and Main Activity of the Project

Objective/Targets	Outcomes	Key Expected Outputs	Main Activity
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	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	<ul style="list-style-type: none"> • 14 fisheries <i>refugia</i> profile reports, including GIS maps & site characterisations, published • 14 published management plans and 24 annual reports • Quarterly reports [224] of network meetings and activities [including list of participants and results of work] • 4 annual partnership reports 	Identification and management of fisheries and critical habitat linkages at priority fisheries <i>refugia</i> in the South China Sea and Gulf of Thailand
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	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	<ul style="list-style-type: none"> • 6 published national reviews and recommendations for reforms of national, provincial and municipal regulations/ordinances for responsible fishing practices at priority <i>refugia</i> • 6 endorsed revised policies • 6 published national guidelines on establishing and operating fisheries <i>refugia</i> • 6 national reports on policy, legal and institutional aspects of <i>refugia</i> establishment and management published • Endorsed policy and executive orders, provincial/local ordinances and by-laws • 6 endorsed National Action Plan for the management of priority fisheries <i>refugia</i> and associated biodiversity • 1 endorsed Regional Action Plan for fisheries <i>refugia</i> • 96 quarterly and 24 annual reports on fish stocks and habitats published online • 6 databases online and populated with datasets • 6 national and 1 regional Geographical Information System online and populated with site-based information 	Improving the management of critical habitats for fish stocks of transboundary significance via national and regional actions to strengthen the enabling environment and knowledge-based for fisheries <i>refugia</i> management in the South China Sea and Gulf of Thailand

Objective/Targets	Outcomes	Key Expected Outputs	Main Activity
		<ul style="list-style-type: none"> • Characterisations for 14 <i>refugia</i> sites accessible online • 1 modelling system online • 4 published reports of the results of demonstrations 	
<p>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>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>	<ul style="list-style-type: none"> • 146 online national and 1 regional catalogue of best practice approaches and measures • 24 communications on best practices published and syndicated • 24 awareness materials published online • Annual reports of outreach programs at 14 priority locations, including tracking of extent of community acceptance [56 reports] • 6 online national web portals on fisheries <i>refugia</i> • 6 published GEF IW experience notes (one per country and one regional) on application of fisheries <i>refugia</i> in the South China Sea and Gulf of Thailand • Information and education materials accessible at SEAFDEC and online • 1 endorsed regional report published online 	<p>Information Management and Dissemination in support of national and regional-level implementation of the fisheries <i>refugia</i> concept in the South China Sea and Gulf of Thailand</p>
<p>4) Effective multi-lateral and intergovernmental communication and joint decision-making, including the use of a consensual knowledge-based in planning ecologically and cost-effective management actions</p>	<p>Cost-effective and efficient coordination of national and regional level cooperation for integrated fisheries and environmental management</p>	<ul style="list-style-type: none"> • 6 NFRC Terms of Reference and 48 biannual meeting reports (joint management decisions and participant lists) • 6 NSTC Terms of Reference and 96 quarterly meeting reports (scientific and technical advice and participants lists) • 14 Management Board Terms of Reference and 224 quarterly meeting reports (joint management decisions and participant lists) • RSTC Terms of Reference and 4 annual meeting reports (documenting scientific and technical advice and participant lists) • PSC Terms of Reference and 4 annual meeting reports (documenting joint decisions and participant lists) • Terms of Reference and contracts for project coordination unit staff 	<p>National and regional cooperation and coordination for integrated fish stock and critical habitat management in the South China Sea and Gulf of Thailand</p>

4.2 Overall Scope/Description of Project

Activity/Component	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-based 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> .

4.3 Activity and Proposed Budget for 2017-2022 (Revision as of 30 September 2020)

(Unit: USD)

Project Components/Activities		Y1 (Inception-Phase)	Y2	Y3	Y4	Y5	Y6	Y7	ToTAL
		2016	2017	2018	2019	2020	2021	2022	
Comp. 1	Identification and management of fisheries and critical habitat linkages at priority fisheries refugia in SCS & GOT	-	80,000	84,800	135,000	201,000	220,000	54,000	774,800
Comp. 2	Improving the management of critical habitats for fish stocks of transboundary significance via national and regional actions in SCS & GOT	-	29,120	900	66,000	100,000	180,000	60,000	436,020
Comp. 3	Information Management and Dissemination in support of national and regional-level implementation of the fisheries refugia concept	-	20,000	7,800	40,000	32,000	57,000	47,000	203,800
Comp. 4	National and regional cooperation and coordination for integrated fish stock and critical habitat management in SCS	95,650	160,000	216,000	240,000	225,000	288,000	360,730	1,585,380
TOTAL PROJECT COST (\$)		95,650	289,120	309,500	481,000	558,000	745,000	521,730	3,000,000

PART II: ACHIEVEMENT OF PROJECT IMPLEMENTATION (As of 30 September 2020)

1. Achievements of the Project Implementation

Activity/Component 1

- Letters of Agreement signed with all participating countries;
- Initiation of fisheries and coastal habitat information and data collection programs for 15 priority fisheries *refugia* sites;
- Intensive series of consultation on the boundaries of fisheries *refugia* which have been supported by facilitated processes to identify key threats to fisheries *refugia* sites and to initiate discussion about possible management measures for evaluation;
- Governance reviews, stakeholder analysis, socio-economic information and data collation, and reviews of existing management arrangements are in progress by 12/15 Sites;
- National teams trained in project management and governance arrangements;
- 12 of the 15 identified Fisheries *Refugia* sites in Cambodia, Indonesia, Malaysia, Philippines, and Thailand were confirmed.
 - Among these, the Government of Cambodia adopted two *refugia*: in KEP (417ha) for Blue swimming crab and KOH KONG Provinces (1,283ha) for short mackerel, respectively.
 - Thailand and Malaysia have prepared for the proposed demarcation *refugia* areas based on scientific findings for further finalization with relevant stakeholders at the site level. The two proposed demarcation *refugia* areas in Malaysia are approximately 140,023ha, whereas the two proposed *refugia* areas of Thailand are anticipated to cover 140,000 ha.

Activity/Component 2

- Working document for regional level review on key threats from fishing and the environment to fish stock and critical habitat linkages at the priority sites in the participating countries
- existing regulations and by-laws in the areas of the 12/15 sites at which the project is presently working have been compiled and reviewed, with feedback provided to national teams, to aid in the formulation of recommendations on policy and legal reforms to support promotion of responsible fishing at times and at locations critical to fish stock and critical habitat linkages
- Workshops with local stakeholders and officials on policy and legal aspects of *refugia* (terminology, procedures, recommended reforms) in the participating countries have allowed discussions to be viewed through a more realistic lens which reflects local stakeholder needs, expectations, and concerns about socio-economic impacts of management
- Questionnaire survey templates have been prepared to: (a) compile and update information and data on the distribution of habitats; known spawning areas; locations of *refugia*; MPAs; fisheries management areas; and critical habitats for endangered species; and (b) produce detailed site characterizations for the 15 priority fisheries *refugia* sites for incorporation into national and regional datasets. Preparation of detailed

Terms of Reference for the development and application of a modelling system linking oceanographic, biochemical, and fish early life history information to improve regional understanding of fish early life history and links to critical habitats have been prepared and discussed with regional universities, and Internationally recognized institutions with expertise in this field.

- **National Review and Recommendations for Reform of Regulation/Ordinance**
 - In Cambodia, new law on fisheries included and classified marine fisheries *refugia* as a fisheries management area. This law will be promulgated and published by 2021 for wider use at national and provincial level;
 - In Philippines, Reviewing the national, provincial and municipal regulations/ordinances for responsible fishing practices at priority *refugia* via the EAMF workshop in three *refugia* sites;
- **Endorsed National Policy:**
 - The Minister of Ministry of Agriculture, Forestry, and Fisheries (MAFF) endorsed the Proclamation of The Establishment of Management Area of Mackerel Fisheries *Refugia* in Koh Kong, and the Blue Swimming Crab Fisheries *Refugia* in Kep, Cambodia in 2019;
 - In addition, Cambodia extends their national program on establishment of Fisheries *Refugia* for blood cockles in Sihanoukville Province. The government endorsed the Proclamation of this Fisheries *Refugia* in 2020.
- **National Guideline on Establishment and Management of Fisheries *Refugia*:**
 - Cambodia and Philippines are drafting the national Guidelines through Stakeholder Consultation Meetings;
- **National Management Plan**
 - Cambodia has set up a working group to draft their national work plan and national framework in alignment with the Regional one to improve the fishery policy and law, as well as to support long term management of Indo-pacific mackerel in their waters. The same process will be followed in the other countries once they established the *refugia* through engagement of multi-stakeholders.
- **National Action Plan for Management of Fisheries *Refugia*:**
 - Cambodia endorsed the Marine Fisheries Management Area (MFMA) Management Plan for the Blue swimming crab Fisheries *Refugia* in Kep Province. And in the process of drafting the MFMA Management Plan for Short Mackerel in Koh Kong province.
- **Regional Policy and Guidelines:**
 - Concerning the improved management policy of critical habitats for fish stocks of transboundary significance, The Regional Action Plan for Management of Short Mackerel (Indo-pacific Mackerel) in the Gulf of Thailand Sub-Region where the results is extent to the South China Sea sub-region was drafted in September 2019, and adopted by the SEAFDEC Council in May 2020. It is scheduled to address this RAP-Short Mackerel at the forthcoming FCG/ASSP in November 2020 and ASWGFi in the 2nd Quarter of 2021 for further support and endorsement under the ASEAN Policy Framework.
 - The Regional Guidelines for management of the Fisheries *Refugia* was drafted in September 2019. The contents consist of key steps on establishment of Fisheries *Refugia*, the standardized methods for collection and analysis, including indicators.
 - Ocean modelling system is based on the existing system developed under the IOC/WESTPAC via the following URL: <http://221.215.61.118:2018/#/>

Activity/Component 3

- The fisheries-*refugia.org* regional web site has been developed and populated with newly developed short films, journal articles written by regional project staff during the reporting period and is supported by various social media platforms including YouTube and Facebook. A six-part short film social media campaign has been prepared and will be implemented.
- This year, almost 140 publications from national and regional programs are uploaded into the SEAFDEC repository system which linked to the Fisheries *Refugia* Web site
- **Information Management and Dissemination:** At the national level, the establishment of the learning center for the promotion of Fisheries *Refugia* is one of the key outputs.
 - Recently, Malaysia set up two learning centers at the *refugia* sites in cooperation with private sectors and the state government. Malaysia planned to set up more centers in other areas;
 - The Philippines planned to set up two centers in early 2020 at Bolinao and Masinloc sites with the support from the Municipal Government; ;
- **Awareness Building Program and Materials:**
 - In Malaysia: Awareness materials were prepared and set up at the learning centers in MIRI and Tanjung Leman. VDO documentations were developed. In addition, the resources awareness program was conducted in 2018 at Kuala Baram in MIRI.

• **Outreach Program:**

- The DOF/Malaysia in collaboration with Radio Televisyen Malaysia (RTM) has produced a 30 minutes documentary about the lobster *refugia* program at East Johor-South Pahang and the documentary was aired in the Simfoni Alam program on the 25th of December 2018. For tiger prawns, the documentary entitled Khazanah Udang Harimau Negara was aired in the Simfoni Alam slot on 4th of December 2018. In addition, two learning centers to promote fisheries *refugia* are established in two *refugia* sites.
- Establishment of the learning centers at *Refugia* Sites are in progress: Distributed IEC materials such as leaflets and RA 10654 booklets for the school. (No Reports)

Activity/Component 4

- The 3rd Meeting of Regional Scientific and Technical Committee (RSTC3) was organized in February 2020 to create the regional cooperation in the integration of scientific knowledge and research outputs with management, while the RSTC3 discussed on the management of transboundary species and other management tools to support the establishment of fisheries *refugia* by countries. Additionally, the progress works at the national and regional levels have been updated.
- The 3rd Project Steering Committee Ad-hoc Meeting (PSC3 Ad-hoc) was organized on 16 June 2020 as a virtual meeting hosted by the SEAFDEC/PCU. The results from the PSC3 are the adopted proposed two-years project extension for 2021 and 2022. The main reasons for project extension requirements are that the project achievements are less than 50% while the budget spent on implementation is less than 50%. Besides, Indonesia and Viet Nam signed the LOA/LOI in Mid of 2019 and the COVID-19 impacts from March to present in 2020. It is also unpredictable how the COVID-19 continues to affect the implementation until when. Participating countries agreed to reduce 10% of the unspent as of 30 December 2019 from the budget allocation to support the project extension.
- The 4th Project Steering Committee Ad-hoc Meeting (PSC4 Ad-hoc) was organized on 6 October 2020 as a virtual meeting hosted by the SEAFDEC/PCU. The meeting finalized and endorsed the proposed budget revision and the cost-Workplan for a two-year extension period of 2021-2022 from participating countries and the SEAFDEC/PCU. The budget revision and cost Workplan for a two-year extension will further report to the UNEP for consideration and approval.
- The 4th Regional Scientific and Technical Committee Meeting (RSTC4-virtual meeting) is scheduled for December 2020. The meeting aims to build regional cooperation in integrating scientific knowledge and research outputs with management and finalizing the Regional Guidelines for the establishment and operation of a regional system of fisheries *refugia*. Introduce a management tool for data collection and other acceptable practices for responsible fisheries. Additionally, the progress works at the national and regional will be updated.

2. Information of Present Year Activity including Involved Stakeholders (JAN.-SEP. 2020)

List of Actual Activity By 4 Components	Type of activity*	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity COM-1	R, T, I	~650	3		105,314
Activity COM-2	P, R				51,081
Activity COM-3	P, I				19,921
Activity COM-4	P, I, R	60	17	5	159,210
Total Expenditures in 2020 as of 30 September					335,526
Remaining Budget till 31 December 2020					~ 222,474

3. Outcome/Outputs of the past Activity (JAN.-SEP. 2020):

Planned activity	Expected outcome/output	Achievements/Outcome and Outputs
COMPONENT 1	<ul style="list-style-type: none"> • Fisheries <i>refugia</i> profiles • Management Plan drafted • Quarterly Report • Annual Report from 6 countries 	<ul style="list-style-type: none"> • 12 of 15 sites have identified their area for <i>refugia</i>. In addition, 2 <i>refugia</i> in Cambodia are endorsed by the Government. In Viet Nam 3 sites are currently undertaking their stakeholder consultations; • Fisheries <i>Refugia</i> profiles are drafting, and one <i>refugia</i> for short mackerel in Trat, Thailand was published; • Philippines provided capacity building to the stakeholders

Planned activity	Expected outcome/output	Achievements/Outcome and Outputs
		<p>to engage in the drafting of a Management Plan for 3 Fisheries <i>Refugia</i>.</p> <ul style="list-style-type: none"> • Annual port for 2020 will be compiled in Q4; • At present, 417 ha of Blue swimming crab Fisheries <i>Refugia</i> in Kep and 1,283 ha of Indo-pacific mackerel Fisheries <i>Refugia</i> in Koh Kong were officially promulgated by the Minister of Ministry of Agricultural, Forestry and Fisheries (MAFF) in September 2019. For the other four <i>refugia</i> sites: the proposed demarcation <i>refugia</i> areas of 140,023 ha in Malaysia, and 140,000 ha in Thailand, are in the final processes through stakeholder consultations in 2020. • Drafting a National Action Plan, in which the Monitoring Control and Surveillance (MCS) framework will be included to support fisheries <i>refugia</i> management. • Local capacity and coordination is being built, and Fisheries <i>Refugia</i> Working Groups are established to support the management of adopted <i>Refugia</i> in the long term.
COMPONENT 2	<ul style="list-style-type: none"> • National Reviews & Recommendations for Policy reforms; • National Guidelines • Endorsed FR Policy: • Endorsed National Action plan; • Endorsed Regional Action Plan • Ocean Modeling 	<ul style="list-style-type: none"> • In Cambodia, new law on fisheries included and classified marine fisheries <i>refugia</i> as a fisheries management area. This law will be promulgated and published by 2021 for wider use at national and provincial level; • In Philippines, reviewing the national, provincial and municipal regulations/ordinances for responsible fishing practices at priority <i>refugia</i> via the EAMF workshop in three <i>refugia</i> sites: • Cambodia and Philippines are drafting the national guidelines through the stakeholder consultations • In Cambodia, two endorsed policy by the Minister of MMAF: 1) Proclamation of the Establishment of Management Area of Short Mackerel Fisheries <i>Refugia</i>; 2) Proclamation of the Establishment of Management Area of Blue Swimming Crab Fisheries <i>Refugia</i>, 3) proclamation on establishment of blood cockle fisheries <i>refugia</i>, as an extension sites conducted under Country program; • Cambodia is drafting a National Action Plan, in which the Monitoring Control and Surveillance (MCS) framework will be included to support fisheries <i>refugia</i> management. While in the Philippines, an Executive Order organizing the <i>Refugia</i> Site Management Committee is endorsed in three <i>refugia</i> sites. • Cambodia endorsed one Marine Fisheries Management Area (MFMA) Management Plan of Blue Swimming Crab Fisheries <i>Refugia</i> In KEP Province, and drafted a management plan for Short mackerel in Koh Kong Province for further approval. • The Regional Action Plan for Management of Short Mackerel was adopted by the SEAFDEC Member Country in May 2020. • Ocean modeling system developed by partners IOC/WESTPAC and DMCR/Thailand is online via http://221.215.61.118:2018/#/
COMPONENT 3	<ul style="list-style-type: none"> • Regional Website • Regional catalogue of best practice 	<ul style="list-style-type: none"> • Regional fisheries <i>refugia</i> website is online via: https://fisheries-refugia.org • The PCU is drafting the <i>Regional catalogue of best practice approaches and measures</i>, It is expected to be

Planned activity	Expected outcome/output	Achievements/Outcome and Outputs
	approaches and measures • Outreach Programs • Published GEF-IW newsletters • Awareness materials published <i>online</i> , and online national web portals on fisheries <i>refugia</i>	<p><i>completed by 2nd Quarter of 2021.</i></p> <ul style="list-style-type: none"> The DOF/Malaysia in collaboration with Radio Televisyen Malaysia (RTM) has produced a 30 minutes documentary about the lobster <i>refugia</i> program at East Johor-South Pahang and the documentary was aired in the Simfoni Alam program on the 25th of December 2018. For tiger prawns, the documentary entitled Khazanah Udang Harimau Negara was aired in the Simfoni Alam slot on 4th of December 2018. In addition, two learning centers to promote fisheries <i>refugia</i> are established in two <i>refugia</i> sites. In the Philippines, establishment of the learning center at 3 <i>Refugia</i> Sites is in progress. 2 Articles related to the project: <ol style="list-style-type: none"> 1) Changing Attitudes to Spark Action Towards Restoration of Blue Swimming Crab in Thailand (https://news.iwlearn.net/changing-attitudes-to-spark-restoration-of-blue-swimming-crabs-in-thailand), and 2) Management of Transboundary Stock, Short Mackerel In The South China Sea And Gulf of Thailand LMEs. Two other articles on Spiny Lobster in Malaysia and Building capacity in Philippines will be published in the 4th Quarter. Information and education materials accessible at Fisheries <i>Refugia</i> websites;
COMPONENT 4	National and regional cooperation and coordination for integrated fish stock and critical habitat management	<ul style="list-style-type: none"> RSTC3 in Feb 2020 RSTC4 (virtual meeting) is scheduled in Dec. 2020 PSC3 and PSC4 ad-hoc virtual Meeting in June and October 2020; More Meetings at country level (will be updated)

4. List of Completed Publications and Others

	List of completed publications as of September 2019-September 2020	Type of media	Attached e-file
	CAMBODIA REPORT		
50	FIA/Cambodia, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Baseline Survey of Short Mackerel and Fish Larvae Collection. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM50,16 p.	E-doc.	http://hdl.handle.net/20.500.12067/1340
51	FIA/Cambodia, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Data Analysis of Fish Larvae Collection During June-August in Koh Kong Province. Southeast Asian Fisheries Development Center, Training Department,	E-doc.	http://hdl.handle.net/20.500.12067/1341

	List of completed publications as of September 2019-September 2020	Type of media	Attached e-file
	Samut Prakan, Thailand; FR/REP/CAM51, 4 p.		
52	FIA/Cambodia, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Baseline Survey of Short Mackerel and Fish Larvae Collection in Koh Kong. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM52, 15 p.	E-doc.	http://hdl.handle.net/20.500.12067/1342
53	FIA/Cambodia, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Meeting with Technical Working Group on Arrangement of Provincial Management Committee Meeting to Approve 5 Years Action Plan for Marine Fisheries Management Area and Blue Swimming Crab Fisheries <i>Refugia</i> . Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM53, 7 p.	E-doc.	http://hdl.handle.net/20.500.12067/1343
54	FIA/Cambodia, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Data Analysis of Fish Larvae of Scombridae Family by Month from March to September 2019. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM54, 4 p.	E-doc.	http://hdl.handle.net/20.500.12067/1344
55	FIA/Cambodia, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Consultation Meeting on the Establishment of Technical Working Group for the Management of Marine Fisheries Resource Protection and Conservation Area in Koh Kong. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM55, 7 p.	E-doc.	http://hdl.handle.net/20.500.12067/1345
56	FIA/Cambodia, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Baseline Survey of Short Mackerel and Fish Larvae Collection in Koh Kong. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM56, 11p.	E-doc.	http://hdl.handle.net/20.500.12067/1346
57	FIA/Cambodia, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Baseline Survey of Short Mackerel and Fish Larvae Collection in Koh Kong. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM57, 12 p.	E-doc.	http://hdl.handle.net/20.500.12067/1347
58	FIA/Cambodia, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Baseline Survey of Short Mackerel and Fish Larvae Collection in Koh Kong. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM58, 11 p.	E-doc.	http://hdl.handle.net/20.500.12067/1348

	List of completed publications as of September 2019-September 2020	Type of media	Attached e-file
60	FIA/Cambodia. 2020. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Consultation Meeting on Reviewing a Final Draft of 5 Year Management Plan for Marine Fisheries Management Area in Kep and Preparing the Schedule for the Meeting of Provincial Management Committee in Kep Province. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM60, 7 p	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1550
61	FIA/Cambodia. 2020. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Baseline Survey of Short Mackerel and Sampling Fish Larvae Collection in Koh Kong. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM61, 11 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1551
62	FIA/Cambodia. 2020. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Stakeholder Consultation Meeting at Provincial Level on Establishment of Marine Fisheries Management Area and Fisheries <i>Refugia</i> Site in Kampot Province. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/ CAM62, 9 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1552
63	FIA/Cambodia. 2020. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Dissemination of MAFF's Proclamation on Creation of Mackerel Fisheries <i>Refugia</i> Peam Krasob, Koh Kong. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM63, 9 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1553
64	FIA/Cambodia. 2020. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Management Committee Meeting on Marine Fisheries Management Area and Blue Swimming Crab Fisheries <i>Refugia</i> in Kep. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM64, 8 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1554
65	FIA/Cambodia. 2020. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of The Baseline Survey of Short Mackerel and Sampling Fish Larvae Collection in Koh Kong. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM65, 11 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1555

	List of completed publications as of September 2019-September 2020	Type of media	Attached e-file
66	FIA/Cambodia. 2020. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Data Analysis of Fish Larvae Collection in Koh Kong from January to March 2020. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM66, 5 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1556
67	FIA/Cambodia. 2020. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of The Study Case of Short Mackerel (<i>Rastrelliger Brachysoma</i>)'s Gonad and Sperm Development in Koh Kong Province, Cambodia. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM67, 11 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1557
68	FIA/Cambodia. 2020. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Technical Working Group for Protection and Conservation Areas of Marine Fisheries in Koh Kong Province. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM68, 11 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1558
69	FIA/Cambodia. 2020. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of The Baseline Survey of Short Mackerel and Sampling Fish Larvae Collection in Koh Kong. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM69, 13 p	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1559
70	FIA/Cambodia. 2020. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Field Survey of Fisheries <i>Refugia</i> Profile and Land Site in Kampot Province. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM70, 9 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1560
71	FIA/Cambodia. 2020. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of World Ocean Day in Koh Sdach, Koh Kong Province. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM71, 7 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1561
INDONESIA REPORT			
1	AMFRHR/Indonesia. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the First National Coordination Meeting, Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/ID01, 5 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1475
2	AMFRHR/Indonesia. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Elucidation Fisheries <i>Refugia</i> Concept as Basis for	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1476

	List of completed publications as of September 2019-September 2020	Type of media	Attached e-file
	Fisheries <i>Refugia</i> Project Planning, Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/ID02, 4 p.		
3	AMFRHR/Indonesia. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Preparation for Implementation of Fisheries <i>Refugia</i> Project, Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/ID03, 5 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1477
4	AMFRHR/Indonesia. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Workplan Review for Fisheries <i>Refugia</i> Project, Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/ID04, 4 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1478
5	AMFRHR/Indonesia. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Consultative Meeting of <i>Refugia</i> Project Implementation, Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/ID05, 3 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1479
6	AMFRHR/Indonesia. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Capacity Building Through Attending Project Steering Committee Meeting of SEAFDEC/UNEP/GEF, Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/ID06, 6 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1480
7	AMFRHR/Indonesia. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the First Meeting on Preparation for Fisheries <i>Refugia</i> Profile of West Kalimantan, Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/ID07, 5 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1481
8	AMFRHR/Indonesia. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Second Meeting on Preparation for Fisheries <i>Refugia</i> Profile of West Kalimantan, Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/ID08, 5 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1482
9	AMFRHR/Indonesia. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Meeting on Preparation for Fisheries <i>Refugia</i> Profile, Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/ID09, 5 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1483
10	AMFRHR/Indonesia. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Second Meeting on Preparation for Fisheries	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1484

	List of completed publications as of September 2019-September 2020	Type of media	Attached e-file
	<i>Refugia</i> Profile of Bangka Belitung, Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/ID10, 5 p.		
11	AMFRHR/Indonesia. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Meeting on Preparation for Fisheries <i>Refugia</i> Profile, Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/ID11, 5 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1485
12	AMFRHR/Indonesia. 2020. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of National Fisheries <i>Refugia</i> Committee (NFRC) Meeting. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/ID12, 4 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1486
13	AMFRHR/Indonesia. 2020. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Meeting Directorate General of Marine Spatial Management, Ministry of Marine Affairs and Fisheries. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/ID13, 4 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1487
14	AMFRHR/Indonesia. 2020. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Outreaching Scientific Community and Stakeholder Through Virtual Seminar 'Fisheries <i>Refugia</i> for Sustainable Fisheries'. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/ID14, 9 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1488
MALAYSIA REPORT			
16	DOF/Malaysia. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Lobster Resources and Fisheries in Sedili, Johor, Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/MY16, 10 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1504
17	DOF/Malaysia. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Establishment of Fisheries <i>Refugia</i> Information Centers in Malaysia. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/MY17, 8 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1505
18	DOF/Malaysia. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of The Fourth National Scientific and Technical Committee Meeting. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/MY18, 4 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1506


	List of completed publications as of September 2019-September 2020	Type of media	Attached e-file
19	DOF/Malaysia. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of National Fisheries <i>Refugia</i> Committee Meeting. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/MY19, 5 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1507
20	DOF/Malaysia. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, SEAFDEC/UN ENVIRONMENT/GEF Fisheries <i>Refugia</i> Project Progress Report Q4 2018 to Q2 2019. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/MY20, 26 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1508
21	DOF/Malaysia. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of The Fifth National Scientific and Technical Committee Meeting. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/MY21, 4 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1509
22	DOF/Malaysia. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Study of Mud Spiny Lobster (<i>Panulirus polyphagus</i>) Distribution and Density in East Johor-South Pahang Water: Observer-on-Board Survey 2019. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/MY22, 9 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1510
23	DOF/Malaysia. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of The Study of Juvenile Tiger Prawn (<i>Penaeus monodon</i>) Distribution, Density and Biomass in Pasu, Lutong and Sibuti rivers in Miri, Sarawak. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/MY23, 8 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1511
PHILIPPINES REPORT			
31	NFRDI/Philippines, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Preliminary Results of Fisheries Data Collection in Bolinao, Coron, Masinloc during January-June 2019. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/PH31, 13 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1541
32	NFRDI/Philippines, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Fisheries <i>Refugia</i> Stakeholders Consultation Workshop in Coron, Palawan. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/PH32, 7 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1542

	List of completed publications as of September 2019-September 2020	Type of media	Attached e-file
33	NFRDI/Philippines, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of <i>Refugia</i> Site Management Committee (RSMC) Meeting in Coron, Palawan. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/PH33, 5 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1543
34	NFRDI/Philippines, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of <i>Refugia</i> Site Management Committee (RSMC) Meeting in Masinloc, Zambales. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/PH34, 5 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1544
35	NFRDI/Philippines, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Fisheries <i>Refugia</i> Stakeholders Consultation Workshop in Masinloc, Zambales. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/PH35, 8 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1545
36	NFRDI/Philippines, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Fisheries <i>Refugia</i> Stakeholders Consultation Workshop in Bolinao, Pangasinan. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/PH36, 8 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1546
37	NFRDI/Philippines, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Ichthyoplankton Survey – Bolinao Site. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/PH37, 3 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1547
38	NFRDI/Philippines, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Ichthyoplankton Survey – Coron Site. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/PH38, 4 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1548
39	NFRDI/Philippines, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Ichthyoplankton Survey – Masinloc Site. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/PH39, 3 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1549
THAILAND REPORT			
12	DOF/Thailand. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Third Meeting of Thailand National Fisheries <i>Refugia</i> Committee. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/TH12, 29 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1411

	List of completed publications as of September 2019-September 2020	Type of media	Attached e-file
13	DOF/Thailand, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Consultation Meeting for Arrangement of Site-Based Fisheries <i>Refugia</i> Management Board in Surat Thani. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/TH13, 6 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1413
14	DOF/Thailand. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Consultation Meeting for Arrangement of Site-Based Fisheries <i>Refugia</i> Management Board in Trat. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/TH14, 5 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1414
15	DOF/Thailand. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Consultation Meeting for Arrangement of Baseline Data Collection. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; Fisheries <i>Refugia</i> Rep-TH15, 5 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1415
16	DOF/Thailand. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Consultation Meeting on the Preparation for Financial Audit. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/TH16, 20 p	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1429
17	DOF/Thailand. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Fourth Meeting of Thailand National Fisheries <i>Refugia</i> Committee. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/TH17, 26 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1430
18	DOF/Thailand. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the First Meeting of Site-Based Fisheries <i>Refugia</i> Management Board in Trat. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/TH18, 66 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1431
19	DOF/Thailand, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the First Meeting of Site-Based Fisheries <i>Refugia</i> Management Board in Surat Thani. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/TH19, 54 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1432

	List of completed publications as of September 2019-September 2020	Type of media	Attached e-file
20	DOF/Thailand, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Fifth Meeting of Thailand National Fisheries <i>Refugia</i> Committee. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/TH20, 10 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1433
21	DOF/Thailand. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Sixth Meeting of Thailand National Fisheries <i>Refugia</i> Committee. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/TH21, 32 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1434
22	DOF/Thailand. 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Second Meeting of Thailand's National Scientific and Technical Committee. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/TH22, 29 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1435
23	DOF/Thailand, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Second Meeting of Site-Based Fisheries <i>Refugia</i> Management Board in Trat. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/TH23, 37 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1436
24	DOF/Thailand, 2020. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Training-Workshop on Socio-Economic Study and Value Chain Analysis of Fisheries. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/TH24, 35 p.	E-doc.	http://repository.seafdec.or.th/handle/20.500.12067/1437
SEAFDEC PCU			
1	SHORT FILM entitled "The South China Sea Fisheries <i>Refugia</i> Initiative"	Film	https://www.youtube.com/embed/Ifq_OkIaAt8
2	Short film entitled "SDG-14 and the South China Sea"	Film	https://www.youtube.com/embed/0voMPFUIIdkg
3	Terms of Reference for National Fisheries <i>Refugia</i> Committee	E-doc.	https://fisheries-refugia.org/refugia-about/refugia-term-of-references/82-refugia-project/168-refugia-tor-nfc
4	Terms of Reference for National Scientific and Technical Committee	E-doc.	https://fisheries-refugia.org/refugia-about/refugia-term-of-references/82-refugia-project/169-refugia-tor-nstc
5	Terms of Reference for National Site Management-Boards	E-doc.	https://fisheries-refugia.org/refugia-about/refugia-term-of-references/82-refugia-project/170-refugia-tor-smb
6	Terms of Reference for Regional Project Steering Committee	E-doc.	https://fisheries-refugia.org/refugia-about/refugia-term-of-references
7	Terms of Reference for Regional Scientific and Technical Committee	E-doc.	https://fisheries-refugia.org/refugia-about/refugia-term-of-references/82-refugia-project/166-refugia-tor-rstc

	List of completed publications as of September 2019-September 2020	Type of media	Attached e-file
8	Term of Reference for Project Coordinating Unit	E-doc.	https://fisheries-refugia.org/refugia-about/refugia-term-of-references/82-refugia-project/171-refugia-tor-pcu
9	Term of Reference for National Lead Agency	E-doc.	https://fisheries-refugia.org/refugia-about/refugia-term-of-references/82-refugia-project/167-refugia-tor-nla
10	SEAFDEC. 2018. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the First Meeting of the Regional Scientific and Technical Committee in Trat Province, Thailand on 11 th – 13 th September 2018. Southeast Asian Fisheries Development Center, Training Department, Samutprakarn, Thailand; 204 p.	E-doc.	http://hdl.handle.net/20.500.12067/872
11	SEAFDEC, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Second Meeting of the Regional Scientific and Technical Committee (RSTC2) in Kampot Province, Cambodia on 21 st – 23 th May 2019. Southeast Asian Fisheries Development Center, Training Department, Samutprakarn, Thailand; 173p.	E-doc.	http://hdl.handle.net/20.500.12067/1076
12	SEAFDEC, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the First Meeting of the Project Steering Committee (PSC1) in Bangkok, Thailand, 4 th – 5 th December 2018. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; 154 p.	E-doc.	http://hdl.handle.net/20.500.12067/874
13	SEAFDEC, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Second Meeting of the Project Steering Committee (PSC2) in Miri, Sarawak, Malaysia on 5 th - 6 th November 2019. Southeast Asian Fisheries Development Center, Training Department, Samutprakarn, Thailand; 114 p.	E-doc.	http://hdl.handle.net/20.500.12067/1474
14	SEAFDEC, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Regional Meeting on Indicators for Fisheries <i>Refugia</i> Management and Discussion on Project Follow-up in Pattaya, Chonburi Province, Thailand on 9 th –11 th September 2019. Southeast Asian Fisheries Development Center, Training Department, Samutprakarn, Thailand. 38p.	E-doc.	http://hdl.handle.net/20.500.12067/1077
15	SEAFDEC, 2019. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Regional Consultative Meeting on Regional Action Plan for Management of Transboundary Species, <i>Rastrelliger brachysoma</i> in the Gulf of Thailand Sub-region in Jomtien, Chonburi Province, Thailand on 12 th –13 th September 2019. Southeast Asian Fisheries Development Center, Training Department, Samutprakarn, Thailand. 74p.	E-doc.	http://hdl.handle.net/20.500.12067/1473

	List of completed publications as of September 2019-September 2020	Type of media	Attached e-file
16	SEAFDEC, 2020. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the 3 rd Meeting of the Regional and Technical Committee in Hai Phong City, Viet Nam on 5 th – 7 th February 2020. Southeast Asian Fisheries Development Center, Training Department, Samutprakarn, Thailand. 372 p.	E-doc.	http://hdl.handle.net/20.500.12067/1562
17	SEAFDEC. 2020. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and the Gulf of Thailand, Report of the 1 st Ad-hoc Meeting of the Project Steering Committee on 16 June 2020. Southeast Asian Fisheries Development Center, Training Department, Samutprakarn, Thailand; 23 p.	E-doc.	http://hdl.handle.net/20.500.12067/1563
18	Ocean Simulation App.	App.	 Scan QR Code to download GOOD mobile app Compatible with Android

5. Evaluation from Participants of Member Countries for WS and Training Course (if available)

<NOT APPROPRIATED>

6. Major Impacts/Issues

- Delay of project initiatives by Countries
- COVID-19 impacts

PART III: PROPOSED ACTIVITIES FOR YEAR 2021

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2021

(Unit: USD)

Proposed Activity	Description of Proposed Activity	Proposed Budget (USD)	Notes
COMPONENT 1	Identification and management of fisheries and critical habitat linkages at priority fisheries <i>refugia</i> in the South China Sea	220,000	
COMPONENT 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-based for fisheries <i>refugia</i> management in the South China Sea	180,000	
COMPONENT 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	57,000	
COMPONENT 4	National cooperation and coordination for integrated fish stock and critical habitat management in the South China Sea	288,000	
		745,000	

2. Expected Outcomes/Outputs of Activity for the Year 2020

Proposed Activity / Component	Expected Outcomes/Outputs of Activity
Component 1	
Sub-activities	<ul style="list-style-type: none"> • 6 Fisheries <i>refugia</i> profiles published • 3 Management Plan endorsed • 24 Quarterly Reports • 6 Annual Report from 6 countries
Component 2	
Sub-activities	<ul style="list-style-type: none"> • 3 National Reviews & Recommendations for Policy reforms; • 3 National Guidelines • 3 Endorsed FR Policy; • 4 Endorsed National Action plan; • 1 Endorsed/supported Regional Action Plan under ASEAN • 1 Regional Guidelines endorsed by 6 countries
Component 3	
Sub-activities	<ul style="list-style-type: none"> • Regional Website updated: included Dashboard, dataset, <i>Refugia</i> profiles • Regional catalogue of best practice approaches and measures published • 4 Outreach Programs from participating countries • 6 Published GEF-IW newsletters • 4 National web portal online: • Awareness materials published online, and online national web portals on fisheries <i>refugia</i>
Component 4	
Sub-activities	<ul style="list-style-type: none"> • Joint management decisions and participant lists; and scientific and technical advice and participants lists • Mid-term evaluation in the 1st Quarter 2021.

3. Schedule of Activity for the Year 2021

Proposed Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1												
Sub-activities												
Activity 2												
Sub-activities												
Activity 3												
Sub-activities												
Activity 4												
Sub-activities												

**PROJECT DOCUMENT
ACHIEVEMENT FOR YEAR 2020
AND
PROPOSED ACTIVITIES FOR THE YEAR 2021**

			Project ID: 202006006
Program Category	Project under the ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title	Strengthening the Effective Management of Inland Fisheries and Aquaculture in AMS with GIS and RS Technology		
Program Strategy No.	I	Total Period	2019 - 2021
Lead Department	Secretariat (SEC)	Lead Country	None
Donor/Sponsor	Japanese ASEAN Integration Fund (JAIF)	Total Donor Budget	USD 279,960
Project Partner	Nil	Budget for 2021	USD 80,216
Lead Technical Officer	Isao koya, Assistant Project Manager for the JTF	Project Participating Country	All Members Countries

PART I: PROJECT DESCRIPTION

1. Executive Summary

Inland fisheries and freshwater aquacultures in the Southeast Asia region as major fish producers have provided various kinds of fish products to the world-wide markets. In Southeast Asia, the inland fishery and aquaculture are important field, which have much production volume compared to other areas.

On the other hand, inland fishery resources are particularly susceptible to the influence of environmental factors such as rainfall and water temperature and catch pressure by fishery. compared to the marine fisheries.

As a result, this has often impeded the appropriate fisheries and aquaculture management measures and guidance for the fishers and farmers by the governments, which often causes seasonal overfishing, excess production, price fluctuation and low-valued fish production. In order to manage and use inland fishery resources, information on the environmental change of habitats affecting resources is necessary. However, such information is currently not sufficiently obtained. Using the Geographic Information System (GIS) and Remote Sensing (RS) technology, it became possible to grasp the environmental changes of environmental factors in the habitats of aquatic organisms affecting inland fishery resources.

Considering those issues on inland fisheries and aquacultures, this project aims to map inland fishery and aquaculture sites in AMSs using GIS & RS technology, and proposes monitoring methodologies using GIS Mapping in order to enable government of AMSs to contribute in the effective management of inland fisheries and aquaculture with GIS & RS technology in AMSs. The project is going to be implemented by GIS (Geographic information system) & RS (Remote sensing) by Southeast Asian Fisheries Development Center (SEAFDEC) for a period of one year.

2. Background and Justification

2.1 Current Problem

Inland fishery resources are greatly affected by changes in the environment. For example, the catch of the inland fluctuates greatly depending on the extent of expansion and contraction of river and lake areas due to precipitation in the rainy season and dry season.

Also, inland fisheries resources are susceptible to environmental fluctuations and catch pressure because the area of the fishing ground is limited. It is necessary to manage the inland fisheries resources and to use them sustainably while taking environmental factors into consideration. However, management methods considering environmental factors have not been established. If the environmental factor mechanism that affects the inland fisheries resources is grasped by GIS/RS, the method of inland fisheries resource management will be newly presented. GIS Mapping, R / S technology is a method that can be used anywhere in AMSs.

2.2 Rationality

In Southeast Asia, the inland fishery and aquaculture are important field, which have much production volume compared to other areas. On the other hand, inland fishery resources are affected by environmental factors.

Several countries that are particularly active in the field of inland fishery among AMSs are selected as pilot site target countries and establish monitoring methods RS using GIS Mapping technology. The method will be disseminated to each AMSs.

2.3 Project History

No project on management schemes with GIS&RS technology of inland fishery and aquaculture has been implemented.

2.4 Beneficiaries

The relationship between catch and environmental data such as rainfall, area of inland fishing ground, temperature, etc. will become clear by using the GIS Mapping/RS technology. By doing so, we will be able to predict the catch amount to some extent. As a result, after the project is over, the fishers/farmers can obtain the environmental information affecting the catch by GIS Mapping/RS technology, and it becomes possible to obtain benefits indirectly that can continue to use fisheries resources effectively. In addition, government officials can learn techniques related to fishery resources management by acquiring GIS Mapping/RS technology during project implementation. This project will therefore allow AMS to obtain all of the required data and information, such as long-term catch data, precise distributions and diversity, and reliable trade data of each of the tropical anguillid eel species. With these data and information, AMS will be able to estimate, for instance, the allowable catch limit to secure the sustainable use of tropical anguillid eel resources.

3. Project Goal, Outputs, Activities, Indicators and Verification

3.1 Logical Framework

GOAL (Overall Objectives)		
This project aims to contribute in the effective management of inland fisheries and aquaculture in AMSs countries through the promotion of GIS Mapping/RS technology. Using the GIS Mapping technique, the causal relation between the catch amount and the environmental data by the satellite on the R/S is clarified.		
OUTPUT 1	Indicator (to measure the project's achievements)	Means of Verification
Output 1: The geographical and environmental data on satellites and the catch data from the fishing ground in inland water of target sites in AMS are analyzed by GIS Mapping technology, and a guideline of analytical method is created.	Indicator1.1: To clarify the relationship between graphical/environmental data by remote sensing and catch data on the fishing ground by GIS Mapping and multivariate analysis. Indicator1.2: The monitoring method for inland fisheries resources management by GIS Mapping /RS technology is proposed and a guideline of analytical method is created.	Means of Verification 1.1 Whether the guideline of the monitoring method is prepared or not. 1.2 An index value indicating the relationship between the environmental data and catch data by GIS Mapping and multivariate analysis is indicated. 1.3 Whether the guideline of the monitoring method is prepared or not.

ACTIVITY 1		
<p>1.1: Data of catch amount by fishing ground necessary for GIS Mapping analysis at project sites (The planned countries as project sites: Cambodia, Indonesia, Lao PDR, Myanmar, Thailand) are collected and compiled.</p> <p>1.2: Environmental data on the geographical and inland water aquatic organism habitats based on satellite images for each target site of AMS are collected and compiled.</p> <p>1.3: The relation among geographical/environmental data (Inland water area, precipitation amount, temperature etc.) based on satellites and the catch data from the fishing ground of target sites of AMS are analyzed and clarified with multivariate analysis by GIS Mapping technology.</p>		
OUTPUT 2	Indicator (to measure the project's achievements)	Means of Verification
<p>Output 2: Dissemination of the monitoring and analyzing GIS Mapping /RS technical methods on geographical / environmental data and catch amount data in AMS.</p>	<p>Indicator 2.1: A technical manual on analysis methods using GIS Mapping technology is produced.</p> <p>Indicator 2.2: The number of staffs who can analyze using GIS Mapping / RS technology increases in AMSs countries</p>	<p>Means of Verification 2: Technical manual on analysis methods using GIS Mapping technology</p> <p>The number of staff who can analyse using GIS Mapping / RS technology in target AMS</p>
ACTIVITY 2		
<p>Technical analysis method of GIS Mapping / RS to clarify the relationship between geographical/environmental data and catch data is disseminated to AMSs.</p> <p>2.1: To summarize the result of the catch monitoring method using GIS Mapping/RS technology obtained through activity 1.</p> <p>2.2: To develop a technical manual on analysis methods using GIS Mapping technology.</p> <p>2.3: To hold the workshop on catch analysis using GIS Mapping /RS technology for disseminating technology to AMSs.</p>		

3.2 Project Implementation Plan for 2019 - 2021

Activities	2019				2020				2021			
	1	2	3	4	1	2	3	4	1	2	3	4
Activity 1.1												
Activity 1.2												
Activity 1.3												
Activity 2.1												
Activity 2.2												
Activity 2.3												

3.3 Proposed Budget for 2019 - 2021

(Unit: USD)

Output	Activities	Year 1 (2019)	Year 2 (2020)	Year 2 (2021)	Total
Output 1	Activity 1.1	87,655	55,094		142,749
	Activity 1.2	9,095	5,800		14,895
	Activity 1.3	5,800	8,000	9,740	23,540
Output 2	Activity 2.1		2,000	2,950	4,950
	Activity 2.2			29,570	29,570
	Activity 2.3	10,250		20,155	30,405
Project budget Sub-Total		112,800	70,894	61,965	246,109
Other budget (Management cost)		2,800	2,800	2,800	8,400

Output	Activities	Year 1 (2019)	Year 2 (2020)	Year 2 (2021)	Total
	contingency fee	500	10,000	14,951	25,451
Total		116,100	83,694	80,216	279,960

PART II: PROJECT ACHIEVEMENTS IN 2020

1. Project Achievements in the Present Year

The achievement of the project in 2020 is as follows.

Due to the impact of the coronavirus in 2020, the planned surveys and meetings could not be carried out as originally planned.

(1) Collection of catch data

A system was established to collect catch data from fishers at the five inland water sites in Cambodia, Indonesia, Myanmar, Laos and Thailand and catch data was collected.

(2) Collection of environmental data by satellites

A method for collecting environmental data (Inland waters area, Temperature of water surface, rainfall, chlorophyll, etc.) by satellites had been established at five inland water sites. The collected environmental data were edited and processed

(3) Data analysis

An analysis of the relationship between catch data and environmental data have been started and will be continued next year.

(4) Summary of analysis results, manuals, and report creation

Analyses were conducted to clarify the relationship between catch data and environmental data at the five target sites, and work had begun on the final compilation.

2. Activities and Budget in the Present Year

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Output 1:								
Activity 1.1	Survey/Meeting	3	11	5	15	17	114	55,094
Activity 1.2	Survey/Meeting	1	15	10	42	2	16	5,800
Activity 1.3	Analysis	Analyses were carried out by SEAFDEC and research institutions.						8,000
Output 2:								
Activity 2.1	Analysis	Analyses were carried out by SEAFDEC and research institutions.						2,000
Activity 2.2	Creating manual	This activity was not implemented in 2020						
Activity 2.3	Work shop	This activity was not implemented in 2020						

3. Expected Outcome/Outputs and Achievements

Activities	Expected Outcome/Outputs	Results/Achievements
Output 1:		
Activity 1.1	Catch data by fishery for GIS mapping analysis will be collected at the five project sites.	Catch data by fishery were collected and compiled for the five project sites.

Activities	Expected Outcome/Outputs	Results/Achievements
Activity 1.2	The environmental data required for GIS mapping analysis will be collected based on information from satellites.	Environmental data (Inland water area, Temperature of water surface, rainfall, Chlorophyll.) from the five project target sites was collected and compiled by downloading data from satellites.
Activity 1.3	A multivariate analysis of the relationship between fishery data at the target sites and environmental data from satellites is conducted using GIS mapping technology to clarify the relationship.	A multivariate analysis was conducted to clarify the relationship between catch data and environmental data. The analysis will continue in the next year and beyond in order to clarify the relationship in detail.
Output 2:		
Activity 2.1	The catch and environmental data obtained in Activity 1 were analyzed using GIS mapping/RS technology and the results of the analysis were compiled.	An analysis was conducted to clarify the relationship between catch data and environmental data, and an analytical approach using GIS/RS technology was discussed.
Activity 2.2	This activity was not implemented in 2020	
Activity 2.3	This activity was not implemented in 2020	

4. List of Publications in 2020

Publications	Type of Media	Attached e-file
There was no publication		

5. Evaluation on Workshops/Training Courses by Participants of AMSs

Activities	Evaluation
Output 1:	
Activity 1.1	None
Activity 1.2	None
Activity 1.3	None
Output 2:	
Activity 2.1	None
Activity 2.2	This activity was not implemented in 2020
Activity 2.3	This activity was not implemented in 2020

6. Major Impacts and Issues

In the 2020 project activities, due to the coronavirus, sufficient field studies were not able and also not hold a working group meeting for data analysis.

As a result, adequate data analysis work could not be carried out.

Meetings for technology dissemination with the presence of AMS countries could not be held either.

As there were some errors in the catch data from the five target sites, it is necessary to correct and process the data.

With regard to environmental data from satellites, it is necessary to re-examine the method of data collection and process the data, as it is not possible to obtain sufficient numerical information at some sites.

It is necessary to experimentally try multivariate analysis to clarify the relationship between catch data and environmental data using some of the data, and to clarify the issues of the analysis method.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2021

1. Project Summary in 2021

In 2021, the following activities will be carried out in the project.

(1) Collecting catch data and creating a database

Compile and process catch data from five sites in five AMS and create a database for analysis.

(2) Collecting environmental data by satellite and creating a database

Collect environmental data (Inland water area, water temperature, rainfall, and chlorophyll, etc.) for the five sites, edit and process them, and create a database for analysis.

(3) Analysis of the relationship between catch data and environmental data

The collected catch and environmental data will be analyzed using multivariate analysis methods to clarify the relationships. The results of the analysis will be compiled.

(4) Prepare an analysis manual and final report.

Prepare a technical manual showing how to analyze using GIS mapping/remote sensing techniques. Prepare a final report.

(5) Organize a workshop to disseminate GIS mapping/Remote Sensing analysis methods

Organize a workshop on techniques for analyzing catch data and environmental data using GIS mapping/Remote Sensing technology to disseminate the technology to AMS.

2. Outputs and Activities and Proposed Budget

(Unit: USD)

Proposed Activities	Descriptions	Proposed Budget
Output 1	The geographical and environmental data on satellites and the catch data from the fishing ground in inland water at target sites in AMS are analyzed by GIS Mapping technology, and a guideline of analytical method is created.	
Activity 1.1	The collected catch data for each target site are compiled and processed, and a database is created.	0
Activity 1.2	The collected environmental data for each target site by the satellite are compiled and processed, and a database is created.	0
Activity 1.3	Relationships between catch data from the five sites and environmental data from satellites will be determined through multivariate analysis using GIS mapping techniques. <i>Estimated expenditures:</i> <i>Working group meeting</i> <ul style="list-style-type: none"> • <i>Traveling cost</i> = US\$ 2,700 • <i>Daily subsistence allowance/Accommodation</i> = US\$ 1,300 • <i>Hire/Rental</i> = US\$ 740 <i>Expenditure of entrusting for analysis relationship between catch data and environmental data to consultancies/research institute</i> = US\$ 5,000 = US\$ 9,740	9,740
Output 2		
Activity 2.1	The results of the analysis will be compiled using the GIS mapping/RS techniques obtained in Activity 1. <i>Estimated expenditures:</i> <i>Preparation of analysis report</i> = US\$ 2,000 <i>Hire/Rental</i> = US\$ 950 = US\$ 2,950	2,950

Proposed Activities	Descriptions	Proposed Budget
Activity 2.2	<p>A technical manual on analytical methods using GIS mapping techniques will be developed. A project completion report will be prepared.</p> <p><i>Estimated expenditures:</i> <i>Analysis result report meeting(2times)</i></p> <ul style="list-style-type: none"> • <i>Travel cost</i> = US\$ 6,700 • <i>Daily subsistence allowance/Accommodation</i> = US\$ 5,300 • <i>Hare /Rental Others</i> = US\$ 1,500 <p><i>Sub-total</i> = US\$ 13,500 (2times) = US\$ 27,000</p> <p><i>Preparation of Technical Manual/Project Completion report</i> = US\$ 2,570 = US\$ 29,570</p>	29,570
Activity 2.3	<p>A workshop will be held to disseminate analytical techniques using GIS mapping/RS technology to AMS.</p> <p><i>Estimated expenditures:</i> <i>Workshop for disseminating GIS mapping/RS technology</i></p> <ul style="list-style-type: none"> • <i>Traveling cost</i> = US\$ 7,500 • <i>Daily subsistence allowance/Accommodation</i> = US\$ 8,500 • <i>Hire/Rental</i> = US\$ 2,000 • <i>Others</i> = US\$ 2,155 <p>= US\$ 20,155</p>	20,155

3. Implementation Plan of Activities in 2021

Activities	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Output 1:												
Activity 1.1												
Activity 1.2												
Activity 1.3												
Output 2:												
Activity 2.1												
Activity 2.2												
Activity 2.3												

4. Expected Activity Results in 2021

Planned activity	Expected Activity Results
Activity 1.	
<p>Activity 1.1. The collected catch data for each target site are compiled and processed, and a database is created.</p>	<ul style="list-style-type: none"> • A database of collected catch data will be properly created.
<p>Activity 1.2. The collected environmental data for each target site by the satellite are compiled and processed, and a database is created.</p>	<ul style="list-style-type: none"> • A database of the collected environmental data will be properly created.
<p>Activity 1.3 Relationships between catch data from the five sites and environmental data from satellites will be determined through multivariate analysis using GIS mapping techniques.</p>	<ul style="list-style-type: none"> • A method will be developed to clarify the relationship between catch data and environmental data through multivariate analysis using GIS mapping techniques.

Planned activity	Expected Activity Results
Activity 2.	
<p>Activity 2.1. The results of the analysis will be compiled using the GIS mapping/RS techniques obtained in Activity 1.</p>	<ul style="list-style-type: none"> The results of the analysis will be summarized by analytical methods using GIS mapping/RS techniques.
<p>Activity 2.2 A technical manual on analytical methods using GIS mapping techniques will be developed. A project completion report will be prepared.</p>	<ul style="list-style-type: none"> A technical manual on analytical methods using GIS mapping techniques will be prepared. A project completion report will be prepared.
<p>Activity 2.3 A workshop will be held to disseminate analytical techniques using GIS mapping/RS technology to AMS.</p>	<ul style="list-style-type: none"> A workshop on analytical techniques using GIS mapping/RS technology will be held and the analytical techniques will be disseminated to AMS.

**PROJECT DOCUMENT
ACHIEVEMENT FOR YEAR 2020
AND
PROPOSED ACTIVITIES FOR THE YEAR 2021**

			Project ID: 20206009
Program Category	Project under the ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title	Development of Stock Assessment Methods and Strengthening of Resources Management Measures for Tropical Anguillid Eel in Southeast Asia		
Program Strategy No.	I	Total Period	2020 – 2021
Lead Department	Secretariat (SEC)	Lead Country	None
Donor/Sponsor	Japanese ASEAN Integration Fund (JAIF)	Total Donor Budget	USD 790,123
Project Partner(s)	None	Budget for 2021	USD 401,508
Lead Technical Officer	Isao Koya, Assistant Project Manager for the JTF	Project Participating Country	All Members Countries

PART I: PROJECT DESCRIPTION

1. Executive Summary

Tropical anguillid eel resources are utilized as direct human consumption worldwide. The demand and use of the tropical anguillid eel resources in Southeast Asia are increasing. For the sustainable resource use of the eel resources, effective resource management measures are urgently required in Southeast Asia. However, appropriate resource management measures have not been developed yet because of limited information and data relevant to the eel biology, catch history and statistics and aquaculture which result with a difficulty to conduct a comprehensive stock assessment of the eel resources stock in Southeast Asia. The two-year first phase project entitled 'Enhancing sustainable utilization and management scheme of tropical anguillid eel resources in Southeast Asia (August 2017 – July 2019)' has been conducted since July 2017 by the Southeast Asian Fisheries Development Center (SEAFDEC) in close cooperation with ASEAN Member States (AMS) to develop eel fishery statistics and data collection system, examine the status of tropical anguillid eel species in AMS, and improve eel aquaculture activities. Under the project, surveys were conducted to collect basic eel fishery statistics and data in selected AMS (*i.e.* Cambodia, Indonesia, Myanmar, Philippines, Thailand and Viet Nam); policy recommendations and guidelines were developed to assist AMS in initiating and improving eel resource management practices in the respective countries; and researches were conducted to improve the survival rate of juvenile eels in aquaculture practices.

At the initial stage, eel fishery statistics and data collection system was not fully operated to obtain all of the required data and information. In order to take effective resources management measures for the sustainable use of tropical anguillid eel species, it is necessary to assess the abundance of eel resources stocks and grasp the appropriate total allowable catch level.

This project is proposed to collect the catch data and biological/ecological information for the estimation of the abundance of eel resources stocks, and to develop mathematical/statistical methods for estimating tropical anguillid eel resources stocks, in order to formulate effective management measures on tropical anguillid eel resources in Southeast Asia.

2. Background and Justification Current Problem

Through the progress and results of the current (first phase) project implemented by SEAFDEC in close cooperation with AMS, it has become evident that the implemented activities in regard to the management of tropical anguillid eel resources in AMS are still at the initial stage. The trends of stock abundance, areas of distribution, and stock structure of the tropical anguillid eel species are unknown, and consequently a lack of the relevant information prevents AMS from determining the allowable catch limit of tropical anguillid eels. In order to control and manage the eel resources for the sustainable use and long-term persistence, it is necessary for AMS to develop and improve tools/methods for the sound management of the anguillid eel resources.

Globally, the conservation and management of the eel species are currently main issues to be addressed adequately. For example, a lack of proper legal framework results in the failure in eel fisheries management. Legally-binding fisheries management measures specific to the tropical anguillid eels have been so far limited and implemented only in two AMS (*i.e.* Indonesia and Philippines) that restrict exporting the tropical eels at a certain size. It is urgently needed to formulate effective management measures based on eel stock and precious distribution, and diversity in Southeast Asia in continued cooperation and coordination within AMS.

2.2.Regionalilty

Southeast Asia is home to several tropical anguillid eel species (*e.g.*, Arai et al., 1999). Eight species/sub-species of the tropical anguillid eels distribute in the Indo-Pacific region. Similar to European eels, American eels, and Japanese eels in their native ranges, the tropical anguillid eels are utilized in Southeast Asia for the direct human consumption locally as well as for the trade globally. The recent listing of European eels in the CITES Appendix II in 2007 as well as the recent export ban of those from the EU member states in 2010 may result in increased exploitation of the tropical anguillid eels. Therefore, it is important for AMS to develop effective management policies and actions for the sustainable use of the tropical anguillid eels in Southeast Asia.

2.3.Project History

The two-year first phase project entitled 'Enhancing Sustainable Utilization and Management Scheme of Tropical Anguillid Eel Resources in Southeast Asia (August 2017 – July 2019)' has been implemented since July 2017 by SEAFDEC in close cooperation with AMS to develop eel fishery statistics & data collection system, examine the status of tropical Anguillid eel species in AMS, and improve eel aquaculture activities. Under the project, surveys were conducted to collect basic eel fishery statistics and data in selected AMS, policy recommendations and guidelines were developed to assist AMS in initiating and improving eel resource management practices in respective countries, and researches were conducted to improve the survival rate of juvenile eels in aquaculture practices.

For developing effective resource management measures for tropical anguillid eels, it is essential to develop appropriate methods for assessing a stock of tropical Anguillid eel resources and for estimating the total allowable catch for the sustainable use of the eel resources.

This project will therefore allow AMS to obtain all of the required data and information, such as long-term catch data, precise distributions and diversity, and reliable trade data of each of the tropical anguillid eel species. With these data and information, AMS will be able to estimate, for instance, the allowable catch limit to secure the sustainable use of tropical anguillid eel resources.

3. Project Goal, Outputs, Activities, Indicators and Verification

3.1 Logical Framework

GOAL (Overall Objectives)		
The objectives of this project are to collect the catch data and biological/ecological information for the estimation of eel resources stocks, and to develop mathematical/statistical methods for estimating tropical anguillid eel resources stocks in order to formulate effective management measures for the sustainable use of tropical anguillid eels in Southeast Asia.		
OUTPUT	Indicator (to measure the project's achievements)	Means of Verification
Outputs 1: In order to estimate resources stock status of the tropical anguillid eel species, 1-1 Catch and fishing effort data for anguillid eel species C in AMS are collected. 1-2 Biological and ecological	Indicators 1: 1-1 Catch and fishing effort data by eel species and region are properly collected. 1-2 Biological and ecological data and information are properly collected. 1-3 Genetic data and information are properly collected.	Means of Verifications 1: 1-1 Confirm that contents of the data include the data suitable for the purpose, such as catch amount by species/by growth stage/by region. 1-2 Confirm that the contents of collecting data include characteristics of key habitats and

<p>data/information of the tropical anguillid eels that contribute to the estimation of eel stock abundance in AMS are collected. 1-3 Current distributions of the tropical anguillid eels and their diversities in AMS are identified.</p>		<p>length composition of all stages of eels from the selected fishing ground. 1-3 Confirm that the contents of collecting data include several genetic indices for analysis at population level from the eels collected from several locations.</p>
<p>ACTIVITY 1</p>		
<p>Main Activities 1: 1-1 To collect data on catches and catch efforts by species and by life history stage (glass eel, and elver/yellow eel) in AMS where eel fisheries occur in order to properly assess stock status. For this purpose, field surveys visiting several places in AMS are conducted to: 1-2 To collect field data to better understand biology and ecology, including habitat and its surrounding environment, of the tropical anguillid eel species. Field surveys at several rivers in AMS are conducted to: 1-3 To collect genetic data to understand distribution, the level of diversity, and stock structure of the tropical anguillid eel species.</p>		
<p>OUTPUT 2</p>	<p>Indicator (to measure the project's achievements)</p>	<p>Means of Verification</p>
<p>Outputs 2: 2-1 Annual catch and CPUE are estimated. 2-2 Methods for the comprehensive stock assessment of tropical anguillid eels are developed. 2-3 Methods for calculation of allowable catch of tropical anguillid eels are developed.</p>	<p>Indicators 2: 2-1 Accurate annual catch and historical CPUE are estimated. 2-2 Methods for estimating stock biomass are developed and stock biomass (and trend) is estimated using a developed method. 2-3 Methods for estimating allowable catch limit and allowable catch are estimated using developed methods.</p>	<p>Means of Verifications 2: 2-1 Review of monthly catch and calculated CPUE by month. 2-2 Progress reports and review by experts. 2-3 Progress reports and review by experts and managers.</p>
<p>ACTIVITY 2</p>		
<p>Main activities 2: 2-1 Analyze catch per unit fishing effort (CPUE), including accurate data collection through regular surveys and selection an appropriate catch effort. 2-2 Develop methods for estimating abundance trend of the eel stocks. Making manual for methods of assessment stock on tropical anguillid eel. 2-3 Develop appropriate methods for estimating allowable catch limit that will secure sustainable use of tropical anguillid eel resources.</p>		
<p>OUTPUT 3</p>	<p>Indicator (to measure the project's achievements)</p>	<p>Means of Verification</p>
<p>Output 3: 3. Effective management measures based on assessment of tropical anguillid eel stocks are proposed, formulated and centralized/harmonized to secure sustainable use and long-term persistence of tropical anguillid eel resources in AMS.</p>	<p>Indicator 3: 3. Metrology on effective management of the tropical anguillid eels are enhanced and management measures are proposed, formulated in AMS.</p>	<p>Means of Verification 3: 3. Review the project report and confirm that the report includes content on resource management methods, data collection system, technology of assessment resource stock.</p>

ACTIVITY 3
Main activity 3:

- 3-1 Examine validities of developed methods of stock assessment for eel resources stocks.
 3-2 Disseminate developed methods of the stock assessment of tropical anguillid eel to AMS.
 3-3 Develop a manual for AMS to formulate the effective resources management based on the assessment of tropical anguillid eel stocks.

For the above activities, “Regional Meeting “will be held three times at the inception, mid-term and final of the project period.

3.2 Project Implementation Plan for 2020 – 2021

Activities	2020				2021			
	1	2	3	4	1	2	3	4
Activity 1.1								
Activity 1.2								
Activity 1.3								
Activity 2.1								
Activity 2.2								
Activity 2.3								
Activity 3.1								
Activity 3.2								
Activity 3.3								

3.3 Proposed Budget for 2020 – 2021

(Unit: USD)

Output	Activities	Year 1 (2020)	Year 2 (2021)	Total
Output 1	Activity 1.1	104,000	121,498	225,498
	Activity 1.2	77,500	44,650	122,150
	Activity 1.3	36,000	30,550	66,550
Output 2	Activity 2.1	65,500	68,910	134,410
	Activity 2.2			
	Activity 2.3			
Output 3	Activity 3.1	40,000	70,286	110,286
	Activity 3.2			
	Activity 3.3			
Sub-Total		323,000	335,894	658,894
Other budget (management cost and contingency fee)		65,615	65,614	131,229
Total		388,615	401,508	790,123

PART II: PROJECT ACHIEVEMENTS IN 2020
1. Project Achievements in the Present Year

The achievement of the project in 2020 is as follows.

Due to the impact of the coronavirus in 2020, the planned surveys and meetings could not be carried out as originally planned.

(1) Collect catch data /aquaculture production

Orientation meetings were held by teleconference in preparation for statistics surveys in Indonesia, Myanmar, the Philippines and Viet Nam.

(2) Collect catch / fishing effort data and biological data

The collection of data on catch/fishing effort and ecological data on tropical anguillid eels had begun at two sites in Indonesia.

(3) Collect genetic data

Genetic data on tropical anguillid eels from eel habitats in Indonesia, Myanmar, the Philippines, and Viet Nam had been collected, and research and analysis had begun to clarify population genetic structure.

(4) Planning Meeting

The project planning meeting was held to plan the details of the project activities with AMS representatives.

2. Activities and Budget in the Present Year

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Output 1:								
Activity 1.1	Survey/ Collect and analyze catch data			4	5			20,000
Activity 1.2	Survey/ Collect and analyze biological data			4	5			20,000
Activity 1.3	Survey/ Collect and analyze DNA data			2	3			10,000
Output 2:								
Activity 2.1	Meeting/Analyze of collected data	3	11	7	18	2	4	12,558
Activity 2.2	Meeting/Develop the method of stock assessment	This activity was not implemented in 2020						
Activity 2.3	Meeting/Develop the method for estimating allowable catch	This activity was not implemented in 2020						
Output 3:								
Activity 3.1	Meeting/Examine validities of developed methods	This activity was not implemented in 2020						
Activity 3.2	Meeting/Disseminate developed methods of the stock assessment	This activity was not implemented in 2020						
Activity 3.3	Meeting/Develop the manual	This activity was not implemented in 2020						

3. Expected Outcome/Outputs and Achievements

Activities	Expected Outcome/Outputs	Results/Achievements
Output 1:		
Activity 1.1	Conducted the survey to collect and analyze catch data	Catch data collection has begun at two sites in Indonesia. In addition, orientation meetings for eel statistical surveys were held by teleconferences in Indonesia, Myanmar, the Philippines and Viet Nam.
Activity 1.2	Conducted the survey to collect and analyze biological data	The collection of ecological data had begun at two sites in Indonesia.
Activity 1.3	Conducted the survey to collect and analyze DNA data	The collection of DNA data had begun in AMS.
Output 2:		
Activity 2.1	The “project planning meeting” was held to formulate the project activities plan for two years.	Specific activities and plans for the two-year project were developed.

Activities	Expected Outcome/Outputs	Results/Achievements
Activity 2.2	This activity was not implemented in 2020	
Activity 2.3	This activity was not implemented in 2020	
Output 3:		
Activity 3.1	This activity was not implemented in 2020	
Activity 3.2	This activity was not implemented in 2020	
Activity 3.3	This activity was not implemented in 2020	

4. List of Publications in 2020

Publications	Type of Media	Attached e-file
There was no publication	-	-

5. Evaluation on Workshops/Training Courses etc by Participants of AMSs

Activities	Evaluation
Output 1:	
Activity 1.1	None
Activity 1.2	None
Activity 1.3	None
Output 2:	
Activity 2.1	None
Activity 2.2	This activity was not implemented in 2020
Activity 2.3	This activity was not implemented in 2020
Output 3:	
Activity 3.1	This activity was not implemented in 2020
Activity 3.2	This activity was not implemented in 2020
Activity 3.3	This activity was not implemented in 2020

6. Major Impacts and Issues

In 2020, due to the impact of COVID19, it was not possible to conduct sufficient field surveys in AMS. As a result, the eel statistics survey was not able to fully establish a sufficient survey system for the collection of catch data.

In addition, opportunities to travel to the field for eel catch sampling surveys were significantly reduced compared to the original plan.

Similarly, we were not able to sample and analyze the data of the DNA survey.

In the next fiscal year, it is necessary to enhance these field surveys.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2021

1. Project Summary in 2021

In 2021, the following activities will be carried out in the project

(1) Collect and analyze catch data /aquaculture production

In order to grasp the catch and aquaculture production of tropical anguillid eels, a system to collect statistical data will be constructed in countries where have eel fisheries / aquaculture. Data from the eel statistical survey will be collected and analyzed in the four target countries (Indonesia, Myanmar, Philippines and Viet Nam).

(2) Collect and analyze biological data / catch and fishing effort data

In order to assess eel stocks, catch / fishing effort data and biological data on caught directly by fishers will be collected and analyzed at two sites in Indonesia.

(3) Collect and analyze genetic data

Genetic data on tropical anguillid eel will be collected from eel habitats in Indonesia, Myanmar, the Philippines, and Viet Nam and analyzed to clarify the genetic structure of the populations.

(4) Develop methods for assessment eel stock

Methods will be developed to assess eel stock by analyzing catch and fishing effort data.

(5) Regional Meeting

The regional meeting will be held to share catch / ecological data and information on tropical anguillid eel and methods for eel stock assessment among the AMS.

2. Outputs and Activities and Proposed Budget

(Unit: USD)

Proposed Activities	Descriptions	Proposed Budget
Output 1	<p>Outputs 1: In order to estimate resources stock status of the tropical anguillid eel species,</p> <ul style="list-style-type: none"> Catch and fishing effort data for anguillid eel species in AMS will be collected. Biological and ecological data/information of the tropical anguillid eels that contribute to the estimation of eel stock abundance in AMS will be collected. Current distributions of the tropical anguillid eels and their diversities in AMS will be identified. 	
Activity 1.1	<p>To collect data on catches and catch efforts by species and by life history stage (glass eel, and elver/yellow eel) in AMS where eel fisheries occur in order to properly assess stock status. Fishery / aquaculture statistical surveys will be conducted in AMS. <i>Estimated expenditures:</i> <i>Reward for fishermen to collect catch data and another statistical data = US\$ 30,000</i> <i>Explanation meeting of statistical survey and sampling survey in AMS(4countries+2sites)</i></p> <ul style="list-style-type: none"> <i>Traveling cost = US\$ 6,000</i> <i>Daily subsistence allowance /Accommodation = US\$ 3,200</i> <i>Rental /Others = US\$ 2,716.3</i> <p><i>Sub total = US\$ 11,916.3 ×(4 countries+2site)</i> <i>= US\$ 71,498</i></p> <p><i>Expenditure for entrusting the research and analysis data to a consultant company/research institute = US\$ 20,000</i> <i>Total = US\$ 121,498</i></p>	121,498
Activity 1.2	<p>To collect field data to better understand biology and ecology, including habitat and its surrounding environment, of the tropical anguillid eel species.</p> <p><i>Estimated expenditures:</i></p> <ul style="list-style-type: none"> <i>Traveling cost = US\$ 3,500</i> <i>Daily subsistence allowance /Accommodation = US\$ 3,000</i> <i>Rental /Others = US\$ 2,430</i> <p><i>Sub total = US\$ 8,930 ×5times</i></p>	44,650

Proposed Activities	Descriptions	Proposed Budget
	<i>Total</i> = US\$ 44,650	
Activity 1.3	<p>To collect genetic data to understand distribution, the level of diversity, and stock structure of the tropical anguillid eel species.</p> <p><i>Expenses for collecting DNA sample and analyzing population genetic structure</i></p> <p><i>Estimated expenditures:</i></p> <p><i>eDNA data collection survey</i></p> <ul style="list-style-type: none"> • <i>Traveling cost</i> = US\$ 2,500 • <i>Daily subsistence allowance</i> = US\$ 1,000 • <i>Accommodation</i> = US\$ 1,000 • <i>Rental /Others</i> = US\$ 1,000 <p><i>Sub-total</i> = US\$ 5,500×3times = 16,500US\$</p> <p><i>Analysis of DNA for sequencer processing</i></p> <ul style="list-style-type: none"> • <i>Sequencer processing</i> = US\$ 10,000 <p><i>Population genetic structure study</i></p> <ul style="list-style-type: none"> • <i>Traveling cost</i> = US\$ 1,800 • <i>Daily subsistence allowance/ Accommodation</i> = US\$ 1,750 • <i>Rental /Others</i> = US\$ 500 <p><i>Sub total</i> = US\$ 4,050</p> <p><i>Total</i> = US\$ 30,550</p>	30,550
Output 2		
Activity 2.1	<ul style="list-style-type: none"> • Analyze catch per unit fishing effort (CPUE), including accurate data collection through regular surveys and selection an appropriate catch effort. <p><i>Expenses for analyzing CPUE data</i></p> <p><i>Estimated expenditures for Working group meeting</i></p> <ul style="list-style-type: none"> • <i>Traveling cost</i> = US\$ 4,000 • <i>Daily subsistence allowance/ Accommodation</i> = US\$ 3,000 • <i>Rental /Others</i> = US\$ 500 <p><i>Sub total</i> = US\$ 7,500×2times = US\$ 15,000</p>	68,910
Activity 2.2	<ul style="list-style-type: none"> • Develop methods for estimating abundance trend of the eel stocks. Making manual for methods of assessment stock on tropical anguillid eel. <p><i>Expenses for making manual of methods of assessment stock</i></p> <p><i>Estimated expenditures for Working group meeting</i></p> <ul style="list-style-type: none"> • <i>Traveling cost</i> = US\$ 4,000 • <i>Daily subsistence allowance/ Accommodation</i> = US\$ 3,000 • <i>Rental /Others</i> = US\$ 500 • <i>Printing Manual</i> = US\$ 1,910 <p><i>Sub total</i> = US\$ 8,910</p>	
Activity 2.3	<ul style="list-style-type: none"> • Develop appropriate methods for estimating total allowable catch limit that will secure sustainable use of tropical anguillid eel resources. <p><i>Expenses for estimating TAC</i></p> <p><i>Estimated expenditures for Working group meeting</i></p> <ul style="list-style-type: none"> • <i>Traveling cost</i> = US\$ 4,000 • <i>Daily subsistence allowance/ Accommodation</i> = US\$ 3,000 • <i>Rental /Others</i> = US\$ 500 <p><i>Sub total</i> = US\$ 7,500×2times = US\$ 15,000</p>	

Proposed Activities	Descriptions	Proposed Budget
	<p><i>Expenditure for entrusting the research and analysis data to a consultant company/research institute = US\$ 30,000</i></p> <p><i>Total = US\$ 68,910</i></p>	
Output 3	Effective management measures based on assessment of tropical anguillid eel stocks are proposed, formulated and centralized/harmonized to secure sustainable use and long-term persistence of tropical anguillid eel resources in AMS.	
Activity 3.1	<ul style="list-style-type: none"> Examine validities of developed methods of stock assessment for eel resources stocks. <p><i>Estimated expenditures for Working group meeting</i></p> <ul style="list-style-type: none"> <i>Traveling cost = US\$ 4,000</i> <i>Daily subsistence allowance/ Accommodation = US\$ 3,000</i> <i>Rental /Others = US\$ 586</i> <p><i>Sub total = US\$ 7,586</i></p>	70,286
Activity 3.2	<ul style="list-style-type: none"> Disseminate developed methods of the stock assessment of tropical anguillid eel to AMS. <p><i>Estimated expenditures:</i></p> <p><i>Planning Meeting:</i></p> <ul style="list-style-type: none"> <i>Traveling cost = US\$ 9,000</i> <i>Daily subsistence allowance /Accommodation = US\$ 8,000</i> <i>Rental /Others = US\$ 3,000</i> <p><i>Sub total = US\$ 20,000</i></p> <p><i>Expenditure for entrusting the research and analysis data to a consultant company/research institute = US\$ 10,700</i></p>	
Activity 3.3	<ul style="list-style-type: none"> Develop a manual for AMS to formulate the effective resources management based on the assessment of tropical anguillid eel stocks. <i>The Regional Meeting and the Planning Meeting will be held to carry out activities 3-1 ~ 3-3.</i> <p><i>Regional meeting</i></p> <ul style="list-style-type: none"> <i>Traveling cost = US\$ 9,000</i> <i>Daily subsistence allowance /Accommodation = US\$ 8,000</i> <i>Rental /Others = US\$ 3,000</i> <p><i>Sub total = US\$ 20,000</i></p> <p><i>Expenditure for entrusting the research and analysis data to a consultant company/research institute = US\$ 12,000</i></p>	

3. Implementation Plan of Activities in 2021

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Output 1:												
Activity 1.1												
Activity 1.2												
Activity 1.3												
Output 2:												
Activity 2.1												

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 2.2												
Activity 2.3												
Output 3:												
Activity 3.1												
Activity 3.2												
Activity 3.3												

4. Expected Activity Results in 2021

Planned activity	Expected Activity Results
Activity 1.	
Activity 1.1. To collect data on catches and catch efforts by species and by life history stage (glass eel, and elver/yellow eel) in AMS where eel fisheries occur in order to properly assess stock status.	<ul style="list-style-type: none"> Describe major fishing grounds of tropical anguillid eels (all stages). Collect catch and fishing effort data to estimate the abundance of tropical anguillid eel resources stocks through catch information by fishers from regional fishing ground. Collect catch and fishing effort data to estimate the abundance of tropical anguillid eel resources stocks by conducting quantitative surveys using specific fishing gears at selected fishing grounds. Identify discrepancy of data, and its reasons, between international trade databases (UN, FAO, etc.) and domestic catch statistics/actual fishery catch.
Activity 1.2. To collect field data to better understand biology and ecology, including habitat and its surrounding environment, of the tropical anguillid eel species.	<ul style="list-style-type: none"> Collect biological/ecological data by conducting quantitative survey using specific fishing gears at selected fishing grounds. Analyze length composition of the eels in order to examine biological and life history characteristics of the tropical anguillid eels in several sites in AMS.
Activity 1.3. To collect genetic data to understand distribution, the level of diversity, and stock structure of the tropical anguillid eel species.	<ul style="list-style-type: none"> Conduct genetic analysis to identify local and regional biodiversity of the tropical anguillid eels Conduct genetic analysis to address current spatial structure of the tropical anguillid eels for the genetic stock identification
Activity 2.	
Activity 2.1. Analyze catch per unit fishing effort (CPUE), including accurate data collection through regular surveys and selection an appropriate catch effort.	<ul style="list-style-type: none"> The trends of eel resources and stock assessment using the collected catch / CPUE data will be analyzed.
Activity 2.2. Develop methods for estimating abundance trend of the eel stocks. Making manual for methods of assessment stock on tropical anguillid eel.	<ul style="list-style-type: none"> Development of methods for assessment eel resources stock and the creation of a technical manual will be started.
Activity 2.3. Develop appropriate methods for estimating allowable catch limit that will secure sustainable use of tropical anguillid eel resources.	<ul style="list-style-type: none"> The examination of the method to estimate the allowable catch by assessment of eel resources stock will be started.
Activity 3.	
Activity 3.1. Examine validities of developed methods of stock assessment for eel resources stocks.	<ul style="list-style-type: none"> Attempts will be made to validity the developed resource assessment methods technique.

Planned activity	Expected Activity Results
Activity 3.2. Disseminate developed methods of the stock assessment of tropical anguillid eel to AMS.	<ul style="list-style-type: none">• Stock assessment techniques and catch information of tropical anguillid eel will be disseminated to AMS through regional meetings.
Activity 3.3. Develop a manual for AMS to formulate the effective resources management based on the assessment of tropical anguillid eel stocks.	<ul style="list-style-type: none">• Preparation of a manual on effective resource management methods for tropical anguillid eel will be examined.

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2020
AND
PROPOSED ACTIVITIES FOR THE YEAR 2021**

			Project ID: 202003003
Program Category:	Project under the ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title:	Sustainable Aquaculture through Cost-Effective Culture Systems and Prompt and Effective Aquatic Animal Health Management		
Program Strategy No:	II	Total Period	2020 - 2024
Lead Department:	Aquaculture Department (AQD)	Lead Country:	Nil
Donor/Sponsor:	Japanese Trust Fund (JTF)	Total Project Budget:	USD 670,000
Project Partner(s):	Nil	Budget for 2021:	USD 135,000
Lead Technical Officer:	Sayaka Ito (AQD)	Project Participating Country:	All Members Countries

PART I: PROJECT DESCRIPTION

1. Executive Summary

This Project is being proposed to:

1) Community-Based Hatchery, Nursery, Grow-out of Giant Freshwater Prawn (GFWP) in Laguna Lake and Tributaries

This activity aims to develop a community-based strategy for food and livelihood of fisherfolks through the promotion of full-cycle aquaculture of high-value indigenous giant freshwater prawn, *Macrobrachium rosenbergii* in Laguna Lake and its tributaries.

2) Promoting Alternative Feeds for Sustainable Production of Freshwater Aquaculture Species

This activity aims to further develop alternative feeds using locally readily available feed ingredients for culturing freshwater species in a small-scale in Southeast Asia.

3) Ecosystem Approach to Responsible/Sustainable Shrimp Farming

This activity aims to identify an aquaculture management plan that can improve shrimp production and include the development of a recirculating system using earthen ponds. Organisms that can be used in the constructed/artificial wetlands will be identified.

4) Development of Aquaculture Techniques on New Aquatic Species for Promotion and Creation of Local Aquaculture Industry

This activity aims to develop techniques for promoting and creating local aquaculture industry, *i.e.* for flathead lobster, breeding, seed production and nursery rearing; for kawakawa and shortfin scad, breeding, seed production and grow-out; for seahorse, technique for distinguishing wild and cultured.

5) Development of Diagnostic Procedures Against Emerging Crustaceans and Fish Diseases

This activity aims to develop diagnostic procedures against emerging, and unknown crustacean and fish diseases.

6) Survey of the Epidemiology, Distribution, Occurrence and Prevalence of EHP

This activity aims to survey for the epidemiological information and elucidate various aspects of *Enterocytozoon hepatopenaei* (EHP) infection.

7) In Vitro and in Hatchery Investigation of Organisms, Chemicals and Methods to Prevent or Mitigate the Effect of Important Shrimp Diseases

This activity aims to investigate other organisms, chemicals and methods against important shrimp pathogens in the hatchery, in order to come up with recommendations and guidelines to protect or mitigate the diseases.

8) Application of Integrated Approaches in the Management of Viral Infections and Other Emerging Diseases in Brackish Water Ponds

This activity aims to apply integrated approaches combining elements of vaccination, host inhibition of pathogen multiplication, and other methods that are crucial for optimizing disease control and management procedures against shrimp and fish diseases occurring in brackishwater grow-out ponds.

9) Capacity Enhancement on Sustainable Aquaculture and Aquatic Animal Health Management

This activity aims to conduct training courses on sustainable aquaculture, fish nutrition and feed development, and fish health management, to enable farmers in the region to acquire technology and skills on sustainable aquaculture.

2. Background and Justification

Global fish production was about 171 million tons in 2016, with aquaculture representing 47 % of the total (FAO 2018). With the capture fishery production relatively static since the late 1980s, aquaculture has been responsible for the continuing impressive growth in the supply of fish for human consumption. Asia has accounted for about 89% of world aquaculture production for over two decades. In 2016, five SEAFDEC Member Countries, which are Indonesia, Viet Nam, Myanmar, Thailand and Philippines, were included in the major aquaculture producers whose production exceeds 500,000 tons.

On the other hand, the growth in aquaculture also brought negative impacts into our region such as; degradation of the culture sites, destruction of sensitive ecosystems, decrease in biodiversity, spread of diseases, social conflicts, etc. All of them hinders the sustainability of aquatic food production. Majority of the repercussions which affect not only the stability of culture production but also stock levels of wild aquatic species and precluding efforts towards food security and poverty alleviation.

Aquaculture Department (AQD) of the SEAFDEC has acquired useful information and developed skills especially in the fields of feed development, culture technology, community-based management for production, fish health management, development of vaccine treatment, protective measures against existing and emerging diseases, and in the conduct of the training courses for aquaculture under the JTF 6 regional program titled “Promotion of sustainable aquaculture and resource enhancement in Southeast Asia”, 2015 - 2019. Those activities should be further strengthened so that the sustainable utilization and management of aquatic resources will be accomplished in a responsible manner in the Southeast Asian region. Sustainable aquaculture through cost-effective culture systems and prompt and effective aquatic animal health management would be the wholesome practices towards these goals.

3. Gender Sensitivity of the Project

The activity leaders in this project consist of five male and 6 female staff of the Aquaculture Department (AQD). They were selected based on their technical specialty. In the training activities, men and women will participate and enhance their technical knowledge.

4. Project Goal, Outcome, Outputs, Activities, Indicators and Verification

4.1 Logical Framework

GOAL (Overall Objectives, Impact)	Indicators	Means of Verification
Attaining Sustainable Aquaculture through Cost-Effective Culture Systems and Prompt and Effective Aquatic Animal Health Management	<ul style="list-style-type: none"> - Developed and updated technologies for sustainable aquaculture - Update developed techniques and information on training course - Spread knowledge and skills with training course and journal 	<ul style="list-style-type: none"> - Number of developed strategies and technologies for sustainable aquaculture - Number of Update developed techniques and information on training course - Number of Spread knowledge and skills with training course and journal

OUTCOME	Indicators	Means of Verification
Dissemination of Aquaculture Strategies and Technologies, and Improvement of Aquaculture Production in Southeast Asia	<ul style="list-style-type: none"> - Technology and knowledge on sustainable aquaculture as references for policy planning and aquaculture management - Improved and newly developed production of aquaculture species with the developed strategies and technologies 	<ul style="list-style-type: none"> - Number of view and download of technological manuals and information for sustainable aquaculture on SEAFDEC/AQD homepage - Efficiency of aquaculture production using the developed strategies and technologies
OUTPUT 1	Indicators	Means of Verification
Development of Strategies and Technologies for Aquaculture Production in Southeast Asia	Strategies and techniques in farm to improve aquaculture production.	<ul style="list-style-type: none"> - Government formulated and implemented enabling policies in support of sustainable aquaculture based on guidelines and technologies - Practical realization of developed methods, strategies and guideline
ACTIVITY 1	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 1.1: Community-Based Hatchery, Nursery, Grow-out of Giant Freshwater Prawn (GFWP) in Laguna Lake and Tributaries	Successful tri-party collaboration among organized fisherfolks, local government and research agencies in the development of sustainable aquaculture livelihood in Barangay Pipindan and 3 other areas around Laguna Lake and tributaries that address economic development, social stability and environmental integrity.	Periodic monitoring towards establishment of: 1) functional tri-party stakeholder collaboration for livelihood development; 2) organized and informed fisherfolks; and 3) sustained economic, social and environmental project benefits.
Activity 1.2: Promoting Alternative Feeds for Sustainable Production of Freshwater Aquaculture Species	<ul style="list-style-type: none"> - Production of alternative feeds using agricultural wastes and by-products identified in GOJ-TF6 and evaluation for on-farm trials - Continued development of alternative feeds using other local, readily available ingredients for laboratory and on-farm trials - Adoption of the alternative feeds by small-scale fish farmers - Reduced production costs of small-scale fish farmers using alternative feeds and feeding strategies developed and identified in the study 	<ul style="list-style-type: none"> - Other alternative feed ingredients identified and processed for use in the continued development of alternative feeds - Production parameters (<i>e.g.</i> growth, survival, FCR, yield) monitored - Cost and benefits evaluated
Activity 1.3: Ecosystem Approach to a Responsible/Sustainable Shrimp Farming	Aquaculture management plan for small scale shrimp holders/farmers developed	Increased shrimp production of adaptors

<p>Activity 1.4: Development of Aquaculture Techniques on New Aquatic Species for Promotion and Creation of Local Aquaculture Industry</p>	<p>To develop hatchery and grow-out techniques on the breeding, seed production and nursery rearing of kawakawa (<i>Euthynnus affinis</i>), shortfin scad (round scad, <i>Decapterus macrosoma</i>), flathead lobster (<i>Thenus orientalis</i>) and seahorse (<i>Hippocampus comes</i>)</p>	<p>Established seed production and grow-out techniques for adoption of local aquaculture industry</p>
<p>OUTPUT 2</p>	<p>Indicators</p>	<p>Means of Verification</p>
<p>Development of Procedures in Disease Control and Management against Crustacean Crustacean and Fish Diseases in Southeast Asia</p>	<p>Procedures in disease control and management against crustacean and fish diseases to improve aquaculture production</p>	<p>Government policies in support of management based on developed diagnostic procedures Practical realization of developed procedures</p>
<p>ACTIVITY 2</p>	<p>Indicators: key inputs (Number to be conducted, Where, Time)</p>	<p>Means of Verification</p>
<p>Activity 2.1: Development of Diagnostic Procedures Against Emerging Crustacean and Fish Diseases</p>	<p>Comprehensive diagnosis of unknown mortalities of crustacean and fish Development and optimization of conventional PCR protocol and real time PCR for emerging fish and shrimp diseases</p>	<p>Diagnosed unknown mortalities of crustacean and fish Optimized diagnostic protocols for emerging fish and crustacean and fish diseases. Dissemination of the standardized diagnostic protocol through hands-on training; and provision of positive control(s) Preparation of disease cards</p>
<p>Activity 2.2: Survey of the Epidemiology, Distribution, Occurrence and Prevalence of EHP.</p>	<p>- Surveillance Survival rate, growth rate of shrimp - Procedures of isolation of viability of spores - Mode of transmission Cohabitation, horizontal and vertical transmission</p>	<p>- Active surveillance reports/database - Guidelines to protect shrimp from EHP</p>
<p>Activity 2.3: <i>In Vitro</i> and in Hatchery Investigation of Organisms, Chemicals and Methods to Prevent or Mitigate the Effect of Important Shrimp Diseases</p>	<p>Recommendations and guidelines on organisms, chemicals and methods that can be used to protect shrimp from and/ or mitigate the effect of WSSV, EMS and other important shrimp diseases</p>	<p>List of organisms, chemicals and methods that will lead to less incidence of shrimp disease outbreak in hatchery tank trials</p>
<p>Activity 2.4: Application of Integrated Approaches in the Management of Viral Infections and Other Emerging Diseases in Brackish Water Ponds</p>	<p>2 tank trials and 3 pond trials to be conducted in SEAFDEC/AQD Tigbauan Main Station and Dumangas Brackishwater Station, January 2020- December 2024</p>	<p>- Completed preliminary tank trials - Completed successful ponds trials demonstrating the efficacy of the integrated approaches</p>

		- Recommended procedures for the management of viral and emerging diseases in pond culture
OUTPUT 3	Indicators	Means of Verification
Capacity Enhancement on Sustainable Aquaculture and Aquatic Animal health Management in Southeast Asia	Dissemination of aquaculture strategies and technologies	Carry out training courses on aquaculture
ACTIVITY 3	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 3.1: Training Course on Sustainable Aquaculture	- Promotion of marine aquaculture technologies in the region - Promotion of freshwater aquaculture technologies in rural communities in the region	- Conduct of training course on marine aquaculture in the region - Conduct of training course on community-based freshwater aquaculture in rural communities to introduce alternative livelihood to small-holder fish farmers
Activity 3.2: Training Course on Fish Nutrition and Feed Development	Skills enhancement and dissemination of improved feed development and management practices to ASEAN Member States	Successfully implemented training course to develop skills, disseminate knowledge and new information in feed formulation and feeding management to SEA participants
Activity 3.3: Training Course on Fish Health Management in Aquaculture	Increased capacity to manage aquatic animal diseases among stakeholders in ASEAN Member States	Successfully implemented training courses to disseminate knowledge, skills, and new approaches in fish health management to SEA participants
OUTPUT 4	Indicators	Means of Verification
Progress management of project	Proper practice of the project	Carry out annual progress meeting and international workshop
ACTIVITY 4	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 4.1: Annual Progress Meeting	Hold annual meeting organized by SEAFDEC/AQD to review the project achievement.	- Carry out annual progress meeting - Review and evaluate the project achievements

Activity 4.2: International Workshop	Hold the workshop organized by SEAFDEC/AQD to review the project achievement and exchange brand-new information on aquaculture.	- Carry out international workshop - Updated on the issues related to sustainable aquaculture
Activity 4.3: Coordination by the Project Leader	Coordinate and encourage the research, training and dissemination, and also facilitate information exchange	- Contribute to achieve the project's objectives - Control the budget - Review the overall project achievements on the provided meetings.

4.2 Project Implementation Plan for 2020 – 2024

Activities	2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Output 1:																				
Activity 1.1																				
Activity 1.2																				
Activity 1.3																				
Activity 1.4																				
Output 2:																				
Activity 2.1																				
Activity 2.2																				
Activity 2.3																				
Activity 2.4																				
Output 3:																				
Activity 3.1																				
Activity 3.2																				
Activity 3.3																				
Output 4:																				
Activity 4.1																				
Activity 4.2																				
Activity 4.3																				

4.3 Proposed Budget for 2020 – 2024

(Unit: USD)

Output	Activities	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Year5 (2024)
Output 1	Activity 1.1	10,000	10,000	10,000	10,000	9,000
	Activity 1.2	10,000	10,000	10,000	10,000	9,000
	Activity 1.3	10,000	10,000	10,000	10,000	9,000
	Activity 1.4	10,000	10,000	10,000	10,000	9,000

Output	Activities	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Year5 (2024)
Output 2	Activity 2.1	10,000	10,000	10,000	10,000	9,000
	Activity 2.2	10,000	10,000	10,000	10,000	9,000
	Activity 2.3	10,000	10,000	10,000	10,000	9,000
	Activity 2.4	10,000	10,000	10,000	10,000	9,000
Output 3	Activity 3.1	14,000	14,000	14,000	14,000	12,000
	Activity 3.2	8,000	8,000	8,000	8,000	7,500
	Activity 3.3	8,000	8,000	8,000	8,000	7,500
Output 4	Activity 4.1	6,000	6,000	6,000	6,000	0
	Activity 4.2	0	0	0	0	22,000
	Activity 4.3	14,000	19,000	19,000	19,000	14,000
Sub-Total		130,000	135,000	135,000	135,000	135,000

PART II: PROJECT ACHIEVEMENTS IN 2020

1. Project Achievements in the Present Year

Activity 1.1) Tri-party collaboration with stakeholders in target Barangay Pipindan in Binangonan, Rizal, namely; fisherfolks, local government and AQD agreed through online meetings. Thus, rapid site assessment for GFWP hatchery and feasibility study is on-going.

Activity 1.2) The best performing alternative tilapia feeds identified in the JTF6 Phase I were used in cage and land-based tank trials to compare two feeding management schemes on growth performance and feed utilization of monosex Nile tilapia fingerlings.

Activity 1.3) Results imply that sandfish, oysters and kappaphycus adapt well in brackishwater pond conditions and thus are good candidates to be used in a constructed wet-land. On the other hand, caulerpa, eucheuma, gracilaria and green mussels have the potential if proper culture method is observed. Brown mussel cannot be used in a constructed wetland. However, these observations will be correlated with the ability of the organisms to remove nutrients from the water.

Activity 1.4) In February 2020, a survey was conducted to search for possible sources of live Kawakawa (*Euthynnus affinis*) and shortfin scad (*Decapterus macrosoma*). Three sources were found: Anini-y and Tibiao, Antique, and in Tigbauan, Iloilo. Also in February, the first sampling was conducted in Anini-y, Antique. No Kawa-kawa was recovered. At the same time, 20 live shortfin scads were collected and transported back to AQD. Only 13 fish survived during the transport. During March, the second sampling was conducted in Tigbauan, Iloilo. No live fish were recovered. In the same month, the third sampling in Tibiao, Antique, was conducted and 27 live shortfin scads were collected and transported. Only 12 fish survived during the transport. No Kawa-kawa was caught. The live fish were stocked in a 20 T flow through the rearing tank. They were fed with different kinds of feed like *dulong* (*Gobiuapterus sp.*) and dried shrimp, but responded only to *Acetes sp.* The cultured fish survived for 82 days. Sampling visits were temporarily suspended due to the travel restrictions under the COVID-19 pandemic. After the easing of restrictions in June, a fish cage was attached to the fishing gear (otoshi-ami) to stock wild fish before transport.

Activity 2.1) COVID-19 pandemic caused travel restrictions which resulted in the project to be limited to providing technical assistance (such as disease diagnosis services) within the province/region. During the 1st to 3rd quarter of 2020, farm visits and samplings were conducted. Samples were processed using different available disease diagnostic methods (Bacteriology, Histopathology, and Molecular Biology) to identify the causative agent(s).

Activity 2.2) Review of the proposal is ongoing.

Activity 2.3) No *P. monodon* egg/larvae disinfection activity has been done yet. Disinfectants have been purchased. Experiment to verify the efficiency of siganid greenwater against VP_{AHPND} is on-going.

Activity 2.4) The study is newly approved. For the remaining part of the year, tank trials testing combined shrimp management approaches vs WSSV will be conducted. The tank experimental set-up should simulate pond conditions. The approaches that will be tested in combination are disinfection of pond soil and water and use of post larvae from SPF brood stocks. All the other steps that are considered part of best management practice (BMP) will be included as standard operating procedure (SOP) and will be the same for all treatments. There will be four (4) treatments with three (3) replications.

Activity 3.1) The training course, initially scheduled June 22 - July 28 and rescheduled on Sept. 2 - Oct. 8, 2020, is yet to be implemented/conducted. Because of travel restrictions in the COVID-19 pandemic, this course is conducted with accepting applicants only from the Philippines. In 2021, if travel restrictions are relaxed, AQD will prioritize applicants from other SEAFDEC Member Countries. Preparations (sending out of letters to prospective participants from SEAFDEC Member Countries, initial discussion with the resource persons and other staff involved in the training for the review of training prospectus) are underway for the upcoming Community-Based Freshwater Training Course. The possibility of virtual training session is being considered in light of the covid19 pandemic. Depending on the situation, the training may be postponed to the first quarter of 2021.

Activity 3.2) The fish nutrition and feed development training program will have an alternate offering per year as an online and a station-based course. For this year, an e-learning course, Aquaculture Nutrition Online (ANOL), will be offered on 21 September to 20 December. Acceptance letters have been emailed to qualified nominees. The online platform and module contents are being updated and revised by the technical support team and the module specialists. The course guide is being prepared to be sent to e-learners a week before the start of the course for familiarization.

Activity 3.3) The station-based training course, initially scheduled March 23 - April 3, 2020 (for 12 days) was postponed due to the COVID-19 pandemic. This has been rescheduled in October 2020 and is yet to be conducted. However, because of travel restrictions, quarantine protocols and local government advisories on the conduct of face-to-face training due to the COVID-19 pandemic, the station-based course might be postponed. An option for this course is to be exchanged with the conduct of the online course on the Principles of Health Management in Aquaculture (AquaHealth Online) which is set to be conducted in 2021 (originally to alternate with the station-based FHM training every year for the 5-year program). If the situation will not be favorable still for a station-based course by September, AquaHealth Online will take place and is proposed to be conducted by the second week of November 2020.

2. Activities and Budget in the Present Year

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Output 1: Development of Strategies and Technologies for Aquaculture Production in Southeast Asia								
Activity 1.1	R (R&D)	0	1	3	2	3	10	10,000
Activity 1.2	Promoting Alternative Feeds for Sustainable Production of Freshwater Aquaculture Species	0	0	1	4	0	0	10,000
Activity 1.3	Investigated organisms that can be used in the constructed/artificial wetlands; assessed based on efficiency in removing nutrients from pond effluent and ability to grow/survive in pond condition	NA	NA	NA	NA	NA	NA	10,000

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Activity 1.4								10,000
Output 2: Development of Procedures in Disease Control and Management against Crustacean and Fish Diseases in Southeast Asia								
Activity 2.1								10,000
Activity 2.2								10,000
Activity 2.3	Investigate efficiency of disinfectants (electrolysis, iodine, chlorine, formalin) against WSSV on fertilized eggs; verify efficiency of siganid greenwater against VP _{AHPND} through pond experiment	NA	NA	NA	NA	NA	NA	10,000
Activity 2.4								10,000
Output 3: Capacity Enhancement on Sustainable Aquaculture and Aquatic Animal health Management in Southeast Asia								
Activity 3.1	Marine and Freshwater Aquaculture Program							14,000
Activity 3.2	Training							8,000
Activity 3.3	Training							8,000
Output 4: Progress management of project								
Activity 4.1	Annual Progress Meeting	ND	ND	ND	ND	ND	ND	6,000
Activity 4.2	International Workshop	NA	NA	NA	NA	NA	NA	0
Activity 4.3	Coordination by Project Leader	0	0	2	1	0	0	14,000

3. Expected Outcome/Outputs and Achievements in the Present Year

Activities	Expected Outcome/Outputs	Results/Achievements
Outcome		
Output 1:		
Activity 1.1	Tri- party stakeholder collaboration; socio-economic baseline survey; hatchery training; start hatchery	Collaboration agreed through online meetings; rapid site assessment for hatchery and feasibility study on-going
Activity 1.2	Information on the most cost-effective tilapia feed and feeding strategy determined.	Growth trials were conducted to test the effects of feed management strategies on production parameters of Nile tilapia fed alternative feed with fermented okara meal and reared in cages and tanks. An economic analysis will be made after the second run to determine the most cost-effective feed and feeding strategy for possible adoption of fish farmers.
Activity 1.3	Identified list of organisms that can purify pond effluent and therefore be used in a constructed wetland.	Tank and pond experiments to identify organisms that have the ability to remove nitrogen from the water was done. Organisms used are: caulerpa, eucheuma, gracilaria, kappaphycus, brown mussel, green mussel, oyster and sandfish. Water samples were collected before adding nitrogen, a day after addition of nitrogen and weekly thereafter. Collected water samples are for analysis.
	Identified list of organisms that	Pond experiment on the other hand was done to identify

Activities	Expected Outcome/Outputs	Results/Achievements
	can grow under brackishwater pond condition and therefore be used in a constructed wetland.	organisms that has the ability to grow under brackishwater pond environment was done. The same organisms used in the tank experiment were used. An increase in biomass was observed in the sandfish, oysters and kappaphycus after 21 days of culture in ponds; while a decrease in biomass was observed in the caulerpa, eucheuma, gracilaria and green mussel. All brown mussels were dead. One of the 3 sandfish also died.
Activity 1.4	Established seed production technique for new aquatic species for adoption of local aquaculture industry. Transport of Kawakawa and shortfin scad in tank-based facilities. Rearing of Kawakawa and shortfin scad	 Twenty-five live shortfin scad from the wild were stocked in their rearing tank. A fish cage was set up in the sampling site for easier collection of wild fish Different kinds of feed like <i>dulong</i> and dried shrimp were fed but shortfin scad responded only to <i>Acetes sp.</i>
Output 2:		
Activity 2.1	Monitoring and surveillance of occurrence of mass mortalities in cultured crustacean and fish.	Responded to the request for technical service through conducting farm visits, samplings, and processing and analyses of samples.
Activity 2.2	Active surveillance of EHP in the Philippines	Research proposal under review.
Activity 2.3	List of chemicals, organisms, and methods that can be used to disinfect fertilized eggs to prevent the vertical transmission of WSSV. Verified efficiency of siganid greenwater against VP _{AHPND}	Chemicals to be used for disinfection have been purchased. Electrolytic machine was purchased. Ponds to be used was rehabilitated and was used for the other GOJ funded study that was terminated in July. Ponds were stocked with <i>P. monodon</i> 2-4 weeks after.
Activity 2.4	Efficacy data of combined approaches vs WSSV: pond disinfection + use of postlarvae from SPF broodstocks + other biosecurity and best management practices in simulated tank trials	The study is newly approved. Tank trials under simulated pond conditions testing combined shrimp management approaches against WSSV will be conducted. The experimental set-up is being prepared.
Output 3:		
Activity 3.1	Submission of the terminal report of the marine fish hatchery training course. Promotion of freshwater aquaculture technologies in rural communities in the region.	 The training may be conducted as scheduled if the situation permits. Other options are to have the training in an online format or deferred it in early 2021.
Activity 3.2	Submission of the terminal report on Aquaculture nutrition online (ANOL)	
Activity 3.3	Submission of the terminal report of the fish health management training course or AquaHealth Online.	

Activities	Expected Outcome/Outputs	Results/Achievements
Output 4:		
Activity 4.1	Hold annual meeting organized by SEAFDEC/AQD to review the project achievement.	Under planning.
Activity 4.2	Not applicable	
Activity 4.3	Coordinated and facilitated the implementation of research, training and information exchange	<ul style="list-style-type: none"> - Contributed to achieve the project's objectives - Controlled the budget - Reviewed the overall project achievements on the provided meetings.

4. List of Publications in 2020

Publications	Type of Media	Attached e-file
1. Aya, FA, Sayco MJP, Unida JCL, Romana-Eguia MRR, Salayo ND (submitted) Potential of agricultural wastes in aquafeed production (for inclusion in SARSEA Proceedings)		

5. Evaluation on Workshops/Training Courses by Participants of AMSs

Activities	Evaluation
Output 1:	
Activity 1.1	None yet, activity just started
Activity 1.2	Not applicable
Activity 1.3	Not applicable
Activity 1.4	Not Applicable
Output 2:	
Activity 2.1	Not applicable
Activity 2.2	Not applicable
Activity 2.3	Not applicable
Activity 2.4	Not applicable
Output 3:	
Activity 3.1	Not applicable as the training shall be conducted late 2020 or moved to 2021
Activity 3.2	None yet
Activity 3.3	None yet
Output 4:	
Activity 4.1	None yet
Activity 4.2	Not applicable
Activity 4.3	Not Applicable

6. Major Impacts and Issues

Activity 1.1) Wives tend to be more skilled on use of social media and support their husbands to enable participation in online project meetings and group chats. Since the proposed giant prawn hatchery is land-based and the grow-out cages will be in the nearshore, wives can participate in operations together or alternately with their husbands.

Activity 1.2) Some delays in the project activities (*e.g.* delayed procurement of needed supplies and materials). In the Luzon lockdown, the duration of the lake-based cage feeding trial was shortened from four to three months.

Activity 1.3) The activities identified organisms that can be used in a constructed/artificial wetland.

Activity 2.1) The project was limited in providing technical assistance (such as disease diagnosis services) within the province/region due to travel restrictions. However, the processing and analyses of samples are still continuing.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2021

1. Project Summary in 2021

In 2021, the following activities will be implemented:

1) More hands-on training on GFWP hatchery, nursery and grow-out operations for more men and women will be conducted. Financial management and entrepreneurship training, and participatory formulation of local policies and governance strategies towards sustainable aquaculture livelihoods for small-holder operations will also be carried out.

2) Experiments on the utilization of aquatic weeds and fisheries by-products will be done to replace soybean and fishmeal in diets for tilapia in biofloc-based systems. The potential of these alternative feed ingredients will be evaluated also for heavy metals to ensure if they are considered safe for use in tilapia feeds.

3) Design an artificial or constructed wetland; and investigate its efficiency in mitigating the effect of diseases using mesocosms.

4) Review of the proposal is still on-going. Active surveillance, epidemiological information, distribution, occurrence and prevalence of *Enterocytozoon hepatopenaei* (EHP) will be continued in 2021.

5) Viral and bacterial diseases have been the cause for the decline of aquaculture production both in marine finfish and shrimp farming. Development of detection methods for these emerging diseases are the most efficient response to be able to implement immediate and appropriate interventions for the prevention and control of the infection. In 2021, the project will focus on monitoring and surveillance of mass mortalities in aquaculture caused by unknown and emerging crustacean and fish diseases. This will enable to isolate and identify the causative agent(s), and develop and optimize disease diagnostic protocol(s).

6) Review of the proposal is still on-going. Development of seed and nursery production techniques of kawakawa (*Euthynnus affinis*), shortfin scad (round scad, *Decapterus macrosoma*), flathead lobster (*Thenus orientalis*) and seahorse (*Hippocampus comes*) will be carried on 2021.

7) Identify chemicals and processes that can be used to disinfect *P. monodon* fertilized eggs and nauplii against pathogens.

8) Simulated tank trials testing combined shrimp management approaches vs AHPND –year 2. Management strategies that will be implemented in ponds will be tested in an experimental tank set-up approximating pond conditions. The same treatments and procedures will be followed as in the previous experiment except that this time, the pathogen of interest will be Vp-AHPND, or other AHPND-causing *Vibrio*. Combined approaches such as disinfection of pond soil and reservoir water and use of SPF post-larvae will be examined. Water coming from a seawater reservoir tank will be filtered with a 200- μ -mesh size filter cloth. Soil substrate previously inoculated with Vp-AHPND and subsequently disinfected by thorough drying as above (1 ton/ha) will be added in the experimental tanks to simulate disinfection of soil. Water previously inoculated with Vp-AHPND will also be disinfected with 30 pm chlorine to simulate disinfection of water in culture ponds. Parallel tanks which are similarly treated but without tilling and drying of the soil substrate, without quicklime application, and without chlorine disinfection of the added water, or stocked with non-SPF PLs analyzed with conventional PCR will serve as controls. All the other steps that are considered part of BMP will be included as SOP and will be the same for all treatments. This may include biosecurity measures, monitoring of key water quality parameters, *i.e.* dissolved oxygen, pH, unionized ammonia and nitrite, addition of probiotics and dsRNA as prophylactics, testing for Vp-AHPND in the tank soil and water after disinfection and before stocking.

9) The same training course will be conducted, prioritizing applicants from other SEAFDEC Member Countries, if travel restrictions are relaxed vis-à-vis COVID-19 pandemic. Virtual training session will be considered in 2021. If the proposed training will be postponed in 2020, there will be training sessions to be conducted in

2021. The online course on aquaculture nutrition will be offered by 21 September to 20 December 2020 to qualified nominees of the SEAFDEC Member Countries.

The station-based training course on Fish Health Management will be replaced by the conduct of the online course on the Principles of Health Management in Aquaculture (AquaHealth Online) if the COVID-19 situation still prevents travels, quarantine and other protocols should be still strictly followed. AquaHealth Online will be conducted instead. This will be finalized by September 2020 and will be still offered to SEAFDEC Member Country representatives.

2. Outcome, Outputs and Activities and Proposed Budget

(Unit: USD)		
Proposed Activities	Descriptions	Proposed Budget
Outcome	Dissemination of Aquaculture Strategies and Technologies, and Improvement of Aquaculture Production in Southeast Asia	
Output 1:	Development of Strategies and Technologies for Aquaculture Production in Southeast Asia	
Activity 1.1	<p>Community-Based Hatchery, Nursery, Grow-out of Giant Freshwater Prawn (GFWP) in Laguna Lake and Tributaries</p> <p>Successful tri-party collaboration among organized fisherfolks, local government and research agencies in the development of sustainable aquaculture livelihood in Barangay Pipindan and three other areas around Laguna Lake and tributaries that address economic development, social stability and environmental integrity.</p> <p>Estimated expenditures: - Personnel service (field assistants): USD 1,000 - MOOE (communications/internet, sundries, travel): 2,500 - Capital expenditures (hatchery tank, equipment): 6,500 Sub-total: USD 10,000</p>	10,000
Activity 1.2	<p>Promoting Alternative Feeds for Sustainable Production of Freshwater Aquaculture Species</p> <p>Experiments will be conducted to evaluate the use of aquatic weeds (water hyacinth <i>Eichhornia crassipes</i> and water cabbage <i>Pistia stratiotes</i>) as partial replacement for soybean meal; and black mussel meal as a replacement for fishmeal in alternative feeds for tilapia in biofloc-based systems.</p> <p>Estimated expenditures: - Personnel Services (TA and Research Aide 25%): USD 2,700 - Office and Laboratory Supplies, and Feed ingredients: 2,000 - Laboratory Analysis: 3,750 - Travel, meetings and workshops: 250 - Laboratory/ research equipment: 1,300 Sub-total: USD 10,000</p>	10,000
Activity 1.3	<p>Ecosystem Approach to a Responsible/Sustainable Shrimp Farming</p> <p>Artificial or constructed wetland design that is efficient in mitigating the effect of diseases.</p> <p>Estimated expenditures: - Personnel services, technical assistant/aide: USD 6,700 - Travel Costs: 1,000 - Communications: 100 - Supplies and materials: 1,000 - Research expenses: 1,200 Sub-total: USD 10,000</p>	10,000

Proposed Activities	Descriptions	Proposed Budget
Activity 1.4	<p>Development of Aquaculture Techniques on New Aquatic Species for Promotion and Creation of Local Aquaculture Industry</p> <p>Survey, procurement and development of breeding and seed production techniques for new aquatic species for local aquaculture industry. Candidate species for seed production studies are kawa-kawa mackerel tuna (<i>Euthynnus affinis</i>), round scad (<i>Decapterus macrosoma</i>) and flathead lobster (<i>Thenus orientalis</i>)</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Traveling costs: USD 1,000 - Hatchery operation costs: 6,000 - Labor costs in hatchery: 2,800 - Others (communication, etc.): 200 <p>Sub-total: USD 10,000</p>	10,000
Output 2:	Development of Procedures in Disease Control and Management against Crustacean and Fish Diseases in Southeast Asia	
Activity 2.1	<p>Development of Diagnostic Procedures Against Emerging Crustacean and Fish Diseases</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Personnel services, technical assistant: USD 6,500 - Travel Costs: 200 - Communications: 100 - Supplies and materials: 1,200 - Research expenses: 2,000 <p>Sub-total: USD10,000</p>	10,000
Activity 2.2	<p>Survey of the Epidemiology, Distribution, Occurrence and Prevalence of EHP</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Travel costs: USD 1,300 - Daily subsistence allowances: 700 - Accommodation: 1,000 - Communications: 100 - Supplies and materials: 100 - Research expenses: 6,800 <p>Sub-total: USD10,000</p>	10,000
Activity 2.3	<p>In Vitro and in Hatchery Investigation of Organisms, Chemicals and Methods to Prevent or Mitigate the Effect of Important Shrimp Diseases</p> <p>List of chemicals, organisms, and methods that can be used to disinfect fertilized eggs to prevent the vertical transmission of WSSV.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Personnel services, technical assistant/aide: USD 6,700 - Travel Costs: 200 - Communications: 100 - Supplies and materials: 1,000 - Research expenses: 2,000 <p>Sub-total: USD10,000</p>	10,000
Activity 2.4	<p>Application of Integrated Approaches in the Management of Viral Infections and Other Emerging Diseases in Brackish Water Ponds</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Personnel services, technical assistant 50%: USD 2,940 - Research animals, feeds, materials, supplies: 2,600 - Laboratory analysis: 1,700 	10,000

Proposed Activities	Descriptions	Proposed Budget
	- Repair and maintenance of tank facilities: 1,600 - Travel DSA, accommodation, vehicle use/hire: 960 - Sundries, office supplies: 200 Sub-total: USD 10,000	
Output 3:	Capacity Enhancement on Sustainable Aquaculture and Aquatic Animal health Management in Southeast Asia	
Activity 3.1	Training Course on Sustainable Aquaculture The marine fish hatchery training program shall provide the participants with the knowledge and skills on hatchery technologies developed by SEAFDEC/AQD on breeding and seed production of marine fish species such as milkfish, sea bass, groupers, mangrove red snapper, rabbitfish and pompano. Estimated expenditures: - Communication: USD 800 - Supplies and materials: 750 - Travel cost (foreign and local): 1,650 - Accommodation: 2,200 - DSA: 1,600 Sub-total: USD 7,000 The CBFWA training course shall provide the participants with the knowledge and skills on freshwater aquaculture technologies from broodstock development, seed production, nursery and grow-out culture phase; and enhance their skills in the transfer and extension services of freshwater aquaculture technologies. Estimated expenditures: - Communications: USD 450 - Supplies and materials: 150 - Research expenses: 100 - Invited travel costs: 3,000 - Accommodations: 1,750 - DSA: 1,250 - Meeting costs: 300 Sub-total: USD 7,000	14,000
Activity 3.2	Training Course on Fish Nutrition and Feed Development Estimated expenditures: - Communications: USD 100 - Vehicle utilization costs/Field Trips: 490 - Accommodation: 500 - Travel Arrangements: 3,500 - Training expenses and supplies: 2,210 - DSA: 1,200 Note: Detailed estimated budget for a 5-day station-based Course Sub-total: USD 8,000	8,000
Activity 3.3	Training Course on Fish Health Management in Aquaculture Estimated expenditures: - Communications: USD 100 - Vehicle utilization costs/Field trips: 490 - Accommodation: 500 - Travel arrangements: 3,500 - Training expenses and supplies: 1,690 - DSA: 1,370	8,000

Proposed Activities	Descriptions	Proposed Budget
	Note: Detailed estimated budget for a 5-day station-based course Sub-total: USD 8,000	
Output 4:	Progress management of project	
Activity 4.1	Hold annual meeting at SEAFDEC/AQD Estimated expenditures: - Travel, DSA, Accommodation, Training fee: USD 4,500 - Communications: 100 - Refreshments: 900 - Supplies and materials: 500 Sub-total: USD 6,000	6,000
Activity 4.2	<i>Not applicable</i>	0
Activity 4.3	Coordinate and encourage the research, training and dissemination, and also facilitate information exchange Estimated expenditures: - Personnel services of financial assistant: USD 6,000 - Travel costs: 4,000 - Communications: 500 - Equipment: 6,000 - Refreshments: 1,000 - Office supplies: 1,500 Sub-total: USD 19,000	19,000

3. Implementation Plan of Activities in 2021

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Output 1:												
Activity 1.1												
Activity 1.2												
Activity 1.3												
Activity 1.4												
Output 2:												
Activity 2.1												
Activity 2.2												
Activity 2.3												
Activity 2.3												
Activity 2.4												
Output 3:												
Activity 3.1												
Activity 3.2												
Activity 3.3												
Output 4:												
Activity 4.1												
Activity 4.2												
Activity 4.3												

4. Expected Activity Results in 2021

Planned activity	Expected Activity Results
Activity 1 Development of Strategies and Technologies for Aquaculture Production in Southeast Asia	
Activity 1.1. Community-Based Hatchery, Nursery, Grow-out of Giant Freshwater Prawn (GFWP) in Laguna Lake and Tributaries	<ul style="list-style-type: none"> At least 20 men and women in Brgy Pipindan trained in GFWP production for sustainable livelihoods. At least three other sites in Laguna Lake and tributaries reached for GFWP for grow-out operations. Policies and governance strategies developed and implemented at the local level to support community-based aquaculture livelihoods
Activity 1.2. Promoting Alternative Feeds for Sustainable Production of Freshwater Aquaculture Species	<ul style="list-style-type: none"> Information on the suitability and optimum inclusion levels of fermented mixtures of aquatic weeds and black mussel meal, and fish silage from tilapia by-products and okara meal in tilapia diets known
Activity 1.3. Ecosystem Approach to a Responsible/Sustainable Shrimp Farming	<ul style="list-style-type: none"> Artificial or constructed wetland design that is efficient in mitigating the effect of diseases
Activity 1.4. Development of Aquaculture Techniques on New Aquatic Species for Promotion and Creation of Local Aquaculture Industry	<ul style="list-style-type: none"> Established seed production technique for new aquatic species for adoption of local aquaculture industry Establishment of standardized transport and rearing protocol for Kawakawa and shortfin scad
Activity 2 Development of Procedures in Disease Control and Management against Crustacean and Fish Diseases in Southeast Asia	
Activity 2.1. Development Diagnosing Procedures Against Emerging Crustacean and Fish Diseases	<ul style="list-style-type: none"> Conduct monitoring and surveillance of unknown and emerging crustacean and fish diseases in selected farms Isolation and identification of the causative agent(s) of unknown and emerging crustacean and fish diseases
Activity 2.2. Survey of the Epidemiology, Distribution, Occurrence and Prevalence of EHP	<ul style="list-style-type: none"> List of the penaeid species infected with EHP in the Philippines will be generated List of other EHP carriers identified List of prevalence and intensity rate if EHP in penaeid shrimps and other EHP carrier collected identified
Activity 2.3. In Vitro and in Hatchery Investigation of Organisms, Chemicals and Methods to Prevent or Mitigate the Effect of Important Shrimp Diseases	<ul style="list-style-type: none"> List of chemicals, organisms, and methods that can be used to disinfect fertilized eggs to prevent the vertical transmission of WSSV
Activity 2.4. Application of Integrated Approaches in the Management of Viral Infections and Other Emerging Diseases in Brackish Water Ponds	<ul style="list-style-type: none"> Tank trial efficacy data on combined management approaches versus AHPND under simulated pond conditions. Results will be used in the conduct of pond trials to formulate updated guidelines for shrimp disease management versus AHPND
Activity 3. Capacity Enhancement on Sustainable Aquaculture and Aquatic Animal health Management in Southeast Asia	
Activity 3.1. Training Course on Sustainable Aquaculture	<ul style="list-style-type: none"> Hatchery technologies for marine fish species such as milkfish, sea bass, groupers, mangrove red snapper, rabbitfish and pompano Culture technologies on economically important freshwater fish species such as

Planned activity	Expected Activity Results
	tilapia, catfish, bighead carp and freshwater prawn promoted for adoption in rural member and non- member countries in Southeast Asia
Activity 3.2. Training Course on Fish Nutrition and Feed Development	<ul style="list-style-type: none"> • Capacitate fisheries officers, researchers, fish farmers, farm managers and technicians, feed manufacturers and college students from the ASEAN Member Countries with sustainable and appropriate technical knowledge, skills and new approaches on aquaculture nutrition, important feedstuff and feeding management for fish and crustaceans
Activity 3.3. Training Course on Fish Health Management in Aquaculture	<ul style="list-style-type: none"> • Useful information and developed skills especially in the fields of fish health management, development of vaccine treatment, protective measures against existing and emerging diseases. • Develop diagnostic procedures against emerging shrimp and fish diseases, surveillance and monitoring to prevent the spread of various aspects of infection, and to apply integrated approaches and other methods in the management of viral and bacterial infections and other diseases, which are crucial for optimizing procedures in disease control and management against shrimp and fish diseases.
Activity 4 Progress management of project	
Activity 4.1. Annual Progress Meeting	<ul style="list-style-type: none"> • Organize an annual progress meeting • Review and evaluate the project achievements
Activity 4.2. International Workshop	<ul style="list-style-type: none"> • Not applicable
Activity 4.3. Coordination by the Project Leader	<ul style="list-style-type: none"> • Contribute to achieve the project's objectives • Control the budget • Review the overall project achievements on the provided meetings

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2020
AND
PROPOSED ACTIVITIES FOR THE YEAR 2021**

			Project ID: 202002003
Program Category:	Project under the ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title:	Enhancing Food Safety and Competitiveness of Seafood Products		
Program Strategy No:	III	Total Period:	2020 - 2024
Lead Department:	Marine Fisheries Research Department (MFRD)	Lead Country:	Singapore
Donor/Sponsor:	Japanese Trust Fund (JTF)	Total Project Budget:	USD 330,000
Project Partner(s):	Nil	Budget for 2021:	USD 60,000
Lead Technical Officer:	Ong Yihang (MFRD)	Project Participating Country:	All Member Countries

PART I: PROJECT DESCRIPTION

1. Executive Summary

The project aims to look at the improvement of food safety and the competitiveness of seafood products in the ASEAN region through conducting training workshops and developing guidelines, with support of regional technical experts. The project will be implemented via two tracks - developing regional guidelines on Good Manufacturing and Handling Practices (GMP & GHP) for sushi and sashimi and introducing High Pressure Processing (HPP) Processing Protocols for seafood. The proposed activities for each track will include:

- Project and Inception Meeting
- Development/Translation of Training Materials
- Training Workshop
- R&D and Pilot Trials
- Preparation of Publication
- End of Project Meeting

The objectives of the project are to strengthen regional capabilities in safe handling of high-risk seafood products, and introduce advanced processing technology such as HPP to enhance the value, safety and quality of seafood products.

2. Background and Justification

Seafood is an important commodity in many ASEAN Member Countries 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 irreversible and accelerated by poor temperature control along the supply chain. Thus, good handling practices and technologies are extremely critical in keeping the seafood products fresh and safe, extend shelf life, and maintain its quality and economic value from catch to consumer.

In today's fast-moving world including the ASEAN region, consumers increasingly demand for quick and easy Ready-to-Cook (RTC) foods, or even ready-to-eat (RTE) meals. Many consumers are drawn to consuming seafood, because of its high nutritional value, along with its versatility in preparation. Quick- and easy-to-prepare RTE seafood dishes include sushi and sashimi, shucked shellfish and ready-to-cook seafood in sauce. However, the minimally processed or raw nature of these foods put them at high microbiological risk. Therefore, it is essential that these foods are prepared under Good Manufacturing and Handling Practices (GMP & GHP) and with reputable technologies that would mitigate the high microbiological risk while retaining the high nutritional content.

Under the project, Regional Guidelines on GMP & GHP for sushi and sashimi will be developed and published, and also capabilities in renowned technologies, such as HPP, will be enhanced.

3. Gender Sensitivity of the Project

The project activities proposed are generally gender-neutral in nature; both male and female can participate in all the proposed activities.

4. Project Goal, Outputs, Activities, Indicators and Verification:

4.1 Logical Framework

GOAL (Overall Objectives, Impact)	Indicators	Means of Verification
Fresh and safe seafood are consumed by people and high quality and economic value of seafood are maintained in Southeast Asia	<ul style="list-style-type: none"> - Regional Guidelines for GMP & GHP endorsed - Handbook on HPP of fish and fishery products well-disseminated 	<ul style="list-style-type: none"> - High quality and healthy seafood for people - High quality and high-valued fishery productions
OUTCOME	Indicators	Means of Verification
Enhanced safety and competitiveness of seafood products in Southeast Asia	<ul style="list-style-type: none"> - Food safety promoted - Reduction in foodborne illness from seafood consumption - Production of high-value products from the countries in Southeast Asia 	<ul style="list-style-type: none"> - Food safety - High-valued fishery products
OUTPUT 1	Indicators	Means of Verification
Regional standards serve as a guide in the development of national standards for GMP & GHP for sushi and sashimi	<ul style="list-style-type: none"> - Regional Guidelines on GMP & GHP developed and published 	<ul style="list-style-type: none"> - Regional Guidelines for GMP & GHP
ACTIVITY 1	Indicators; key Inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 1.1: Project Planning and Inception Meeting to be held in Singapore in 2020	<ul style="list-style-type: none"> - 2-day meeting organized in Singapore for all SEAFDEC Member Countries (MCs) in the 4th quarter of 2020 - Implementation plan of the project activities discussed - Two participants from each MC invited - National Project Focal Points identified in MCs - Back-to-back with Activity 2.1 	<ul style="list-style-type: none"> - Meeting report - Implementation plan of the project activities - Two participants from each MC - National Project Focal Point in each MC

<p>Activity 1.2: Development of Training Material for GMP & GHP for sushi and sashimi</p>	<ul style="list-style-type: none"> - Training materials will be developed for GMP & GHP for sushi and sashimi while taking into account the scope defined at the inception meeting by local Institute of Higher Learning (IHL) 	<ul style="list-style-type: none"> - Training Materials
<p>Activity 1.3: Regional Training Course on GMP & GHP for sushi and sashimi</p>	<ul style="list-style-type: none"> - Regional Training Course conducted in Singapore by local IHL - ½ day site visit to local food processing company to observe GMP/GHP - Two participants from each MC invited (ideally 1 being the National Project Focal Points and 1 from the MC industry who handles sushi and sashimi) - Resource person(s) invited from Japan 	<ul style="list-style-type: none"> - Training Course report - Two participants from each MC
<p>Activity 1.4: GMP & GHP handling pilot trials</p>	<ul style="list-style-type: none"> - One-year trial on implementing GMP & GHP conducted in MCs - Gaps in manufacturing industry in each country identified and reported 	<ul style="list-style-type: none"> - Country report on the trial from each MC
<p>Activity 1.5: Mid-Term Review Meeting</p>	<ul style="list-style-type: none"> - Two participants from each MC invited (ideally 1 being the National Project Focal Points and 1 from the MC industry who handles sushi and sashimi) - Resource person(s) invited from Japan 	<ul style="list-style-type: none"> - Meeting report - Two participants from each MC - Regional Guidelines drafted
<p>Activity 1.6: Preparation of Regional Guidelines on GMP & GHP</p>	<ul style="list-style-type: none"> - Feedbacks from in-country consultations collected and reviewed - Draft Regional Guidelines prepared 	<ul style="list-style-type: none"> - Draft Regional Guidelines
<p>Activity 1.7: End of Project Meeting</p>	<ul style="list-style-type: none"> - 2-day meeting organized in Singapore - Two participants from each MC invited - Regional Guidelines finalized with all MCs' consensus - Final draft document of Regional Guidelines will be shared with all MCs for their official endorsement 	<ul style="list-style-type: none"> - Meeting report - Two participants from each MC - Regional Guidelines on GMP & GHP

OUTPUT 2	Indicators	Means of Verification
Handbook on HPP serves as methods to process fish and fishery products through HPP	Handbook on HPP of fish and fishery products developed and published	Handbook on HPP of fish and fishery products
ACTIVITY 2	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 2.1: Project Inception Meeting to be held in Singapore in 2020	<ul style="list-style-type: none"> - Two-day meeting organized in Singapore for all MCs in the 4th quarter of 2020 - Two participants from each MC invited - Project scope and range of seafood products for HPP discussed - National Project Focal Points identified in MCs - Back-to-back activity with 1.1 	<ul style="list-style-type: none"> - Meeting report - Finalised project scope and range of seafood products for HPP - Two participants from each MC - National Project Focal Point in each MC
Activity 2.2: R&D and product development in collaboration with local institutes and industry co-operants/partners	- R&D and product development undertaken in collaboration with local institutes and industry cooperants/partners	- R&D and product development in trial
Activity 2.3: Development of Training Material for HPP of fish and fishery products	- Training materials will be developed for HPP of fish and fishery products while taking into account the scope defined at the inception meeting by local Institute of Higher Learning (IHL)	- Training Materials
Activity 2.4: Preparation of Handbook on HPP of fish and fishery products	- Handbook on HPP of fish and fishery products to be drafted	- Draft handbook on HPP of fish and fishery products
Activity 2.5: Regional Training Course on HPP technology	<ul style="list-style-type: none"> - Regional Training Course on HPP technology organized in Singapore - Two participants from each MC invited - Handbook on HPP of fish and fishery products to be finalised with consensus from the participants 	<ul style="list-style-type: none"> - Training Course Report - Two participants from each MC - Finalised Handbook on HPP of fish and fishery products
Activity 2.6: Translation of Handbook on HPP of fish and fishery products to other languages	- Handbook on HPP of fish and fishery products translated to other languages and published	- Handbook on HPP of fish and fishery products in different languages

Activity 2.7: End of Project Meeting and Visit to an overseas commercial High-Pressure Processing Plant for Seafood	- One-day meeting - One-day site visit to an overseas commercial High-Pressure Processing Plant for Seafood - Two participants from each MC invited	- Meeting and site visit report - Two participants from each MC
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4.2 Project Implementation Plan for 2020 - 2024

Activities	2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Output 1: Regional standards serves as a guide in the development of national standards for GMP & GHP for sushi and sashimi																				
Activity 1.1				■																
Activity 1.2				■	■	■														
Activity 1.3							■													
Activity 1.4								■	■	■	■	■								
Activity 1.5													■							
Activity 1.6														■	■	■	■	■		
Activity 1.7																			■	
Output 2: Handbook on HPP serves as methods to process fish and fishery products through HPP																				
Activity 2.1				■																
Activity 2.2				■	■	■														
Activity 2.3				■	■	■	■	■												
Activity 2.4						■	■	■	■											
Activity 2.5										■										
Activity 2.6											■	■	■	■	■	■				
Activity 2.7																			■	

4.3 Proposed Budget for 2020 - 2024

(Unit: USD)

Output	Activities	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Year 5 (2024)
Output 1	Activity 1.1	35,000				
	Activity 1.2		10,000			
	Activity 1.3		30,000			
	Activity 1.4			15,000	15,000	
	Activity 1.5				35,000	
	Activity 1.6					2,500
	Activity 1.7					32,500
Output 2	Activity 2.1	35,000				
	Activity 2.2		10,000			
	Activity 2.3		10,000			
	Activity 2.4			10,000		
	Activity 2.5			35,000		
	Activity 2.6				10,000	
	Activity 2.7					45,000
Sub-Total		70,000	60,000	60,000	60,000	80,000

PART II: PROJECT ACHIEVEMENTS IN 2020

1. Project Achievements in the Present Year

Due to the current Covid-19 pandemic in the region, adjustments were made to the activities planned for 2020. The inception meeting which was originally planned to be hosted in Singapore has been converted to a virtual teleconference meeting. In preparation for the activity details in 2021, the project organized its virtual regional inception meeting via Google Meet on 6 October 2020 (for Activity 2.1) and 8 October 2020 (for Activity 1.1).

Activity 1.1: GMP/GHP for Sushi and Sashimi

29 participants from 9 Member Countries attended the Activity 1.1. The national focal point was nominated and confirmed at the meeting. The scope of the regional guidelines GMP and GHP for sushi and sashimi was discussed. The meeting discussed and eventually agreed to rename and broaden the scope of this track to GMP and GHP for ready-to-eat raw fish and fishery products to cover beyond the range of sushi and sashimi. The consultant engaged by MFRD will develop the training materials in accordance with the discussed scope.

Activity 2.1: Guidelines on HPP Processing

29 participants from 9 Member Countries attended the Activity 2.1. The national focal point was nominated and confirmed at the meeting. The scope and range of seafood products for HPP was discussed and agreed by all the participating Member Countries. R&D will be conducted in accordance with the agreed scope and range of seafood products.

2. Activities and Budget in the Present Year

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Output 1: Regional standards serve as a guide in the development of national standards for GMP & GHP for sushi and sashimi								
Activity 1.1	Video Conferencing/Online questionnaire/Communication through email	8	12	4	3	2	0	25
Output 2: Handbook on HPP serves as methods to process fish and fishery products through HPP								
Activity 2.1	Video Conferencing/Online questionnaire/Communication through email	9	11	4	4	0	1	-

3. Expected Outcome/Outputs and Achievements in the Present Year

Activities	Expected Outcome/Outputs	Results/Achievements
Outcome		
Output 1:	Regional standards serve as a guide in the development of national standards for GMP & GHP for sushi and sashimi	
Activity 1.1	Implementation plan of the project activities discussed	National Focal Point nominated and confirmed. The scope of the regional guidelines GMP and GHP for sushi and sashimi was discussed. The meeting discussed and eventually agreed to rename and broaden the scope of this track to GMP and GHP for ready-to-eat raw fish and fishery products to cover beyond the range of sushi and sashimi. The consultant engaged by MFRD will develop the training materials in accordance to the discussed scope.

Activities	Expected Outcome/Outputs	Results/Achievements
Output 2:	Handbook on HPP serves as methods to process fish and fishery products through HPP	
Activity 2.1	Project scope and range of seafood products for HPP discussed	National Focal Point nominated and confirmed. The scope and range of seafood products was discussed and agreed by all the participating Member Countries. R&D will be conducted in accordance to the agreed scope and range of seafood products.

4. List of Publications in 2020

Publications	Type of Media	Attached e-file
Nil		

5. Evaluation on Workshops/Training Courses by Participants of AMSs

Activities	Evaluation
Output 1:	Regional standards serve as a guide in the development of national standards for GMP & GHP for sushi and sashimi
Activity 1.1	The participants from the SEAFDEC Member Countries expressed their heartfelt appreciation to MFRD for conducting the meeting smoothly and productively.
Output 2:	Handbook on HPP serves as methods to process fish and fishery products through HPP
Activity 2.1	The participants from the SEAFDEC Member Countries expressed their heartfelt appreciation to MFRD for conducting the meeting smoothly and productively.

6. Major Impacts and Issues

The meeting was originally planned to be hosted physically in Singapore but due to Covid-19, the meeting was conducted virtually via Google Meet. Although the inception meeting was conducted virtually, it was no less engaging and productive with very active participation from the participating Member Countries.

Due to Covid-19, we understand that most Member Countries staff are working from home and possibly overlooked the project meeting invitation. As a result, most countries responded late to our request for nomination and Lao PDR did not manage to join the inception meetings.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2021

1. Project Summary in 2021

After implementation, Plan and Scope of project have been finalised in year 2020, both outputs would embark on preparation phase, including developing of training materials, R&D product development for HPP of fish and fishery products, to be ready to deliver the Regional Training Course next in line.

2. Outcome, Outputs and Activities and Proposed Budget

(Unit: USD)

Proposed Activities	Descriptions	Proposed Budget
Outcome	Enhanced safety and competitiveness of seafood products in Southeast Asia	
Output 1:	Regional standards serve as a guide in the development of national standards for GMP & GHP for sushi and sashimi	
Activity 1.2	Development of Training Material for GMP & GHP for sushi and sashimi	10,000
Activity 1.3	Regional Training Course on GMP & GHP for sushi and sashimi	30,000

Proposed Activities	Descriptions	Proposed Budget
	Expected expenditures: - Travel Costs: USD 10,800 (USD600/pax, 18 participants, 2 from each Member Country) - Accommodation: USD 9,720 (USD180 x 3 nights x 2 participants x 9 countries) - DSA: USD 1,080 (USD30 X 2days X 18pax from Member Country) - Welcome dinner: USD 750 (USD25 x 30pax) - Other meeting costs: USD 6,000 (venue, transportation, etc.) - Miscellaneous: USD 1,650 Sub-total: USD 30,000	
Output 2:	Handbook on HPP serves as methods to process fish and fishery products through HPP	
Activity 2.2	R&D and product development in collaboration with local institutes and industry co-operants/partners	10,000
Activity 2.3	Development of Training Material for HPP of fish and fishery products	10,000
Activity 2.4	Preparation of Handbook on HPP of fish and fishery products	10,000 (to be paid in 2022)

3. Implementation Plan of Activities in 2021

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Output 1:												
Activity 1.2												
Activity 1.3												
Output 2:												
Activity 2.2												
Activity 2.3												
Activity 2.4												

4. Expected Activity Results in 2021

Planned activity	Expected Activity Results
Activity 1 Development of regional standards and guidelines on safe handling of raw seafood products	
Activity 1.2 Development of Training Material for GMP & GHP for sushi and sashimi	<ul style="list-style-type: none"> • Training materials developed
Activity 1.3 Regional Training Course on GMP & GHP for sushi and sashimi	<ul style="list-style-type: none"> • Completed Training Course report • Two participants from each MC
Activity 2 Building capabilities in HPP for seafood to enhance competitiveness	
Activity 2.2 R&D and product development in collaboration with local institutes and industry co-operants/partners	<ul style="list-style-type: none"> • R&D and product development completed
Activity 2.3 Development of Training Material for HPP of fish and fishery products	<ul style="list-style-type: none"> • Training materials developed

Planned activity	Expected Activity Results
Activity 2.4 Preparation of Handbook on HPP of fish and fishery products	<ul style="list-style-type: none">• Handbook on HPP of fish and fishery products drafted

PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2020
AND
PROPOSED ACTIVITIES FOR THE YEAR 2021

			Project ID: 202006008
Program Category:	Project under the ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title:	Assistance for Capacity Development in the Region to Address International Fisheries-related Issues		
Program Strategy No:	V	Total Period:	2020 - 2024
Lead Department:	Secretariat (SEC)	Lead Country:	Nil
Donor/Sponsor:	Japanese Trust Fund (JTF)	Total Project Budget:	USD 455,000
Project Partner(s):	Nil	Budget for 2021:	USD 91,000
Lead Technical Officer:	Suwanee Sayan (SEC)	Project Participating Country:	All Members Countries

PART I: OVERALL PROJECT DESCRIPTION

1. Executive Summary

Regional approaches in addressing the major gaps in the international fisheries-related issues tend to impede the sustainable development of fisheries and aquaculture in the Southeast Asian region. The project aims to provide a platform where discussions among the ASEAN Member States (AMSs) can be made, including regional approaches that could be raised to the international fisheries forum (*e.g.* FAO, meetings of RFMOs, CITES, WTO negotiations on fisheries subsidies, etc.). A number of key recommendations by regional and international experts at the meetings to be organized by the project could be used as a basis for regional actions by SEAFDEC and national actions by AMSs. Major outputs of such regional meetings organized by the project over the years include: regional common/coordinated positions and recommendations for national and regional action plans to safeguard the interest in the region and also supports AMSs on awareness raising for international fisheries-related issues. As a result, inputs from SEAFDEC and AMSs at global level, such as the FAO Committee on Fisheries (COFI), the Endangered Species of Wild Fauna and Flora (CITES), WTO – Fisheries Subsidies Negotiations can be made.

2. Background and Justification

Over the years, SEAFDEC has monitored the potential international issues on fish and fish products in Southeast Asia and provided a platform for AMSs through the organization of Expert Meetings and Regional Technical Consultations where the discussions concluded with key recommendations on the trade-related and environment-related issues on international concerns. For example, the proposed listing of commercially-exploited Aquatic Species (CEAS) into the CITES Appendices is one of the crucial issues that could impact not only on the management of fisheries but also on the economies of the countries in the region. Such impacts are anticipated not only as a result of new regulations in trade of the species being listed into the CITES Appendices, but also in the trade of look-alike species, as well as trade in parts or processed forms of the species. The listing of species into the CITES Appendices could therefore result in the termination of data collections on the production of these species, leading to the unavailability of data and information on the status of the species after being listed. Furthermore, the difficulties could also be encountered in proposing to delist or down-list the species once these are listed in the CITES Appendices. At the 32nd Meeting of the SEAFDEC Program Committee in 2000, SEAFDEC was asked to carefully give consideration on the proposed listing of CEAS into the Appendices of the CITES. In response, SEAFDEC has initiated the implementation of the program “Assistance of Capacity Building in the Region to Address International Fish-Trade Related Issues” under the ASEAN-SEAFDEC Strategic Partnership mechanism.

Since then, SEAFDEC has conducted a series of regional fora to facilitate discussions and development of common/coordinated positions among AMSs in the region on the proposals to list certain aquatic species into the CITES Appendices. SEAFDEC has also been undertaking technical activities on the conservation and management as well as on the sustainable utilization of various aquatic species that could be proposed for listing

in the Appendices, *e.g.* sharks and rays, seahorses, sea cucumbers, sea turtles and catadromous eels. These activities aim to come up with data and information on the status and trends of the production and utilization of these species, as well as the existing conservation and management measures undertaken by the countries in the region. The information compiled would serve as a basis for discussions on the proposed listing of the species into the CITES Appendices. Furthermore, with a funding support from the CITES-EU, SEAFDEC has been undertaking since 2016 the project that would support the improvement of data collections specifically for recording of sharks and rays at species level, and also the capacity building in the development of Non-Detriment Findings (NDFs) for the conduct of scientific reviews that would justify as to whether the trade endangers the species or not.

SEAFDEC also provides a platform for AMSs to discuss harmonized approaches toward the issue of fisheries subsidies. For example, the Regional Technical Consultation (RTC) on International Fisheries-related Issues on 20-22 June 2018 in Bangkok, Thailand, included discussions on fisheries subsidies. During the 2018 RTC, it was agreed that the scope of fisheries subsidies should focus on the types of fishing gear and not by species, and that fisheries subsidies should not be considered as a standalone issue, as it has a close linkage with other initiatives, *e.g.* sustainability of the fish stocks. In order that the discussions would also address the issues that concern the region, it was agreed that AMSs should consider the possibility of sending a country delegate that comprises especially their national fisheries officers to attend in different clusters of fishery subsidies negotiations. Meanwhile, SEAFDEC should also facilitate the identification of a focal point of each AMS as well as the development of the ASEAN common position on fishery subsidies for adoption by the ASEAN Minister on Agriculture and Forestry (AMAF) to be reflected at the WTO fora upon consideration by the SEAFDEC Council. In 2020, SEAFDEC in collaboration with FAO and WTO jointly organized the Webinar on Fisheries Subsidies: Southeast Asian Region Perspectives to discuss among SEAFDEC Member Countries (MCs) on possibility to come up with a set of recommendations and the ASEAN common position on fisheries subsidies. SEAFDEC also brought the international organizations to present the brief introduction on fisheries subsidies in the WTO and updated information on the status of the negotiation agenda of WTO on fisheries subsidies. The webinar also provides the platform for SEAFDEC MCs to share views at the national level on the impacts of WTO rules on fisheries subsidies and to discuss this issue together.

In addition, SEAFDEC has been working on the promotion of sustainable fisheries development in the Southeast Asian region since its establishment in 1967. The SEAFDEC program frameworks to support AMSs have 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 policy guidelines for SEAFDEC and its 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 its continuing efforts to further strengthen the SEAFDEC network among AMSs in order to move forward on the sustainable utilization of fisheries resources in the region. In conjunction with this, the cooperation within the region and among AMSs needs to be further enhanced and included in the project framework under the new JTF 6-II in order to share and exchange information and to work together to meet the final goal of the ASEAN-SEAFDEC Resolutions and Plan of Action that has been committed by all AMSs.

This project also supports the development and implementation of the Resolution on Sustainable Fisheries for Food Security for the ASEAN Region Towards (RES-2030) as follows;

#82 “Strengthen cooperation and mechanisms among AMSs to work towards common positions that could be reflected in international fish trade related fora, *e.g.* World Trade Organization (WTO), Food and Agriculture Organization of the United Nations (FAO)/COFI Sub-Committee on Fish Trade, Office International des Epizooties (OIE), Codex Alimentarius Commission (CAC), and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)” through provide the platform for Regional Technical Consultation (RTC) (or Senior Official Meeting if required) to discuss the international fish trade-related issues which may impact the development of fisheries and aquaculture in the Southeast Asian region.

#88 “Increase participation and involvement of AMSs in international fora and technical committees, *e.g.* CITES, CAC, FAO, OIE, Regional Fisheries Bodies (RFBs) and WTO; and promote ASEAN interest, recognizing that fisheries policies of relevance to the ASEAN are increasingly discussed and agreed upon at the global” through supports SEAFDEC staff to participate the relevant regional/international forum on international fish trade.

Furthermore, this project also supports the strengthening global cooperation for Sustainable Development Goals (SDGs), such as *e.g.* SDG14: “Life below Water” to conserve and sustainably use the oceans, seas and marine resources; and SDG 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development. SEAFDEC continues to support the sustainable use of ocean-based resources through AMSs on awareness raising for international fisheries-related issues.

3. Gender Sensitivity of the Project

No gender sensitive issue in this project because this project welcomed all genders to participate *e.g.* RFPN members.

4. Project Goal, Outcome, Outputs, Activities, Indicators and Verification

1.1 Logical Framework

GOAL (Overall Objectives)	Indicators	Means of Verification
Sustainable utilization and sound management of fisheries resources through appropriate regional approaches in international fish trade	<ul style="list-style-type: none"> - Regional cooperation in international fish trade - Responsible fisheries practice is maintained 	<ul style="list-style-type: none"> - Improved international fish trade - Effective and efficient fisheries management
OUTCOME 1	Indicators	Means of Verification
Actions of AMSs at the international fora reflecting a more understanding with supportive data/information	All AMSs can update and share their status on the international fish trade-related issues	Improved information on and improved capacities of AMSs in international fish trade-related issues
OUTPUT 1	Indicators	Means of Verification
The status of international fish trade-related issues updated and informed AMSs	Detailed information on international fish trade-related issues	Updates of international fish trade-related issues
ACTIVITY 1	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 1.1: Participation in the relevant regional/international forum on international fish trade, <i>e.g.</i> FAO COFI, CITES, etc.	Participation of one SEAFDEC staff in FAO COFI, CITES, etc.	<ul style="list-style-type: none"> - Meeting report - Back-to-Office report - Newsletter - Appropriate budget allocated for meetings participations
Activity 1.2: The status of international fish trade-related issues reviewed	At less once a year to review/updated status of the international fish trade-related issues	Updates of international fish trade-related information and issues
OUTPUT 2	Indicators	Means of Verification
Cooperation among AMSs aiming to safeguard fisheries and aquaculture of the Southeast Asian region through the development the common/ coordinated positions on the international fish trade-related issue and acknowledge the impact from the international fish trade-related issues	<ul style="list-style-type: none"> - Strengthened cooperation in the region - Common/ coordinated positions on the international fish trade-related issue developed 	Common/coordinated positions on the international fish trade-related issue

ACTIVITY 2	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 2.1: A platform for Regional Technical Consultation (RTC) (or Senior Official Meeting if required) provided to discuss the international fish trade-related issues which may impact to the development of fisheries and aquaculture in the Southeast Asian region	<ul style="list-style-type: none"> - RTC - Expected number (50 persons) of participants 	<ul style="list-style-type: none"> - Consultation report - Number (50 persons) of participants - Appropriate budget allocated for meeting participations
Activity 2.2: RTC organized to discuss and develop a common/coordinated position and policy recommendations for AMSs	<ul style="list-style-type: none"> - RTC - Expected number (50 persons) of participants 	<ul style="list-style-type: none"> - Number (50 persons) of participants - Report of the RTC - The Country's Position on the proposed international trade-related instruments (e.g. CEAS by COP as well as the country's views on each proposal to be addressed at the Council Meeting for consideration and adoption, WTO negotiation on fisheries subsidies, etc.) - ASEAN-SEAFDEC Common Positions on Inclusion of the Commercially - exploited Aquatic Species (CEAS) to the CITES Appendix
OUTPUT 3	Indicators	Means of Verification
Communications and cooperation with AMSs through the Regional Fisheries Policy Network (RFPN) strengthened	<ul style="list-style-type: none"> - Better communications and improved cooperation between SEAFDEC and AMSs - Effective RFPN roles 	<ul style="list-style-type: none"> - Appropriate and effective communications with their respective AMSs and among AMSs - Efficient actions by RFPN members
ACTIVITY 3	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 3.1: Capacities of RFPN enhanced through the participation in SEAFDEC meetings/ workshops	Participation of RFPN members in SEAFDEC meetings/workshops	<ul style="list-style-type: none"> - Meeting report - Back-to-Office report - Newsletter
Activity 3.2: SEAFDEC Fisheries Country Profiles updated under the assignments of RFPN	SEAFDEC Fisheries Country Profiles updated	Updated SEAFDEC Fisheries Country Profiles in the SEAFDEC website

Activities 3.3: Communications with AMSs improved through the support / advice of RFPN members	Information obtained, planned work initiated and actions taken timely	Work plan completed based on appropriate information obtained from AMSs
OUTPUT 4	Indicators	Means of Verification
Information on international fisheries-related issues disseminated in the Southeast Asian region	Updated information on international fisheries-related issues disseminated	Number of publications and their dissemination
ACTIVITY 4	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 4.1: Preparation, production and dissemination of the publications on international fisheries-related issues or the results of the project	Publications produced and disseminated	Publications on international fisheries-related issues

1.2 Project Implementation Plan for 2020 - 2024

Activities	2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Output 1:																				
Activity 1.1	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Activity 1.2			■	■			■	■			■	■			■	■			■	■
Output 2:																				
Activity 2.1		■				■				■		■		■		■		■		■
Activity 2.2									■	■	■	■								
Output3:																				
Activity 3.1	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Activity 3.2			■	■			■	■			■	■			■	■			■	■
Activity 3.3																				
Output4:																				
Activity 4.1				■				■				■				■				■

1.3 Proposed Budget for 2020 – 2024

(Unit: USD)

Output	Activities	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Year 5 (2024)
Output 1	Activity 1.1	7,500	7,500	10,000	3,000	7,000
	Activity 1.2	1,000	1,000	1,000	1,000	1,000
Output 2	Activity 2.1	26,000	26,000	25,000	25,000	25,000
	Activity 2.2	-	-	25,000	-	-
Output 3	Activity 3.1	50,000	55,000	50,000	50,000	50,000
	Activity 3.2	500	500	500	500	500
	Activity 3.3	-	-	-	-	-
Output 4	Activity 4.1	1,000	1,000	1,500	1,000	1,000
Sub-Total		86,000	91,000	113,000	80,500	84,500

PART II: PROJECT ACHIEVEMENTS IN 2020

1. Project Achievements in the Present Year (2020)

Under the current Covid-19 pandemic situation, the key outputs of the project implementation of this year were two SEAFDEC webinars including the Webinars on Impact of the COVID-19 on Fisheries and Aquaculture in Southeast Asia on 2-3 July 2020 and the Webinar on Fisheries Subsidies: Southeast Asian Region Perspectives on 23-24 September 2020. The webinar reports were published through the SEAFDEC publications such as Fish for the People, Meeting Report, in order to enhance its visibility to the Member Countries, regional and international levels, and to be used as a basis for further discussions among AMS on such issues (e.g. impacts of COVID19 on fisheries and aquaculture, particular to the small-scale fisheries (discussed by another webinar of FAO, ASEAN, etc.)).

2. Activities and Budget in the Present Year

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Output 1:								
Activity 1.1 Participation in the relevant regional/ international forum on international fish trade e.g. FAO COFI, CITES, etc. (Most of the regional/ international forum postponed to 2021 and changed to online platform) - FAO virtual dialogues examining Fisheries and Aquaculture Governance and Development, 15-17 July 2020	III							0
Activity 1.2 Review the status of international fish trade-related issues This activity was adjusted to online platform, including								
- Webinar on Impact of COVID-19 on Fisheries and Aquaculture in Southeast Asia on 2-3 July 2020	I	189	134	59	40	38	47	336 (completed)
- Webinar on Fisheries Subsidies: Southeast Asian Region Perspectives on 23-24 September 2020	I	46	18	14	11	1	4	290 (completed)
- Virtual Inter-Departmental Workshop on Study on Impact from COVID, 5 October 2020	I	-	-	16	10	-	-	204 (completed)
- Special Seminar on Financial Services for Small-Scale Fisheries in Southeast Asia: Insurance Schemes, December 2020	I							(On-going)

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Output 2:								
Activity 2.1 Regional Technical Consultation on International Fisheries-related Issues This activity will be adjusted to be the Technical Consultation on Road Map for Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030 (RES&POA-2030), scheduling in December 2020 or early 2021								10,000 (on-going)
Output 3:								
Activity 3.1 Support RFPNs and enhanced RFPNs capacity through participations of ASEAN-SEAFDEC Meetings (This activity was cancel of RFPN for 2020)	II							454*
Activity 3.2 SEAFDEC Fisheries Country Profiles updated under the assignments of RFPN (Postponed this activity to the following year)								0
Output 4:								
Activity 4.1 Preparation, production and dissemination of the publications on international fisheries-related issues or the results of the project								0

* Expenses for Activity 3.1 included the cancellation of international airfares, etc. for the RFPN members due to the Covid-19 pandemic early 2020.

3. Expected Outcome/Outputs and Achievements

Activities	Expected Outcome/Outputs	Results/Achievements
Outcome		
Output 1:		
Activity 1.1 Participation in the relevant regional/international forum on international fish trade (Most of the regional/ international forum postponed to 2021 and changed to online platform)		
Activity 1.2 Review the status of international fish trade-related issues - Webinar on Impact of COVID-19 on Fisheries and Aquaculture in	Updated information and current situation on the issues on international fish trade-related issues e.g. impact of COVID-19, WTO negotiation on fisheries subsidies, etc. for	- Report of the webinars - Drafted common/coordinated position of AMSs on WTO negotiation on fisheries subsidies - An article published in the

Activities	Expected Outcome/Outputs	Results/Achievements
Southeast Asia via zoom platform on 2-3 July 2020 - Webinar on Fisheries Subsidies: Southeast Asian Region Perspectives on 23-24 September 2020 - Virtual Inter-Departmental Workshop on Study on Impact from COVID-19, 5 October 2020	their AMSs consideration and information	Fish for the People Vol. 18.3 - A news in Newsletters - VDO clips recorded of the webinars disseminated on SEAFDEC website and facebook
Output 2:		
Activity 2.1 Regional Technical Consultation on International Fisheries-related Issues		
Output 3:		
Activity 3.1 Support RFPNs and enhanced RFPNs capacity through participations of ASEAN-SEAFDEC Meetings (This activity was cancelled for 2020)		
Activity 3.2 SEAFDEC Fisheries Country Profiles updated under the assignments of RFPN (Postponed this activity to the following year)		
Output 4:		
Activity 4.1 Preparation, production and dissemination of the publications on international fisheries-related issues or the results of the project	Published and disseminated the reports of the webinars organized in 2020	Reports of the webinars

4. List of Publications in 2020

Publications	Type of Media	Attached e-file
1. Full Report of the SEAFDEC Webinars on Impact of the COVID-19 on Fisheries and Aquaculture in Southeast Asia	Soft copy	PDF
2. Full Report of the SEAFDEC Webinar on Fisheries Subsidies: Southeast Asian Region Perspectives	Soft copy	PDF

5. Evaluation on Workshops/Training Courses by Participants of AMSs

Activities	Evaluation
Output 1:	
Activity 1.1 Participation in the relevant regional/international forum on international fish trade such as FAO COFI, CITES, etc.	The regional/international forum of FAO-COFI and others were postponed whereby the platform of such events were virtually conducted. The FAO-COFI has been rescheduled to early February 2021.
Activity 1.2 Review the status of international fish trade-related issues - Webinar on Impact of COVID-19 on Fisheries and	By the end of each webinar, the attendees were requested to provide evaluation through the online questionnaire by identifying points for further improvement. The results of evaluation for each webinar will be attached to the full report of the webinar. The Webinar/Meeting Reports and the VDO records during the conduct

Activities	Evaluation
Aquaculture in Southeast Asia via zoom platform on 2-3 July 2020 - Webinar on Fisheries Subsidies: Southeast Asian Region Perspectives on 23-24 September 2020 - Inter-Departmental Workshop on Study on Impact from COVID-19, 5 October 2020	of the webinars were uploaded to SEAFDEC website and other social media.
Output 2:	
Activity 2.1 Regional Technical Consultation on International Fisheries-related Issues	This activity was cancelled.
Output 3:	
Activity 3.1 Support RFPNs and enhanced RFPNs capacity through participations of ASEAN-SEAFDEC Meetings	This activity was postponed to 2021.
Activity 3.2 SEAFDEC Fisheries Country Profiles updated under the assignments of RFPN	This activity was postponed to 2021.
Output 4:	
Activity 4.1 Preparation, production and dissemination of the publications on international fisheries-related issues or the results of the project	This activity was cancelled.

6. Major Impacts/Issues

In 2020, due to the unusual situation brought by the Covid-19 pandemic, the implementation of the planned project activities has been adjusted and re-scheduled. The project supports the AMSs at updating information, exchanging views, and sharing experiences among experts and national agencies concerned on fisheries specific issues through the online platform. The SEAFDEC Webinars were conducted, including i) Webinar on Impact of Covid-19 on Fisheries and Aquaculture in Southeast Asia on 2-3 July 2020, and ii) Webinar on Fisheries Subsidies: Southeast Asian Region Perspectives on 23-24 September 2020.

In response to the Teleconference of SEAFDEC Council Meeting in May 2020, this project plans to organize an Inter-Departmental workshop to study the impacts of Covid-19 in AMSs, scheduling on 5 October 2020. In this connection, it is planned that a series of activities for this study will be implemented under a regional program on Study on Impacts of Covid-19 Pandemic on the Fisheries Sector of SEAFDEC Member Countries.

Furthermore, SEAFDEC plans to organize the Technical Consultation Meeting on Road Map of Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030 (RES&POA-2030) in December 2020 or early 2021 to set indicators and timeline to evaluate of each resolution and plan of action.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2021

1. Project Summary in 2021

In 2021, SEAFDEC will continue to support SEAFDEC staff to participate in the relevant regional/international fora *e.g.* FAO COFI, CITES, etc. and update the status of the international fish trade-related issues thought providing a platform for Regional Technical Consultation (RTC) for AMSs to discuss the international fish trade-related issues which may impact to the development of fisheries and aquaculture in the Southeast Asian region.

SEAFDEC plans to carry out the series of activities for regional program on the Study on Impacts of Covid-19 Pandemic on the Fisheries Sector of SEAFDEC Member Countries to support SEAFDEC Member Countries to come-up with a policy brief of the impacts of the Covid-2019 pandemic on the fisheries sector of the SEAFDEC Member Countries. Moreover, SEAFDEC also plans to organize a meeting to set-up a common system/methodology to monitor the implementation and evaluate the implementation of SEAFDEC Guidelines which were developed and endorsed by SEAFDEC Council Directors and ASEAN Mechanism. The meeting results and/or meeting reports will be produced and disseminated at the end of the year.

In addition, SEAFDEC continues to support and strengthen the cooperation with AMSs through eight members of the Regional Fisheries Policy Networks (RFPNs) such as their participation in SEAFDEC meetings/workshops, updates of Country Profiles and assistance in smooth and effective communications with AMSs under the assignments of RFPN.

2. Outcome, Outputs and Activities and Proposed Budget

(Unit: USD)		
Proposed Activities	Descriptions	Proposed Budget
Outcome:	Actions of AMSs at the international fora reflecting a more understanding with supportive data/information	
Output 1:	Review/updated status of the international fish trade-related issues	
Activity 1.1	<p>Participation in the relevant regional/international forum on international fish trade, <i>e.g.</i> FAO COFI, CITES, etc.</p> <p>SEAFDEC staff will participate in the international/regional fora to update the international fish trade-related issues <i>e.g.</i> AEG-CI TES, FAO Panel, etc.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Traveling Costs: USD 3,500 - Daily Subsistence Allowances: USD 1,750 - Accommodations: USD 2,250 Sub-total: USD 7,500 	7,500
Activity 1.2	<p>The status of international fish trade-related issues reviewed</p> <p>Information and current situation on the issues from the international events will be updated and shared with the AMSs for their reference and consideration for further appropriate action.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - 3 Regional Workshops (online platform): USD 1,000 Sub-total: USD 1,000 	1,000
Output 2:	<p>The Country's Position on the proposed CEAS by COP as well as the country's views on each proposal to be addressed at the Council Meeting for consideration and adoption</p> <p>ASEAN-SEAFDEC Common/Coordinated Position and regional fishery policy recommendations.</p>	

Proposed Activities	Descriptions	Proposed Budget
Activity 2.1	<p>Provide platform for Regional Technical Consultation (RTC) 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</p> <p>The Regional Technical Consultation will be organized with the participation from AMSs and experts to seek views and update the status on the international fish trade related issues in their country which may impact the development of fisheries and aquaculture in the Southeast Asian Region. The outputs from the RTC are the regional interest to be addressed at the International fora.</p> <p>Remarks: RTC will be organized in Thailand (for 2 days)</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Traveling Costs: USD 13,000 - Daily Subsistence Allowances: USD 3,300 - Accommodation: USD 5,200 - Meeting package: USD 3,500 - Others: USD 1,000 Sub-total: USD 26,000 	26,000
	<p>System to monitor the implementation and evaluate the SEAFDEC guidelines (Back-to-Back with the RTC)</p> <p>SEAFDEC plans to organize a Meeting to develop a common system/methodology to monitor and evaluate the implementation of SEAFDEC Guidelines.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Accommodation: USD 5,200 - Meeting package: USD 3,500 - Others: USD 1,300 Sub-total: USD 10,000 	10,000
	<p>Study on Impacts of Coronavirus-2019 Pandemic on the Fisheries Sector of SEAFDEC Member Countries</p> <p>This activity will support the respective SEAFDEC Departments and/or the Member Countries to undertake necessary works to collect data, and provide such data to the project based on the study framework and questionnaires. The outputs from this activity would be used as a basis for further development of a policy brief for AMSs on this topic.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Allocation to SEAFDEC Department and/or Member Countries (USD 1,000 for each Department/country): USD 10,000 - Other: USD 1,000 Sub-total: USD 11,000 	11,000
Output 3:	Strengthened cooperation with ASEAN Member Countries through RFPN	
Activity 3.1	<p>Support RFPNs and enhanced RFPNs capacity through participations of ASEAN-SEAFDEC Meetings</p> <p>RFPN members are fishery officers from ASEAN Member States who are invited and stationed at SEAFDEC Secretariat, and to be involved in activities of SEAFDEC especially in terms of coordination with their respective countries. SEAFDEC also supports the expenditures of RFPN members' stationing at the SEAFDEC Secretariat as well as business trips to attend related meetings in the region aiming at enhancing capacity of the RFPN members.</p>	55,000

Proposed Activities	Descriptions	Proposed Budget
	Estimated expenditures: - Traveling Costs (USD 450 x 8 prs): USD 3,600 - Honorarium (USD 750 x 6 months x 8 Prs): USD 36,000 - Accommodation (USD 225 x 6 months x 8 Prs): USD 10,800 - Other expenses (Health insurance, airport taxes, visa, etc.): USD 4,600 Sub-total: USD 55,000	
Activity 3.2	SEAFDEC Fisheries Country Profiles updated under the assignments of RFPN RFPN members will be assigned to updated country profiles on the topic related to the international fish trade-related issues.	500
Activity 3.3	Communications with AMSs improved through the support / advice of RFPN members RFPN members will be assisted and supported by SEAFDEC to communicate with AMSs to take actions in a timely and smooth manners.	
Output 4:	Publication of the results of the project	
Activity 4.1	Produce and disseminate the publications related to international fisheries related issues or the results of the project Meeting Report will be produced and disseminated. Estimated expenditures: - Printing meeting results and/or Meeting Report USD 1,000 Sub-total: USD 1,000	1,000

3. Implementation Plan of Activities in 2021

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Output 1:												
Activity 1.1												
Activity 1.2												
Output 2:												
Activity 2.1												
Output 3:												
Activity 3.1												
Activity 3.2												
Activity 3.3												
Output 4:												
Activity 4.1												

4. Expected Activity Results in 2021

Planned activity	Expected Activity Results
Activity 1 Actions of AMSs at the international fora reflecting a more understanding with supportive data/information	
Activity 1.1. Participation in the relevant regional/international forum on international fish trade, e.g. FAO COFI, CITES, etc.	<ul style="list-style-type: none"> Strengthened coordination between SEAFDEC, Member Countries and organizations on international fisheries related matters.

Planned activity	Expected Activity Results
Activity 1.2. Review the status of international fish trade-related issues	<ul style="list-style-type: none"> Information and current situation on the issues from the international events will be updated and shared with all AMSs for their reference consideration.
Activity 2 Provide platform to develop the regional recommendations, common/coordinated positions and regional fishery policy	
Activity 2.1. Provide a platform for Regional Technical Consultation (RTC) or even Senior Official Meeting (if required) in order to discuss and consider the international fish trade related issues which may impact the development of fisheries and aquaculture in the Southeast Asian Region.	<ul style="list-style-type: none"> The regional issues/concerns to be addressed at the international fora such as the draft of Regional Policy Recommendation. This draft would be further submission to the SEAFDEC Council Director and ASEAN mechanism for endorsement and also high level respectively. Report on the study of impacts of Covid-19 pandemic on the fisheries sector of the SEAFDEC Member Countries Policy brief on the impacts of the Covid-19 pandemic on the fisheries sector of the SEAFDEC Member Countries
Activity 3 Strengthened cooperation with ASEAN Member Countries through RFPN	
Activity 3.1 Support RFPNs and enhanced RFPNs capacity through participations of ASEAN-SEAFDEC Meetings.	<ul style="list-style-type: none"> Enhanced knowledge and understanding of the RFPN members (8 countries) on SEAFDEC policy, project implementations and activities. Capacity development in writing the report of the meeting and improvement of their working performance. Able to expose themselves to work under a multinational environment. Creation of network among the RFPN members, facilitating closer cooperation among the Member Countries in the future.
Activity 3.2 SEAFDEC Fisheries Country Profiles updated under the assignments of RFPN.	<ul style="list-style-type: none"> Country Profiles on Fisheries were updated and presented by those RFPN members.
Activity 3.3 Communications with AMSs improved through the support/advice of RFPN members.	<ul style="list-style-type: none"> RFPN members assisted and supported SEAFDEC to communicate with AMSs to actions taken timely and work smoothly.
Activity 4 Publication of the results of the project	
Activity 4.1 Produce and disseminate the publications related to international fisheries related issues or the results of the project.	<ul style="list-style-type: none"> Meeting reports or the results of the project.

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2020
AND
PROPOSED ACTIVITIES FOR THE YEAR 2021**

			Project ID: 201301006
Program Category:	Project Under the ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title:	Fisheries Resource Survey & Operational Plan for M.V. SEAFDEC 2		
Program Strategy No:	Strategy VI	Total Period	2004 ~
Lead Department:	Training Department	Lead Country:	None
Donor/Sponsor:	Host Countries of the Survey	Total Project Budget:	None
Project Partner(s):	SEAFDEC Member Counties	Budget for 2021:	
Lead Technical Officer:	Isara Chanrachkij	Project Participating Country	SEAFDEC Member Counties

PART I: PROJECT DESCRIPTION

1. Executive Summary

Since the establishment of Southeast Asian Fisheries Development Center (SEAFDEC) in 1968, the technical supporting to SEAFDEC Member Countries (MCs) on (4) major components: (1) Marine fisheries resources research survey; (2) Marine environmental oceanographic research survey; (3) Onboard navigation and marine engineering training; and (4) Sea trial on fishing operation, oceanographic instruments, and fishing vessel. Since 2004, M.V. SEAFDEC 2 has been granted by the Government of Japan to support SEAFDEC MCs on fisheries resources and marine environmental survey in order to fulfill the needs of the SEAFDEC MCs. The major outputs from the survey is cruise reports, technical documents on fisheries resource stock status marine biodiversity, and other specific requirements, *e.g.* oceanography and marine environment, and etc.

Due to COVID 19 pandemic in 2019, SEAFDEC/TD is necessary to postpone 3 research cruises in 2020, *i.e.* 1) National Research Survey on Demersal resources in the Waters of Viet Nam by using M.V. SEAFDEC 2 (expected 69 service days), 2) Marine Fisheries Resources and Marine Debris Research Survey in the Gulf of Thailand (expected 47 service days), and 3) Research cruises to compare on the catch per unit effort of fisheries resources by trawling between research vessel of SEAFDEC/TD and Department of Fisheries Thailand (expected 6 service days). Only Cruise M.V. SEAFDEC 2 No. 61-1/2020, Sea trial on main engine, generator engines, machinery, engine control system, steering gear, navigation equipment, safety device system and bottom trawl, had been complete operated in September 2020. Total number of service days by M.V. SEAFDEC 2 are 3 days

SEAFDEC/TD plan to conduct two (2) by using M.V. SEAFDEC 2 in 2020 *i.e.* 1) Marine Fisheries Resources, Environment and Marine Debris Research Survey in the Gulf of Thailand (). Total expected service days are 47 days during the period of March to May 2021, and 2) The Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between Research Vessel of SEAFDEC Training Department and Department of Fisheries Thailand. Total expected service days are 6 days, during the period of January to February 2021. In addition, SEAFDEC/TD will improve the hydroacoustic equipment *e.g.* scientific echo sounder to investigate abundance of small pelagic resources which can support to SEAFDEC MCs in the future.

2. Background and Justification

Since the establishment of Southeast Asian Fisheries Development Center (SEAFDEC) in 1968, the technical supporting to SEAFDEC Member Countries (MCs) on marine capture and exploitation of fisheries resource focused on human resource development by using SEAFDEC's research vessels has been on the significant mandates of SEAFDEC. Since the 1970s, SEAFDEC has supported MCs in fisheries resource exploration, marine fisheries resources research survey, human resource development on fishing technology and marine engineering. In line with the SEAFDEC Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030, SEAFDEC has mandate to support MCs to explore the potential of under-utilized fishery resources through comprehensive fishery resources surveys, and promote their

exploitation in a precautionary manner based on analysis of the best available scientific information. With the operations of M.V. SEAFDEC research vessels, SEAFDEC can support MCs to strengthen knowledge, including local knowledge, and science-based development and management of fisheries by enhancing the national capacity to collect, analyze, and share fisheries data and information. The envisage outcome of fisheries resources marine environmental survey by SEAFDEC research vessel could establish the reference points and come up with estimated biomass or capacity level to determine the maximum sustainable yield, allowable biological catch, or allowable effort for marine and inland fisheries. In addition activities under the resources survey of M.V. SEAFDEC 2 will improve the capability of fishing crew and workers in the fishing industry, and conduct educational and skills development programs for new crew members and workers entering the industry; while also adopting appropriate technologies to optimize the number of crew onboard fishing vessels.

In 2002, the Government of Japan approved the construction of a new fishery research and training vessel namely “M.V. SEAFDEC 2” along with procurement of the requisite fishing gear, fishing machinery, and survey equipment with the main purposes to conduct fishery resource and oceanographic research surveys and shipboard training on such topics in ASEAN Countries. M.V. SEAFDEC 2 has supported SEAFDEC MCs on fisheries resources and marine environmental survey since 2004. The expected envisage output of the utilization of M.V. SEAFDEC 2 on the fisheries resources survey are cruise reports, technical documents on fisheries resource stock status marine biodiversity, and other specific requirements, e.g. oceanography and marine environment, and, etc. SEAFDEC has expected that the results from the survey could facilitate the establishment and implementation of comprehensive policy for sustainable management and development of marine capture fisheries both national, sub-regional and regional. The other significant expected outputs is to support human resource development of national researchers in various fields including fisheries resources and marine environmental survey, oceanography, fisheries biologist, fishing gear technologist, navigator, and marine engineer to support the shipboard survey. In order to achieve the expected outputs as mentioned above, SEAFDEC Training Department (TD) works in close collaboration with the SEAFDEC Member Countries and potential partners at national, sub-regional, and regional levels has supported MCs on fisheries resources and marine environmental survey. M.V. SEAFDEC 2 as major research vessel has carried out sixty-one (61) cruises with four (4) major components: (1) Marine fisheries resources research survey; (2) Marine environmental oceanographic research survey; (3) Onboard navigation and marine engineering training; and (4) Sea trial on fishing operation, oceanographic instruments, and fishing vessel. Early of 2019, M.V. SEAFDEC 2 has completely improved and reconditioned the modern navigation equipment, parts of engines, and fishing accessories supported by Japanese Government through Japan International Cooperation Agency (JICA) and overall improvement has been completed in early 2020.

Due to COVID 19 pandemic in 2019, SEAFDEC/TD is necessary to postpone 3 research cruises in 2020, *i.e.* 1) National Research Survey on Demersal resources in the Waters of Viet Nam by using M.V. SEAFDEC 2 (expected 69 service days), 2) Marine Fisheries Resources and Marine Debris Research Survey in the Gulf of Thailand (expected 47 service days), and 3) Research cruises to compare on the catch per unit effort of fisheries resources by trawling between research vessel of SEAFDEC/TD and Department of Fisheries Thailand (expected 6 service days). Only Cruise M.V. SEAFDEC 2 No. 61-1/2020, Sea trial on main engine, generator engines, machinery, engine control system, steering gear, navigation equipment, safety device system and bottom trawl, had been complete operated in September 2020. Total number of service days by M.V. SEAFDEC 2 are 3 days.

3. Gender Sensitivity of the Project

Shipboard activities by using M.V. SEAFDEC 2 is available for female and male researchers. However, numbers of female researchers are less than male researchers regarding the number of bathroom and toilet arrangements onboard. Generally, the quota for female researchers is 4 persons limited by only bedroom with 4 bunkers.

4. Project Goal, Outcome, Outputs, Activities, Indicators and Verification

4.1 Logical Framework

GOAL (Overall Objectives, Impact)	Indicators	Means of Verification
Sustainable marine fisheries resources in Southeast Asia		

OUTCOME	Indicators	Means of Verification
National fisheries management by using the update reference data and information from the Marine Fisheries Resources and Marine Environment survey and indicator of resource abundance	Data and information from the Marine Fisheries Resources and Marine Environment survey and indicator of fisheries resource abundance	National report on the fisheries resource abundance
OUTPUT 1	Indicators	Means of Verification
A set of scientific data <i>i.e.</i> fisheries resource, marine environmental and oceanography data collected from the cruise survey	A set of scientific data <i>i.e.</i> fisheries resource, marine environmental and oceanography data collected from the cruise survey	Cruise report Data of fisheries resources and oceanography store in SEAFDEC database.
ACTIVITY 1	Indicators; key Inputs (Number to be conducted, Where, Time)	Means of Verification
The marine fisheries resources and marine environmental survey conducted by using M.V. SEAFDEC 2	Cruise of M.V. SEAFDEC 2 to support SEAFDEC Member Countries on fisheries marine fisheries resources and marine environmental survey, and human resources development.	1. Summary Report of cruise plan 2. Cruise Report of fisheries resources and marine environmental survey, and shipboard training.
OUTPUT 2	Indicators	Means of Verification
Competent researcher in the marine fisheries resources research survey and SEAFDEC ship staffs on the navigation and Engineers engineering	Number of researcher onboard fisheries resources and marine environmental survey conducted by SEAFDEC MCs	1. Cruise Report of fisheries resources and marine environmental survey, and shipboard training.
ACTIVITY 2	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
The marine fisheries resources and marine environmental survey and training cruise conducted by using M.V. SEAFDEC 2	Cruise of M.V. SEAFDEC 2 to support SEAFDEC Member Countries on fisheries marine fisheries resources and marine environmental survey, and human resources development.	1. Cruise Report of fisheries resources and marine environmental survey, and shipboard training.

4.2 Project Implementation Plan for 2020 – 2024

Activities	2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Output 1:																				
Activity 1																				
Output 2:																				
Activity 2																				

4.3 Proposed Budget for 2020 – 2024

(Unit: USD)

Output	Activities	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Year5 (2024)
Output 1	Activity 1	Cost Sharing Policy				
Output 2	Activity 2	Cost Sharing Policy				
Sub-Total						

PART II: PROJECT ACHIEVEMENTS IN 2020

1. Project Achievements in the Present Year (2020)

Due to COVID 19 pandemic in 2019, SEAFDEC/TD is necessary to postpone 3 research cruises in 2020, *i.e.* 1) National Research Survey on Demersal resources in the Waters of Viet Nam by using M.V. SEAFDEC 2 (expected 69 service days), 2) Marine Fisheries Resources and Marine Debris Research Survey in the Gulf of Thailand (expected 47 service days), and 3) Research cruises to compare on the catch per unit effort of fisheries resources by trawling between research vessel of SEAFDEC/TD and Department of Fisheries Thailand (expected 6 service days).

Only Cruise M.V. SEAFDEC 2 No. 61-1/2020, Sea trial on main engine, generator engines, machinery, engine control system, steering gear, navigation equipment, safety device system and bottom trawl, had been completely operated in September 2020. Total number of service days by M.V. SEAFDEC 2 are 3 days During the sea trial, navigators of M.V. SEAFDEC 2 understands and well operates the new installed instrument *e.g.* navigation equipment, communication equipment onboard. Ship stabilizer test and engine efficiency and engine control system was conducted. Load of freezing room, cold storage and refrigeration system was operated. Engineers of M.V. SEAFDEC 2 enhances skill and experience on engine maintenance of main engine and auxiliary engine and deck machineries. List on the condition of navigation, engine, and trawl fishing system onboard M.V. SEAFDEC 2 is recorded as a reference for further improvement in the future. An imperfect part of marine debris and microplastic sampling gear identified and further been modified. Area of deck where should be installed with auxiliary boom to operate marine debris and microplastic sampling gear is identified and further modification in the future.

Last achievement of the Sea trial cruise is the application of the ship rules to prevent the COVID-19 outbreaking had already been practiced and verified. In case of the survey in Thailand Waters, ship rules to prevent the COVID-19 outbreaking is applicable.

2. Activities and Budget in the Present Year

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Output 1:								
Activity 1.1	R, I, C			1	4			
Output 2:								
Activity 2.1	T, C			4	26			

3. Expected Outcome/Outputs and Achievements

Activities	Expected Outcome/Outputs	Results/Achievements
Outcome		
Output 1:	Sampling gear improvement	
Activity 1	1. Well operation on the sampling gear co collect marine debris and microplastic	1. An imperfect part of sampling gear of the marine debris and microplastic have been identified. 2. Area of deck where should be installed with auxiliary boom to operate sampling gear of marine debris and microplastic
	2. Underwater camera protection applicable with bottom trawl of M.V. SEAFDEC 2	1. Underwater camera protection applicable with bottom trawl of M.V. SEAFDEC 2
Output 2:		
Activity 2	1. Update the condition of Navigation, engine, and trawl fishing system onboard M.V. SEAFDEC 2	1. List of the condition of navigation, engine, and trawl fishing system installed onboard M.V. SEAFDEC 2
	2. Competent SEAFDEC navigators, engineers, and	1. Navigators of M.V. SEAFDEC 2 understands and well operates the new instrument <i>e.g.</i> navigation

Activities	Expected Outcome/Outputs	Results/Achievements
	fishing crew and researcher of SEAFDEC research vessels.	equipment, communication equipment on board M.V. SEAFDEC2 2. Engineers of M.V. SEAFDEC 2 enhances skill and experience on engine maintenance of main engine and auxiliary engine and deck machineries.
	3. Application of the ship rule to prevent the COVID 19 Outbreak	1. Application of the ship rules to prevent the COVID 19 Outbreaking.

4. List of Publications in 2020

Publications	Type of Media	Attached e-file
1. Cruise report includes list of	Hard copy	
2. List of the condition of navigation, engine, and trawl fishing system installed onboard M.V. SEAFDEC 2	Hard copy	
3. Ship rules to prevent the COVID 19 Outbreaking	Hard copy	

5. Evaluation on Workshops/Training Courses by Participants of AMSS

Activities	Evaluation
Output 1:	
Activity 1	Researchers are satisfied with the verification of sampling gear of the marine debris and microplastic and result of the trial on the Underwater camera protection applicable with bottom trawl. *
Output 2:	
Activity 2	Navigator engineer and research showed their skill and experience to well operate and maneuver the instrument, equipment, and devices installed onboard M.V. SEAFDEC 2. Ship rules to prevent the COVID 19 Outbreaking formulated by the Ship and Fleet Section of the Training Department. *

* Due to the ship crew, researcher and additional personnel from sea trial of M.V. SEAFDEC 2

6. Major Impacts/Issues

With reference to the requests by the Directorate of Fisheries of Viet Nam on the utilization of the SEAFDEC's Research and Training Vessel, M.V. SEAFDEC2 for a national survey of small pelagic fish resources in marine waters of Viet Nam during May to August 2020, under the severe outbreak of the Corona Virus Disease 2019 or COVID-19 pandemic in Thailand and in the region as well, M.V. SEAFDEC 2 and Training Department is unable to proceed on supporting the Directorate of Fisheries of Viet Nam for such a survey during the above-mentioned period. The Government of Thailand has declared the National State of Emergency since 26 March 2020, so as to intensify attempts to stem the spread of the COVID-19 in the country and to maintain all disease control measures. Subsequently, the travelling inbound and outbound countries by land, water and air will remain heavily restricted. Under this unpredicted condition occurring in the region at the present, we are encountering some difficulties to manage to support the survey mission utilizing the M.V. SEAFDEC 2 for the Government of Viet Nam this year. M.V. SEAFDEC 2 will support the SEAFDEC Member Countries on the marine resources survey by the utilization of M.V. SEAFDEC2 in Southeast Asia region in the following years or whenever the situation of the outbreak of the COVID-19 is under control. It is important for M.V. SEAFDEC 2 to develop the ship rules to prevent the COVID-19 outbreaking during the cruise survey. However the major issues of the voyage to foreign countries is the national policy to conduct quarantine that made survey plans need to prepare an extra period for one month to conduct the quarantine when the ship arrives at port of MCs (14 days) and ship returns to Thailand (14 days).

Even though the situation of COVID-19 outbreak in Thailand has been recovered since July 2020, the ship rule to prevent the domestic outbreak in Thailand had finalized in September 2020. With that SEAFDEC/TD necessary to postpone the additional two (2) plans of M.V. SEAFDEC 2 to in year 2020:

1) Marine Fisheries Resources, Environment and Marine Debris Research Survey in the Gulf of Thailand (47 days). Due to the northeast monsoon condition starting in October, there is a high risk to encounter severe sea weather conditions. Hence M.V. SEAFDEC 2 will not complete the sixty-two (62) station survey. (Refer to the experience from a cruise survey of M.V. SEAFDEC 2 No. 61-4/2019 conduct in December 2019).

2) The Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between Research Vessel of SEAFDEC Training Department and Department of Fisheries Thailand (6 days) During September to December 2020, shipboard activities of Department of Fisheries Thailand have been terminated. The operation of DOF Thailand research vessel may start in January 2021. M.V. SEAFDEC 2 needs to wait to get an updated cruise plan from DOF Thailand research vessel.

M.V. SEAFDEC 2 has completely improved and reconditioned the modern navigation equipment, parts of engines, and fishing accessories supported by Japanese Government through Japan International Cooperation Agency (JICA) and overall improvement has been completed in early 2020. One of the important research instruments to investigate the fisheries resources abundance is scientific echo sounder. SEAFDEC/TD, therefore, has provided the technical support on the fisheries resources survey by using scientific echo-sounder since the operation of M.V. SEAFDEC in 1992, and the following of M.V. SEAFDEC 2 in 2004. Numbers of fisheries resources survey cruises had been provided by trawl fishing operations and scientific echo sounder. Installation of the scientific echo-sounder onboard M.V. SEAFDEC 2 that can service to the whole region, will be better cost benefit because the vessel and equipment can be operated frequently throughout the region on research survey and human resources development purposes. With reference to the Consultation visit on the national plan of fisheries resource research survey during 2020-2023 of SEAFDEC MCs and the Utilization of M.V. SEAFDEC 2 for national fisheries research resource survey conducted in 2019, reveals that SEAFDEC MCs requested the technical support on the hydroacoustic survey of the fisheries resources and stock assessment in the future. In addition, recommendations of the Chief of MFRDMD expressed in the 51st and 52nd Meeting of the Council of the Southeast Asian Fisheries Development Center in 2019 and 2020 informed that scientific echo-sounder installed onboard M.V. SEAFDEC 2 has not operated properly and such equipment needs to be upgraded. He proposed that SEAFDEC/TD should consider acquiring its own scientific equipment for installation in the SEAFDEC vessels in the future. With that SEAFDEC/TD has proposed for the improvement of the modern scientific echo-sounder for fishery resource survey of M.V. SEAFDEC 2 to support SEAFDEC MCs for the next decade.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2021

1. Project Summary in 2021

In 2021, SEAFDEC Training Department (TD) continues to closely collaborate with the SEAFDEC Member Countries and potential partners at national, sub-regional, and regional levels to support MCs on fisheries resources and marine environmental survey. M.V. SEAFDEC 2. The major components of utilization of M.V. SEAFDEC 2 are (1) Marine fisheries resources research survey; (2) Marine environmental oceanographic research survey; (3) Onboard navigation and marine engineering training; and (4) Sea trial on fishing operation, oceanographic instruments, and fishing vessels. Plan of M.V. SEAFDEC 2 is pending for national fisheries research survey by SEAFDEC MCs requested in the 43rd PCM

Regarding the COVID-19 outbreak, M.V. SEAFDEC 2 will follow the national instruction and policy of SEAFDEC MCs and the protocol of the ship rules to prevent the COVID-19 outbreaking during the cruise survey. The voyage to foreign countries and province of Thailand on the coast of Andaman Sea is under the national policy to conduct quarantine that made survey plan needs prepare extra period for one month, to conduct the quarantine when ship arrives at destination port (14 days) and ship returns to SEAFDEC/TD Pier (14 days).

SEAFDEC/TD plan to conduct two (2) by using M.V. SEAFDEC 2 in year 2020:

- 1) Marine Fisheries Resources, Environment and Marine Debris Research Survey in the Gulf of Thailand (47 days). Survey plan to conduct during March to May 2021. Total expected services days are 47 days.
- 2) The Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between Research Vessel of SEAFDEC Training Department and Department of Fisheries Thailand (6 days) Cruise plan to conduct during the period of January to February 2021. Total expected services days are 6 days.

SEAFDEC/TD will seek for opportunity to learn and improve the hydroacoustic equipment *e.g.* scientific echo sounder to investigate abundance of small pelagic resources, bottom mapping sonar to investigate the bottom characteristic of fishing ground which can support to SEAFDEC MCs.

2. Outcome, Outputs and Activities and Proposed Budget

(Unit: USD)

Proposed Activities	Descriptions	Proposed Budget
Outcome	National fisheries management by using the update reference data and information from the Marine Fisheries Resources and Marine Environment survey	
Output 1:	A set of scientific data <i>i.e.</i> fisheries resource, marine environmental and oceanography data collected from the cruise survey	
Activity 1.1	National fisheries research survey by SEAFDEC MCs (Pending for the requesting in the 43 rd PCM)	
Activity 1.2	Marine Fisheries Resources, Environment and Marine Debris Research Survey in the Gulf of Thailand	
Activity 1.3	The Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between Research Vessel of SEAFDEC Training Department and Department of Fisheries Thailand	15,208
Output 2:	Competent of SEAFDEC ship staffs (navigators, and engineers) and researchers	
Activity 2.1	National fisheries research survey by SEAFDEC MCs (Pending for the requesting in the 43 rd PCM)	
Activity 2.2	Marine Fisheries Resources, Environment and Marine Debris Research Survey in the Gulf of Thailand	
Activity 2.3	The Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between Research Vessel of SEAFDEC Training Department and Department of Fisheries Thailand	15,208

3. Implementation Plan of Activities in 2020

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Output 1:												
Activity 1.1												
Activity 1.2												
Activity 1.3												
Output 2:												
Activity 2.1												
Activity 2.2												
Activity 2.3												

4. Expected Activity Results in 2021

Planned activity	Expected Activity Results
Activity 1	
Activity 1.1. National fisheries research survey by SEAFDEC MCs (Pending for the requesting in the 43 rd PCM)	1. A set of scientific data, <i>i.e.</i> fisheries resource, marine environmental and oceanography data collected from the cruise survey 2. Cruise report of the national fisheries research survey
Activity 1.2. Marine Fisheries Resources, Environment and Marine Debris Research Survey in the Gulf of Thailand	1. Cruise report on the status of marine fisheries resources in the Gulf of Thailand 2. Baseline data and present status of marine debris and related subject <i>e.g.</i> mesoplastic and microplastic situation in the Gulf of Thailand for scientific reference

Planned activity	Expected Activity Results
Activity 1.3 The Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between Research Vessel of SEAFDEC Training	1. Report of the Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between Research Vessel of SEAFDEC Training Department and Department of Fisheries Thailand operated in the Gulf of Thailand
Activity 2	
Activity 2.1. National fisheries research survey by SEAFDEC MCs (Pending for the requesting in the 43 rd PCM)	1. Number of skill and experience scientist and researcher on the marine fisheries resources and marine environmental of SEAFDEC Member Countries
Activity 2.2. Marine Fisheries Resources, Environment and Marine Debris Research Survey in the Gulf of Thailand	1. Number of skill and experience scientist and researcher on the marine fisheries resources and marine environmental of SEAFDEC Member Countries and Training Department 2. List of scientists and researchers as network on the marine fisheries resources and marine environmental scientists in the Gulf of Thailand.
Activity 2.3. The Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between Research Vessel of SEAFDEC Training	1. Number of skill and experience scientist and researcher on the marine fisheries resources and marine environmental of SEAFDEC Training Department

**PROJECT DOCUMENT
PROPOSED ACTIVITIES FOR THE YEAR 2021**

			Project ID: 202006014
Program Category:	Project under the ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title:	ASEAN-JICA Food Value Chain Development Project		
Program Strategy No:	III	Total Period	2021 – 2024
Lead Department:	Secretariat (SEC)	Lead Country:	Nil
Donor/Sponsor:	ASEAN-Japan Technical Cooperation	Total Project Budget:	USD550,000
Project Partner(s):	Japan International Cooperation Agency (JICA)	Budget for 2021:	USD79,000
Lead Technical Officer(s):	Pattaratjit Kaewnuratchadosorn (SEC), Thaweesak Thimkrap (TD), Leobert de la Pena (AQD) and Yihang Ong (MFRD)	Project Participating Country	All Member Countries

PART I: PROJECT DESCRIPTION

1. Executive Summary

The framework of proposed project is composed of four major thematic areas: 1) ASEAN-GAP (Good Agriculture Practice), 2) SPS (Sanitary and Phyto-sanitary) measures, 3) **fishery value chain** and 4) coordination and research on PPP (Public-Private Partnership) based FVC (Food Value Chain). The proposed project supports the fishery sector by strengthening of GAQp (Good Aquaculture Practice) and SPS measures. The key objectives of SPS measures in the sector are to develop relevant regional guidelines, technical manual and principles on inspection mechanism, harmonization of SPS measures in aquatic animal quarantine and health certification for export/import across the AMSs, and to facilitate sharing information and best practices on SPS.

Under the project's Output 3 (Hygiene management of fish and fishery products is improved through the training courses and workshops in the implementation of GAQp and promotion of eco-labelling), a series of capacity development activities will be conducted on GAQp, fish handling, seafood safety, cold chain management of seafood and aquatic animal health.

2. Background and Justification

Due to the constant growth of the ASEAN economy, the middle-class consumers who tend to be keen for food safety and also have strong demand for high value-added products are dramatically increasing in these few decades. ASEAN recognizes that the establishment of a sound food value chain can be a key solution for ensuring the food safety and sustainable development in the region as reflected in its various policy documents such as the Vision and Strategic Plan for ASEAN Cooperation in Food, Agriculture and Forestry (2016-2025), ASEAN Integrated Food Security Framework and Strategic Plan of Action on Food Security in the ASEAN Region (2015-2020), and the ASEAN Plus Three Leader's Statement on Food Security Cooperation 2017. Through their endorsement and request for development of a full proposal by ASEC and JICA, the value of the initiative to ASEAN was recognized at both the Special SOM-18th AMAF+3 and 19th AMAF+3 Meetings in 2019.

ASEAN Secretariat (ASEC) and JICA initiated the discussions on the formulation of a new project in February 2018. After collecting the necessary information and data in the region, JICA developed and presented a conceptual framework of the project on the occasion of Special SOM-18th AMAF+3 Meeting held in Viet Nam on 7 August 2019, in which the concept proposal was welcomed by SOM-AMAF+3 Leaders. The project proposal is currently in the final approval process at ASEC.

Through the planned activities under **the fishery value chain**, direct beneficiaries are: 1) government agencies involved in fishery value chain in AMSs, 2) officials and inspectors engaged in SPS, 3) producers and actors related in fishery value chain, and 5) distributors and traders related in fishery value chain in AMSs. The indirect beneficiaries are consumers in and out of the ASEAN region.

3. Gender Sensitivity of the Project

Under a series of the planned capacity development activities, workshops/meetings are open to both men and women to participate in. There is an equal opportunity for men and women.

4. Project Goal, Outcome, Outputs, Activities, Indicators and Verification

4.1 Logical Framework

GOAL (Overall Objectives, Impact)	Indicators	Means of Verification
Safety and good quality food for consumers' daily needs and healthy life	<ul style="list-style-type: none"> - Safe and good quality of food improved - Safe and good quality food available and sold at any retail shops - Healthy and active life commenced 	<ul style="list-style-type: none"> - Safe and good quality food available at any retail shops - Healthy and active life
OUTCOME	Indicators	Means of Verification
Securing safe and good quality food in sustainable food value chain in the ASEAN Economic Community	Safe and good quality food maintained and available in food value chain	Food value chain in place effectively and sustainably
OUTPUT 1	Indicators	Means of Verification
Action Plan for marketing and promotion of ASEAN GAP is developed	N/A	N/A
OUTPUT 2	Indicators	Means of Verification
Capacities of SPS are strengthened through improvement of pesticide analysis	N/A	N/A
OUTPUT 3	Indicators	Means of Verification
Hygiene management of fish and fishery products is improved through the training courses and workshops in the implementation of GAqP and promotion of eco-labelling	GAqP, fish handling on board and eco-labelling well programmed in and promoted through the trainings and workshops	<ul style="list-style-type: none"> - Annual Progress Reports (Output 3) - Project Completion Report (Output 3) - Improved hygiene management system for fish & fishery products in place
ACTIVITY 3	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 3.1 To assess hygiene management system (including GAqP and eco-label) of fish and fishery products and national capacities in each member country	Hygiene management system of fish & fishery products and national capacities reviewed in each member country through training courses and workshops	<ul style="list-style-type: none"> - Assessment report on hygiene management system of fish & fishery products in the region - Draft regional eco-labeling strategy (common policy directives)
Sub-activity 3.1.1 GAqP assessment training for extension/inspection focal officers (marine and inland aquaculture)	<ul style="list-style-type: none"> a) 3 training courses - Training programme developed/prepared - 10 Member Countries (one participant per country for each training) invited b) 3 training courses - Training programme developed/prepared 	<ul style="list-style-type: none"> a) Training course reports Training programme - Assessment report on hygiene management system in each member country - 10 national officers participated for each training course
a) Training courses on GAqP (marine aquaculture)		
b) Training courses on GAqP (inland aquaculture)		
c) On-site training courses on		

GAqP	<ul style="list-style-type: none"> - 10 Member Countries (one participant per country for each training) invited c) 4 training courses - Training programme developed/prepared - 4 Member Countries (15-20 participants for for each training) invited 	<ul style="list-style-type: none"> b) Training course reports - Training programme - Assessment report on hygiene management system in each member country - 10 national officers participated for each training course c) Training course reports - Training programme - 20 national officers participated for each training course
Sub-activity 3.1.2 Capacity building on assessment of fish handling on board and landing	<ul style="list-style-type: none"> - 2 workshops - Training programme developed/prepared - 10 Member Countries (2 participants each country for each workshop) invited 	<ul style="list-style-type: none"> - Workshop reports - Training programme - 20 national officers participated for each workshop
Sub-activity 3.1.3 Workshops for the development of eco-labeling strategy in the region	<ul style="list-style-type: none"> - 2 workshops - 10 Member Countries (2 participants each country for each workshop) invited 	<ul style="list-style-type: none"> - Workshop reports - Country reports - Draft regional eco-labeling strategy (common policy directives) - 20 national officers participated for each workshop
Activity 3.2 To further promote and enhance Seafood Cold Chain Management in Southeast Asia		
Sub-activity 3.2.1 Effective implementation of Regional Guidelines on Cold Chain Management of Seafood	<ul style="list-style-type: none"> - 3 workshops - 10 Member Countries (2 participants each country for each workshop) invited 	<ul style="list-style-type: none"> - Workshop reports - Train-the-trainers material kit - Translation of training materials into local language - 20 national officers participated for each workshop
Activity 3.3 To develop ASEAN guidelines for safety inspection and inspection of fish and fishery products in a supply chain	<ul style="list-style-type: none"> - Food safety testing and inspection of fish and fishery products reviewed in each member country 	<ul style="list-style-type: none"> - Draft regional guidelines for food safety testing and inspection of fish and fishery products - Draft manual on inspection of transboundary diseases
Sub-activity 3.3.1 Workshops on the development of guidelines for food safety testing of fish and fishery products	<ul style="list-style-type: none"> - 3 workshops - 10 Member Countries (2 participants each country for each workshops) invited 	<ul style="list-style-type: none"> - Workshop reports - Training materials - Survey report - Draft regional guidelines for food safety testing of fish and fishery products - Country reports - Mid-term review report - 20 national officers participated for each workshop

Sub-activity 3.3.2 Workshops on strengthening inspection of transboundary diseases	<ul style="list-style-type: none"> - 2 workshops - 10 Member Countries (2 participants each country for each workshops) invited 	<ul style="list-style-type: none"> - Workshop reports - Country reports/presentations - 20 national officers participated for each workshop - Draft manual on inspection of transboundary diseases
OUTPUT 4	Indicators	Means of Verification
Strategies for promoting PPP-based FVC is developed	N/A	N/A

4.2 Project Implementation Plan for 2021 - 2024

Activities	2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Sub-activity 3.1.1																
Sub-activity 3.1.2																
Sub-activity 3.1.3																
Sub-activity 3.2.1																
Sub-activity 3.3.1																
Sub-activity 3.3.2																

4.3 Proposed Budget for 2021 - 2024

Output	Activities	(Unit: USD)			
		Year 1 (2021)	Year 2 (2022)	Year 3 (2023)	Year 4 (2024)
Output 3	Sub-activity 3.1.1	15,000	50,000	65,000	
	Sub-activity 3.1.2		24,000	24,000	
	Sub-activity 3.1.3	24,000		24,000	
	Sub-activity 3.2.1		60,000	35,000	
	Sub-activity 3.3.1	40,000		40,000	40,000
	Sub-activity 3.3.2		25,000	25,000	
Sub-Total		79,000	159,000	213,000	40,000

PART II: PROJECT ACHIEVEMENTS IN 2020

Note: No activities in 2020 because of the new project commencing in 2021

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2021

1. Project Summary in 2021

Under the Sub-activity 3.1.1, Training courses on GAqP (Good Aquaculture Practice) in marine fish aquaculture, inland aquaculture and on-site training will be conducted to enable participants to learn the importance of GAqP in the food value chain, and to understand the concepts and approaches in GAqP and to promote GAqP in each AMS. The first training course in marine aquaculture will be organized in the 3rd Quarter of 2021.

Under the Sub-activity 3.1.3, regional workshops for the development of eco-labeling strategy in Southeast Asia. The first Workshop will be organized in the 4th Quarter of 2021, with aiming at obtaining the current information of the eco-label certification in Southeast Asia, understanding the level of national capacity and recommendation and requirements for the development of the regional eco-label strategy that will promote sustainably managed fisheries and highlight their products to consumers.

Under the Sub-activity 3.3.1, a survey on the food safety testing for fish and fishery products will be conducted to determine the specific scope of food safety testing guidelines. The recommended scopes include heavy metals, histamine, and organic contaminants (Benzo[a]pyrene plus sum of 4 marker PAHs). A workshop will then be organised to understand the current state, interest and capability of the identified scope of food safety

testing across the ASEAN region. It will allow the training to be further customised to fill the knowledge gap of the ASEAN region. Training materials will be developed in accordance to the defined scope(s) of food safety testing for fish and fishery products.

2. Outcome, Outputs and Activities and Proposed Budget

(Unit: USD)

Proposed Activities	Descriptions	Proposed Budget
Outcome	Securing safe and good quality food in sustainable food value chain in the ASEAN Economic Community	
Output 3:	Hygiene management of fish and fishery products is improved through the training courses and workshops in the implementation of GAqP and promotion of eco-labelling	
Activity 3.1	To assess hygiene management system (including GAqP and eco-label) of fish and fishery products and national capacities in each member country	
Sub-activity 3.1.1	GAqP assessment training for extension/inspection focal officers (marine aquaculture) - Training courses on GAqP (marine aquaculture) Expected expenditures: - Travel costs: USD 7,000 - DSA: USD 1,200 - Accommodation: USD 1,300 - Transportation, etc.: USD 1,950 - Honorarium: USD 1,500 - Training materials: USD 1,700 - Others: USD 350 Sub-total: USD 15,000	15,000
Sub-activity 3.1.3	Workshop for the development of eco-labeling strategy in Southeast Asia Expected expenditures: - Travel costs: USD 10,300 - DSA: USD 5,600 - Accommodation: USD 1,350 - Transportation, etc.: USD 730 - Honorarium: USD 550 - Meeting expenses: USD 2,350 - Workshop materials: USD 1,400 - Others: USD 1,720 Sub-total: USD 24,000	24,000
Activity 3.3	To develop ASEAN guidelines for safety inspection and inspection of fish and fishery products in a supply chain	
Sub-activity 3.3.1	Workshop on the development of guidelines for food safety testing of fish and fishery products Expected expenditures: - Travel costs: USD 10,800 - DSA: USD 1,620 - Accommodation: USD 7,560 - Meeting expenses: USD 15,750 - Publication: USD 3,000 - Others: USD 1,270 Sub-total: USD 40,000	40,000

3. Implementation Plan of Activities in 2021

Activities	Jul	Aug	Sep	Oct	Nov	Dec
Output 3:						
Sub-activity 3.1.1						
Sub-activity 3.1.3						
Sub-activity 3.3.1						

4. Expected Activity Results in 2021

Planned activity	Expected Activity Results
Activity 3:	
Sub-activity 3.1.1 GAqP assessment training for extension/inspection focal officers (marine aquaculture) - Training course on GAqP (marine aquaculture)	- Training course report - Training programme - Training assessment/evaluation
Sub-activity 3.1.3 Workshops for the development of eco-labeling strategy in Southeast Asia	- Workshop report - Country reports - Recommendations towards the development of eco-labeling strategy
Sub-activity 3.3.1 Workshops on the development of guidelines for food safety testing of fish and fishery products	- Workshop report - Survey Report - Training Materials

**PROJECT DOCUMENT
PROPOSED ACTIVITIES FOR THE YEAR 2021**

Project ID: 202001016			
Program Category:	Project under the ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title:	ASEAN-JICA Capacity Building Project on IUU Fishing Countermeasures in Southeast Asia		
Program Strategy No:	IV	Total Period	2021 - 2024
Lead Department:	Training Department (TD)	Lead Country:	Nil
Donor/Sponsor:	ASEAN-Japan Technical Cooperation	Total Project Budget:	USD550,000
Project Partner(s):	Japan International Cooperation Agency (JICA)	Budget for 2021:	USD98,000
Lead Technical Officer(s):	Taweekit Amornpiyakrit, Panitnard Weerawat & Kongpathai Saraphaivanich	Project Participating Country(ies)	All Member Countries

PART I: PROJECT DESCRIPTION

1. Executive Summary

Fisheries are an important socioeconomic activity in the coastal developing countries. However, the illegal, unreported and unregulated (IUU) fishing has brought not only overexploitation of fisheries resources but also hindering the recovery of fish populations and ecosystems in addition to affecting the economic and social well-being of fishing communities, which in turn could negatively affect the countries with weak regulatory systems as specified in Sustainable Development Goal 14. Therefore, countermeasures to combat IUU fishing have been internationally drawing attention.

Taking into account the significant contribution of fish and fishery products from the Southeast Asian countries to the world market, the ASEAN Secretariat in cooperation with regional partners led by the Southeast Asian Fisheries Development Center (SEAFDEC) has strengthened regional initiatives for facilitating the sharing of experiences and information among the ASEAN Member States (AMSs) in order to enhance the respective countries' capacities and efforts to deal with eliminating IUU fishing and market driven measures. This has been demonstrated when the AMSs adopted in 2016 "The Joint ASEAN-SEAFDEC Declaration on Regional Cooperation for Combating IUU Fishing and Enhancing the Competitiveness of ASEAN Fish and Fishery Products" to strengthen efforts in implementing regional initiatives to combat IUU fishing, and promoted the "ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain," endorsed by 37th AMAF in 2015.

This project aims at enhancing the capacities of AMSs to prevent and combat IUU fishing through a series of training and/or workshop activities, and target staff of the government agencies concerned responsible in the implementation of relevant activities to eliminate IUU fishing. This project will be implemented in line with the Strategic Plan of Action for ASEAN Cooperation on Fisheries (2016-2020) on fostering cooperation between international and regional organizations in combating IUU fishing and developing adequate capacities among the Member Countries in implementing specific measures to further promote the sustainable fisheries. This project is expected to contribute to the "ASEAN Economic Community Blueprint 2025: Specifically, Increase of Fishery/Aquaculture Production (C.5.57.i), and Enable Sustainable Production (C.5.57.iii)".

2. Background and Justification

Considering that the vast regional waters of ASEAN are interconnected – nearly 13 million square kilometers in total area, with around 850,000 fishing vessels operating in the region (in 2015) and regional production volume representing 22% of the world fish and fishery production. Recognizing the international attention on IUU fishing, there is an urgent concern for the ASEAN region to take a leading role in ensuring that the world's fish and fishery supply chain could be free of IUU fishing practices. Therefore, the ASEAN Member States (AMSs) need to strengthen their activities to combat IUU fishing. In cooperation among AMSs, several measures could be implemented, such as 1) promoting responsible fishing practices, 2) avoiding the depletion of fish stocks and the destruction of marine ecosystem, 3) improving legal frameworks, 4) upgrading systems of monitoring,

control and surveillance (MCS), and 5) adopting fair labor practices. More importantly, the capacity development of national fisheries officers in AMSs is urgently needed in the implementation of these measures.

Regarding trans-boundary fisheries resources in the region, it is essential to cooperate among AMSs and promote countermeasures at regional level to combat IUU fishing. Therefore, the challenge in IUU fishing has been continuously underscored by the ASEAN leaders and government officials, as indicated in the “ASEAN Leaders’ Vision for Resilient and Innovative ASEAN” adopted in 2018 that calls for the expansion of regional cooperation to address the issue of IUU fishing. The “Joint ASEAN-SEAFDEC Declaration on Regional Cooperation for Combating IUU Fishing and Enhancing the Competitiveness of ASEAN Fish and Fishery Products” adopted in 2016 also aims to strengthen efforts in implementing regional initiatives to combat IUU fishing.

Therefore, ASEAN has been actively engaged in relevant activities including developing various common policies and regional guidelines in cooperation with partners to address the issues on IUU fishing. The ASEAN Secretariat in cooperation with SEAFDEC under the regional ASEAN-SEAFDEC Fisheries Consultative Group Mechanism (FCG) framework has been addressing concerns on IUU fishing by focusing on the development of common policies, guidelines and countermeasure tools for the region. Under the agreement on technical cooperation between ASEAN and the Government of Japan (the ASEAN-JICA cooperation framework), the first regional project on capacity building to combat IUU fishing in Southeast Asia was initiated and proposed.

Under this project, direct/immediate beneficiaries are staff of government agencies concerned in AMSs who will attend the training courses. Indirect beneficiaries are the AMSs and the other countries as well as fishers, other stakeholders and the consumers in general who will be benefitted from the improved management of fisheries resources.

3. Gender Sensitivity of the Project

Under a series of the planned capacity development activities, workshops/meetings/trainings are open to both men and women to participate in. There is an equal opportunity for men and women.

4. Project Goal, Outcome, Outputs, Activities, Indicators and Verification

4.1 Logical Framework

GOAL (Overall Objectives, Impact)	Indicators	Means of Verification
Sound management and sustainable utilization of fisheries resources	Sustainable fisheries resources	Good management practice in place
OUTCOME	Indicators	Means of Verification
AMSs’ understanding of the practices and actions necessary to deter IUU fishing improved	Countermeasures for combating IUU fishing strengthened	Countermeasures for combating IUU fishing in place
OUTPUT 1	Indicators	Means of Verification
Responsible fishing technologies and practices to combat IUU fishing promoted	Training courses organized	Annual progress report and project completion report
ACTIVITY 1	Indicators; key Inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 1.1: Training course on responsible fishing technologies/practices to combat IUU fishing in Southeast Asia	<ul style="list-style-type: none"> - Training courses organized - Expected number (20) of participants attended - International fisheries issues (IUU fishing, fishing vessel & gear, vessel inspection, MCS, by catch, Global Record of fishing vessels) updated 	<ul style="list-style-type: none"> - Training course reports - Updated international fisheries issues - Number (20) of participants

GOAL (Overall Objectives, Impact)	Indicators	Means of Verification
OUTPUT 2	Indicators	Means of Verification
Capacity of AMSs to combat IUU fishing activities in small scale fisheries is enhanced through effective management tools by EAFM and ACDS, and pilot projects on EAFM and eACDS promoted in AMSs	<ul style="list-style-type: none"> - Capacities of AMSs to combat IUU fishing enhanced - Training courses organized 	<ul style="list-style-type: none"> - Annual progress report and project completion report - eACDS introduced in AMSs
ACTIVITY 2	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 2.1: Training course on Ecosystem Approach to Fishery Management (EAFM)	<ul style="list-style-type: none"> - Training course organized - Expected number (20) of participants attended 	<ul style="list-style-type: none"> - Training course report - Number (20) of participants in total
Activity 2.2: Training course on electronic ASEAN Catch Documentation Scheme	<ul style="list-style-type: none"> - Training courses organized - Training programmes on eACDS in small-scale fisheries developed 	<ul style="list-style-type: none"> - Annual progress report and project completion report - Number of AMSs to introduce eACDS as pilot projects - Training course reports - Training programme
Activity 2.3: On-site training of eACDS at pilot sites in AMSs (about 5 countries)	<ul style="list-style-type: none"> - On-site training courses organized - eACDS application for traceability developed 	<ul style="list-style-type: none"> - Training course reports - On-site training programme - Number of on-site training - Number of participants, at least 50 persons in total - eACDS application
OUTPUT 3	Indicators	Means of Verification
Policy measures to combat IUU fishing enhanced in AMSs	<ul style="list-style-type: none"> - NPOA-IUU developed or revised in AMSs - Training courses organized 	<ul style="list-style-type: none"> - Development, review and revision of NPOA-IUU - Annual progress report and project completion report
ACTIVITY 3	Indicators: key inputs (Number to be conducted, Where, Time)	Means of Verification
Activity 3.1 Regional capacity building workshop on enhancing policies and countermeasures against IUU fishing in Southeast Asia	<ul style="list-style-type: none"> - Regional workshop organized - Expected number (30) of fisheries officers attended 	<ul style="list-style-type: none"> - Regional workshop report - Number (30) of participants in total
Activity 3.2 Training course for fisheries inspectors in the implementation of Port State Measures (PSM)	<ul style="list-style-type: none"> - Expected number (20) of inspectors in AMSs trained - AMSs ratified PSMA 	<ul style="list-style-type: none"> - Training course reports - Number (20) of participants in total

4.2 Project Implementation Plan for 2021 - 2024

Activities	2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Activity 1.1																
Activity 2.1																
Activity 2.2																
Activity 2.3																
Activity 3.1																
Activity 3.2																

4.3 Proposed Budget for 2021 - 2024

(Unit: USD)

Output	Activities	Year 1 (2021)	Year 2 (2022)	Year 3 (2023)	Year 4 (2024)
Output 1	Activity 1.1		56,000	56,000	
Output 2	Activity 2.1		43,000	43,000	
	Activity 2.2	30,000			30,000
	Activity 2.3	21,000	43,000	44,000	7,000
Output 3	Activity 3.1	47,000		47,000	47,000
	Activity 3.2		36,000		
Sub-Total		98,000	178,000	190,000	84,000

PART II: PROJECT ACHIEVEMENTS IN 2020

Note: No activities in 2020 because of the new project commencing in 2021

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2021**1. Project Summary in 2021**

To enhance capacity of AMSs to combat IUU fishing activities in small scale fisheries, a regional training course on “electronic ASEAN Catch Documentation Scheme for Small-scale Fisheries in Southeast Asia” will be organized for promoting traceability for fishery products for combating IUU fishing in small-scale fisheries in Southeast Asia. Further, the on-site training of eACDS at pilot sites (Brunei Darussalam, Cambodia, Malaysia, Myanmar or Viet Name) will be conducted 3 times in 2021. The selected country will be considered depend on priorities and suitable situation. Regarding policy measures to enhance AMSs for combating IUU fishing, the regional capacity building workshop on enhancing policies and countermeasures against IUU fishing in Southeast Asia will be conducted.

2. Outcome, Outputs and Activities and Proposed Budget

(Unit: USD)

Proposed Activities	Descriptions	Proposed Budget
Outcome	AMSs’ understanding of the practices and actions necessary to deter IUU fishing improved	
Output 1:		
Activity 1.1	Training course on responsible fishing technologies/practices to combat IUU fishing in Southeast Asia	Nil
Output 2:		
Activity 2.1	Training course on Ecosystem Approach to Fishery Management (EAFM)	Nil
Activity 2.2	Training courses on electronic ASEAN Catch Documentation Scheme Expected expenditures: - Travel costs: USD 10,600 - DSA: USD 3,170 - Accommodation: USD 3,076 - Transport, etc. USD 300 - Honorarium: USD 500 - Meeting expenses: USD 5,025 - Others: USD 7,329 Sub-total: USD 30,000	30,000
Activity 2.3	On-site training of eACDS at pilot sites in AMSs Expected expenditures: For three on-site trainings - Travel costs: USD 3,000 - DSA: USD 1,800	21,000

Proposed Activities	Descriptions	Proposed Budget
	- Accommodation: USD 2,880 - Transport, etc. USD 1,500 - Meeting expenses: USD 9,300 - Others: USD 2,520 Sub-total: USD 21,000	
Output 3:		
Activity 3.1	Regional capacity building workshop on enhancing policies and countermeasures against IUU fishing in Southeast Asia Expected expenditures: - Travel costs: USD 15,900 - DSA: USD 7,770 - Accommodation: USD 3,564 - Transport, etc. USD 2,000 - Honorarium: USD 600 - Meeting expenses: USD 6,900 - Others: USD 10,266 Sub-total: USD 47,000	47,000
Activity 3.2	Training course for fisheries inspectors in the implementation of Port State Measures (PSM)	Nil

3. Implementation Plan of Activities in 2021

Activities	Jul	Aug	Sep	Oct	Nov	Dec
Output 1:						
Activity 1.1						
Output 2:						
Activity 2.1						
Activity 2.2						
Activity 2.3						
Output 3:						
Activity 3.1						
Activity 3.2						

4. Expected Activity Results in 2021

Planned activity	Expected Activity Results
Activity 1:	
Activity 1.1	N/A
Activity 2:	
Activity 2.1	N/A
Activity 2.2 Training course on electronic ASEAN Catch Documentation Scheme (eACDS)	<ul style="list-style-type: none"> Enhanced knowledge and understanding on eACDS for the traceability of fishery products for combating IUU fishing in small-scale fisheries
Activity 2.3 On-site training of eACDS at pilot sites in AMSs	<ul style="list-style-type: none"> Enhanced knowledge and understanding on the use of eACDS application at pilot sites

Activity 3:	
Activity 3.1 Regional capacity building workshop on enhancing policies and countermeasures against IUU fishing in Southeast Asia	<ul style="list-style-type: none"> • Enhanced capacities to develop and implement a plan of action to combat IUU fishing • Enhanced knowledge and understanding on international-related issues and countermeasures of IUU fishing • Information shared among AMSs including a review and/or development of a National Plan of Action to combat IUU fishing
Activity 3.2	N/A

**PROJECT DOCUMENT
PROPOSED ACTIVITIES FOR THE YEAR 2021**

			Project ID: 20216009
Program Category	ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title	Regional Collaborative Research and Capacity Building for Monitoring and Reduction of Marine Debris from Fisheries in Southeast Asia		
Program Strategy No.	I	Total Period	2021 – 2022
Lead Department	Secretariat (SEC)	Lead Country	None
Donor/Sponsor	Japanese ASEAN Integration Fund (JAIF)	Total Donor Budget	USD 532,999.5
Project Partner(s)	Nil	Budget for 2021	USD 311,926
Lead Technical Officer	Isao Koya, Assistant Project Manager for the JTF	Project Participating Country	All Members Countries

PART I: PROJECT DESCRIPTION

1. Executive Summary

Marine debris is one of the important global challenges that require cooperative responses. The severity of the marine debris issue is particularly acute in the Southeast Asian region and requires a need for efforts to obtain an understanding on the impacts of marine debris, and develop necessary management and preventive approaches to mitigate its impediments to sustainable economic growth in the ASEAN through innovation, research and development of technologies toward conservation and sustainable management of biodiversity and natural resources.

Marine debris is a transboundary issue that requires integrated regional cooperation, and strong collaboration among sectors is crucial particularly in the ASEAN region. Without immediate actions, marine debris pollution may negatively impact marine biodiversity, the productivity of fishery resources, health, society and economies of the region. In the fisheries sector, Abandoned, Lost or otherwise Discarded Fishing Gear (ALDFG) has recently drawn attention as one of the significant sources of marine debris; and the reduction of the impacts from ALDFG is a key and distinct part of the global marine debris issue. On the other hand, the fisheries sector is also known to play an important role in addressing the issue of marine debris, *e.g.* in monitoring the situations not only of the fishery resources but also on the marine debris through fishing activities by fishers, fishery resources research activities, and fishery management activities. Therefore, the contribution from the fisheries sector by encouraging positive actions and reducing negative impacts in close cooperation among fisheries sector and other sectors, both public and private, of ASEAN Member States is envisaged as necessary in combating marine debris in Southeast Asia.

The ASEAN Member States during the 34th ASEAN Summit held in Thailand 22 June 2019 adopted the “Bangkok Declaration on Combating Marine Debris in the ASEAN Region,” and encouraged the implementation of the “ASEAN Framework of Action on Marine Debris.” In line with these two regional policy frameworks, this project is aimed at enhancing the regional collaborative research and capacity building of the fisheries sector in Southeast Asia by applying scientific knowledge in regional policies for monitoring and reducing marine debris. It also reinforces the contribution of the fisheries sector in combating marine debris in Southeast Asia by reducing its negative impacts and encouraging positive actions in cooperation with fishers, private sectors and other relevant sectors of the ASEAN Member States.

2. Background and Justification

2.1 Current Problem

The ASEAN Member States adopted the “Bangkok Declaration on Combating Marine Debris in the ASEAN Region” during the ASEAN Summit held in Thailand in June 2019, and encouraged the implementation of the “ASEAN Framework of Action on Marine Debris,” comprising 4 priority areas, namely: I) Policy Support and Planning; II) Research, Innovation and Capacity Building; III) Public Awareness, Education and Outreach; and IV) Private Sector Engagement. It is also well noted that marine debris is a transboundary issue that requires integrated regional cooperation, and strong collaboration among sectors is crucial particularly in the ASEAN

region. In addition, at the 21st ASEAN Plus Three Summit Meeting on 15 November 2019, the “ASEAN Plus Three Marine Plastic Debris Cooperation Action Initiative” proposed by Japan was endorsed by the ASEAN Member States along with the Declaration and Framework of Action.

From the fisheries viewpoint, the important and urgent issues on marine debris that are a common concern at the regional level include:

- i) The extent of marine debris caused by ALDFG in Southeast Asia is unclear, and it is necessary to investigate the situation of ALDFG and develop effective countermeasures to reduce marine debris from fisheries in the region;
- ii) Some marine debris that could be collected as bycatch from fishing activities are discarded back into the sea and becoming sources of microplastic in the future;
- iii) Only a limited number of officers and researchers know effective and reliable research methods on marine debris and microplastics, and training on the subject is necessary;
- iv) The risk from contamination and characteristics of microplastics in freshwater and marine fish for securing food safety is not still clear; and
- v) Need to enhance mutually beneficial collaboration among sectors and regional organizations relevant to fisheries, natural resources, environment and marine affairs to share updated knowledge on marine debris at the regional level.

2.2 Regionality

The past years saw several miserable events related to marine pollution in the Southeast Asian waters. First, in June 2018, a pilot whale died in Thailand and some 80 pieces of plastic rubbish weighing 8 kilograms were found in its stomach. Subsequently, in November, a dead sperm whale found in the waters around Wakatobi, Indonesia was reported to have ingested almost 6 kg of plastic waste. Again, in March 2019, a dead whale was found in the Philippine waters with the same condition. Those are only some of the devastating examples of the impact of marine litters on the marine resources.

While four of its Member States are among the biggest polluters of the oceans: Indonesia, the Philippines, Viet Nam, and Thailand; ASEAN has been working to solve the issue. The recent 34th ASEAN Summit, held in Thailand in June 2019 issued two important documents related to the protection of the marine environment and combating marine debris. These are the “Bangkok Declaration on Combating Marine Debris in the ASEAN Region” and the “ASEAN Framework of Action on Marine Debris.” These two regional policy frameworks reaffirm ASEAN’s commitment of strategic measures to respond and deal with the risk of pollution and threats to the coastal and marine ecosystem. It is therefore an important moment for ASEAN as a whole to undertake efforts that contribute to the implementation of these regional frameworks on marine debris.

2.3 Project History

This is a new project conceptualised from the fisheries sector based on the “Bangkok Declaration on Combating Marine Debris in the ASEAN Region,” which includes: 1) strengthening actions at the national level as well as through collaborative actions among the ASEAN Member States and partners to prevent and significantly reduce marine debris; 2) enhancing the multi-stakeholder coordination and cooperation to combat marine debris, including implementation of joint actions and partnerships; 3) promoting inter-sectoral coordination among ASEAN sectoral bodies to effectively address the multi-dimensional and far-reaching negative effects; and 4) strengthening research capacity and application of scientific knowledge to combat marine debris.

3. Project Goal, Outputs, Activities, Indicators and Verification

3.1 Logical Framework

GOAL (Overall Objectives)
To enhance regional collaborative research and capacity building in the fisheries sector, including application of scientific knowledge in regional policies and monitoring based on four priority areas of the “ASEAN Framework of Action on Marine Debris” (<i>i.e.</i> I) Policy Support and Planning; II) Research, Innovation and Capacity Building; III Public Awareness, Education and Outreach; and IV) Private Sector Engagement) for combating marine debris in Southeast Asia.

OUTPUT 1	Indicator (to measure the project's achievements)	Means of Verification
<p>Outputs 1:</p> <p>(Policy Support and Planning) A technical guideline outlining the status and ALDFG in ASEAN and measures to prevent and remove ALDFG</p>	<p>Indicators 1:</p> <p>1-1 Results of data collection on the ALDFG are reported.</p> <p>1-2 Information for situations and countermeasures on ALDFG in AMSs is shared through the workshop.</p> <p>1-3 Technical Guidelines on the status of ALDFG and measures to prevent and remove ALDFG is developed.</p>	<p>Means of Verifications 1:</p> <p>1-1 Annual progress report and Project completion report</p> <p>1-2 Reports of the results of surveys on the ALDFG situations</p> <p>1-3 Technical Guidelines on the status of ALDFG and measures to prevent and remove ALDFG</p>
ACTIVITY 1		
<p>Main Activities 1:</p> <p>Activity 1-1: Information gathering on ALDFG Situations to support policy planning and development</p> <ol style="list-style-type: none"> 1. Information gathering to estimate the amount of ALDFG at pilot sites (12 pilot sites along the coastal waters in the Gulf of Thailand and the Andaman Sea) 2. Monitoring on the ALDFG at accumulated pilot sites and development of removal guidance of the ALDFG (18 pilot sites at coastal waters along the East Coast of Peninsular Malaysia) <p>Activity 1-2: Information exchange on ALDFG situation and countermeasures in AMSs</p> <ol style="list-style-type: none"> 1. Workshop for information exchange and the development of technical guidance on ALDFG countermeasures (at Kuala Lumpur, Malaysia; 2 days) 		
OUTPUT 2	Indicator (to measure the project's achievements)	Means of Verification
<p>Outputs 2:</p> <p>2-1. Risk assessments outlining the status of microplastic in aquatic environments.</p> <p>2-2. Enhancement of AMS's capacity on methods to collect and analyze marine debris and microplastics</p>	<p>Indicators 2:</p> <p>2-1 Results on data of microplastic (<i>i.e.</i> type and quantity) and resources abundant by surveys are reported.</p> <p>2-2 Results of data on marine debris (<i>i.e.</i> types and volume) collected by fishing activities are reported.</p> <p>2-3 Results of contamination of microplastic (in unit) in fish and other marine animals are reported.</p> <p>2-4 Training courses with participants from AMSs are conducted.</p>	<p>Means of Verification 2:</p> <p>2-1 Annual progress report and Project completion report</p> <p>2-2 Report of microplastic and resources abundant by survey</p> <p>2-3 Report of marine debris collected by fishing activities Report of contamination of microplastic in fish and other marine animals</p>
ACTIVITY 2		
<p>Main activities 2:</p> <p>Activity 2-1: Environment research survey to evaluate microplastics and other marine environment situations related to fisheries resources at sea</p> <ol style="list-style-type: none"> 1. Marine environment and fishery resources survey by using a research vessel, and evaluate the impacts of microplastics on the fisheries resources (in the Gulf of Thailand) 		

Activity 2-2: Research and evaluation on amount of marine debris collected by fishing activities

1. Research and evaluation on amount of marine debris collected by different types of fishing gears during the fishing activities at sea (Pilot sites: Terengganu waters and Kelantan waters)

Activity 2-3: Research study on the impact from contaminant of microplastics in freshwater fish and marine fish

1. Investigation and risk assessment of microplastics in freshwater fish and marine fish, and dissemination of the results on contaminant of microplastics (Pilot sites: (marine fish) in Gulf of Thailand, (freshwater fish) at the Musi River, South Sumatra, Indonesia)

Activity 2-4: Training on the liable research methods to collect and analyse the marine debris and microplastics

1. On-the-job training on reliable research methods on marine debris and microplastics to officers and researchers in AMSs (at SEAFDEC Training Department (TD), Kasetsart University and on the SEAFDEC research vessel, Thailand; 2 times, each 8 days)

(Main training contents)

- Introduction of marine debris/microplastics, and world marine debris situation
- Problems of monitoring and marine debris management
- Methodology of collecting microplastics: Water Sample, Sediment and Biota Sample
- Marine debris situation and case study on marine debris survey conducted in Japan
- Survey methodology for macro benthic marine debris
- Trawl sweep area calculation
- Practice onboard survey by using the SEAFDEC training vessel
- Density assessment model for floating marine debris
- Group practice on microplastic analysis in marine organisms (digestion process, sorting, and identification by using FTIR), etc.

OUTPUT 3	Indicator (to measure the project's achievements)	Means of Verification
<p>Output 3: (Public Awareness, Education and Outreach)</p> <p>3-1 Marine debris management are strengthened and promoted in AMSs</p> <p>3-2 Updated scientific-based knowledge and technical guidance are shared and enhanced among relevant sectors.</p>	<p>Indicator 3:</p> <p>3-1 “Regional Symposium on Marine Debris and Microplastics in Fisheries in Southeast Asia” is organized.</p> <p>3-2 Project website and materials on marine debris are developed.</p>	<p>Means of Verification 3:</p> <p>3-1 Annual progress report and Project completion report</p> <p>3-2 Project website of Marine debris in SEAFDEC home page</p>

ACTIVITY 3

Main activity 3:

Activity 3-1: “Regional Symposium on Marine Debris and Microplastics in Fisheries in Southeast Asia”

1. “Regional Symposium on Marine Debris and Microplastics in Fisheries in Southeast Asia”, inviting international, regional organizations and donors, as well as representatives from AMSs and Japan in charge of fisheries and marine environment (at Bangkok, Thailand; 2 days)

Activity 3-2: Information distribution and development of website on Marine Debris

1. Development of Project website and communication materials.

TD staff develops and manage a website on Marine Debris in the SEAFDEC website, and the website on Marine Debris will be updated after the project through SEAFDEC marine debris survey activities in collaboration with AMSs.

For the above activities, “Regional Meeting “will be held three times at the inception, mid-term and final of the project period.

OUTPUT 4	Indicator (to measure the project's achievements)	Means of Verification
Output 4: (Private Sector Engagement) 4-1 Marking of fishing gears is promoted.	Indicator 4: 4-1 Technical manual for marking of fishing gears is developed.	Means of Verification 4: Annual progress report and Project completion report Technical manual for marking of fishing gears
ACTIVITY 4		
Main activity 4:		
Activity 4-1: Development of methods on marking of fishing gears and promotion on marking of fishing gears 1. Development of technical manual for marking of fishing gears - Information gathering of constrain to marking of fishing gear in AMSs - Research of available technical methods on marking of fishing gears - Investigation of pilot activities on marking of fishing gears - A technical meeting on development of technical manual for marking of fishing gears (at TD, Thailand; 3 days)		

3.2 Project Implementation Plan for 2021 - 2022

Year	2021				2022			
	1	2	3	4	1	2	3	4
Activity 1.1								
Activity 1.2								
Activity 2.1								
Activity 2.2								
Activity 2.3								
Activity 2.4								
Activity 3.1								
Activity 3.2								
Activity 4.1								

3.3 Proposed Budget for 2020 - 2022

(Unit: USD)

Output	Activities	Year 1 (2021)	Year 2 (2022)	Total
Output 1	Activity 1.1	55,000	55,000	110,000
	Activity 1.2	30,000		30,000
Output 2	Activity 2.1	90,000		90,000
	Activity 2.2	13,200	16,800	30,000
	Activity 2.3	42,000	18,000	60,000
	Activity 2.4	25,000	25,000	50,000
Output 3	Activity 3.1		50,000	50,000
	Activity 3.2	12,500	12,045	24,545
	Activity 4.1	20,000	20,000	40,000
Sub-Total		287,700	196,845	484,545
Contingency fee		24,226	24,228.5	48,454.5
Total		311,926	221,073.5	532,999.5

PART II: PROJECT ACHIEVEMENTS IN 2020

Note: No information in 2020 since this project starts in 2021 and project period is January 2021-December 2022.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2021**1. Project Summary in 2021**

In 2021, the following activities will be carried out in the project

1. Information gathering to estimate the amount of ALDFG and monitoring on the ALDFG at accumulated pilot sites and development of removal guidance of the ALDFG
2. Workshop for information exchange and the development of technical guidance on ALDFG countermeasures
3. Marine environment and fishery resources survey by using a research vessel, and evaluate the impacts of microplastics on the fisheries resources (in the Gulf of Thailand)
4. Research and evaluation on amount of marine debris collected by different types of fishing gears during the fishing activities at sea
5. Marine environment and fishery resources survey by using a research vessel, and evaluate the impacts of microplastics on the fisheries resources
6. Research and evaluation on amount of marine debris collected by different types of fishing gears during the fishing activities at sea
7. Investigation and risk assessment of microplastics in freshwater fish and marine fish, and dissemination of the results on contaminant of microplastics
8. On-the-job training on reliable research methods on marine debris and microplastics to officers and researchers in AMSs
9. Development of Project website and communication materials.
10. Development of technical manual for marking of fishing gears

2. Outputs and Activities and Proposed Budget

		(Unit: USD)
Proposed Activities	Descriptions	Proposed Budget
Activity 1.1	Information gathering on ALDFG Situations to support policy planning and development (1) Information gathering to estimate the amount of ALDFG at pilot sites (12 pilot sites along the coastal waters in the Gulf of Thailand and the Andaman Sea) <i>Estimated expenditures:</i> <ul style="list-style-type: none"> • <i>Daily subsistence allowance /Accommodation</i> = US\$ 15,000 • <i>Hire/Rental</i> = US\$ 5,000 • <i>Data collection and analysis</i> = US\$ 9,000 • <i>Consumable/others</i> = US\$ 1,000 = US\$ 30,000 (2) Monitoring on the ALDFG at accumulated pilot sites and development of removal guidance of the ALDFG (18 pilot sites at coastal waters along the East Coast of Peninsular Malaysia) <i>Estimated expenditures:</i> <ul style="list-style-type: none"> • <i>Daily subsistence allowance/ Accommodation</i> = US\$ 9,000 • <i>Hire/Rental</i> = US\$ 15,000 • <i>Consumable/others</i> = US\$ 1,000 = US\$ 25,000 <i>Total</i> = US\$ 55,000	55,000

Proposed Activities	Descriptions	Proposed Budget
Activity 1.2	<p>Information exchange on ALDFG situation and countermeasures in AMSs Workshop for information exchange and the development of technical guidance on ALDFG countermeasures (at Kuala Lumpur, Malaysia; 2 days)</p> <p><i>Estimated expenditures:</i></p> <ul style="list-style-type: none"> • <i>Traveling cost (Aire fare)</i> = US\$ 11,780 • <i>Daily subsistence allowance /Accommodation</i> = US\$ 14,270 • <i>Hire/Rental</i> = US\$ 3,450 • <i>Consumable/others</i> = US\$ 500 <i>Total</i> = US\$ 30,000 	30,000
Activity 2.1	<p>Environment research survey to evaluate microplastics and other marine environment situations related to fisheries resources at sea</p> <p>Marine environment and fishery resources survey by using a research vessel, and evaluate the impacts of microplastics on the fisheries resources (in the Gulf of Thailand)</p> <p><i>Estimated expenditures:</i></p> <ul style="list-style-type: none"> • <i>Traveling cost (Aire fare)</i> = US\$ 10,700 • <i>Daily subsistence allowance /Accommodation</i> = US\$ 12,800 • <i>Consumable/others</i> = US\$ 800 • <i>Document/Dissemination matters</i> = US\$ 1,000 • <i>Operational cost of research /training vessel</i> = US\$ 64,700 <i>Subtotal</i> = US\$ 90,000 	230,000
Activity 2.2	<p>Research and evaluation on amount of marine debris collected by fishing activities</p> <p>Research and evaluation on amount of marine debris collected by different types of fishing gears during the fishing activities at sea (Pilot sites: Terengganu waters and Kelantan waters)</p> <p><i>Estimated expenditures:</i></p> <ul style="list-style-type: none"> • <i>Daily subsistence allowance /Accommodation</i> = US\$ 3,000 • <i>Hire/Rental</i> = US\$ 10,000 • <i>Consumable/others</i> = US\$ 200 <i>Subtotal</i> = US\$ 13,200 	
Activity 2.3	<p>Research study on the impact from contaminant of microplastics in freshwater fish and marine fish</p> <p>Investigation and risk assessment of microplastics in freshwater fish and marine fish, and dissemination of the results on contaminant of microplastics (Pilot sites: (marine fish) in Gulf of Thailand, (freshwater fish) at the Musi River, South Sumatra, Indonesia)</p> <p><i>Estimated expenditures:</i></p> <ul style="list-style-type: none"> • <i>Traveling cost (Aire fare)</i> = US\$ 3,700 • <i>Daily subsistence allowance /Accommodation</i> = US\$ 6,000 • <i>Hire/Rental</i> = US\$ 15,000 • <i>Data collection and analysis</i> = US\$ 16,000 • <i>Consumable/others</i> = US\$ 500 	

Proposed Activities	Descriptions	Proposed Budget
Activity 2.4	<ul style="list-style-type: none"> • <i>Document/Dissemination matters</i> = US\$ 800 <li style="padding-left: 2em;"><i>Subtotal</i> = US\$ 42,000 <p>Training on the liable research methods to collect and analyze the marine debris and microplastics</p> <p>On-the-job training on reliable research methods on marine debris and microplastics to officers and researchers in AMSs (at SEAFDEC Training Department (TD), Kasetsart University and on the SEAFDEC research vessel, Thailand; 2 times, each 8 days)</p> <p><i>Estimated expenditures:</i></p> <ul style="list-style-type: none"> • <i>Traveling cost (Aire fare)</i> = US\$ 6,600 <li style="padding-left: 2em;">• <i>Daily subsistence allowance /Accommodation</i> = US\$ 10,000 • <i>Hire/Rental</i> = US\$ 5,650 • <i>Consumable/others</i> = US\$ 250 • <i>Operational cost of research /training vessel</i> = US\$ 2,500 <li style="padding-left: 2em;"><i>Subtotal</i> = US\$ 25,000 <li style="padding-left: 4em;"><i>Total</i> = US\$ 230,000 	
Activity 3.1 Activity 3.2	<p>“Regional Symposium on Marine Debris and Microplastics in Fisheries in Southeast Asia”, inviting international, regional organizations and donors, as well as representatives from AMSs and Japan in charge of fisheries and marine environment (at Bangkok, Thailand; 2 days)</p> <p>※The Regional Symposium will not be held in 2021, but will be held in 2022.</p> <p>Information distribution and development of website on Marine Debris Development of Project website and communication materials. TD staff develop and manage a website on Marine Debris in the SEAFDEC website, and the website on Marine Debris will be updated after the project through SEAFDEC marine debris survey activities in collaboration with AMSs.</p> <p>For the above activities, “Regional Meeting “will be held three times at the inception, mid-term and final of the project period.</p> <p><i>Estimated expenditures:</i></p> <ul style="list-style-type: none"> • <i>Data collection and analysis</i> = US\$ 1,500 • <i>Document/Dissemination matters</i> = US\$ 2,500 • <i>Personnel cost</i> = US\$ 8,500 <li style="padding-left: 2em;"><i>Total</i> = US\$ 12,500 	12,500
Activity 4	<p>Development of methods on marking of fishing gears and promotion on marking of fishing gears</p> <p>(1) Development of technical manual for marking of fishing gears</p> <ul style="list-style-type: none"> - Information gathering of constrain to marking of fishing gear in AMSs - Research of available technical methods on making of fishing gears - Investigation of pilot activities on making of fishing gears - A technical meeting on development of technical manual for making of fishing gears <p><i>Estimated expenditures:</i></p> <ul style="list-style-type: none"> • <i>Traveling cost (Aire fare)</i> = US\$ 6,000 <li style="padding-left: 2em;">• <i>Daily subsistence allowance /Accommodation</i> = US\$ 5,000 	20,000

Proposed Activities	Descriptions	Proposed Budget
	<ul style="list-style-type: none"> • Hire/Rental = US\$ 1,200 • Data collection and analysis = US\$ 2,800 • Consumable/others = US\$ 5,000 Total = US\$ 20,000 	

3. Implementation Plan of Activities in 20121

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Output 1:												
Activity 1.1												
Activity 1.2												
Output 2:												
Activity 2.1												
Activity 2.2												
Activity 2.3												
Activity 2.4												
Output 3:												
Activity 3.1												
Activity 3.2												
Output 4:												
Activity 4.1												

4. Expected Activity Results in 2021

Planned activity	Expected Activity Results
Activity 1.	
Activity 1.1. 1.Information gathering to estimate the amount of ALDFG and monitoring on the ALDFG at accumulated pilot sites and development of removal guidance of the ALDFG	<ul style="list-style-type: none"> • Information will be collected to estimate the amount of ALDFG quantities at 12 Pilot sites in Gulf Bay. • ALDFG monitoring will be conducted and quantities assessed at 18 pilot sites in costal water of Peninsular Malaysia
Activity 1.2. Workshop for information exchange and the development of technical guidance on ALDFG countermeasures (at Kuala Lumpur, Malaysia; 2 days)	<ul style="list-style-type: none"> • A two-day workshop will be held in Kuala Lumpur, Malaysia, to exchange information and provide technical guidance on ALDFG measures.
Activity 2.	
Activity 2.1. Marine environment and fishery resources survey by using a research vessel, and evaluate the impacts of microplastics on the fisheries resources (in the Gulf of Thailand)	<ul style="list-style-type: none"> • The survey will be conducted in the Gulf of Thailand to assess the impact of microplastics on fisheries resources by research vessel and data related to the impact of microplastics will be collected and analyzed.
Activity 2.2. Research and evaluation on amount of marine debris collected by different types of fishing gears during the fishing activities at sea	<ul style="list-style-type: none"> • The survey will be conducted on the amount of marine debris caused by fishing activities at sea, and data on the amount of marine debris by different type of fishing gear will be collected and analyzed.

Planned activity	Expected Activity Results
<p>Activity 2.3. Investigation and risk assessment of microplastics in freshwater fish and marine fish, and dissemination of the results on contaminant of microplastics (Pilot sites: (marine fish) in Gulf of Thailand, (freshwater fish) at the Musi River, South Sumatra, Indonesia)</p>	<ul style="list-style-type: none"> • A survey on the effects of microplastics in freshwater and marine fish will be conducted at the targeted research site in Thailand, Indonesia to assess the hazard and collect data on contaminants.
<p>Activity 2.4. On-the-job training on reliable research methods on marine debris and microplastics to officers and researchers in AMSs</p>	<ul style="list-style-type: none"> • On the job training on marine debris and microplastics research methods will be provided and participants will be trained in the techniques.
Activity 3.	
<p>Activity 3.1. “Regional Symposium on Marine Debris and Microplastics in Fisheries in Southeast Asia ” will be held.</p>	<ul style="list-style-type: none"> • The Regional Symposium will not be held in 2021, but will be held in 2022.
<p>Activity 3.2. Development of Project website and communication materials. TD staff develop and manage a website on Marine Debris in the SEAFDEC website, and the website on Marine Debris will be updated after the project through SEAFDEC marine debris survey activities in collaboration with AMSs. For the above activities, “Regional Meeting “will be held three times at the inception, mid-term and final of the project period.</p>	<ul style="list-style-type: none"> • A website on marine debris will be set up on the SEAFDEC website, with communication materials and information on marine debris. • One Regional Meeting will be held.
Activity 4.	
<p>Activity 4.1. Development of technical manual for marking of fishing gears</p> <ul style="list-style-type: none"> - Information gathering of constrain to marking of fishing gear in AMSs - Research of available technical methods on making of fishing gears - Investigation of pilot activities on marking of fishing gears - A technical meeting on development of technical manual for marking of fishing gears 	<ul style="list-style-type: none"> • Preparatory work on the development of a technical manual for marking or fishing gears will proceed. - Constrained information on the marking of fishing gear in AMS will be collected - A reserch of available technical methods for marking of fishing gear will be carried out - Investigation of pilot activities on the marking of fishing gear will be carried out. - A technical meeting on the development of a technical manual for marking fishing gears was held.

Annex 5

SEAFDEC DEPARTMENTAL PROGRAMS OF ACTIVITY FOR THE YEAR 2020-2021

Strategy/Project Title	Lead Department	Period	Appendix no.
1. Quality Seed for Sustainable Aquaculture	AQD	2016-2020	1
2. Healthy and Wholesome Aquaculture	AQD	2016-2020	2
3. Maintaining Environmental Integrity through Responsible Aquaculture	AQD	2016-2020	3
4. Meeting Social and Economic Challenges in Aquaculture	AQD	2016-2020	4
5. Adapting to Climate Change	AQD	2016-2020	5
6. Quality Seed for Sustainable Aquaculture	AQD	2018-2021	6
7. Promotion on Strengthening of SEAFDEC Visibility and Enhancing Human Capacity Building	TD	2020	7
8. Improving of Fisheries Technology and Reduction of the Impact from Fishing Activities	TD	2020	8
9. SEAFDEC Capacity Development through USAID Sustainable Fish Asia Activity	TD	2020-2021	9
10. Modernizing Irrigated Agriculture to Protect and Restore Aquatic Biodiversity and Ecosystem Services in South-East Asia	IFRDMD	2020-2021	10

PROJECT DOCUMENT

Program Categories: Departmental Programs
Project Title: Quality Seed for Sustainable Aquaculture
Responsible Department: Aquaculture Department
Total Duration: 2016-2020
Funding Sources: AQD
Estimated Budget for 2021: USD 686,627

1. INTRODUCTION

A sustainable supply of good quality seedstock is key to a successful aquaculture enterprise. Rearing quality seedstock to commercial sizes require efficient husbandry techniques and suitable farm conditions to achieve increased yield. With the intensification of aquaculture systems in several Southeast Asian countries and the environmental challenges such as those resulting from climate change, development and use of quality farmed broodstock and adoption of optimal culture management methods are equally important in ensuring a steady production of seeds and later, marketable aquaculture products.

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:

- (1) develop good quality broodstock for both traditional and emerging species
- (2) improve quality and production of seedstock through the refinement of hatchery and nursery management methods;
- (3) develop schemes for the production, management, maintenance, and dissemination of genetically selected and improved stocks; and
- (4) produce sufficient seedstock through the adoption of economically viable seed production systems

2.2 Outcomes and Expected Outputs

The program is expected to achieve the following:

- (1) production of good quality broodstock;
- (2) increased seed stock production through the availability and adoption of refined and efficient hatchery and nursery protocols
- (3) if available, promote genetically selected and improved stocks and apply techniques to optimize their use to improve on-farm aquaculture production
- (4) enough supply of seeds from major aquaculture commodities through the adoption of technically- and economically-viable breeding and seed production schemes

2.3 Project Description/Framework (*for total duration of the project*)

The program focuses on studies and activities that determine optimal conditions and cost-effective, science-based methods for the production of quality seedstock. Enhancement of breeding performance, such as (a) use of different modes of hormone administration to induce maturation in captive broodstock; (b) nutritional interventions *e.g.* formulation of broodstock diets and larval nutrition schemes; and (c) other non-genetic/environmental interventions are approaches that are being adopted. While past studies have already covered genetics tools in broodstock management for key species such as milkfish, tilapia, mangrove crab, and abalone, apart from focusing on the farmed aquatic species, a continuation of the Japan-ASEAN Integration Fund (JAIF) project has been approved to strengthen with the efforts on genetics-based management of Anguillid eels, an important resource in the SE Asian region. Biotechnological tools such as DNA markers for the genetic identification and characterization of *Anguilla bicolor pacifica* stocks in natural habitats in the SE Asian region have been planned as part of the JAIF phase 2 activity. The study is led by SEAFDEC/IFRDMD as assisted by SEAFDEC/AQD, which is tasked to take charge of environmental DNA-based eel species identification. The ultimate objective of this activity is to later on have an understanding of the genetic connectivity among wild stocks of Anguillid eels in the region (Philippines, Indonesia, Viet Nam and Myanmar) as basis for sustainable management of this wild aquatic resource.

As mentioned, 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 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.

Activity 1: Broodstock development

Information on the reproductive biology, mating/breeding behavior, and production traits in traditional and emerging aquaculture species (e.g. giant grouper) help formulate suitable broodstock management protocols. Nutritional intervention can be done as well to improve reproductive traits. Currently, the abalone, giant and hybrid groupers are the species being studied for the development of better breeding stocks.

Activity 2: Refinement of hatchery and nursery protocols

To increase production and rearing of larval and juvenile stages of important aquaculture species, mechanisms that: (a) enhance laboratory production of natural food organisms, e.g. algal paste production, and alternative food items, e.g. polychaetes, which serve as early-stage diets; as well as (b) improved rearing conditions and interventions that allow the aquatic organisms to adapt and survive well during larval development, are evaluated.

Activity 3: Increase awareness on available genetically selected/improved stocks and optimize their use for improved on-farm aquaculture production

This is done either through the development and evaluation of selected breeds commercially available or otherwise. Once such stock or strains are noted as superior then the same can be promoted to farmers for use with the end-goal of being able to increase on-farm fish yield. Preliminary activities related to stock improvement have been done in mangrove crab, abalone, oyster, and milkfish in previous years with the genetic characterization of potential sources of quality stocks from natural habitats. These programs were funded by the Philippine Department of Science and Technology, with AQD researchers collaborating with local research and academic institutions. Information on genetically diverse stocks of mangrove crab, oyster, abalone, milkfish, and seaweed has already been published and/or awaiting publication. However, initiatives toward the use of genetically variable stocks for breeding and/or genetic improvement shall be done hopefully in the future especially so that the breeding and hatchery facilities at AQD have already been improved and expanded.

Activity 4: Promotion of technically and economically-viable breeding and seed production schemes

It is not enough to disseminate information on innovative and technically feasible breeding and seedstock production methods. One has to ensure that such methods are cost-effective thus can generate increased profit for the hatchery/nursery farm operator. The objectives for this activity can be achieved if the technologies that are based on science are verified on-farm and will in the process, demonstrate economic viability.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2020

Project/Activity Title	Duration	Remarks
Broodstock development		
<p><u>Broodstock management, breeding protocol development for other species (for stock management and enhancement)</u></p> <p>Giant grouper Study Title: Verification studies on breeding and seed production of giant and hybrid groupers (<i>Epinephelus</i> spp.)</p> <p>A verification study on the breeding and seed production of giant and hybrid groupers (<i>Epinephelus</i> spp.) that focuses on the induction of maturation in captive groupers through an alternative mode of hormone administration was started in 2020. This study likewise aimed to verify protocols for the preservation of grouper spermatozoa. Apart from this, the study hoped to cross the giant grouper (as the source of sperm) with either the tiger grouper or the orange-spotted grouper to produce fast-growing hybrids. Finally, once available, trials on <i>Proales</i> supplementation during the larval rearing phase shall be done to look at its effect on growth and larval survival.</p>	<p>2020-2021</p>	

Project/Activity Title	Duration	Remarks
<p>Hormones used for inducing breeders to spawn are normally injected onto the fish. In this study, GnRH has been incorporated in yeast and then orally administered to the grouper. Results showed that via this mode, gonad development has been effectively stimulated. Meanwhile, fertilization trials to test the viability of preserved grouper sperms did not result in any hatched eggs. Finally, with the limited breeders available for the experiments, new breeders have been acquired.</p>		
<p><u>Environmental and nutritional intervention to improve broodstock performance</u></p> <p>Abalone (<i>Haliotis asinina</i>) Study Title: Verification of the effectiveness of SEAFDEC/AQD broodstock diets in improving reproductive performance in the tropical abalone, <i>Haliotis asinina</i></p> <p>The verification study on the effectiveness of AQD broodstock diets in improving reproductive performance and larval quality in the abalone <i>Haliotis asinina</i> continued in 2020. The two test diets -- Diet 1 (37% protein/3570 kcal kg⁻¹ energy) and Diet 2 (42% protein/3750 kcal kg⁻¹ energy) were compared against the control diet which is seaweed (18% protein/2200 kcal kg⁻¹ energy). Results showed that regardless of the feeding treatment and sex (male vs female), all abalone breeders followed a 30-day spawning cycle. All the diets gave similar results in relation to the following reproductive parameters: egg spawning and milt release rates, milt release frequency, and instantaneous fecundity. Meanwhile, for broodstock survival rate, the results showed no significant difference among treatments (and between males and females) while broodstock survival rate and egg fertilization rate were better for those fed the seaweed or the control diet.</p>	<p>2018 to date</p>	
<p><u>Production of nonconventional feed ingredients for use in broodstock diets</u></p> <p>Mudworm (<i>Marphysa iloiloensis</i>) Study Title: Economic viability of tank based polychaete culture technology</p> <p>The study “Economic viability of tank based polychaete culture technology,” aimed to establish an optimal nursery and grow-out methods for the production of uniformly sized polychaetes (<i>Marphysa iloiloensis</i>) in tanks. Polychaete production facilities have been improved. Production using 500 broodstock in each 1 m² tank was found to give the highest survival rate. Better survival (26.11 ± 8.95%) was likewise achieved when polychaetes were fed at a rate of 100g/m², using feeds administered three times a week. The cost and returns analysis using this protocol shall later be made to demonstrate the economic viability of the indoor tank-based system. Part of the plan is to incorporate polychaetes in formulated feeds for mangrove crabs.</p>	<p>2019-2020</p>	
<p>Refinement of Hatchery and Nursery Protocols</p>		
<p><u>Improvement of rearing protocols</u></p> <p>Shrimp <i>Penaeus monodon</i>/ <i>Penaeus indicus</i> Study Title: Use of biofloc system to improve water quality, growth performance and disease resistance of <i>Penaeus monodon</i></p>	<p>2020</p>	

Project/Activity Title	Duration	Remarks
<p>and <i>Penaeus indicus</i> juveniles reared in tanks</p> <p>To achieve good growth and disease resistance in farmed penaeid species, a study was conducted to determine if the adoption of the biofloc system can help improve the quality of the water where shrimp juveniles are reared. The objectives of this study include the following: (a) to determine the composition of the microbial biofloc which were developed either using reared tilapia and/or milkfish in tanks, (b) to evaluate the efficiency of the biofloc (produced using different carbon sources vs. clear water) on the growth and survival of shrimps and (c) to evaluate the efficacy of the biofloc system in improving the resistance of shrimps against the white spot syndrome virus. Results showed that the biofloc was composed of chlorophytes, ciliated and flagellated protozoa, nematodes, and rotifers. The specific growth rate (or SGR expressed in %/day) after 45 days of rearing was noted to be the best in shrimps reared in tanks with biofloc that was prepared using molasses (SGR= 8.62 %/day) compared to the control (clear water; SGR = 6.58%/day) and to the biofloc prepared using wheat flour (SGR = 7.79%/day) as carbon source.</p>		
<p>Mangrove crab (<i>Scylla serrata</i>) Study Title: Use of algal paste in the larval rearing of mangrove crab <i>Scylla serrata</i></p> <p>To make hatchery rearing of mangrove crab seedstock less difficult, the use of algal paste in rotifer cultures for mangrove crab seed production was tried. When live <i>Tetraselmis</i>, AQD <i>Tetraselmis</i> algal paste (obtained through flocculation) and a commercial <i>Tetraselmis</i> algal paste (centrifuged) were compared, the number of rotifers produced were highest in those fed the <i>Tetraselmis</i> algal paste from AQD. Moreover, crab larvae fed rotifers that subsisted on flocculated <i>Tetraselmis</i> algal paste produced by SEAFDEC/AQD consistently resulted in better growth.</p>	2018-2020	
<p>Sandfish <i>Holothuria scabra</i> Study Title: Optimizing hatchery production of early juvenile sandfish <i>Holothuria scabra</i></p> <p>The sandfish hatchery facility was improved, that is, an auto heating system and a new and more efficient UV system were installed. Several broodstocks acquired from San Lorenzo and Sagay were made to spawn from January 2020 to May 2020. From these spawning episodes, the number of early juveniles harvested ranged from 2,513 to 17,541 while the survival rate of early juveniles (from hatched eggs) ranged from 0.05 to 1.46%. Faster larval development was noted in heated tanks (50% doliolaria at 14 days post-hatching) compared to larvae in unheated tanks (50% at 19 days post-hatching). An updated hatchery technology manual for sandfish is currently being prepared.</p>	2018-2020	
<p><i>Tigriopus</i> sp. Study Title: Development of techniques for sustainable mass production of harpacticoid copepods for marine fish and crustacean larviculture</p> <p>This study aimed to investigate and describe the life cycle of <i>Tigriopus</i> sp., determine and establish optimal culture conditions for <i>Tigriopus</i> mass production. The life cycle of <i>Tigriopus</i> was</p>	2019-2020	

Project/Activity Title	Duration	Remarks
successfully monitored and described. To determine the ideal culture conditions for the copepod, these were reared under different temperature and salinity combinations. Results showed that the <i>Tigriopus</i> is best cultured at 28-29°C and 30ppt salinity for optimal growth. For mass production, 60L tanks and rectangular tanks measuring 1.5 x 0.77 x 0.48m ³ will be used while trials comparing the effect of feeding copepods items such as Baker's yeast, rice bran, <i>Chaetoceros</i> sp. and biofloc will also be done.		
<p>Pompano Study Title: Utilization of artificial illumination in floating net cages on the nursery culture of pompano <i>Trachinotus blochii</i>: Effects on the growth and survival of pompano and its added economic value</p> <p>This study was conducted to (a) develop alternative and cost-effective nursery rearing techniques for the pompano, (b) determine the effect of artificial illumination on prey selectivity of pompano and subsequently, on pompano growth and survival, and (c) determine the effect of artificial illumination on the abundance of zooplankton in floating net cages. Results showed that the culture period for pompano in lighted cages and fed 100% of the feed ration was shortened by 15 days. The specific growth rates of pompano fed at 50% and 75% of the feed ration were not significantly different from those in unlit cages fed at 100% of the ration and with pompano in lighted cages and fed 100% of the ration. On the other hand, the feed conversion ratio was noted to be best in lighted cages where pompano were fed at 75% feeding rate. Good growth of pompano in lighted cages could be due to higher zooplankton (calanoid and cyclopoid copepods) ingestion .</p>	<p style="text-align: center;">2017-2020</p>	
<p>Seaweed (<i>Kappaphycus</i> sp.)</p> <p>Study Title: Production of farmed eucheumatoids by micropropagation in the land-based nursery</p> <p>This study aims to produce seaweed micropropagules to support the needs of the sea-based nursery. With the adoption of refined methods, the land-based nursery production of <i>Kappaphycus</i> propagules is projected to increase from 4000 to 8000 individuals per month. In 2020, propagule production per month increased from 4000 - 7200 to date. At the end of the study, the cost and return analysis of micropropagule production in the land-based nursery facility shall be determined.</p> <p>Study Title: Optimizing the survival of micropropagated seaweed <i>Kappaphycus alvarezii</i> through acclimation in tank-based nursery systems</p> <p>This newly approved study aims to (a) define the optimal acclimation time of seaweed propagules in the laboratory, (b) determine the effective stocking density for seaweed propagules reared in laboratory-based tanks during the acclimation period and (c) establish the protocol for improved growth and survival of seaweed propagules through the adoption of an efficient tank acclimatization method. Preparations are on-going for the conduct of the laboratory experiments.</p>	<p style="text-align: center;">2020</p> <p style="text-align: center;">2020</p>	

Project/Activity Title	Duration	Remarks
<p>Study Title: Sea-based nursery cage production of farmed eucheumatoids</p> <p>This study aims to (a) increase the production of seaweed propagules or plantlets by improving their survival rate in expanded sea-based nursery cages, (b) decrease propagule production cost, (c) conduct disease management measures to improve seaweed plantlet survival in the nursery cages and (d) provide quality propagules to grow-out farmers. Based on the <i>Kappaphycus alvarezii</i> and <i>K. striatus</i> production data, the average plantlet survival was noted at 22.9%.</p>	2020	<p>Because of travel restrictions (mid-March to May) brought about by the current pandemic, propagules from the laboratory-based hatchery were not delivered to the Igang Marine Station. Moreover, marketable-sized propagules were not harvested. Finally, some diseases (ice-ice and epiphytic filamentous algae) were noted in the seaweeds. To this, interventions are already being made.</p>
<p><u>Production of alternative natural food organisms for hatchery and nursery rearing of commercially important aquatic species</u></p> <p>Algal paste Study Title: Optimization of electrolytic flocculator for paste production of important locally available microalgae in aquaculture</p> <p>This study aimed to establish optimal conditions for the production of algal paste through electrolytic flocculation using important, locally available microalgal strains/species in aquaculture by determining the ideal: (a) current/power source, (b) electrode material, and (c) harvest parameters such as biomass and time. It also aims to determine the quality of algal paste in terms of viability, storage conditions, and the metal residue content, if any. Finally, once the production conditions are optimized, feeding trials to zooplankton are conducted, looking at paste acceptability, storage, and metal transfer as assessment parameters.</p> <p>Thus far, the study has defined the ideal power source, electrode material, and harvest time for the production of algal paste using <i>Chaetoceros calcitrans</i>, <i>Tetraselmis tetrahele</i>, and <i>Nanochlorum</i> sp. The best number and type of electrode for use in algal paste production are as follows: 6 pcs. Aluminum and 6 pcs Lead for both <i>C. calcitrans</i> and <i>T. tetrahele</i>. The highest biomass harvested for <i>C. calcitrans</i> is 0.646 kg using a 10volts power source while for <i>T. tetrahele</i> it is 1.7kg using a 12-volt battery power source. Harvest time for <i>C. calcitrans</i> is shortest at 15minutes using a 10-volt power source while the shortest harvest time for <i>T. tetrahele</i> and <i>Nanochlorum</i> is at 61mins and 78 mins respectively. The paste quality based on metal content and storage conditions has also been determined for the different species, particularly for the <i>C. calcitrans</i>.</p>	2018-2020	

Project/Activity Title	Duration	Remarks
<p><u>Development of a modified continuous culture system for natural food production</u></p> <p>Larval food Development of a modified continuous culture system for the mass production of <i>Nanochlorum</i> sp. and <i>Brachionus rotundiformis</i></p> <p>This study aimed to (a) determine pH and substrate and nutrient concentration for <i>Nanochlorum</i> species in batch culture, (b) determine the turnover rate to achieve stable and sustainable algal culture, (c) determine biochemical composition at different turnover rates, and (d) reduce the cost of producing live food in fish and crab hatcheries. Thus far, the study determined that a reduced substrate of 50 mg/L nitrate concentration using TMRL as culture media promotes optimum growth rate for <i>Nanochlorum</i> species in batch culture. The identified benchmark turn-over rates to achieve a stable and sustainable algal culture were 15% and 30%. Moreover, a 30 ppm chlorine was found to be necessary to treat the water and minimize the presence of ciliates.</p>	<p>2019-2020</p>	
<p>Promotion of technically and economically-viable breeding and seed production schemes</p>		
<p>Abalone Seed production of donkey's ear abalone <i>Haliotis asinina</i> juveniles</p> <p>The aims of this study were to (a) increase juvenile yield to 5% or more, (b) produce 20,000 early juveniles (with a size of 2-4mm standard length) at every cropping, (c) determine the effect of seaweed quality on broodstock reproduction and larval performance, and(c) verify some hatchery rearing techniques such as the use of artificial diets on postlarvae and juveniles. It has been noted that the abalone juvenile survival rate ranged from 3 to 4%. Growth of the abalone juveniles fed seaweeds still gave a higher specific growth rate (4.2%) than the juveniles fed the prawn diet (2.8%) and the abalone diet (2.6%).</p>	<p>2008-2020</p>	
<p>Mangrove crab Seed production of mangrove crab with refinements on the feeding frequency</p> <p>The mean survival rate from zoea 5 to crab instar using a feeding frequency of 6x was higher at 28% than the 4x feeding frequency (22%). A total of 3.2 million newly hatched larvae and 395,324 pcs of crablets were sold. The monetary value of all the crabs sold was Php 1,995,913.</p>	<p>2018-2020</p>	<ul style="list-style-type: none"> • Broodstock procurement limited due to travel restrictions • High mortality in broodstock sourced from Capiz • Few recorded spawnings/hatchings from Apr-May • Need for additional tanks for larval rearing and rotifer prodn

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2021

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
<p>All the aforementioned studies will continue in 2021.</p> <p>The study on the Anguillid eels (population genetics and e-DNA research) shall be continued in 2021. This shall be funded by JAIF and is led by SEAFDEC/IFRDMD with AQD's technical assistance.</p> <p>New proposals that are aligned with the current thrusts of SEAFDEC/AQD shall be considered for 2021</p>	<p>2021</p>	

4.2 Expected Outcomes/Outputs

Hopefully, most of the targeted objectives in the 2020 studies will be achieved in 2021. New information shall be generated and science-based technologies shall be developed and disseminated.

PROJECT DOCUMENT

Program Categories: Departmental Programs
Project Title: Healthy and Wholesome Aquaculture
Responsible Department: Aquaculture Department
Total Duration: 2016-2020
Funding Sources: AQD
Estimated Budget for 2020: USD 645,150

1. INTRODUCTION

The concept of healthy and wholesome aquaculture is an integral component in improving and sustaining aquaculture production to provide the protein needs of an escalating human population. Research and development efforts in aquaculture have resulted in phenomenal growth of the sector in the last four decades, but more problems need to be studied and solved to attain significant improvements and assure sustainability for future generations in the face of many challenges posed by ecological, economic, and climatic changes, among others, happening in our world today.

This program has two main components: fish health and nutrition and feed. Fish health concentrates on disease diagnosis, control, monitoring and surveillance of aquatic animals; and environmental integrity, certification, and food safety. While the nutrition and feed component conducts studies to address some problem and need areas to sustain the production of aquaculture products in the region.

2. PROJECT

2.1 Goal /Overall Objectives

Fish health component aims to improve aquaculture production through innovations in nutrition and feeding and fish health management in aquaculture and in maintaining the environmental integrity of aquaculture systems.

Nutrition and feed component aims to (a) find effective alternative protein sources to fish meal in dietary formulations; (b) to determine specific nutrients that enhances growth performances; and (c) to promote practices and strategies to improve production.

2.2 Outcomes and Expected Outputs

Fish health component

Over-all the program is expected to achieve the following: (a) promotion of the wider use of conventional diagnostic as well as new methods especially for newly reported, emerging diseases; (b) finding an effective alternative safe drugs/chemicals (including natural products) to manage aquaculture diseases in lieu of harmful chemicals and drugs which have been discouraged or banned for use due to quality and safety issues; (c) re-education of stakeholders and develop the capability of fish health specialists on fish disease diagnosis using gross clinical examination and bacteriology, mycology, parasitology and histopathology techniques; (d) enhancement of the stakeholders and fish health specialists' understanding and interpretation of molecular diagnostic techniques and to develop healthy broodstock through pathogen exclusion; and (e) promotion of the group implementation of BMP/GAP and certification of small-scale farmers in the region and incorporate FAO Technical Guidelines to Aquaculture Certification into national aquaculture certification schemes and development of regional standards as well as promotion of global standard for responsible supply certification system.

Nutrition and feed component

Approved studies covered six aquaculture species. In pompano, the requirement for an amino acid was determined and the dietary level of an alternative ingredient. A feed for abalone grow-out was also selected from various formulations. For the female *P. indicus*, the performance of a formulated maturation diet was found comparable with fresh feed and for this same species, the hatchery-bred breeders are able to supply seeds for grow-out in ponds and in polyculture with milkfish. For the freshwater species e.g. silver therapon, the optimum stocking density were conducted in land-based tanks and in cages in the lake. Fish seemed bigger in tanks than in cages. Processing of a potential feed ingredient was undertaken and also the addition of an enzyme combination in a formulated feed with the aim to improve feed quality and cost.

2.3 Project Description/Framework (for total duration of the project)

Fish Health Component

Activity 1: Detection, quantification, and viability of Tilapia Lake Virus (TiLV) in pond soil and water as influenced by water quality parameters and culture management

The study detects and quantifies TiLV in pond soil, water, and fish samples using quantitative reverse transcription PCR (qRT-PCR). TiLV risk and protective factors will be identified by correlating water quality parameters (temperature, dissolved oxygen, pH, ammonia, transparency, water depth, salinity) with TiLV loads in pond soil /water/ fish samples.

Activity 2: Efficacy of different therapeutants against Caligus sp. infestation in tropical fish under laboratory conditions

The study evaluates the efficacy and determines the effective dose of different chemotherapeutants (emamectin benzoate, hydrogen peroxide and onion) against pre-adult and adult sea lice in pompano

Activity 3: Detection, control and treatment of persistent and emerging pathogens affecting pond cultured Asian catfish (Clarias macrocephalus)

The study addresses the current problem on sporadic occurrences of catfish mortalities in the municipalities of Zarraga and Leganes through active monitoring and surveillance of the putative causative disease agents.

Activity 4: Field verification of the vaccination regimen in cage-cultured marine fish species (pompano, snapper, grouper) broodfish in Igang Marine Station as a practical strategy to prevent the vertical transmission of nervous necrosis virus during seed production

The study verifies the practical application of the vaccination regimen as an effective strategy to produce NNV-specific-free eggs coming from immunocompetent (vaccinated) high value marine broodfish species reared in floating net-cages in Igang Marine Station.

Activity 5: Use of biofloc system to improve water quality, growth performance and disease resistance of Penaeus monodon and Penaeus indicus juveniles reared in tanks

The study develops microbial biofloc in tanks using tilapia and milkfish and determines its floc composition; evaluates the effect of biofloc system using two different carbon sources against clear water culture on the growth and survival of *P. monodon* and *P. indicus* cultured in tanks; and evaluates the effectiveness of the biofloc system on the resistance of shrimp against WSSV.

Activity 6: Safeguarding the future of the Seaweed Industry of the Philippines: Disease and Pest Detection

The study identifies the key diagnostic tools (detection protocols and molecular diagnostic tools) for yield-limiting seaweed diseases and pests (e.g., epiphytes and endophytes) associated with cultivation sites and the wider environment; and compiles a central open access database and national biobanks leading to an open access, digital 'Atlas' (Shore, DAPS).

Nutrition and Feed Component

Activity 7: *Quantitative amino acid requirements of juvenile Asian sea bass (Lates calcarifer Bloch): Requirements for leucine, isoleucine and histidine*

The requirement for essential amino acids of a high value aquaculture species was conducted. The quantitative requirement of pompano, *Trachinotus blochii* for leucine, isoleucine and histidine was started this year. Test diets have been formulated to contain different levels of the specific amino acid. Feeding trials are on-going.

Activity 8: *Spray dried hemoglobin (SDH) powder meal as an alternative protein source in grouper diets*

Spray dried hemoglobin (SDH) powder meal is a good source of protein. This was initially used in the formulation for grouper diet as an alternative protein source. The experimental fish was unavailable and with unpredictable production, pompano *Trachinotus blochii*, was used instead. The study will determine the proximate, amino acid, and fatty acid composition of hemoglobin meal as well as determine the digestibility of hemoglobin meal in a carnivorous fish. It will be followed by an efficacy evaluation of the meal when used as an ingredient in pompano diets. It will be evaluation in terms of performance parameters, feed efficiency, and comparative body composition (amino acid, proximate, and fatty acid profile).

Activity 9: *Application of enzyme combinations in milkfish diet*

Plant protein sources are increasingly used in aquafeed formulations due to its relatively low-cost and ample availability. The presence of phytate and other antinutritional factor restricts its own inclusion. It was known that phytase supplementation could increase bioavailability of nitrogen, leading to reduction in feed cost and carbohydrase hydrolyze complex non-starch polysaccharides present in plant feedstuffs. With this, this study aims to investigate the benefits of enzymes (phytase and carbohydrase) combinations in milkfish diets to improve feed performance and reduce formula cost.

Activity 10: *Evaluation of raw meal, fermented and live green macroalgae Chaetomorpha linum as food source for farmed Penaeus monodon*

The use of *Chaetomorpha* seaweed as food source, either through inclusion in formulated feeds or by direct feeding through co-culture system, can potentially benefit culture shrimps and possibly other farmed aquatic species. The study will optimize the fermentation protocol of *Chaetomorpha* meal. Unfermented *Chaetomorpha* meal will also be fed as diet to shrimp and tilapia, and milkfish juveniles hence, this study will determine the animal's survival and growth parameters. The study will also evaluate and estimate the nutrient digestibility of the meal among the aforementioned commodities.

Activity 11: *Hatchery production and semi-intensive pond culture of Penaeus (Fenneropenaeus) indicus*

The hatchery production and semi-intensive pond culture of *Penaeus indicus* were conducted with the aim to compare growth using *P. indicus* feeds (34-40%) and low-cost tilapia feeds (28-35%) and to demonstrate the profitability of *P. indicus* semi-intensive pond culture.

Activity 12: *Grow-out culture of abalone comparing the use of Gracilariopsis heteroclada and SEAFDEC formulated diet as feeds*

This study aims to compare seaweed *G. heteroclada* and SEAFDEC-formulated diet as feed to abalone in grow-out culture. It will specifically determine the growth and survival of abalone when fed with the seaweeds, formulated diet, and combination of both.

Activity 13: *Production techniques for culture of silver therapon (Leiopotherapon plumbeus) in tanks and cages*

SEAFDEC/AQD has established a reliable nursery and grow-out technique for silver therapon in cages. However, farming of silver perch juveniles requires a nutritionally-balanced diet for optimal growth and survival. To address this, concern a series of experiments will be carried out to establish the basic nutrient requirements. Basically, the study aims to develop production techniques and diets for silver therapon juveniles.

Activity 14: *Nutritional interventions to improve reproductive performance of Indian White Prawn Penaeus indicus (H. Milne Edwards, 1837)*

To formulate synthetic diets with similar efficacy as that of polychaete in promoting shrimp gonad maturation, understanding the mechanism and characterization of polychaete components that serves as promoter of gonad maturation would be vital. With this, the study aims to improve the reproductive performance of *Penaeus indicus* by providing maturation diet with optimized protein and lipid levels supplemented with polychaete extract with vitellogenesis promoting factor.

Activity 15: *Test of refined formulated feed for the grow-out culture of mangrove crab, Scylla serrata (Forsskal) in land-based tanks*

This study aims to refine feed formula for mangrove crabs based on its published nutritional requirement and physical properties. The study will also undertake proximate analysis, digestibility test, attractability test, and stability test for the refined formulation. It is expected to produce low- and cost-effective refined diet formulation for grow-out mangrove crab.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2020

Project/Activity Title	Duration	Remarks
Fish Health Component		
<i>Detection, quantification, and viability of Tilapia Lake Virus (TiLV) in pond soil and water as influenced by water quality parameters and culture management</i> Optimized detection/diagnostic protocol for TiLV was established. New TiLV primers were designed using the recently deposited sequence of TiLV isolate from the Philippines. The new primers are aligned with other international isolates and is specific only to TiLV. Three genetic groups of TiLV isolates from the Philippines were identified. Groups 1 and 3 are related to the Egyptian strain; while group 2 is related to the Malaysian strain.		
<i>Efficacy of different therapeutants against Caligus sp. infestation in tropical fish under laboratory conditions</i> The life cycle of <i>Lepeophtheirus spinifer</i> is completed. The lethal concentration to kill 50 % of the parasite is 0.32 ppm emamectin benzoate (EMB). Pompano fed with EMB (1.25, 1.39, 1.53 and 1.67 ppm) showed significant reduction in the prevalence and mean intensity of sea lice on day 17 and 27 after treatment compared to the control.		
<i>Detection, control and treatment of persistent and emerging pathogens affecting pond cultured Asian catfish (Clarias macrocephalus)</i> Two catfish hatcheries were monitored every two weeks. One had problem with catfish eggs that do not hatch (A); the other hatchery does not have any problem (B). In the hatchery phase, water hardness and presumptive Vibrio counts (PVC) are higher in hatchery A; PVC of fry from hatchery A is also higher (105 cfu/g) compared to hatchery B (undetectable at 10-1 dilution to 105 cfu/g). In the nursery phase, water hardness and presumptive <i>Aeromonas</i> counts (PAC) are higher in A; PVC is higher in B. PAC and PVC of the sediment are higher in A. PAC of the fingerlings are higher in B.		
<i>Field verification of the vaccination regimen in cage-cultured marine fish species (pompano, snapper, grouper) broodfish in Igang Marine Station as a practical strategy to prevent the vertical transmission of nervous necrosis virus during seed production</i> Several marine fish species at the IMS were vaccinated from March to July 2020. serum was examined for neutralizing antibody titers at		

Project/Activity Title	Duration	Remarks
<p>different time points post-vaccination. Sera of vaccinated fish showed 1:1729 titer and 1:5042 at 1 and 2 months, respectively. All sera from unvaccinated control fish showed titers under 1:40.</p>		
<p><i>Use of biofloc system to improve water quality, growth performance and disease resistance of Penaeus monodon and Penaeus indicus juveniles reared in tanks</i></p> <p>The dominant species in tilapia and milkfish BFT tanks were chlorophytes, ciliated and flagellated protozoa, nematodes and rotifers. Dominant bacteria present in tilapia biofloc with wheat flour as carbon source are <i>Mycobacterium</i> sp., <i>Vibrio</i> spp, <i>Bacillus</i> sp. and <i>Shigella</i> sp.; while, those with molasses as carbon source: <i>Pseudomonas</i> sp., <i>Vibrio</i> spp., and <i>Bacillus</i> sp. Dominant bacteria present in milkfish biofloc with wheat flour as carbon source are <i>Aeromonas</i> spp and <i>Vibrio</i> spp. While those with molasses as carbon source: <i>Vibrio</i> spp and <i>Flavobacterium</i> sp.</p>		
<p><i>Safeguarding the future of the Seaweed Industry of the Philippines: Disease and Pest Detection</i></p> <p>Key diagnostic tools (detection protocols and molecular diagnostic tools) for yield-limiting seaweed diseases and pests (e.g. epiphytes and endophytes) were established. Sentinel farming activity monitoring (June 2019- June 2020) encompassing the wet and dry seasons was completed. Representative samples (for histology, electron microscopy, microbiome and holobiome) were sent to the UK partners to be included in the ShORE and DAPS online databases.</p>		
<p>Nutrition and Feed Component</p>		
<p><i>Quantitative amino acid requirements of juvenile Asian sea bass (Lates calcarifer Bloch): Requirements for leucine, isoleucine and histidine</i></p> <p>The growth requirement for the amino acid leucine by pompano was determined this year. As a result of the experiment conducted, pompano's optimum requirement for leucine is 1.61% of the diet. The inclusion level showed optimum weight (38.62±3.08), FCR (1.14±0.07), and survival rate (82.21%). Currently, amino acid of the pompano fresh is being analyzed. Analysis of the data collected throughout the study is being conducted and a manuscript for publication is being prepared.</p>		
<p><i>Spray dried hemoglobin (SDH) powder meal as an alternative protein source in grouper diets</i></p> <p>SDH is high in crude protein. Its efficacy as an ingredient in grow-out formulations for high value species is assessed. Six dietary levels of SDH was fed to pompano since of grouper was not available for the study. The first run conducted in October 2019 and January 2020 yielded poor survival results due to cold weather conditions. A re-run was conducted in Igang Marine Station using 6 test diets with the following SDH diet levels 0, 4, 6, 12, 18, 27 percent. The feeding period will be for another 90 days in 1 x 1 x 2 m floating net cages.</p>		
<p><i>Application of enzyme combinations in milkfish diet</i></p> <p>The benefits of adding phytase and carbohydrase in grow-out diets for milkfish is investigated. Performance parameters, gut health and liver morphology were assessed. Milkfish with 50 g initial body weight were stocked in 37.5 m³ floating net cages following a 15 per m³ stocking</p>		

Project/Activity Title	Duration	Remarks
<p>density. Milkfish were fed with a combination with four dietary treatments: commercial diet as reference control, addition of phytase and carbohydrases, reduce 50% mono-calcium phosphate as positive control, reduced 50% MCP and 10% SBM for negative control, and negative control + phytase and carbohydrases as enzyme control. Initial results showed numerical differences between the four dietary treatments but the figures are yet to be statistically analyzed.</p> <p>The following analysis will be conducted as part of the study: (a) final proximate composition of milkfish fed the different dietary treatments; (b) liver and intestines histology; (c) calculation of performance parameters (hepatosomatic index, visceral somatic index, condition factor, protein and lipid retention, and others).</p>		
<p><i>Evaluation of unfermented, fermented and live green macroalgae Chaetomorpha sp. as food source for farmed Penaeus monodon and low-trophic level finfish</i></p> <p>This year, the diets produced from last year's activities were tested. An experimental set-up was also done to estimate apparent nutrient digestibility of diets containing UFM and FCM. Four isonitrogenous and isolipidic diets containing increasing levels (0%, 12%, 18% and 24%) of FCM were formulated and prepared. About 5,000 pcs of <i>Penaeus monodon</i> PL 15 were acquired from SEAFDEC/AQD Shrimp Hatchery and grown to desired body weight (0.3 g) for over a month. These were then randomly distributed to twenty 250-L rearing tanks at a density of fifteen shrimps per tank representing four treatments with five replications. The shrimps were fed with treatment diets for 90 days. Results showed that there is no significant difference between the four diets of UCM but it showed that optimum level is closer to 6%.</p> <p>In summary, the 5 μ cellulase fermentation protocol seemed ideal but a confirmation run is still needed. Survival rates for all treatments did not differ. The UCM dietary level for shrimps at 6 to 12% can be administered without adverse effect on its growth. Also, a high variability in the FCM feeding trial results were noted.</p>	<p>2018-2020</p>	
<p><i>Hatchery production and semi-intensive pond culture of Penaeus (Fenneropenaeus) indicus</i></p> <p>This study aims to produce a sustainable supply of <i>P. indicus</i> PL from hatchery-bred broodstock. The hatchery production protocol involves 1:1 broodstock in 15 tanks following AQD hatchery-rearing protocol until PL15 which were fed with mussel, artificial diet, polychaetes, and squid. The protocols also include regular diseases monitoring and biosecurity. The study also compared the growth of shrimp using 40% <i>P. indicus</i> feeds and 33% of low-cost tilapia feeds.</p> <p>This year, the study produced 5,845,594 eggs and 4,230,890 nauplii with 40.5% spawning, 72.4% hatching rate. From that it produced 141,063 PL with 3.3% survival rate.</p>		
<p><i>Grow-out culture of abalone comparing the use of Gracilariopsis heteroclada and SEAFDEC formulated diet as feeds</i></p> <p>This study aims to determine growth and survival of abalone fed with seaweed, SEAFDEC formulated diet (SFD) and combination of both. Nine diets were formulated and were tested for water stability (4 and 6 hours). These diets have the following nutrient ranges: 26.3 to 32.6% crude protein, 4.4 to 5.4% crude fat, 30.6 to 35.6% NFE, and 278.7 to</p>		

Project/Activity Title	Duration	Remarks
<p>302.8 kcal/100 g DE. The price range of the feeds starts from PHP 100.1 to PHP 502.6 per kg (USD 2.07 to 10.37). As part of the experiments, the diets will be ranked according to water stability, costs, and dietary nutrient content.</p>		
<p><i>Production techniques for culture of silver therapon (Leiopotherapon plumbeus) in tanks and cages</i></p> <p>An experiment was conducted to determine the optimal stocking densities of silver therapon during the nursery phase. The study used three treatments with varying densities (50 pcs/m³, 75 pcs/m³, and 100 pcs/m³) for stocking in 1 x 1 x 1.5 m cages located in both land-based tank and lake-case cage nurseries. It was fed with formulated microdiet (<149 µm) and were sampled every 2 weeks. After 10 weeks in land-based tank, results show no significant difference in the growth and survival of silver therapon juveniles, although those held at the lower stocking density (50/m³) had slightly higher mean final weight, percent weight gain (WG), specific growth rate (SGR) and survival than at higher stocking densities. Feed conversion ratio (FCR) was not significantly affected by stocking density but was better at 100/m³ stocking density. For lake-based cages, no significant difference in the growth performance of silver therapon juvenile. But, fish reared at lower stocking density (50/m³) had slightly higher mean final weight, percent weight gain (WG), and specific growth rate (SGR) than those reared at higher stocking densities. Survival and feed conversion ratio (FCR) were comparable among density groups.</p> <p>Generally, silver therapon juveniles reared in land-based cage nursery grew better than those reared in lake-based cage nursery</p>		
<p><i>Nutritional interventions to improve reproductive performance of Indian White Prawn Penaeus indicus (H. Milne Edwards, 1837)</i></p> <p>The study generally aims to improve reproductive performance of <i>Penaeus indicus</i> by providing a maturation diet with optimized protein and lipid levels supplemented with polychaete extract with vitellogenesis promoting factor. This year, the study is assessing the effects of different levels of polychaete extracts on sperm quality of the prawn. The study made use of three dietary treatments with varying protein levels (55%, 45%, and 35%) and lipid level for each protein levels (18, 12, and 6). The female shrimps were fed for 45 days. The control diet includes fresh and frozen squid, mussel, and polychaete that were given alternatively. As a result, 45% protein together with 18% lipid (45:18) and 55% protein with 12% lipid (55:12) were determined as the best diet treatments. It has the same effect with the control diet in terms of maturation rate, ovary shadow ratio, egg diameter, crude protein of ovary and hepatopancreas, and ovary lipid content. However, the difference would be that the latency period of the aforementioned best treatments is significantly shorter in control diets.</p>		
<p><i>Test of refined formulated feed for the grow-out culture of mangrove crab, Scylla serrata (Forsskal) in land-based tanks</i></p> <p>The study is a newly approved study and all activities are still ongoing.</p>		

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2021

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Fish health components		
Detection, quantification, and viability of Tilapia Lake Virus (TiLV) in pond soil and water as influenced by water quality parameters and culture management		The study will be continued. Continue genome sequencing of local TiLV isolates. Genetic selection using molecular markers to improve resistance of tilapia against TiLV and other diseases will be done
Efficacy of different therapeutants against <i>Caligus</i> sp. infestation in tropical fish under laboratory conditions		A new study will be proposed on the field verification of control/treatment/intervention protocol against caligids.
Detection, control and treatment of persistent and emerging pathogens affecting pond cultured Asian catfish (<i>Clarias macrocephalus</i>)		The study will be continued. Continue monitoring of catfish farms to identify pathogens and their control and treatments.
Field verification of the vaccination regimen in cage-cultured marine fish species (pompano, snapper, grouper) broodfish in Igang Marine Station as a practical strategy to prevent the vertical transmission of nervous necrosis virus during seed production		The study will be discontinued. Vaccination of marine fishes will be incorporated as one of the activities at Igang Marine Station.
Use of biofloc system to improve water quality, growth performance and disease resistance of <i>Penaeus monodon</i> and <i>Penaeus indicus</i> juveniles reared in tanks		The study will be continued. The effectiveness of the biofloc system on the resistance of shrimp against WSSV will be investigated.
Safeguarding the future of the Seaweed Industry of the Philippines: Disease and Pest Detection		The study will be continued. Sharing Best Practices (SBP) event in key seaweed growing areas around the country will be conducted. Seaweed brochure (with the whole Philippine Team) will be produced. Additional sampling activity will be done if needed. Identification of EFAs using histology, EM, and molecular analyses will be continued.
Studies on the virulence factors of the Philippine strains of <i>Streptococcus</i> spp. and their potential application for vaccine development against streptococcal infection in tilapia and other susceptible fish species		To be proposed to address the concern on Streptococcal infection affecting finfishes especially grouper as has been identified during commodity meetings on Marine Finfishes
Molecular Studies on Seaweeds		To be proposed
Antimicrobial resistance study on bacteria from shrimp and its environment		To be incorporated in studies with bacterial component and in the diagnostic services of AQD's Fish Health Section.
Epidemiological studies on persistent diseases like <i>ice-ice</i> in seaweeds, <i>Caligus</i> in pompano, bacterial diseases of finfishes, other diseases		AQD's Fish Health diagnostic team will collaborate with AQD's Farming Systems and Ecology Section, Igang Marine Station, and Laboratory Facilities for Advanced Aquaculture Technology team.

Project/Activity Title	Duration	Remarks
Nutrition and Feed Component		
Quantitative amino acid requirements of juvenile Asian sea bass (<i>Lates calcarifer</i> Bloch): Requirements for leucine, isoleucine and histidine	1 year	Pompano will be fed different dietary levels of isoleucine to determine the requirement of this amino acid for growth. Last of the 3 amino acids to be determined in the approved study.
Spray dried hemoglobin (SDH) powder meal as an alternative protein source in grouper diets	1 year	Spray dried hemoglobin meal added in different levels in pompano feed. This is to evaluate the efficacy of this ingredient especially on digestibility, liver and intestine morphology in pompano.
Evaluation of raw meal, fermented and live green macroalgae <i>Chaetomorpha linum</i> as food source for farmed <i>Penaeus monodon</i>	1 year	The use of fermented and unfermented <i>Chaetomorpha</i> meal will be evaluated in a confirmatory run. Different levels will be added in formulated diets for shrimps.
Hatchery production and semi-intensive pond culture of <i>Penaeus (Fenneropenaeus) indicus</i>	1 year	The production of PLs from hatchery-bred broodstocks of <i>P. indicus</i> was shown to be sustainable. An economic analysis will be done which will be included in the preparation of the manual.
Grow-out culture of abalone comparing the use of <i>Gracilariopsis heteroclada</i> and SEAFDEC formulated diet as feeds	1 year	Grow-out diet appropriate for abalone grow-out is being selected from various formulations based on water stability and nutrient content. This activity will be able to identify the adequate feed.
Production techniques for culture of silver therapon (<i>Leiopotherapon plumbeus</i>) in tanks and cages	2 years	The study on optimum stocking density in the nursery phase of silver therapon was almost done. This was part of the production technique aimed to aid in the development of grow-out diet for this species.
Nutritional Interventions to Improve Reproductive Performance of Indian White Prawn, <i>Penaeus indicus</i> (<i>H. Milne Edwards, 1837</i>)	2 years	Female breeders of <i>P. indicus</i> were fed different dietary levels of protein and lipid to improve maturation. Results are being analyzed in order to design a similar experiment for the male shrimp.
Test of refined formulated feed for the grow-out culture of mangrove crab, <i>Scylla serrata</i> (Forsskal) in land based tanks	1 year	A modified/refined formulated feed for the mangrove crab will be tested in tanks. Results will be tested to improve the grow-out diet.

4.2 Expected Outcomes/Outputs

Some of the projects are ending in 2021 and proponents are expected to analyze the data gathered from experiments and publish information materials for dissemination to stakeholders. Continuing projects will be finished the remaining activities indicated in the work timeline. As for the entire program, it is expected to propose new projects and activities to achieve the over-all goal of the program.

PROJECT DOCUMENT

Program Categories: Departmental Programs

Project Title: Maintaining Environmental Integrity through Responsible Aquaculture

Responsible Department: Aquaculture Department

Total Duration: 2016-2020

Funding Sources: AQD

Estimated Budget for 2021: USD 164,989

1. INTRODUCTION

This program was developed to address issues on the adverse influences of aquaculture on the environment and how these impacts will be minimized. It has been known that the phenomenal growth of aquaculture caused modification, destruction, or complete loss of habitat; an unregulated collection of wild broodstock and seeds; translocation or introduction of exotic species; loss of biodiversity; introduction of antibiotics and chemicals to the environment; discharge of aquaculture wastewater; salinization of soil and water; dependence on fishmeal and fish oil as an aquaculture feed ingredient, to name a few. SEAFDEC/AQD has been developing aquaculture technologies for various species of finfish, crustaceans, mollusks, seaweeds, and other emerging aquaculture species to boost production in the Philippines and other countries in Southeast Asia, while taking the lead in the development and promotion of eco-friendly aquaculture strategies.

2. PROJECT

2.1 Goal /Overall Objectives

To develop environment-based aquaculture technology by integrating environmental factors in SEAFDEC/AQD research activities and to maintain environmental integrity by promoting responsible aquaculture practices

2.2 Outcomes and Expected Outputs

The project aims to achieve the following: (a) assess impacts of aquaculture on biodiversity, water, and sediment qualities in the culture areas and adjacent ecosystems both in marine and freshwater systems; (b) identify appropriate extractive species that may be used in Integrated Multi-Trophic Aquaculture (IMTA); (c) develop and promote efficient and suitable environment-friendly culture systems, and (d) conduct biological and ecological studies on species with potentials for resource enhancement.

2.3 Project Description/Framework (for total duration of the project)

Research and development activities of MEITRA focus on maintaining environmental integrity while promoting sustainable and responsible aquaculture practices. The program involves studies on assessing impacts of aquaculture systems, assessing potential tropical species that may be used in Integrated Multi-Trophic Aquaculture (IMTA), testing environment-friendly culture systems for various aquatic commodities, and promoting resource enhancement, especially of economically-important but vulnerable or endangered species.

Activity 1: *Strategic feeding of milkfish (Chanos chanos) for efficient marine cage culture production*

The compensatory growth (CG) in fish, which enables rapid growth after a period of food restriction, provides an opportunity to reduce feed input with a comparable harvest. The study will determine the minimum duration of food restriction that primes CG response in milkfish fingerlings as well as the minimum duration of refeeding wherein normal physiology is regained and lost growth is fully compensated. CG response of the milkfish juvenile will also be examined. At the end of the study, a feeding technique was based on the optimum starvation-refeeding cycle in a full grow-out culture of milkfish in marine cages.

Activity 2: *Increasing technical skills supporting community-based sea cucumber production in Viet Nam and the Philippines*

Funded by the Australian Centre for International Agricultural Research (ACIAR) and involving other similar institutions in the Philippines, this study seeks to improve technical skills and reliability of current culture

methods to support increased production capacity of community-based sandfish culture. This study will optimize the hatchery production strategy for sandfish using micro-algae concentrates as well as its productivity of the juvenile culture system. It will also develop strategies to improve livelihood outcomes through sandfish culture.

Activity 3: Development of optimal fish-prawn co-culture schemes in tanks and lake-based cages for increased farm production

This study aims to jointly produce two commercially valuable, low-input species in a sustainable, cost-efficient and responsible culture system that would provide profitable returns for the small-scale fish farmers. In the long run, the study wishes to improve freshwater aquaculture production and increase the income of tilapia farmers through the rearing of genetically-improved Nile tilapia strains and/or red tilapia hybrids together with giant freshwater prawns in tank-based co-culture systems and also to adopt the optimal tilapia-prawn co-culture schemes in lake-based cages.

Activity 4: IMTA: Demonstration and verification of sustainable and efficient aquaculture techniques by combination of multiple organisms

This study will collect supplementary data relevant to IMTA-cultured species such as growth performance of sandfish in a modified IMTA system. It will also explore possible areas for the IMTA system through environmental mapping surveys as well as analysis of economic efficiency of IMTA in an inter-temporal context.

Activity 5: Grow-out culture of abalone in pipes

This study will verify the effectiveness of a newly-development grow-out technique of rearing abalone using recycled oil containers, PVC pipes and mesh cages in different areas of Panay Island, Philippines. Growth and survival of abalone using pipes as culture containers will be determined in Sicogon Island, Aklan, and Antique.

Activity 6: Polychaete culture in raceway ponds

Due to its quality to enhance reproductive performance, marine worms (polychaete) are used in maturation diets for crustaceans and fish broodstocks. The study will verify culture methods of marine worms in raceways or flow-through systems and assess nutrient quality, health, and profitability of such a culture system.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2020

Project/Activity Title	Duration	Remarks
<p><i>Strategic feeding of milkfish (Chanos chanos) for efficient marine cage culture product</i></p> <p>This study seeks to evaluate the compensatory growth (CG) response of milkfish aiming to determine the minimum duration of food restriction that primes CG response in milkfish fingerlings, determine the minimum duration of refeeding wherein normal physiology is regained and lost growth is fully compensated in milkfish fingerlings and develop a feeding technique based on optimum starvation-and-re-feeding cycle in a full grow-out culture of milkfish in marine cages. In its first year in 2019, the focus was on determining indicators of starvation in milkfish juveniles using body weight loss and hepatosomatic index (HSI) by comparing starved and fed milkfish. Results showed that CG response may be induced after 4-5 days of starvation. Meanwhile, HSI showed to be fully recovered after 4-6 days of re-feeding. In 2020, an actual cage culture trial was started. One treatment was employing the 5-day no feeding, followed by a 5-day re-feeding schedule. Initial results after 20 d showed that HSI recovers during refeeding but not the body weight. The experiment will continue to achieve conclusive results.</p>		

Project/Activity Title	Duration	Remarks
<p><i>Increasing technical skills supporting community-based sea cucumber production in Viet Nam and the Philippines</i></p> <p>This study is a continuation activity funded by ACIAR (Australia) on the production of sea cucumber <i>Holothuria scabra</i> from optimizing hatchery and nursery production up to resource enhancement and grow-out in the sea ranch. With a duration of 5 years, the first year is focused on optimizing hatchery production by utilizing algal concentrates to minimize dependency on live micro-algae cultures. Experiment results in 2019 showed that live <i>Chaetoceros calcitrans</i> (Cc) is still best, but <i>Isochrysis</i> sp. (Isochrysis 1800®) paste & Shellfish diet® 1800 can be possible alternatives. For the ocean-based nursery culture of sandfish in floating hapas, results suggest that algal biofilm and temperature positively affect sandfish growth in hapa, while wind and rain are negative factors. In 2020, problems with predation of sandfish in nursery pens and sea ranch were evaluated in lab and field experiments. In a predation-avoidance experiment, small (3-5 g) sandfish juveniles seemed to be naïve of predators, while medium (15-20g) sandfish tended to avoid predators. Thus, >20 g sandfish is recommended for stocking in the field. Predator-mitigation measures in grow-out pens and sea ranch will be studied in succeeding years.</p>	2019-2023	
<p><i>Development of optimal fish-prawn co-culture schemes in tanks and lake-based cages for increased farm production</i></p> <p>This study aims to jointly produce two commercially valuable low input species in a sustainable, cost-efficient, and responsible culture system that would provide profitable returns for the small-scale fish farmer. Specifically, the study will look into the rearing of genetically-improved Nile tilapia strains (e.g. i-Excel) and red tilapia hybrids, together with giant freshwater prawns (GFP) in tank-based co-culture systems and assess optimal tilapia-prawn co-culture schemes in lake-based cages. After 14 weeks, the combination of red tilapia + GFP tended to be better than other treatments (i-Excel + GFP), in terms of overall growth and survival. In a feeding study, GFP attained higher survival when fed while red tilapias survived better whether fed or unfed. Lake-based culture set-up and economic viability will be assessed in 2021.</p>	2020-2021	
<p><i>IMTA: Demonstration and verification of sustainable and efficient aquaculture techniques by combination of multiple organisms</i></p> <p>SEAFDEC/AQD and JIRCAS collaboration involves the determination of practically feasible systems through modified IMTA culture systems, applying polyculture techniques appropriate for aquatic organisms from various trophic levels. In this study, a combination of fed fish (milkfish), a deposit feeder (sea cucumber), and plants (seaweed) was tested in a pen culture set-up. The IMTA set-up design has evolved since 2015 to address various problems encountered respective of the species. The traditional idea of the 2D IMTA, where all commodities occupy the same pen, was problematic especially at low tide where the swimming space for fish became limited because of the seaweeds, while feed waste showed to be too much of the sandfish. The 3D IMTA, where seaweeds and sandfish were culture adjacent to the primary fish pen showed promise. However, seaweeds proliferated but showed significant seasonality where mortality was high due predation by herbivores. On the other hand, sea cucumbers (sandfish) have consistently shown good growth, but were stunted after 4-5 months. In a 4D IMTA, stunted sandfish were re-stocked inside the primary fish pen to feed on remaining organic materials, after harvest of the milkfish. Experimental demonstration of IMTA from 2011 to 2018</p>		

Project/Activity Title	Duration	Remarks
<p>showed that milkfish in this IMTA set-up produced marketable sizes at harvest. However, because of the small-scale and the open pen system, there was no clear significant bioremediation effect from sandfish and seaweed. IMTA pen showed better prospects as a sandfish nursery system, than for grow-out.</p>		
<p><i>Grow-out culture of abalone in pipes</i></p> <p>An alternative culture method for abalone <i>Haliotis asinina</i> in perforated PVC pipes was established by a previous research work by the same proponent. This system uses natural food seaweed <i>Gracilariopsis heteroclada</i>, thereby being environment-friendly. In its verification phase, this method will be evaluated in field culture trials in partnership with a private company, located in northern Iloilo. Starting in March 2018, this study was successful in demonstrating the technology with 20 units of PVC. In 2019, a total of >5,000 abalones were stocked and >1,500 harvested, weighing >35 kg. As of Jul 2020, a total of 7,320 were already stocked. However, >3,000 were recorded as missing/mortality, primarily due to the intermittent feeding and maintenance as caused by COVID19 travel restrictions to and from the site.</p>	2018-2020	
<p><i>Polychaete culture in raceway ponds</i></p> <p>Marine worms (Annelida: Polychaeta) are used for crustacean and fish broodstock maturation diet due to their qualities in enhancing reproductive performance. As a potential feed ingredient, polychaete needs to be disease-free and thus require to be produced in controlled environments like in land-based raceways using hapa nets. This study aims to verify the culture methods of polychaetes in raceways and assess nutrient quality, health, and profitability of such a culture system. Adult polychaetes <i>Marphysa</i> sp. were collected from the wild and tested for the absence of diseases (<i>e.g.</i> WSSV, IHNV, YHV, MBV, AHPND, EHP, and VNN). Larvae at the nectochaete stage from cocoons produced by these adults were harvested and used in experiments. In terms of stocking density, polychaetes significantly grew bigger at 500 ind/m² than at 1000, 1500, 2000, although not significant in survival. There was higher polychaete biomass (0.56 g, 100 g/m²) when cultured for 4 months than 3 months (0.40 g, 69 g/m²). However, in terms of profitability potential, growing polychaetes only up to bait-size (<0.4 g) showed to be profitable (ROI:58%) using this culture protocol: 2-month culture, 6 runs/year, 100m² @ 1000/m², 30% survival, Php1/pc selling price. In terms of nutrients, the highest crude protein (64%) was achieved at 4 months' culture with 10% fat, while the highest HUFA levels were achieved at 3 months. In testing for storage potential, Polychaetes are recommended to be used within 2 months of storage in the freezer.</p>		

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2021

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Strategic feeding of milkfish (<i>Chanos chanos</i>) for efficient marine cage culture product	2021	Will continue in 2021 with funding from AQD
Increasing technical skills supporting community-based sea cucumber production in Viet Nam and the Philippines	2021	Will continue in 2021 with funding from ACIAR
Development of optimal fish-prawn co-culture schemes in tanks and lake-based cages for increased farm production	2021	Will continue in 2021 with funding from AQD
IMTA: Demonstration and verification of sustainable and efficient aquaculture techniques by combination of multiple organisms	2021	Project will end by 2021
Grow-out culture of abalone in pipes	2020	Project will be ending this year
Polychaete culture in raceway ponds	2020	Project will be ending this year

4.2 Expected Outcomes/Outputs

Projects ending this year and in 2021 are expected to be published for information dissemination and continuing projects will work on all activities in the timeline in order to achieve the remaining objectives. The program is also expected to propose new projects and activities to achieve the goals to the program.

PROJECT DOCUMENT

Program Categories: Departmental Programs
Project Title: Meeting Social and Economic Challenges in Aquaculture
Responsible Department: Aquaculture Department
Total Duration: 2016-2020
Funding Sources: AQD
Estimated Budget for 2021: USD 124,635

1. INTRODUCTION

Growth of aquaculture in the Southeast Asian region is driven by the scientific and technological breakthroughs developed and adopted by receptive entrepreneurs and investors. 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. 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: a) 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; b) 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 c) 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. PROJECT

2.1 Goal /Overall Objectives

The MSECAP program aims to implement socioeconomics research and development studies to promote the inclusive engagement of fisherfolk communities and small-holder fish farmers in aquaculture and resource enhancement. These studies cut across the role of aquaculture in seed production for grow-out culture and stock enhancement. These both aim to improve food and income security among small-scale fisherfolks in coastal areas and freshwater environments.

2.2 Outcomes and Expected Outputs

Since its inception in 2011, the MSECAP program conducted studies such as the introduction of tilapia (*Tilapia nilotica*) farming in cages in inundated rice fields due to the construction of riverine irrigation project in upland area of Dumarao, Capiz; promotion of co-culture of giant freshwater prawn (GFWP, *Macrobrachium rosenbergii*) with tilapia in cages in Laguna Lake using juveniles produced by the fisherfolks during hands-on training in Binangonan, Rizal; participatory farming of seaweeds (*Kappaphycus alvarezii*) in Nueva Valencia, Guimaras to improve understanding of benefits and losses due to climate change; community participatory application of integrated multi-trophic aquaculture in milkfish (*Chanos chanos*) farming also in Guimaras; initiative towards a bioeconomic analysis of mangrove crab (*Scylla serrata*) hatchery operation; area capacity development for enhancement of tiger shrimp (*Penaeus monodon*) in Batan Estuary in Aklan province, and community-based enhancement of abalone (*Haliotis asinina*) and sandfish (*Holothuria scabra*) in Sagay Marine Reserve in Negros Occidental.

For 2020, MSECAP continues to reach out to promote inclusive growth through its successful community-based strategies. It engages collaboration with fisherfolks, local government, traders and other stakeholders. Two community-oriented projects are on-going. This includes the breeding of freshwater prawn in on-site hatchery and its subsequent grow-out in cages in Laguna Lake; and the family-run grow-out of sandfish in sea ranch. Both studies aim to develop sustainable livelihoods and contribute to food and income security of marginalized households in fishing communities. These expected outcomes are designed to be sustained through bottom-up development of enabling local regulations that are implemented jointly by local government institutions and the capacitated fisherfolk organization

2.3 Project Description/Framework (for total duration of the project)

Activity 1: Developing community-based sustainable aquaculture livelihood strategies in Laguna Lake and tributaries

This study aims to develop strategies for securing food and livelihood of fisherfolks through the promotion of full-cycle aquaculture of high-value indigenous species such as the GFWP and explore its ranching potential in Laguna Lake and tributaries. The specific objectives during the 5-year duration are: 1) develop community-based strategies to promote the adoption of hatchery technologies for the production of GFWP seeds for grow-out and exploratory ranching in Laguna Lake and tributaries; 2) enhance aquaculture skills and entrepreneurial competencies of fish farmers to sustain privately-owned family-based grow-out of GFWP in cages in Laguna Lake and tributaries, and in ponds in lakeshore areas; 3) formulate local policies, regulations and governance strategies, for sustaining livelihoods of fish farmers through production of GFWP in communities around Laguna Lake and tributaries; and 4) determine the value chain for GFWP to motivate sustainable and profitable GFWP industry involving a functional network of hatcheries, nurseries and grow-out farms in Laguna Lake and tributaries.

The specific objectives for 2020 include: 1) study existing literature on community-based strategies in sustainable livelihood development in inland freshwater communities in the Philippines and other relevant locations; 2) organize orientation and social preparation activities with fisherfolks and local government of Brgy. Pipindan in Binangonan, Rizal; 3) conduct baseline socioeconomic survey of stakeholders such as fisherfolk households, local government and regulatory institutions, research and development institutions, and market agents involved in the production of GFWP in Laguna Lake and tributaries; and its trade in markets noted in its value chain; and 4) plan with stakeholders an economically viable GFWP hatchery/nursery in Brgy Pipindan, Binangonan, Rizal.

This community-based study is expected to deliver the following outputs: 1) established collaboration between fisherfolks, local government, relevant national government agencies, seafood traders and SEAFDEC/AQD in sustainable GFWP production in Laguna Lake and tributaries; 2) capacitated fisherfolk-members in community-based hatchery and nursery operations with income from sale of GFWP post-larvae; 3) capacitated family-based farm operators with income from grow-out and exploratory ranching of GFWP sold locally and in Metro Manila markets; and 4) developed value chain for GFWP indicating the strategies for sustainable management and governance of aquaculture of GFWP in Laguna Lake and tributaries.

Activity 2: Assessment and development of community-based sandfish (Holothuria scabra) farming livelihood for fishing communities

This study aims to assess the capacity of island-based fishing communities towards sandfish farming livelihood; and develop strategies to increase and sustain the participation of fishing community members in sea cucumber farming. A multi-method approach that combines qualitative and quantitative methods will be used to collect data. A structured researcher-made questionnaire will be used to obtain data from randomly selected participants among different fishing actor groups. Focus group discussions (FGDs), oral history interviews, key informant interviews (KII), and gender-sensitive mapping workshops will also be employed to gather rich, detailed, and contextually grounded participatory qualitative data from various actors (*e.g.*, the local barangay officials, the local traders, the members of the people's organization or collaborators, and community members) in the community.

The expected outputs of the study include: 1) established gender-differentiated profile of the fishing community, with emphasis on their production, management, and decision-making roles; and the gaps in sea cucumber farming; and 2) established indicators on the willingness to participate in a community-based sea cucumber farming supplemental livelihood opportunity.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2020

Project/Activity Title	Duration	Remarks
<p><i>Developing community-based sustainable aquaculture livelihood strategies in Laguna Lake and tributaries</i></p> <p>The travel and community quarantine restrictions due to the COVID-19 pandemic brought further challenges to the implementation R&D activities under MSECAP. Nonetheless, it became an additional goal of this Program to explore strategies for implementing community-based projects in the midst of a pandemic. Thus, telecommunication through the text messaging, telephone calls, group chats and online virtual meetings became the modality to carry-out its activities for the study in Laguna Lake. Thus, outputs include: 1) discussed collaboration with LGU and fisherfolk stakeholders; 2) initiated social preparation and community organizing; 3) assessed and planned for an on-site community-based GFWP hatchery; 3) drafted project agreement, and the constitution and by-laws of the fisherfolk association.</p>		
<p><i>Assessment and development of community-based sandfish (Holothuria scabra) farming livelihood for fishing communities</i></p> <p>For the study on family-run ranching of sandfish in Sagay, the project preparation together with nodes of a network of collaborators around the Philippines was conducted in early 2020. A workshop on qualitative social research methods survey was hosted by the SEAFDEC/AQD team and attended by partners such as the University of the Philippines Marine Science Institute (UP-MSI), Guiuan Development Foundation, Inc. (GDFI) (GDFI) and Mindanao State University (MSU)-Marawi Campus and resource person from University Technology of Sydney (UTS). Other accomplishments included finalization of the MOA with partners in fisherfolks in Molocaboc Island in Sagay City and its local government. The AQD team also submitted the Sandfish Mariculture Handbook to ACIAR and is under review since May 2020. The project also updated and completed its final online version of the social survey instruments for key informant interview, and household and trader survey using Qualtrics offline survey applications implemented online via Messenger platform due to local travel restrictions around the Philippines due to the COVID-19 pandemic.</p>		

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2021

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
<p><i>Developing community-based sustainable aquaculture livelihood strategies in Laguna Lake and tributaries</i></p> <p>The community-based study in Laguna Lake has the following activities for 2021: 1) validate socioeconomic baseline survey results with stakeholders; 2) train fisherfolks on GFWP hatchery and nursery; 3) construct and operationalize the community-based GFWP hatchery and nursery, and establish collaboration with grow-out farmers; and conduct workshops on entrepreneurial management and financial skills development.</p>	2021	
<p><i>Assessment and development of community-based sandfish (Holothuria scabra) farming livelihood for fishing communities</i></p> <p>The study in Sagay will conduct: 1) guided online social survey of 45 members of the MOSRA, 2) stakeholder workshop and site assessment;</p>	2021	

Project/Activity Title	Duration	Remarks
3) IEC and specific training workshops on sea cucumber farming; and on its final quarter in 2021, it will conduct organizational workshops on leadership, financial and entrepreneurial activities and livelihood project development for MOSRA.		

4.2 Expected Outcomes/Outputs

The project is expected to encourage the people of the community to engage in aquaculture of commercially-viable species through capacity-building.

PROJECT DOCUMENT

Program Categories: Departmental Programs
Project Title: Adapting to Climate Change
Responsible Department: Aquaculture Department
Total Duration: 2016-2020
Funding Sources: AQD
Estimated Budget for 2020: USD 28,336

1. INTRODUCTION

Climate change is already happening. There is little doubt that global warming is occurring and at a greater rate than previously predicted. The recent extreme weather disturbances like more frequent and stronger typhoons, long dry spells resulting to droughts, frequent heavy rains resulting to severe flooding are some of the phenomena that are linked to climate change. These changes are projected to impact broadly across ecosystems and economies, increasing pressures on all livelihoods and food supply chains, including those in the fisheries and aquaculture sector. The future food supply will be a central issue as food resources come under greater pressure, and the availability and access to fish supplies will become an increasingly critical development issue.

Climate change is a compounding threat to the sustainability of aquaculture development. Impacts occur as a result of gradual warming, the increasingly acidity of the oceans and associated physical and chemical changes as well as from frequency, intensity and location of extreme climatic events. How these changes affect the aquaculture organisms in general, the different aquaculture systems and structures, the various support systems to aquaculture operations, and to the fish farmers in the region are highly vulnerable since they are dependent on their aquaculture operations for food and income. Urgent adaptation measures are required in response to the threats to food and livelihood provision due to climatic variations.

2. PROJECT

2.1 Goal /Overall Objectives

The overall goal of the program is to help ensure sustainability of aquaculture amidst the expected impacts of disturbances in the culture environment brought about by climate change/global warming.

2.2 Outcomes and Expected Outputs

- (1) Scientific information on the effects of increasing temperature and acidity, as well as other perturbations in the culture environment brought about by climate change (CC) on the different cultured species (reproduction, early development, recruitment and performance during culture including susceptibility to diseases), the different natural food organisms used for broodstock and seed production, natural pond productivity, the occurrence of diseases, and on the mangrove ecosystem
- (2) Information on feed ingredients that can potentially replace fish meal and fish oils in feeds for cultured species
- (3) Identification of CC-resilient species
- (4) Development and promotion of CC-resilient practices
- (5) Establishment of early warning systems that will enhance the resilience of the aquaculture sector

2.3 Project Description/Framework *(for total duration of the project)*

At present, there is no activity that is directly listed under the Climate Change Program. However, several activities under the other Departmental programs also address the objectives of this program. Moreover, information on the impacts of climate change on aquaculture is incorporated in all SEAFDEC/AQD training courses.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2020

Although there is no activity that is directly listed under the Climate Change Program at present, several activities under the other Departmental programs also address the objectives of the Climate Change Program.

Project/Activity Title	Duration	Remarks
<p>Extreme weather disturbances such as more frequent and stronger typhoons, long dry spells resulting to droughts, and frequent heavy rains resulting to severe flooding are some of the phenomena that have been recently linked to climate change. These changes are projected to impact broadly across ecosystems and economies, increasing pressures on all livelihoods and food supply chains, including those in the fisheries and aquaculture sector. The future food supply will be a central issue as food resources come under greater pressure, and the availability and access to fish supplies will become an increasingly critical development matter.</p> <p>Climate change is a compound threat to the sustainability of aquaculture development. Impacts occur as a result of gradual warming, the increasing acidity of the oceans and associated physical and chemical changes as well as from frequency, intensity and location of extreme climatic events. How these changes affect the aquaculture organisms in general, the different aquaculture systems and structures, the various support systems to aquaculture operations, and the vulnerable fish farmers in the region need to be assessed and corresponding adaptation measures formulated.</p> <p>Aside from the inclusion of climate change topics in aquaculture training courses, several activities under SEAFDEC/AQD's Departmental Programs investigate the impact of environmental variations to aquaculture organisms. The effects of temperature and salinity on the reproduction of copepods that are potential food during fish and crustacean seed production was investigated as well as the effects of salinity and pH on growth of seaweeds and growth of green algae used in rotifer culture. The effects of water temperature on the mating performance of captive and wild shrimp broodstock was studied as well as the effect of abrupt salinity fluctuations on the early recruitment of sandfish.</p> <p>The past and current activities on the evaluation of potential feed ingredients from various sources (<i>e.g.</i> industrial, agricultural and fish processing by-products) as replacement for fish meal and fish oil help address constraints of diminishing supplies of fish meal and fish oil in light of the expected impacts of climate change on global fishery resources. For example, based on previous work on alternative ingredients, a low-fish meal feed (1-2% fish meal) for tilapia and milkfish is now being field tested, and the information on nutrient profiles of these ingredients could be added into the Regional Feed Ingredients Database. These initiatives contribute to the overall resilience of the aquaculture sector in the region.</p> <p>Ongoing studies on persistent and emerging diseases (white spot syndrome, acute hepatopancreatic necrosis diseases, enterocytozoon hepatopenaei, nervous necrosis virus, tilapia lake virus, as well as other viral, bacterial, and parasitic diseases) and the development of measures to prevent and control disease outbreaks (<i>e.g.</i> vaccination, immunostimulation, greenwater culture) likewise address climate change issues. Formulation of policy recommendations as well as development of guidelines for the establishment of an early warning and response system for disease outbreaks based on the outcomes of Regional Technical Consultation on the said issue help improve capacity in dealing with disease outbreaks in the region. This system could be linked to other initiatives like the warning system for harmful algal blooms or fish kills, and contribute further to building resilience</p>	<p>2020</p>	

Project/Activity Title	Duration	Remarks
<p>to the impacts of climate change.</p> <p>Current initiatives in promoting community-based resource enhancement and aquaculture-based community livelihood programs also improve the resilience of coastal communities, one of the most affected sectors of society, to the impacts of climate change.</p>		

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2021

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Continue to incorporate climate change-resilient practices in studies conducted in AQD as well as in training and information materials	2021	

4.2 Expected Outcomes/Outputs

The program is expected to generate and integrate scientific information which relates to the regulation and preparation of the industry, fish farmers, and other stakeholders to the effects and impacts of climate change.

PROJECT DOCUMENT

Program Categories: Departmental Programs

Project Title: Collaborative Projects with the Philippine Government

Responsible Department: Aquaculture Department

Total Duration: 2018-2021

Funding Sources: BFAR and NFRDI

Estimated Budget for 2021: Accounting has no update on this yet since the budget hearing for the Philippines government is still ongoing

1. INTRODUCTION

Over the years, the Aquaculture Department of the Southeast Asian Fisheries Development Center (SEAFDEC/AQD) has developed technologies in broodstock development, seed production, and grow-out as well as feeds and nutrition of economically-important finfishes, crustaceans, mollusks, and seaweeds in various stages of development. Several of these technologies have already been successfully field-tested in ponds, pens, and cages in fresh, brackish, and marine waters in collaboration with fish pond operators, local government units, non-government organizations, and other international organizations. With this, the following projects were conducted by SEAFDEC/AQD to support the thrusts of its host government.

2. PROJECT

2.1 Goal /Overall Objectives

In order to accelerate fish production and export revenues from the aquaculture sector, SEAFDEC/AQD is committed to intensifying techno-transfer of matured aquaculture technologies to stakeholders which will provide additional and alternative livelihood to fisherfolks through sustainable aquaculture technologies that are economically viable, environment-friendly, and socially equitable.

2.2 Outcomes and Expected Outputs

The projects are expected to introduce SEAFDEC/AQD's established aquaculture such as:

- a) Environment-friendly farming of shrimp in ponds;
- b) Cage and Pond culture of economically important marine and freshwater species (pompano, grouper, seabass, snapper, milkfish, and tilapia);
- c) Hatchery production of economically important marine and freshwater species (pompano, grouper, seabass, snapper, milkfish, and tilapia); and
- d) Use of feeds containing alternative ingredients to ensure sustainable and low production cost aquaculture.

It is also expected to create a manpower development pool to be trained at different aquaculture disciplines which will be deployed at several government and private aquaculture facilities. Short term training courses will be tailored for fish farmers, entrepreneurs as well as students interested in aquaculture science.

2.3 Project Description/Framework (for total duration of the project)

Activity 1: Fry sufficiency program

This project to find a solution to the problem of seed insufficiency in the Philippines by constructing and operating more hatcheries, rehabilitating unproductive hatcheries, and enhancing the performance of milkfish breeders.

Activity 2: Development of cost-efficient feeds

The project aims to find cheaper alternatives to substitute for fish-based feed ingredients, come up with effective feed formulations using cheaper alternative ingredients, and promote locally-sourced alternative ingredients to bring down the cost.

Activity 3: *Oplan Balik Sugpo* Operation Black Tiger Prawn Revival

The projects seek a solution to the declining production of tiger shrimp, a million-dollar export industry of the Philippines in the nineties. It aims to promote eco-friendly strategies and effective biosecurity and the production of high-quality shrimp larvae.

Activity 4: *Accelerated Techno-Transfer*

There's been a weak linkage between the scientific development of aquaculture technologies and the fish farmers. This project aims to accelerate technologies through techno-caravans and field demonstrations.

Activity 5: *Manpower Development*

This project aims to find a solution to the lack of technical manpower to operate new government hatcheries. These solutions include intensive hands-on training of fisheries graduates in SEAFDEC/AQD facilities, deployment of training graduates to operate government facilities and train a pool of aquaculture technicians that may be tapped by the private sectors.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2020

Project/Activity Title	Duration	Remarks
<p><i>Fry sufficiency program</i></p> <p><i>Technical assistance given to DA-BFAR.</i> In accordance with a 2018 Memorandum of Agreement (MOA) between the Philippine Bureau of Fisheries and Aquatic Resources (BFAR) and SEAFDEC/AQD, proposed areas of multi-species hatcheries legislated during the 16th and 17th Philippine Congress were evaluated. SEAFDEC/AQD's role in the program is to provide technical assistance by performing suitability surveys of the proposed sites; to conduct field trials of low-cost feeds; to establish a feed mill in the site, and to conduct training for manpower development. Once constructed, the hatcheries will serve as central and satellite milkfish hatcheries providing for the seed requirements of grow-out facilities in their respective regions. Each marine hatchery is capable of producing 25 million milkfish fry annually. Even though the facilities are designed for milkfish, they are also capable of accommodating other species.</p> <p>Aside from production, the hatchery facilities will also serve as a training and demonstration facility for private groups that plan on putting up hatcheries. The facilities may also accommodate students for internship and on-the-job training. Resident technicians may provide hands-on training on various aspects of hatchery operations.</p> <p><i>Site feasibility studies.</i> In 2019, SEAFDEC/AQD evaluated new sites in Hinatuan and Surigao City in the CARAGA region as well as another site in Quezon Province. Three sets of engineering layouts and detailed feasibility studies of the sites were turned over to the BFAR Central Office, respective BFAR Regional Offices, and local government units (LGUs). Meanwhile, detailed feasibility study reports for the following sites were submitted: Perez, Quezon (RA 10945); Sultan Naga Dimaporo, Lanao del Norte (RA 10860); and Jose Dalman, Zamboanga del Norte (RA 10859). Six out of the 15 legislated areas listed covered in the MOA have already received engineering plans and feasibility study reports. Construction began on the multi-species marine hatchery in Lingig, Surigao del Sur (RA 10787). It is expected to be completed around the second quarter of 2020. Meanwhile, construction of the hatchery in Del Carmen, Surigao del Norte under RA 10825 began in the last quarter of 2019. The only freshwater multi-species hatchery in Jabonga, Agusan del Sur under RA 10813 will also begin after following a bidding process.</p>		

Project/Activity Title	Duration	Remarks
<p>Profiling unproductive hatcheries. SEAFDEC/AQD extended help to BFAR-6 by providing technical assistance for the rehabilitation of non-operational, abandoned, or damaged hatcheries in the hope of increasing fry production in the province of Iloilo. Profiling was done in the 1st district of Iloilo. Nine hatcheries in the area were found to be operational and were culturing tilapia, shrimp (<i>Litopenaeus vannamei</i> and <i>Penaeus monodon</i>), milkfish, and seabass. Meanwhile, 12 hatcheries were listed as abandoned or non-operating due to sickness or death of the owner, bankruptcy, and lack of finances to continue operations. It was also noted that most abandoned hatcheries used to culture <i>P. monodon</i>. Profiling of hatcheries was done to serve as the baseline information towards the rehabilitation of non-operational hatcheries in the area in order to maximize the production of milkfish fry. Recommendations, cost estimates, and other technical plans for the rehabilitation of the identified hatcheries will be drawn up and submitted to BFAR for approval.</p> <p><i>Environmental manipulation of milkfish breeders.</i> To further support the Fry Sufficiency Program, SEAFDEC/AQD has undertaken the problem of limited spawning of milkfish during colder months. While milkfish mature and are ready to spawn after 5 years, the water temperature needs to be 30°C or above. The spawning season in the Philippines is usually limited from March to November when the waters are warmer. SEAFDEC/AQD installed water heaters in a milkfish broodstock tank which raised the average temperature of the water to about 30°C as opposed to 26.1°C in the tank without heaters. There were eight spawning events that occurred during November 2019 which produced 2,200,075 eggs, 1,980,188 of which were good eggs with a hatching rate of 90%. In December 2019, there were five spawning events that yielded a total of 698,163 eggs and 541,000 of those were classified as good eggs with a hatching rate of 77.49%. In November and December 2019, during a period when no production is usually experienced, SEAFDEC/AQD was able to distribute 970,000 and 120,000 milkfish fry, respectively.</p>		
<p><i>Development of Cost-Efficient Feeds</i></p> <p><i>Search for alternative ingredients.</i> In recent years, SEAFDEC/AQD has been testing agro-industrial wastes and byproducts (mango peel silage, soybean curd residues, citrus by-products) for suitability as protein source for tilapia breeders and fingerlings. Protein-enhanced copra meal was also analyzed and tested as a protein source for grouper (<i>Epinephelus coioides</i>). A hydrolysate of milkfish by-products, with its rich protein content, was also evaluated as a potential feed ingredient for pompano (<i>Trachinotus blochii</i>) and tilapia diets. Promising results were obtained from distillers dried grain solubles (DDGS), a by-product of the distillery industry, which was shown to significantly improve milkfish growth.</p> <p><i>Public database for alternative ingredients.</i> The Regional Database of Alternative Feed Ingredients in Aquaculture was officially launched by SEAFDEC/AQD in July 2018. The database, accessible at http://afid.seafdec.org.ph, is intended to serve as a reference on the different feed ingredients that, depending on cost and availability, may be used to produce cheaper feed. Alternative feed ingredients include leguminous seed meals, leaf meals of various terrestrial plants such as <i>ipil-ipil</i>, papaya, and cassava as well as non-conventional sources like snails and worms. The database currently lists 70 different feed ingredients along with their nutritional composition and optimal inclusion levels.</p>		

Project/Activity Title	Duration	Remarks
<p><i>Low-cost formulations.</i> The average cost of a commercial feed is between Php 34 to 36 per kg which is higher compared to the SEAFDEC/AQD formulated diet which costs around Php 19 to 22 per kg. When produced in a commercial scale, the cost of the SEAFDEC/AQD feed could even be lower.</p> <p><i>Testing of feed formulations.</i> Initial growth trials for milkfish were conducted at the Igang Marine Station in floating net cages last June 2019. SEAFDEC/AQD formulated feeds were tested against commercial diets. After 120 days of culture, milkfish fed with the SEAFDEC/AQD diet achieved a total of 2,795.30 kg of harvest which is higher than that of milkfish fed with commercial feed which achieved 2,234.92 kg of harvest. Milkfish fed with the new diet also weighed more (393.45 g average) than commercial diet-fed milkfish (325.35 g). Feed conversion ratio was 2.10 and 2.43, respectively. In partnership with NFRDI Muñoz, a similar feeding experiment for tilapia was initiated at Muñoz, Nueva Ecija last 27 June 2019. A second feeding experiment for tilapia was conducted at Lala, Lanao del Norte on September 17, 2019. In the latter, after 120 days of culture, the experiments harvested a total of 1,097.93 kg from ponds fed with the SEAFDEC/AQD diet and 1,023.50 kg from ponds fed the commercial diet with an average body weight of 338.45 and 308.28, respectively. Feed conversion ratio was 1.35 for the SEAFDEC/AQD diet and 1.52 for commercial feeds.</p>		
<p><i>Oplan Balik Sugpo (Operation Black Tiger Prawn Revival)</i></p> <p><i>Enhanced biosecurity in new shrimp hatchery.</i> The shrimp hatchery complex was prepared to provide high-quality shrimp fry to be stocked in ponds. Enhanced biosecurity operations were implemented beginning with a spawner/broodstock facility. The facility is located outside the shrimp hatchery and serves to quarantine newly-arrived spawners and to sample spent spawners for the possible presence of pathogens. After spawning and analyses, nauplii from positive spawners are chlorinated and discarded while nauplii from negative spawners are stocked in the larval rearing facility located at the shrimp hatchery. The hatchery is equipped with biosecurity features to prevent or lessen the accumulation of pathogens. A disinfection building was built for hatchery staff and visitors. Visitors are not allowed to enter the facility within 48 hours after visiting other hatcheries or farms. Rapid sand filters, UV sterilizers, filter bags, and enclosed larval rearing facilities ensure good quality rearing water. Larval rearing tanks are divided into two modules which allow resting of the other module after a run. Rearing water is sampled twice a week while the stocked fry are sampled at PL 5, PL 10, and PL 15 stage to make sure that they are disease-free before harvest.</p> <p><i>Demonstration of eco-friendly pond culture.</i> The technology demonstration projects for this program were divided into two phases. The first phase began in the Dumangas Brackishwater Station with the technology demonstration runs of low or partial discharge and closed-recirculating system of shrimp farming using environment-friendly schemes at the intensive, semi-intensive, and modified extensive levels of production. Successful technology demonstration runs will then be followed by the implementation of Phase 2 where demonstration will be done in private commercial shrimp farms. In July 2019, disease-free fry were stocked in DBS to begin the experimental grow-out run using environment-friendly strategies. In October 2019, over 2.8 tons of tiger shrimp were harvested from a 0.5-hectare pond. After 113 days of culture, 93.3% of the 100,000 PLs survived and attained an average body weight of 30 grams. In November 2019, another 4.4 tons of tiger shrimp, with an</p>		

Project/Activity Title	Duration	Remarks
<p>average body weight of 30 g, were harvested from a 0.8-hectare pond after 120 days of culture, yielding a survival rate of 89.7%. More runs will be conducted to verify the culture system in 2020. Once verified and proven effective, the technology will be adopted by BFAR Region 6 to be demonstrated in their technology outreach stations in Negros and Aklan and will be introduced to fish farmers.</p>		
<p><i>Accelerated Techno-transfer</i></p> <p>Joint Mission for Accelerated Nationwide Technology Transfer Program-II. In collaboration with the Bureau of Fisheries and Aquatic Resources (BFAR), techno-caravans, field demonstrations, and hands-on training courses were conducted in different areas in the Philippines. Field evaluation of BFAR's national aquaculture centers and regional stations were done to identify appropriate technologies for demonstration. This technology transfer will provide fish farmers, entrepreneurs, and other end-users access to additional and alternative livelihoods. This JMANTTP-II program was designed to intensify the techno-transfer of mature aquaculture technologies to stakeholders towards accelerated fish production and export revenues from the aquaculture sector. It is hoped that these will provide additional and alternative livelihood to fisherfolks through aquaculture technologies that are sustainable, economically viable, environment-friendly, and socially equitable.</p>		
<p><i>Manpower Development</i></p> <p>SEAFDEC/AQD trained a batch of fisheries graduates in hatchery seed production as well as grow-out using different pond culture systems. Trainees were equipped with knowledge on the farming of shrimp, marine fish, and tilapia. Graduates of the rigorous and in-depth training are meant to be deployed to projects of SEAFDEC/AQD or be recommended to various government or non-government offices and the private business sector. Sixteen graduates from different schools in Western Visayas graduated with enhanced capabilities and broadened perspectives and experiences in shrimp and multi-species marine fish hatchery operations including cage and brackishwater pond culture operations. The graduates were assigned to different facilities. Some graduates upstarted the operation of BFAR-5's multi-species hatchery in Sagnay, Camarines Sur in the Philippines. The hatchery produced and sold a total of 467,000 fry. In the next years, there is a plan to conduct another training course to produce another batch of trainees. This time, fisheries graduates from different fisheries schools, mostly in Mindanao, Quezon, and Bicol area, are the target individuals for training and deployment in constructed legislated hatcheries.</p>		

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2021

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
<p><i>Fry sufficiency program</i></p> <p>AQD will continue giving technical assistance to DA-BFAR in ensuring that hatcheries around the country are equipped with facilities and are feasible for sustainable production of fry. The Department will also continue undertaking studies on milkfish breeders for it to be more productive.</p>	<p>2021</p>	

Project/Activity Title	Duration	Remarks
<p><i>Development of cost-efficient feeds</i></p> <p>The cost-efficient feeds developed by AQD will undergo more trial testing. AQD will also be working on increasing the production capacity of its feed mill.</p>	2021	
<p><i>Oplan Balik Sugpo (Operation Black Tiger Prawn Revival)</i></p> <p>AQD will continue the research under this project such as enhancement of biosecurity in shrimp hatcheries and demonstration of eco-friendly pond culture.</p>	2021	
<p><i>Accelerated Techno-Transfer</i></p> <p>The program will continue on-site training courses next year following the regulations of the Philippine government on COVID-19.</p>	2021	
<p><i>Manpower Development</i></p> <p>Another training course to produce another batch of trainees. This time, fisheries graduates from different fisheries schools, mostly in Mindanao, Quezon, and Bicol area, are the target individuals for training and deployment in constructed legislated hatcheries.</p>	2021	

4.2 Expected Outcomes/Outputs

The collaborative projects with Philippine Government agencies aim to accelerate technology transfer through new thrusts. By next year, AQD will continue strategizing to harmonize relevant research and development studies with the priorities of the host government. Through this collaborations, DA-BFAR, NFRDI and other government agencies will assist AQD in transferring adoptable and sustainable technologies to the industry and stakeholders. Fish farmers are expected to benefit from the projects as they will immediately reap the benefits of the research done by the department.

PROJECT DOCUMENT

Program Categories: Departmental Programs

Project Title: Promotion on Strengthening of SEAFDEC Visibility and Enhancing Human Capacity Building

Responsible Department: Training Department

Total Duration: 2020

Funding Sources: Training Department

Estimated Budget for 2020: 70,000 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 the 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.

In addition, the Plan of Action on Sustainable Fisheries for Food Security Towards 2030 which was adopted in ASEAN-SEAFDEC Regional Meeting on the Resolution and Plan of Action for ASEAN Region Toward 2030 which hold in September 2019, Bangkok, Thailand 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 2030 through promotion of SEAFDEC role, implementation activities, visibility and image to Member Countries, other international institutions and the public including enhancing capacity building on fishery field for relevant agencies and stakeholder, SEAFDEC/TD propose and implement the project of “Promotion on strengthening of SEAFDEC visibility and enhancing human capacity building” under Departmental program.

2. PROJECT

2.1 Goal /Overall Objectives

SEAFDEC’s role, responsibility, visibility, and image are promoted and enhanced among Member Countries, other international institutions, and the public.

2.2 Outcomes and Expected Outputs

Outcomes

- Strengthening of SEAFDEC and Department’s visibility and image
- Increasing of understanding, knowledge, and experience for relevant agencies and stakeholder in fisheries-related issues

Expected Outputs

- Understanding of the role and SEAFDEC / Departments activities
- Delivery of fisheries information to stakeholders and the public
- Hub of fishery information and capacity building on the fisheries-related issues in the region
- Building up human capacity on the fisheries-related issues

2.3 Project Description/Framework

Activity 1: Promotion and Enhancement of SEAFDEC Visibility and Image

SEAFDEC’s role and implementing activities as knowledge on fisheries information in collaboration with other SEAFDEC Departments will be promoted and enhanced among other 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, 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 other departments and other relevant agencies in sharing information on fisheries issues via TD media channel. Moreover, strengthening of TD information and networks such as TD website and social media will be updated and developed.

Activity 4: Human capacity building

For SEAFDEC staff

The knowledge, skill, and experience of SEAFDEC staff will be enhanced and developed by relevant ICT training programs and others with outside institutions.

For fishery stakeholder and public

The tailor-made training courses will be conducted based on the need and requirements of the partners and donors. 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 new topics and programs.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2020

Project Activity Title	Duration	Remarks
1) <i>Promotion and Enhancement of SEAFDEC Visibility and Image</i> <ul style="list-style-type: none"> Exhibition on Fisheries Resource Conservation and promotion SEAFDEC and TD activities for Children Day at Pomprachunlajomklao Navy was organized. 	11 Jan 20	
2) <i>Production of Information Materials</i> <ul style="list-style-type: none"> Twenty (20) articles of fisheries knowledge including Fishery Management, Fishing Technology, Combating IUU Fishing, and Fisheries Resources was presented to publish at SEAFDEC Training Department Facebook page via www.facebook.com/SEAFDECTrainingDepartment and TD website at www.seafdec.org Twenty-three (23) VDO clips related to fisheries field was produced and published on TD Youtube channel at www.youtube.com/channel/UC-LMmTRM-mLV3FZScO1gUQg?view_as=subscriber 	Feb-Dec 20	
3) <i>Management Information System</i> <ul style="list-style-type: none"> Updating of TD website (www.seafdec.or.th) 	Jan-Dec 20	
<ul style="list-style-type: none"> Development and uploaded information of TD repository (http://repository.seafdec.or.th) 	Jan-Dec 20	
4) <i>Human capacity building</i>		
4.1) Human capacity building for national		
<ul style="list-style-type: none"> The workshop for adaptive EAFM to Fisheries management in Phrea province, Thailand. The participants were composed of the key fishers and government officers from seven (7) Sub-Districts as well as the local government. The participants in the workshop are totally 35 persons (25 males, 10 females). 	24-25 June 20	

Project Activity Title	Duration	Remarks
<ul style="list-style-type: none"> Study visit to observed M.V. SEAFDEC and discussed her duty and role in the region for 10 staff (8 males and 2 females) from Siam Maritime School 	9 Jan. 20	
<ul style="list-style-type: none"> Study visit to increase knowledge and experience through practiced on coastal navigation for 32 students (10 males and 22 females) from the Faculty of Fisheries, Kasetsart University who learned in the subject of Coastal Navigation including two (2) lecturers for a study visit 	13 Mar. 20	
<ul style="list-style-type: none"> Study visit to discussed on collaborative research on marine debris for 12 staff (5 males and 7 females) from Department of Marine and Coastal Resources 	30 July 20	
<ul style="list-style-type: none"> On the job training for Thai university students. There were 3 Thai university students (1 male, 2 female) practice training to include experience and skill in their study. 	4 Nov.-4 Dec. 20	
4.2) Tailor made training		
<ul style="list-style-type: none"> The Training Course on Inland Fishing Gear. There were 32 fisheries officers (20 males and 12 females) from Inland Fisheries Research and Development Division, Department of Fisheries (DOF), Thailand. 	24-28 Feb. 20	
<ul style="list-style-type: none"> The workshop on model construction and structure of commercial fishing gear conducted at SEAFDEC/TD. there were thirty-six fisheries officers from the Marine Fisheries Research and Development Division, Department of Fisheries, Thailand 	3-7 Aug. 20	
4.3) SEAFDEC Staff		
<ul style="list-style-type: none"> The Training on Ecosystem Approach to Fisheries Management for Inland was organized in SEAFDEC Secretariat by a resource person from FAO. There were ten trainers on EAFM from TD participated in this training to increase their skill on inland EAFM. 	27 Jan. 20	
<ul style="list-style-type: none"> The Training on the Use of Google Meet and Google Classroom was organized in TD to inform this application for preparation of teleconference and online training to implement activities during COVID 19 pandemic. There were twenty-nine SEAFDEC staff participated in this training. 	12 June 20	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2021

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
<p><i>Activity 1: Promotion and Enhancement of SEAFDEC Visibility and Image</i></p> <p>National and international exhibitions as required will be organized to promote and enhance SEAFDEC's role, visibility, and image through present knowledge on fisheries information in collaboration with other SEAFDEC Departments.</p>	Jan-Dec	
<p><i>Activity 2: Production of Information Materials</i></p> <p>Fisheries information packages promote awareness understanding for fishermen, stakeholders, and the public will be produced. The package will include books, brochures, VDO, and new media, etc.</p>	Jan-Dec	
<p><i>Activity 3: Management Information System</i></p> <p>The management of information systems will be conducted and updated such as databases, TD website and social media through cooperation with other Departments and partners to share information on fisheries issues and relevant issues.</p>	Jan-Dec	

Project/Activity Title	Duration	Remarks
<i>Activity 4: Enhancing on human capacity building</i>		
<ul style="list-style-type: none"> The knowledge, skill and experience of SEAFDEC staff will be enhanced and developed by relevant ICT training programs and so on with outside institutions. 	Jan-Dec	
<ul style="list-style-type: none"> The tailor-made training courses will be conducted based on the need and requirement from the partners and donors. 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 new topics and programs. 	Jan-Dec	

4.2 Expected Outcomes/Outputs

- Strengthening of SEAFDEC and Departments visibility and image
- Understanding on role and SEAFDEC / Departments activities on public
- Delivery and enhance knowledge through capacity building of fisheries issues to stakeholders and the public

PROJECT DOCUMENT

Program Categories: Departmental Programs

Project Title: Improving of Fisheries Technology and Reduction of the Impact from Fishing Activities

Responsible Department: Training Department

Total Duration: 2020

Funding Sources: Training Department

Estimated Budget for 2021: USD 65,000

1. INTRODUCTION

Over the years, TD has initiated several projects/programs aiming to promote responsible fishing technology and practices, improvement of deck machineries and catch handling onboard fishing vessels through the 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. Department of Coastal Marine and Resources, Fish Marketing Organization of Thailand, Fisheries Academies, Institutes and Universities) and local fisheries association. The activities are included with technical assistances, research and development, sea trials, and demonstrations and human resources development.

Project activities have been implemented since year 2014 with three (3) main components are 1) Promotion of appropriate technologies and practices of fishing and marine engineering to enhance sustain marine fisheries resource utilization; 2) Fisheries research on impact of fishing (include fisheries resources, socioeconomic and governance) to marine ecosystem; and 3) Database to support the fisheries management for Thailand. Since year 2018 the program has been extended to support the formulation of fisheries management plan of local communities in Thailand, based on the area that SEAFDEC training has been implementing project activities in the past.

2. PROJECT

2.1 Goal /Overall Objectives

Improvement fishing technology, marine engineering and application of management tool to support sustainable utilization of marine fisheries resources and strengthening the national networks.

2.2 Outcomes and Expected Outputs

- 2.2.1 Appropriate fishing technologies and marine engineering to support sustainable fisheries by mitigating impacts of fisheries resources and marine ecosystem.
- 2.2.2 Baseline information of the fisheries management, socioeconomic and gender in fisheries to support sustainable fisheries
- 2.2.3 Fisheries information and database support sustainable fisheries.

2.3 Project Description/Framework

Activity 1: Research and promotion of appropriate technologies and practices of fishing and marine engineering. The series of activities are emphasized on the improvement of appropriate fishing and marine engineering technology and practices including the energy saving, safety to enhance sustainable marine fisheries resource utilization. Introducing fishing deck machineries to reduce manpower, improve fishing gear according to fishing method modification and study on economic impacted by improvement of fishing and marine engineering technology and practices is multidisciplinary research applied for these activities. Human resource development by improvement of training material of fishing technology subject for junior researcher and extension officers of Department of Fisheries, and undergraduate student of Thailand. This is included with the technical support on monitoring and survey on fishing gear, fishing boat to support Fisheries Management of Thailand and other specific purposes are also major sub activities.

Activity 2: Study on the impact on fisheries resources, marine environmental, social well-being and livelihood from fishing activities.

The activities are emphasized on multidisciplinary research to investigate impact of habitat and ecosystem focus on fisheries resources, oceanography and marine environment from fishing operations. Socioeconomic small-scale as well as the study on the cost and return in commercial scale fisheries are significant sub-activities.

Activity 3: Database for fisheries management

SEAFDEC Training department in collaboration with the Department of Fisheries, Thailand has developed a 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 the Department of Fisheries, Thailand and SEAFDEC/TD. In addition, SEAFDEC has a series of data collected from coastal fisheries projects. This data has never been developed as a database system for socioeconomic data management.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2020

Project/Activity Title	Duration	Remarks
Promotion of appropriate technologies and practices of fishing and marine engineering		
1. Study on improvement of fishing technology to enhance sustainable marine fisheries resource utilization 1.1. Reduction of manpower in purse seine fishing operation of Thailand (Activities are ongoing to monitor the operation of hauling devices and freezing room onboard purse seiner. Report on the economic study on the Thai purse seine equipped with modern technology is drafting) 1.2. Safety in fishing operation in Thailand (Activities are ongoing to monitor the operation of deck machineries, hauling devices and onboard purse seiner)	Jan-Dec	Activities were Delay due to the impact of COVID-19
2. Research on coastal fishing activities, <i>e.g.</i> set net, bamboo stake trap, for specific proposes. 2.1. Marking of fishing gear (Desk study entitle Recommendation on the Marking of Fishing Gear of Towed Nets is drafting)	Jan-Dec	
3. Advanced technology to support fisheries research survey 3.1. Study on the midwater trawl net construction and designed suitable for M.V. SEAFDEC 2 and Research vessel of Department of Fisheries Thailand. (Expert of SEAFDEC/TD supported the cruise sea trial and crew training of the Department of Fisheries Thailand.) 3.2. Study on the Scientific echo sounder suitable for M.V. SEAFDEC 2 (Ongoing the report on the Scientific Echo Sounder EK-80 to installed onboard M.V. SEAFDEC 2)	Jan-Dec	
4. Fishing technology reference 4.1. Training material for fishing technology subject for staffs of the Department of Fisheries Course curriculum, training material of the inland fishing gear (in Thai) was completely produced and used in the training course for Department of Fisheries Thailand during 24-28 February 2020 4.2. Training material for fishing technology for undergraduate student of Thailand (Basic Knowledge of Fishing Gear: Gillnet (in Thai) has been drafted) 4.3. Revised monograph of fishing gear of Thailand Authors finished drafting the bottom trawl net designs of Thailand.	Jan-Dec	

Project/Activity Title	Duration	Remarks
5. Monitoring on fishing technology to support fisheries management of Thailand and other specific purpose 5.1. Support of National and Local Programs and the Sustainable Development Strategy for the Seas of East Asia (Trat Province of Thailand) The program has been complete. The draft integrate coastal management plan is submitted to the local authority and stakeholder for further consideration.	Jan-Dec	Activities were delay due to the impact of COVID-19
Study on the impact on fisheries resources, marine environmental, social well-being and livelihood from fishing activities		
1. Research and study on the status and impact of fisheries oceanography and marine environment from fishing operations. 1.1. Facilitate the presentation on the result of Collaborative Research Survey on Marine Fisheries Resources and Marine Environment in the Gulf of Thailand (Cambodia, Thailand, and Viet Nam) in the 7 th Marine Science Conference of Thailand. (Activities were postponed to June 2021, due to the impact of COVID-19) 1.2. Facilitating on the producing the reference of Scombrid Fish Larvae and Juvenile in Southeast Asia. (Reference of Scombrid Fish Larvae and Juvenile in Southeast Asia is ongoing drafting) 1.3. Study the type and amount of debris in the surface layer of Chao Phraya River that flows into the Gulf of Thailand. (Study has been postponed due to the improvement of research methodology)	Jan-Dec	
2. Research and study on impact from fishing activities to social well-being (e.g. social, economic, etc.) The implementation of EAFM in Krabi province is ongoing	Feb-Dec	
Database for fisheries management		
1. Development of database system for fisheries resources survey There is not new data input in 2020 due to the collaborative research survey to support SEAFDEC MCs by M.V. SEAFDEC 2 has been cancelled. Data of year 2019 is ongoing input.	Jan-Dec	Activities were Delay due to the impact of COVID-19
2. Development of database system to support fisheries socio-economic and small-scale fisheries study Activities were postponed due to the impact of COVID-19.	Jan-Dec	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2021

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Promotion of appropriate technologies and practices of fishing and marine engineering		
1. Study on improvement of fishing technology to enhance sustainable marine fisheries resource utilization 1.1. Reduction of manpower in fishing operation of Thailand 1.2. Safety in fishing operation in Thailand	Jan-Dec	
2. Research on coastal fishing activities, e.g. set net, bamboo stake trap, for specific purposes. 2.1. Study on the Abandoned, Lost or otherwise Discarded Fishing Gear (ALDFG)	Jan-Dec	

Project/Activity Title	Duration	Remarks
3. Advanced technology to support fisheries research survey 3.1. Study on the trawl net construction and designed suitable for M.V. SEAFDEC 2 and Research vessel of Department of Fisheries Thailand. (Research study to improve trawl net to reduce negative impact of seabed by apply concept of semi pelagic trawl net design) 3.2. Study on the Scientific echo sounder suitable for M.V. SEAFDEC 2 (Ongoing the report on the Scientific Echo Sounder EK-80 to be installed onboard M.V. SEAFDEC 2)	Jan-Dec	
4. Improve fishing technology reference and monitoring on fishing technology to support fisheries management of Thailand and other specific purpose 4.1. Training material for fishing technology subject for staffs of the Department of Fisheries 4.2. Training material for fishing technology for undergraduate student of Thailand (Producing the Basic Knowledge of Fishing Gear: Gillnet (in Thai)) 4.3. Revised monograph of fishing gear of Thailand (Producing the catalogue of the bottom trawl net designs of Thailand) 4.4. Study on the impact of light fishing on fishery resources (Jointly research implemented by TD and DOF-Thailand and Academic institutes. The specific objectives to apply innovative technology to obtain a pattern of light fishing boat setting in the sea.)	Jan-Dec	Draft of the publications expected to complete in 2021
Study on the impact on fisheries resources, marine environmental, social well-being and livelihood from fishing activities		
1. Research and study on the status and impact of fisheries oceanography and marine environment from fishing operations. 1.1. Facilitate the presentation on the result of Collaborative Research Survey on Marine Fisheries Resources and Marine Environment in the Gulf of Thailand (Cambodia, Thailand, and Viet Nam) in the 7 th Marine Science Conference of Thailand. 1.2. Facilitating on the producing the reference of Scombrid Fish Larvae and Juvenile in Southeast Asia. (Continuing produce the reference of Scombrid Fish Larvae and Juvenile in Southeast Asia is ongoing drafting) 1.3. Study the type and amount of debris in the surface layer of Chao Phraya River that flows into the Gulf of Thailand. (A new proposal has already finished)	Jun-Aug	
2. Research and study on impact from fishing activities to social well-being (e.g. social, economic, etc.) 2.1. The implementation of EAFM in Krabi province (Continue implement the extension on EAFM in Thailand) 2.2. Investigate the case studies to improve the market access in small-scale fisheries in Thailand	Feb-Dec	
Database for fisheries management		
1. Development of database system for fisheries resources survey	Jan-Dec	
2. Development of database system to support fisheries socio-economic and small-scale fisheries study	Jan-Dec	

4.2 Expected Outcomes/Outputs

1. Technical Report and IEC material on the appropriate design of deck machinery and freezing room to reduction of manpower in fishing operation of Thailand
2. Report on the economic study on the Thai purse seine equipped with modern technology.
3. Technical Report on the Recommendation on the Marking of Fishing Gear of Towed Nets.
4. Draft study report on the study on the Scientific echo sounder suitable for M.V. SEAFDEC 2.
5. Training material for fishing technology subject for staff of the Department of Fisheries and undergraduate students of Thailand.
6. Complete revised catalogue of the bottom trawl net designs of Thailand.
7. Study report the type and amount of debris in the surface layer of the Chao Phraya River that flows into the Gulf of Thailand by visual observation method.
8. Article on the case studies to improve the market access in small-scale fisheries in Thailand.
9. Draft Guidebook of Scombrid Fish Larvae and Juvenile in Southeast Asia.
10. Database of the fisheries resources survey conducted by SEAFDEC research vessels.
11. Database to support SEAFDEC projects of the fisheries socio-economic and small-scale fisheries.

PROJECT DOCUMENT

Program Categories: Departmental Programs

Project Title: SEAFDEC Capacity Development through USAID Sustainable Fish Asia Activity

Responsible Department: Training Department

Total Duration: 1 October 2020-30 September 2021

Funding Sources: Training Department

Estimated Budget for 2021: Approx. \$2.0 million USD (through Local Solutions and U.S. Department of Interior mechanisms)

1. INTRODUCTION

The Asia-Pacific region has the highest marine biodiversity on the planet.^{1,2} The region is home to 17 of the 36 global biodiversity hotspots.³ The region contains more than a third of all coral reefs on Earth, extending more than 100,000 square kilometers and containing more than 75% of all hermatypic coral species.⁴ Mangrove forests in the region comprise 73% of all mangrove taxa and nearly half of all seagrass species.⁵ The fisheries supported by these rich ecosystems are the most productive globally, both in terms of biomass and diversity of catch.⁶ More than 22 million people in the region rely on fisheries for livelihoods, while many more rely on them for food security and ecosystem services from their natural environment.⁷ But the threats to Asia's biodiversity could very well undermine its sustainability, integrity, and productivity.

The USAID Sustainable Fish Asia Project's (USAID SuFIA) identified four broad threats to marine biodiversity in the region: climate change; marine and land pollution (*i.e.* nutrients, plastics, noise); destructive development (*e.g.* ports, aquaculture, unsustainable tourism); and fishing-related threats, including unsustainable fishing (Very High Risk) and illegal (High Risk), unregulated (Very High Risk), and unreported (Very High Risk) fishing. The SuFIA Project will address threats to biodiversity from fishing-related activities, namely, unsustainable fishing and illegal, unreported and unregulated fishing (IUUF).

The Southeast Asian Fisheries Development Center (SEAFDEC), established as an intergovernmental organization in 1967 to promote fisheries development in Southeast Asia, is the leading regional organization in the fisheries sector. USAID envisages that supporting SEAFDEC's institutional development, through the existing Memorandum of Understanding (MOU) signed between SEAFDEC and USAID/RDMA on 16 June 2014, will enhance SEAFDEC's specific regional mandates and roles on sustainable fisheries management and marine biodiversity conservation in Southeast Asia region.

2. PROJECT

2.1 Goal /Overall Objectives

To provide SEAFDEC with organizational development, institutional capacity building, and further strengthening of the organization's role as regional fisheries platform to carry on international fisheries development projects, policies, and activities.

2.2 Outcomes and Expected Outputs

The expected outcomes are:

¹ Chan CY, Tran N, Dao CD, Sulser TB, Phillips MJ, Batka M, Wiebe K and Preston N. 2017. *Fish to 2050* in the ASEAN region. Penang, Malaysia: WorldFish and Washington DC, USA: International Food Policy Research Institute (IFPRI). Working Paper: 2017-01.

² World Bank. 2013. *FISH TO 2030 Prospects for Fisheries and Aquaculture*. World Bank Report Number 83177-GLB.

³ Myers, N., Mittermeier, RA, Mittermeier, CG, Da Fonseca, G.A., and Kent, J., 2000. Biodiversity hotspots for conservation priorities. *Nature*, 403(6772), p.853.

⁴ McManus, J.W., 1997. Tropical marine fisheries and the future of coral reefs: a brief review with emphasis on Southeast Asia. *Coral Reefs*, 16(1), pp. S121-S127.

⁵ McManus 1997

⁶ Bavinck, M., and Kooiman, J., 2013. Applying the governability concept in fisheries—explorations from South Asia. In *Governability of Fisheries and Aquaculture* (pp. 131-153). Springer, Dordrecht.

⁷ Stobutzki, I.C., Silvestre, G.T. and Garcés, L.R., 2006. Key issues in coastal fisheries in South and Southeast Asia, outcomes of a regional initiative. *Fisheries Research*, 78(2-3), pp.109-118.

- To strengthen the SEAFDEC Secretariat’s ability to promote regional sustainable fishery management by putting in place regional policies, standards, and regulatory frameworks.
- To increase the capacities of all regional multi-stakeholders, in this case, SEAFDEC Member Countries to improve fisheries management, compliance and enforcement both at the national and regional levels.
- To support the development and implementation of any future activities that fall under the existing MOU between SEAFDEC and USAID by deploying technical expert(s) into the region as identified/prioritized by both sides. The expert(s) will be embedded within the SEAFDEC Secretariat to provide necessary support for the implementation of the USAID Sustainable Fish Asia Project. Funded by USAID, the technical support will come from the U.S. Department of Interior (USDO I).

2.3 Project Description/Framework

The project would include the following activities during its implementation period:

Activity 1: In partnership with SEAFDEC and other stakeholders, conduct an initial organizational capacity assessment of SEAFDEC to understand their institutional capacity development needs based on various Organizational Capacity Assessment (OCA) tools available, as well as any other areas of strengths and weaknesses identified by SEAFDEC

Activity 2: The development of SEAFDEC’s Capacity Development Action Plan (CDAP)

Activity 3: The evaluation of SEAFDEC’s capacity to fully develop activities with milestones. The identification of support needed and gaps identified in the Capacity Development Action Plan (CDAP), with notes on improvements and continued gaps.

Activity 4: Re-assessment of support, and the final report of SEAFDEC’s Organizational Capacity Development Plan

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2020

Project Activity Title	Duration	Remarks
1) SEAFDEC Kick-Off Meeting Agenda The purpose of this meeting is threefold: 1) to have formal introductions of the key stakeholders and detail preferred communication protocols; 2) describe and discuss the broad brushstrokes of the SUFIA project; and 3) RTI to better understand the structure, capacity gaps, and prioritized technical interventions for SEAFDEC.	17 Sep. 2020	
2) USAID Sustainable Fish Asia (SUFIA) and SEAFDEC Meeting Key Discussion Points mainly on Task 2 (Conduct a Private Sector Landscape Assessment)	22 Sep. 2020	
3) USAID Sustainable Fish Asia (SUFIA) and SEAFDEC Meeting Key Discussion Points mainly on Task 1(Provide Organizational Assessments & Capacity-Building)	2 Oct. 2020	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2021

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Capacity development for SEAFDEC staff on Task 1 and Task 2	Jan.- Sep. 2021	

4.2 Expected Outcomes/Outputs

- To strengthen the SEAFDEC Secretariat's ability to promote regional sustainable fishery management by putting in place regional policies, standards, and regulatory framework;
- To increase the capacities of all regional multi-stakeholders, in this case, SEAFDEC Member Countries to improve fisheries management, compliance and enforcement both at the national and regional levels; and
- To support the development and implementation of any future activities that fall under the existing MOU between SEAFDEC and USAID by deploying technical expert(s) into the region as identified/prioritized by both sides. The expert(s) will be embedded within the SEAFDEC Secretariat to provide necessary support for the implementation of the USAID Sustainable Fish Asia Project. Funded by USAID, the technical support will come from the U.S. Department of Interior (USDOI).

PROJECT DOCUMENT

Program Categories: Departmental Program

Project Title: Modernizing Irrigated Agriculture to Protect and Restore Aquatic Biodiversity and Ecosystem Services in Southeast Asia

Responsible Department: IFRDMD

Total Duration: 2 Years

Funding Sources: The Australian Water Partnership (AWP)

Estimated Budget for 2021: USD 34,040

1. INTRODUCTION

Asia contains 70% of the world's irrigated area, where 34% of cultivated land is irrigated, as compared to only 10% in North America and 6% in Africa. Irrigation has been largely developed to enhance rice productivity. However, in many countries, and especially in Southeast Asia, fish comprise the main animal-source protein – for instance, in the four countries of the Lower Mekong Basin, freshwater fish and other aquatic animals make up 50-80% of animal protein consumed by people.

Irrigation infrastructure (water storage, control, delivery and drainage systems) was designed with the sole purpose of achieving efficient water delivery for agricultural crops such as rice. This had wide ranging, and often negative, impacts on water resources and the aquatic ecosystems and fisheries that are dependent upon them. To avoid and reduce such negative impacts in new or rehabilitated irrigation schemes, irrigation managers need to find technological options (incorporating new design features, changing design) and policy solutions (e.g. by introducing new environmental policies, legislation and best-practice guidelines).

Although the increase in crop productivity and associated improved food security due to expanded irrigation have been fundamental to the rapid fall in extreme poverty in many Asian countries, the impact on freshwater biodiversity and associated ecosystem services has been less well documented. Some of the impacts have been positive, with the extension of aquatic regimes and inadvertent creation of wetlands and habitat, elsewhere there have been negative impacts on fish migration and water connectivity, water flows and the loss of natural habitat. This has in turn limited opportunities for food security and nutrition from wild capture fisheries, as well as resulted in the loss of biodiversity in the systems affected by connectivity losses. The World Wildlife Fund's (WWF) Living Planet Index shows that the decline in freshwater species is closely correlated with the expansion of irrigation.

Given the threats facing freshwater health, new, evidence-based management approaches are critical to the sustainability of these valuable ecosystems and the services they provide (as stipulated in the GEF-7 Programming Directions, and inherent in SDG 15 on protecting and restoring ecosystems). In particular, there is a need to develop and extend known successful methods to reduce and mitigate the negative impact of irrigated crop production on aquatic ecosystems. Application of designed options enables the better capture of synergies and benefits for improved productivity and nutritional benefits from the water used in irrigated agriculture. Opportunities span technical interventions relating to the design and operation of delivery and storage infrastructure in ways that minimize harm and maximize biodiversity benefits including via environmental flows, increased connectivity and the construction or improvement of critical habitat and refuge areas within and around irrigated systems.

Technological options need to be accompanied by the improvement of policy, regulation and management arrangements to enable integration of aquatic biodiversity, fisheries and ecosystem services in irrigated areas (which at present are typically managed separately). Capitalizing on this opportunity is essential if we are to maximize future productivity while also preventing further ecosystem decline, biodiversity loss and loss of freshwater fisheries.

2. PROJECT

2.1 Goal /Overall Objectives

Objective

The aim of the project is to improve agricultural water management and irrigation practices in the Southeast Asian region to protect and restore fisheries productions, aquatic biodiversity and ecosystem services.

2.2 Outcomes and Expected Outputs

Outcomes

1. Improved technical and policy-making capacities for practitioners and decision makers from the agriculture, environment and irrigation sub-sectors with regard to best-practice agricultural water management for enhancing aquatic biodiversity and protecting ecosystem services.
2. Increased coordination between ministries (and stakeholders) in the agriculture/irrigation and environment sectors.
3. Increased gender mainstreaming capacity within government, local decision makers and key stakeholders in the context of agriculture, biodiversity and ecosystem services
4. New technical and policy understanding among academic institutions, farmers, NGOs and other key stakeholders relevant to water management, aquatic biodiversity and ecosystem services of water
5. Enhanced national government capacity to design technically-sound and bankable irrigation and environment projects for government and/or donor funding.
6. Greater awareness among major funds (GCF, GEF), the international financing institutions (WB, ADB, IFAD) and bilateral donors (JICA, DFID, GIZ, etc.) as to the technologies and approaches that are available to reduce the environmental impact of their agriculture investments, specifically related to aquatic biodiversity and ecosystem services.

Outputs

1. Developing materials for technical and policy guidance
2. Stakeholder consultation and buy-in
3. Dissemination and capacity building at national and regional levels

2.3 Project Description/Framework

Activity	Description
Developing materials for technical and policy guidance, and resource mobilisation	Desktop review and regional expert consultation workshop to compile and assess draft guidelines and interactive communication products. Develop guidance documents.
Stakeholder consultation and buy-in	Extensive national consultations on the new guidance (ministries, donors including the GEF, GCF, IFIs, NGOs).
Dissemination and capacity development at national and regional levels	Support national/regional capacity development in the form of workshops (mid-level government training programme, masterclasses, hands-on training, study tours and small-scale pilots).

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2020

Project/Activity Title	Duration	Remarks
Activity 1 Engage project staff as indicated in the project head agreement; including employing a project coordination officer	July 27 th , 2020	Hire one project support

Project/Activity Title	Duration	Remarks
Activity 2 Organise a preliminary consultation workshop involving both MMAF and Public Works staff in both Jakarta and Palembang	October 5 th , 2020	To be conducted

4. IMPLEMENTATION PLAN OF ACTIVITIES IN THE YEAR 2021

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Organise a preliminary consultation workshop involving both MMAF and Public Works staff in Jakarta												
Organise logistics for an irrigation biodiversity masterclass to be held in Palembang												
Participate in a final project collaboration workshop with key Mekong and Myanmar staff												

5. REQUIRED CONSIDERATION BY THE PROGRAM COMMITTEE

- Take noted the project activities
- To report the project on the FCG/ASSP 23rd 2020

Annex 6

PROPOSED ACTIVITIES UNDER OTHER PROGRAMS FOR THE YEAR 2021

I. Training Department

Activities	Appendix no.
1. Implementing the Lower Mekong Fish Passage Initiative in Cambodia, Thailand, and Viet Nam	1
2. Gender Dimension in the Value Chain of Small-scale Fisheries and Aquaculture in Southeast Asia	2
3. The Strategic Action Programme for the South China Sea and Gulf of Thailand	3

II. Aquaculture Department

Activities	Appendix no.
1. Seminar-Workshop on Aquaculture Development in Southeast Asia (ADSEA)	4

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2020
AND
PROPOSED ACTIVITY FOR YEAR 2021**

Project id: 201801010			
Program Categories:	Other Program		
Project Title:	Implementing the Lower Mekong Fish Passage Initiative in Cambodia, Thailand, and Viet Nam		
Program Strategy No:	I	Total Duration:	2018 - 2021
Lead Department:	Training Department	Lead Country:	Thailand
Donor/Sponsor:	USDID - DOI	Total Donor Budget:	USD 743,500
Project Partner:	None	Budget for 2021:	USD 277,500
Project Leader:	Suthipong Thanasansakorn (TD)	Project Participating Country:	Cambodia, Thailand, Viet Nam, Lao PDR

1. INTRODUCTION/BACKGROUND

Freshwater fish provide the primary source of protein for more than 60 million residents of the Lower Mekong. Much of this resource derives not from the main stem of the Mekong River, but from the thousands of far smaller water bodies that traverse the region. Smaller water bodies are essential for fisheries production, providing breeding and nursery habitat for a large proportion of artisanal and commercial fisheries. These water bodies are becoming increasingly fragmented by weirs, dikes, dams, road prisms, and associated water management structures, mostly associated with agricultural development and local flood control activities. These development activities are providing productivity boosts for rice farmers, but are impacting fisheries production, and adversely impacting the communities reliant upon them for income and nutrition.

The November 2016 SIM-sponsored Lower Mekong Fish Passage Conference in Vientiane, Lao PDR focused on the challenges of addressing fish passage at planned Mekong River and major tributary hydropower facilities across the region (Myanmar, Viet Nam and Cambodia). However, a consistent theme voiced by the more than 160 conference participants from 15 nations was the need to expand the inventory, restoration prioritization, and restoration of the thousands of existing barriers that fragment fish populations and, by extension, threaten local food security, across the Region. There was also a demonstrated need to establish fish passage demonstration sites in other countries to build regional momentum that can help to recover fisheries productivity on a broader catchment scale.

Established techniques already exist to restore passage at many of these barriers, which were largely developed in Lao PDR. However, government agencies throughout the region have very limited technical capacity to conduct many of these activities. This Project supports the broader SIM effort to transfer knowledge to five Lower Mekong nations (Burma, Cambodia, Lao PDR, Viet Nam, and Thailand) regarding fish passage barrier inventory and prioritization processes, low head fish passage design and construction, and post-construction fish passage facility monitoring.

On August 15, 2013, DOI-International Technical Assistance Program (ITAP) entered into an Interagency Agreement (IAA) with USAID/RDMA, the stated purpose of which is for DOI-ITAP to “implement technical assistance activities that support Presidential Initiatives in global climate change (adaptation, clean energy, sustainable landscapes, and low emission development strategy), food security, and global health. DOI may also work in priority program areas of biodiversity, science and technology exchange, public-private partnerships, disaster assistance and risk reduction, economic growth, and good governance.”

DOI is a world leader in the management of natural resources. With its depth of applied knowledge, through the ITAP program, DOI provides technical assistance to countries around the globe in the areas of protected area management and conservation, fisheries, and water resource management. At the request of USAID/RDMA, DOI’s technical assistance enables government to government capacity building to SEAFDEC (an intergovernmental organization) and the ASEAN Member States (AMS).

The Southeast Asian Fisheries Development Center (SEAFDEC) is a non-profit intergovernmental organization established in 1967 to promote sustainable fisheries development in the Southeast Asian region. SEAFDEC

currently comprises 11 Member Countries, namely: Brunei Darussalam, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam. For almost 50 years SEAFDEC has been implementing activities to support its Member Countries in Southeast Asia as follows; 1) exploration of marine fishery resources and its utilization, 2) conservation and management of aquatic species under international concern, 3) sustainable aquaculture development, 4) fisheries post-harvest and safety of fish and fishery products, 5) promoting management for sustainable fisheries and addressing emerging international fisheries-related issues.

2. PROJECT

2.1 Goal/Overall Objectives

The objectives of the project are to build capacity within SEAFDEC and Lower Mekong nations to construct and maintain low head fish passes to restore fisheries connectivity at irrigation facilities, weirs, and road prisms.

The four (4) specific objectives are the following:

Objective 1: Provide technical and administrative oversight of Field Fish Passage Barrier Inventories conducted by Ministry personnel in Cambodia, Thailand, and Viet Nam.

Objective 2: Design and Construct One (1) Demonstration Fish Pass in Cambodia, One (1) Demonstration Fish Pass in Thailand, and One (1) Demonstration Fish Pass in Viet Nam.

Objective 3: Project Administration and Coordination, including providing a single point of contact (“project officer”) to DOI, and documenting project activities in SEAFDEC publications and other media.

Objective 4: Design and Construct Three (3) Additional Demonstration Fish Pass in Cambodia.

2.2 Expected Outcomes and Outputs:

The ultimate outcomes of the project are:

1. Appropriate construction site selection for demonstration fish passage in Cambodia, Thailand and Viet Nam
2. Demonstration fish passage construction in Cambodia, Thailand and Viet Nam
3. Distribution of demonstration fish passage technical information

The major project outputs include:

1. Report of fish passage barrier inventories in Cambodia, Thailand, and Viet Nam.
2. Enhance the capacity of participants on GIS approaches to fish passage barrier inventory and Engineering design and construction procedures for Low-head fish passage.
3. Dissemination of project activities document in SEAFDEC publications and other media

2.3 Project Description/Framework

Activity 1: Coordinate Field Fish Passage Barrier Inventories in Cambodia, Thailand, and Viet Nam.

Sub-activity:

- 1.1 Support Cambodia Inland Fisheries Research and Development Institute (IFRDI) and Viet Nam Directorate of Fisheries (VDOF) vehicle maintenance or rental/fuel/lodging/ DSA/field equipment, as needed.
- 1.2 Participate in training workshops.
- 1.3 Participate in on-ground inventories in each country.

Activity 2: Construct One (1) Demonstration fish pass in Cambodia, One (1) Demonstration Fish Pass in Thailand, and One (1) Demonstration Fish Pass in Viet Nam.

Sub-activity:

- 2.1 In collaboration with DOI and Charles Stuart University (CSU), develop appropriate technical specifications that suit the swimming ability of local species and hydrology of the selected sites.
- 2.2 Host and provide space for a workshop between DOI, CSU, and all partner ministries on Engineering Design and Construction Procedures for Low-Head Fish Passes.
- 2.3 Host and provide space for a workshop between DOI, CSU, and all partner ministries on GIS Approaches to Fish Passage Barrier Inventory.
- 2.4 Using final technical specifications, site locations, and funding levels provided by DOI, identify and contract with a qualified contractor in each nation to conduct all site surveys and construction activities.

- 2.5 Respond to requests from all relevant government agencies with environmental or other permitting responsibilities and meet all relevant regulatory requirements.
- 2.6 Provide periodic oversight of all phases of construction and report progress back to DOI and CSU.
- 2.7 In collaboration with DOI, CSU and the fishway construction contractor, ensure compliance with technical specifications during fishway construction.
- 2.8 Complete the three fish passes per the timelines and budget identified in Articles 5 and 6 of this Project.
- 2.9 In collaboration with DOI and CSU, perform a hydraulic and ecological commissioning to ensure the fishway performs to desired standards.
- 2.10 Coordinate with relevant Ministries to document the final ownership and operations and maintenance plans for the fish passes.

Activity 3: Administration and Coordination

Sub-activity:

- 3.1 Engage a Project Officer to work with points of contact in all partner Ministries and any selected contractors in each nation.
- 3.2 Document project activities in SEAFDEC publications and other media.
- 3.3 Provide computing equipment and consumables as needed to Project Officer.
- 3.4 Provide financial support to the appropriate contractor to construct a model fishway for educational use.

Activity 4: Design and Construct Three (3) Additional Demonstration Fish Pass in Cambodia

Sub-activity:

- 4.1 Using final technical specifications, site locations, and funding levels provided by DOI, contract with a qualified contractor based on recommendations of IFRéDI to conduct all site surveys and construction activities.
- 4.2 In collaboration with DOI and IFRéDI respond to requests from all relevant government agencies with environmental or other permitting responsibilities and meet all relevant regulatory requirements.
- 4.3 Provide periodic oversight of all phases of construction, in-person if permissible under COVID-19 rules, otherwise through photographs, video, document review, other methods and inspection report from local fish passage construction committee, and report progress back to DOI.
- 4.4 In collaboration with DOI and the fishway construction contractor, ensure compliance with technical specifications during fishway construction, in-person if permissible under COVID-19 rules, otherwise through photographs, video, document review, other methods and inspection report from local fish passage construction committee, and report progress back to DOI.
- 4.5 Complete the three fish passes per the timelines and budget identified.
- 4.6 In collaboration with DOI, perform a hydraulic and ecological commissioning to ensure the fishway performs to desired standards, if permissible under COVID-19 rules.
- 4.7 Coordinate through IFRéDI, with relevant Ministries to document the final ownership and operations and maintenance plans for the fish passes.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2020

3.1 Activities Achievements in the Year 2020

Project/Activity Title	Duration	Remarks
<p>Activity 2: Construct One (1) Demonstration fish pass in Cambodia, One (1) Demonstration fish pass in Thailand, and One (1) Demonstration fish pass in Viet Nam.</p> <p>Sub-activity 2.4 Using final technical specifications, site locations, and funding levels provided by DOI, identify and contract with a qualified contractor in each nation to conduct all site surveys and construction activities.</p> <p>Sub-activity 2.8 Complete the three fish passes per the timelines and budget identified</p> <p>VIET NAM The Directorate of Fisheries (D-Fish) requested and authorized the Đắ</p>		

Project/Activity Title	Duration	Remarks
<p>Lac Department of Agriculture & Rural Development (DARD) to design and implement the fish way construction project. The vertical slot fishway was selected as a demonstration site for fishway construction at Ea Tul weir, Ban Don District, Dac Lac Province, Viet Nam. The review of fishway design by DARD in consultation with USAID/DOI fishway engineers was submitted to the DACLAC Provincial Committee for approval.</p> <p>The Department of Agriculture and Rural Development of Dac Lac People's Committee proposed to assign Mr. Duong Hoai Nguyen, Director, Department of Agriculture and Rural Development of Dac Lac Province, as Provincial Focal Point to coordinate the Lower Mekong Basin, Low - Head Fish passage Initiative. SEAFDEC/TD was signed the LOA with Dac Lac Provincial DARD on supporting the fishway construction with proposed to starting on construction process by October 2020.</p> <p>THAILAND</p> <p>The fish passage construction at Hauy Wang Chang Weir, Udon Thani Province by Thaithananun Construction (2009) company was starting from 10 December 2019 and completed on 7 April 2020.</p> <p>The SEAFDEC/ TD technical team conducted fish passage construction site inspection at Hauy Wang Chang Weir, Sangkom District, Udon Thani Province from 12-15 June 2020. The objective of inspection was to observe the performance of fish passage during the first raining season with water flow and the endurance of the crushed stone bottom of the fish passage exit. The inspection was also to observe the efficiency of fish passage on allowing fish migrating to up-stream during the beginning of the raining season.</p> <p>In order to prevent erosion of water way beside the fish passage as recommended by Australasian Fish Passage Services, the SEAFDEC/TD fish passage working team in consulted with Thailand fish passage working team are requested to USAID/DOI for additional improvement of fish passage by construction 1) concrete wall blocked the overflow on top of the weir and 2) surface crash stone along the fish passage. The additional improvements were completed on 1 October 2020.</p> <p>The fish passage handover ceremony to Sangkom District, Udon Thani Province is propos to be conducted by December 2020.</p>	<p>Jan. – Dec. 2020</p> <p>Jan. – Dec. 2020</p>	
<p>Activity 3: Administration and Coordination</p> <p>Sub-activity 3.2</p> <p>Document project activities in SEAFDEC publications and other media.</p> <p>SEAFDEC/TD launching a video clip of “Fish Passage Implementation in Cambodia” on SEAFDEC/TD website for promotion of demonstration of implementing the Lower Mekong Fish Passage Initiative program.</p>	<p>Sep. 2020</p>	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2021

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
<p>Activity 2: Construct One (1) Demonstration fish pass in Cambodia, One (1) Demonstration fish pass in Thailand, and One (1) Demonstration fish pass in Viet Nam.</p> <ul style="list-style-type: none"> - Complete a demonstration fish pass at Ea Tul weir, Ban Don District, Dac Lac Province, Viet Nam. <p>Sub-activity 2.4 – 2.10</p> <ul style="list-style-type: none"> - Using final technical specifications, site locations, and funding levels provided by DOI, identify and contract with a qualified contractor in each nation to conduct all site surveys and construction activities. - Respond to requests from all relevant government agencies with environmental or other permitting responsibilities and meet all relevant regulatory requirements. - Provide periodic oversight of all phases of construction and report progress back to DOI and CSU. - In collaboration with DOI, CSU and the fishway construction contractor, ensure compliance with technical specifications during fishway construction. - Complete the three fish passes per the timelines and budget identified in Articles 5 and 6 of this Project. - In collaboration with DOI and CSU, perform a hydraulic and ecological commissioning to ensure the fishway performs to desired standards. - Coordinate with relevant Ministries to document the final ownership and operations and maintenance plans for the fish passes. 	<p>Jan. – May 2021</p>	
<p>Activity 3: Administration and Coordination</p> <p>Engage a Project Officer to work with points of contact in all partner Ministries and any selected contractors in each nation. Document project activities in SEAFDEC publications and other media.</p>	<p>Jan. – Sep. 2021</p>	
<p>Activity 4: Design and Construct Three (3) Additional Demonstration Fish Pass in Cambodia</p> <ul style="list-style-type: none"> - Complete additional three (3) demonstration fish pass around Tonle Sab Great Lake, Cambodia. <p>Sub-activity 4.1 – 4-7</p> <ul style="list-style-type: none"> - Using final technical specifications, site locations, and funding levels provided by DOI, contract with a qualified contractor based on recommendations of IFReDI to conduct all site surveys and construction activities. - In collaboration with DOI and IFReDI respond to requests from all relevant government agencies with environmental or other permitting responsibilities and meet all relevant regulatory requirements. - Provide periodic oversight of all phases of construction, in-person if permissible under COVID-19 rules, otherwise through photographs, 	<p>Jan. – Sep. 2021</p>	

Project/Activity Title	Duration	Remarks
<p>video, document review, other methods and inspection report from local fish passage construction committee, and report progress back to DOI</p> <ul style="list-style-type: none"> - In collaboration with DOI and the fishway construction contractor, ensure compliance with technical specifications during fishway construction, in-person if permissible under COVID-19 rules, otherwise through photographs, video, document review, other methods and inspection report from local fish passage construction committee, and report progress back to DOI. - Complete the three fish passes per the timelines and budget identified - In collaboration with DOI, perform a hydraulic and ecological commissioning to ensure the fishway performs to desired standards, if permissible under COVID-19 rules. - Coordinate through IFReDI, with relevant Ministries to document the final ownership and operations and maintenance plans for the fish passes 		

4.2 Expected Outcomes/Outputs of Activity for the Year 2021

Proposed Activity	Outputs of Activity
<p>Activity 2: Construct One (1) Demonstration fish pass in Cambodia, One (1) Demonstration fish pass in Thailand, and One (1) Demonstration fish pass in Viet Nam.</p>	<p>Complete a demonstration fish passage construction in Viet Nam.</p>
<p>Activity 4: Design and Construct Three (3) Additional Demonstration Fish Pass in Cambodia</p>	<p>Complete additional three (3) demonstration fish pass around Tonle Sab Great Lake, Cambodia</p>

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2020
AND
PROPOSED ACTIVITY FOR YEAR 2021**

			Project id: 202001013
Program Categories:	Other Program		
Project Title:	Gender Dimension in the Value Chain of Small-scale Fisheries and Aquaculture in Southeast Asia		
Program Strategy No:	V	Total Duration:	2020 - 2021
Lead Department:	Training Department	Lead Country:	Thailand
Donor/Sponsor:	FAO	Total Donor Budget:	USD 98,000
Project Partner:	None	Budget for 2021:	USD 29,400
Project Leader:	Jariya Sornkliang	Project Participating Country	Lao PDR, Myanmar, Philippines, and Thailand

1. INTRODUCTION/BACKGROUND

Gender issues are widely recognized in many workplaces including in Fisheries. Especially in small scale fisheries that were found that it can support livelihoods for women and men to work together. Thus, the SSF Guidelines recommend that gender mainstreaming should be an integral part of all small-scale fisheries development strategies, considering different cultural contexts. Therefore the Food and Agriculture Organization of the United Nations (FAO) and Southeast Asian Fisheries Development Center (SEAFDEC) have agreed to conduct the Gender Dimension in the Value Chain of Small-scale Fisheries and Aquaculture in Southeast Asia project to improve and strengthened gender dimension in selected small-scale fisheries and aquaculture values chain in Southeast Asia. The project comprises of four (4) main activities are site training for enumerators on gender concept and analysis and development of a data collection protocol, data collections, and analysis to collect the data on Gender Dimension in the Value Chain of Small-scale Fisheries, data validation workshops, and preparation of a report on gender analysis and communication product and Regional Workshop. The project consists of four (4) countries, as follows: Lao PDR, Myanmar, the Philippines, and Thailand.

To initiate the data collecting, it needs to strengthen the capacities of Gender concept and gender analysis to staff who are work for fisheries management and Development project, therefore the first activities to preparing for data collection training workshop for the staff to clear understand the gender concept and know how to collect data to understand gender context in fishing communities.

The Practical Guide for Gender Analysis in Small-scale fisheries and Aquaculture in Southeast Asia which was structured in accordance with the thematic areas of the SSF Guidelines will be used as a framework for the study.

2. PROJECT

2.1 Goal/Overall Objectives

The objectives of the project are to build capacity within SEAFDEC and Lower Mekong nations. The main goal of this project is to carry out the gender dimension in the value chain of small-scale fisheries and aquaculture in the Southeast Asian region in support of the SEAFDEC Gender Strategy and SSF Guidelines. The specific objectives are:

1. To identify gender issues and appropriate interventions in the fisheries value chain
2. To promote gender equality and equity in decision-making processes and organizations, fisheries technologies, and policies
3. To empower men and women in small-scale fishing communities in sustaining their livelihoods.

2.2 Expected Outcomes and Outputs

The outcome of the project is capacities of Fisheries officer of SEAFDEC Member Countries in Gender integration in Fisheries were strengthened

The major project outputs include:

1. Report on the gender dimension in the small-scale fisheries value chain that can be used as a basis for field interventions.
2. Communication product conveying good practices to promote gender in fisheries

2.3 Project activities

The four (4) mains activities under the project are:

1. Site training for enumerators on gender concept and analysis and development of a data collection protocol
2. Data collections and analysis to collect the data on Gender Dimension in the Value Chain of Small-scale Fisheries and Aquaculture
3. Data validation workshops to recheck and return data to all stakeholders
4. Preparation of report on gender analysis and communication product and Regional Workshop to a shared lesson learned to all SEAFDEC Member Countries

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2020

3.1 Activities Achievements in the Year 2020

Project/Activity Title	Duration	Remarks
<p>Activity 1: Site training for enumerators on gender concept and analysis and development of a data collection protocol</p> <p>THAILAND: There are 13 participants (nine (9) men and four (4) women) from Department of fisheries from Thailand participate the training, the training session are introduction of training and then follow by Gender concept, Gender in Fisheries and Aquaculture, Gender analysis, Gender in FAO small scale guideline, and SEAFDEC Practical Guide for Gender Analysis in Small-scale Fisheries and Aquaculture in Southeast Asia. The training also had a program on develop questionnaire from practical guide and trial for data collecting.</p>	25-27 August 2020	
<p>Activity 2: Data collections and analysis to collect the data on Gender Dimension in the Value Chain of Small-scale Fisheries and Aquaculture</p> <p>THAILAND: SEAFDEC team and Fisheries officers from Department of Fisheries conducted the data collection on gender study under SEAFDEC-FAO project on “Gender Dimension in the Value Chain of Small-scale Fisheries and Aquaculture in Southeast Asia”. The study site was selected in Surat Thani Province, Thailand focusing on small-scale marine aquaculture. The data were collected by using questionnaires to interview the aquaculture farmers in the areas of Surat Thani Province covering 7 District namely: Muang, Kanchanadit, Donsak, Thachana, Chaiya, Thachang, and Punpin. The total number of respondents is 93 persons compose of men 64 persons and women 29 persons</p>	28 August to 1 September 2020	
<p>Activity 3: Data validation workshops to recheck and return data to all stakeholders</p> <p>THAILAND: The data validation workshop was conducted to report the result of data collecting to stakeholder to recheck and confirm the information. Moreover, the gender in general concept was introduced in this workshop. The validation workshop has been conducted in two (2) place are</p>	2-3 September 2020	

Project/Activity Title	Duration	Remarks
<ul style="list-style-type: none"> - The Surat Thani Coastal Fisheries Research and Development Center, which is located at Kanchanadit District (Fig. 1). There were 36 participants (30 men and 6 women) attended the validation workshop. - The others place of workshop is at the canteen of primary school of Chaiya District with the 23 participants (5 men and 18 women) 		

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2021

4.1. Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Activity 1: Site training for enumerators on gender concept and analysis and development of a data collection protocol Activities will be conduct in remaining country are Lao PDR, Myanmar, and Philippines	Jan to April 2021	
Activity 2: Data collections and analysis to collect the data on Gender Dimension in the Value Chain of Small-scale Fisheries and Aquaculture Activities will be conduct in remaining country are Lao PDR, Myanmar, and Philippines	Jan to April 2021	
Activity 3: Data validation workshops to recheck and return data to all stakeholders Activities will be conduct in remaining country are Lao PDR, Myanmar, and Philippines	Jan to April 2021	
Activity 4: Preparation of report on gender analysis and communication product and Regional Workshop to a shared lesson learned to all SEAFDEC Member Countries	Jan to June 2021	

4.2. Expected Outcomes/Outputs of Activity for the Year 2021

Proposed Activity	Outputs of Activity
Activity 1: Site training for enumerators on gender concept and analysis and development of a data collection protocol	<ul style="list-style-type: none"> - At least 12 staff from each project site were trained on Gender concept and analysis - Questionnaire of gender study
Activity 2: Data collections and analysis to collect the data on Gender Dimension in the Value Chain of Small-scale Fisheries and Aquaculture	Information of gender in each study site
Activity 3: Data validation workshops to recheck and return data to all stakeholders Activities will be conduct in remaining country are Lao PDR, Myanmar, and Philippines	Draft report of gender study for all study site
Activity 4: Preparation of report on gender analysis and communication product and Regional Workshop to a shared lesson learned to all SEAFDEC Member Countries	<ul style="list-style-type: none"> - Report of gender study for all study site - One communication product to disseminate information of gender in Fisheries

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2020
AND
PROPOSED ACTIVITY FOR YEAR 2021**

			Project id: 202001017
Program Category:	Other Program		
Project Title:	The Strategic Action Programme for the South China Sea and Gulf of Thailand		
Program Strategy No.	IV	Total Duration:	2018 - 2023
Lead Department:	TD	Lead Country:	-
Donor/Sponsor:	UNEP/GEF	Total Donor Budget:	USD 15 million (with approximately USD 8 million co-financing)
Project Partner (s):	None	Budget for 2021:	-
Lead Technical Officer:	-	Project Participating Countries:	Cambodia, China, Indonesia, Philippines, Thailand and Viet Nam

1. INTRODUCTION/BACKGROUND

Since 2018, SEAFDEC signed the Agreement with UNEP under the Project Cooperation Agreement (PCA) for a GEF Full Size Project “Implementing the Strategic Action Programme for the South China Sea”. SEAFDEC, as the Executing Agency, provide facilities and technical inputs to carry out activities aiming to assist the participating countries (only for SEAFDEC Member Countries) to meet the targets under the approved Strategic Action Programme (SAP) for the marine and coastal environment of the South China Sea (SCS), particularly in support of the SAP to strengthen regional coordination for SCS SAP implementation. Factsheet of the project appears in **Annex 1**.



The Strategic Action Programme for the South China Sea and Gulf of Thailand (SCS SAP Project)

Summary Facts

Participating Countries:	Cambodia, China, Indonesia, Philippines, Thailand and Viet Nam
Implementation Agency:	United Nations Environment Programme (UNEP)
Executing Agencies:	United Nations Office for Project Services (UNOPS) and the Southeast Asian Fisheries Development Center (SEAFDEC)
GEF Funding:	15 million USD (with approximately 8 million USD in co-financing)
Timeline:	2018-2023
Web-links:	https://scssap.org

The Challenge

The South China Sea is a semi-enclosed sea, which supports a number of unique habitats and ecosystems that are amongst the most biologically diverse shallow water marine ecosystems globally. The richness and productivity of the South China Sea and associated environments are, however, seriously threatened by high population growth, pollution, overharvest and habitat modification, resulting in high rates of habitat loss and impairment of the regenerative capacities of living resources. The socio-economic impacts of environmental deterioration are significant for the economies of this region.

Recognising that actions were urgently needed to halt degradation of the environment of this marine basin, the countries of the region sought the assistance of UNEP and the Global Environment Facility (GEF) in preparing a Transboundary Diagnostic Analysis of the issues and problems and their societal root causes as the basis for development of a Strategic Action Programme (SAP) which was inter-governmentally adopted in 2008. The SAP established a series of objectives and priority costed actions for coastal habitats, land-based pollution management, and the over-exploitation of fish stocks in the South China Sea.

The Solution

The objective of the Strategic Action Programme for the South China Sea and Gulf of Thailand (SCS SAP Project) is:

“To assist countries in meeting the targets of the approved Strategic Action Programme (SAP) for the marine and coastal environment of the South China Sea (SCS) through implementation of the National Action Plans in support of the SAP, and strengthening regional co-ordination for SCS SAP implementation.”

This will be achieved through the cooperation of participating countries, intergovernmental organizations, regional organizations, public-private sectors partnerships, civil society and non-governmental organizations (NGOs), leading scientists from the region. The project will also contribute to global targets such as the Sustainable Development Goals and Agenda 2030 and the Convention on Biological Diversity (CBD) Post 2020 Biodiversity Framework.

Actions will be taken from the local to the regional level through three main components to achieve the following outcomes:

Component 1. Reducing habitat degradation and loss via national and local reforms to achieve Strategic Action Programme targets for coastal habitat management in the South China Sea and Gulf of Thailand

- ✓ Outcome 1.1 Appropriate forms of sustainable management established for 860,000 ha of mangrove
- ✓ Outcome 1.2 153,000 ha of coral reef at 82 priority sites managed sustainably, including a reduction in the decadal rate of degradation in live coral cover from 16 to 5%

- ✓ Outcome 1.3 Conservation, management and sustainable use of 25,900 ha of known seagrass area in the South China Sea and Gulf of Thailand
- ✓ Outcome 1.4 Integrated management of 783,900 ha of coastal wetland at 19 sites, including habitat restoration and protection strengthened at priority locations
- ✓ Outcome 1.5 National and regional level cooperation in tracking results of SAP actions for coastal habitat management

Component 2. Strengthening knowledge-based action planning for the management of coastal habitats and land-based pollution to reduce environmental degradation of the South China Sea and Gulf of Thailand

- ✓ Outcome 2.1 Enhanced information-base for coastal habitat management, monitoring and action planning
- ✓ Outcome 2.2 Effective integration of regional science in the management of land-based pollution
- ✓ Outcome 2.3 Strengthened and harmonized national policies and laws, and supporting financial mechanism, for the management of habitats and land-based sources of pollution
- ✓ Outcome 2.4 Updated Total Economic Values of coastal habitats for use in development planning and decision-making and blue economy
- ✓ Outcome 2.5 Regionally appropriate tools and mechanisms to guide the development of sustainable management systems for coastal habitats and land-based pollution
- ✓ Outcome 2.6 Updated and Ministerially adopted Transboundary Diagnostic Analysis and Strategic Action Programme, including prioritization of national management actions to address climate variability and change

Component 3. Facilitating regional and national level integration and cooperation for implementation of the South China Sea and Gulf of Thailand Strategic Action Programme

- ✓ Outcome 3.1 Regional and sub-regional co-operation in the integration of scientific knowledge and research outputs with management and policy making
- ✓ Outcome 3.2 Capacity for civil society and community organization participation in SAP implementation strengthened via operational partnership with GEF SGP
- ✓ Outcome 3.3 Relationships between central and local governments and the private sector strengthened and formalized
- ✓ Outcome 3.4 Revitalization of regional mechanisms for communications, knowledge exchange, and information and data management and sharing
- ✓ Outcome 3.5 Agreed arrangements for strengthened regional cooperation in the management of the marine and coastal environment of the South China Sea and Gulf of Thailand

The SCS SAP project is complemented by the UNEP GEF “*Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand*”, executed by SEAFDEC in Cambodia, Indonesia, Malaysia, Philippines, Thailand and Viet Nam with the objective 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’. See <https://fisheries-refugia.org/> for further information.

Current Status 2020

The Inception phase of the SCS SAP is fully underway with the support of participating countries to finalize detailed activities at the national and regional level and in spite of the challenges of COVID-19, all partners and national teams are able to initiate initial actions. The First Inception Phase online meeting was held on Thursday 30th July 2020, with forty-five (45) participants from national lead agencies from Cambodia, Indonesia, Philippines, Thailand, Viet Nam as well as implementing and executing agencies, UNEP, UNOPS, SEAFDEC, and the Inception Phase consultants (<https://scssap.org/9-uncategorised/136-2030-agenda-sustainable-development-01>).

Following the meeting, national teams organized their respective internal coordination and consultations with concerned agencies and institutions to discuss the project and inception phase activities. This includes the

review and confirmation of national focal points of different project bodies including memberships, review and confirmation of intervention sites, and review and updating of the draft National Implementation Report (regarded as the national project document) to include activities, workplan and budget. At the regional level, the project organized bilateral meetings with national teams to guide and provide details of the inception phase activities. The project has prepared, in different stages of progress, the following: draft Regional Implementation Report detailing the activities for regional execution, draft contracts (Project Cooperation Agreements) for national execution, draft terms of reference for project staff and consultants, draft execution scheme between UNOPS and SEAFDEC, and documentation for the project inception/first steering committee meeting, including updating the project website at www.scssap.org.

For further information on the SCS SAP project please contact Virginie Hart at virginie.hart@scssap.org and Reynaldo Molina at reynaldo.molina@scssap.org.

SCS SAP Project Office: The Southeast Asian Fisheries Development Center (SEAFDEC), Training Department, Samut Prakan Thailand

PROJECT DOCUMENT

			Project id: 202001016
Program Categories:	Other Program		
Project Title:	Seminar-Workshop on Aquaculture Development in Southeast Asia (ADSEA)		
Program Strategy No:	II	Total Duration:	2020-2021
Lead Department:	Aquaculture Department	Lead Country:	Philippines
Donor/Sponsor:	AQD	Total Donor Budget:	USD 35,000
Project Partner:	None	Budget for 2021:	USD 35,000
Project Leader:	Mr. Dan Baliao	Project Participating Country:	Philippines

1. INTRODUCTION

Traditional aquaculture has been practiced by fish farmers of Southeast Asia for centuries. In the past years, however, the introduction and development of modern innovative aquaculture technologies have transformed this age-old occupation into a major industry that has increased the national fish production, produced much-needed export earning, and generated employment and business opportunities. Aquaculture slowly became a necessity in order to produce more fish in the face of decreasing supply from marine fisheries and increasing demand from the burgeoning population. The challenge now is how to make the best possible use of coastal and inland waters for aquaculture which are cost-efficient and causing no adverse environmental and socioeconomic changes.

Since its establishment more than 46 years ago, the Aquaculture Department of the Southeast Asian Fisheries Development Center (SEAFDEC/AQD) has generated technologies that contributed significantly to the development of aquaculture in the region. Aquaculture technologies must keep abreast of the present and future needs and challenges of the industry. Thus, the Seminar-Workshop on Aquaculture Development in Southeast Asia (ADSEA) is being proposed.

ADSEA was first conducted in 1987 in Iloilo City, Philippines with the main goal of re-examining the existing aquaculture technologies in Southeast Asia and identifying future directions for aquaculture in the region. It was then conducted every four years in 1991, 1994, and 1999. Through the revival of this Seminar-Workshop, AQD can collect valuable inputs from aquaculture officers from SEAFDEC Member Countries in terms of research areas and training opportunities where closer collaboration and partnership can be strengthened. Therefore, ADSEA wishes to review recent developments in aquaculture and provide a forum to discuss strategies to ensure further developments of responsible aquaculture in the region.

2. PROJECT

2.1 Goal /Overall Objectives

ADSEA was first conducted in 1987 in Iloilo City, Philippines with the main goal of re-examining the existing aquaculture technologies in Southeast Asia and identifying future directions for aquaculture in the region. It was then conducted every four years in 1991, 1994, and 1999. Through the revival of this Seminar-Workshop, AQD can collect valuable inputs from aquaculture officers from SEAFDEC Member Countries in terms of research areas and training opportunities where closer collaboration and partnership can be strengthened. Therefore, ADSEA wishes to review recent developments in aquaculture and provide a forum to discuss strategies to ensure further developments of responsible aquaculture in the region. Specifically, it aims to:

- a) assess the progress and developments of aquaculture technologies in the region;
- b) assess the progress of research and development within AQD concerning the current status aquaculture research and technologies in the Region;
- c) review recent advances in sustainable and responsible aquaculture elsewhere in the world; and
- d) identify strategies for sustainable and responsible aquaculture in the region.

2.2 Outcomes and Expected Outputs

At the end of the workshop, the participants will be updated on the recent activities on sustainable and responsible aquaculture technologies including the gaps and possible research areas. It also aims to put forward recommendations to address the gaps and issues identified during the workshop.

2.3 Project Description/Framework (for total duration of the project)

In order to achieve these objectives, the seminar-workshop proposed the following activities:

Activity 1. *Country Reports*. Status reports of SEAFDEC Member Countries on sustainable aquaculture including recent developments, pressing issues, gaps, possible strategies, and recommendations.

Activity 2. *Review of Research and Development Activities at AQD*. Status, updates, and plans of the aquaculture technologies being developed by scientists and researchers in AQD.

Activity 3. *Special Reports*. Updates on the latest research aquaculture technologies by scientists and researchers from distinguished research institutions and universities; and the industry

Activity 4. *Workshop Discussion*. Identification of research gaps and collaborative activities among Member Countries.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2020

Project/Activity Title	Duration	Remarks
N/A		

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2021

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Following the approval of the proposed activity, AQD will proceed with the creation of a committee to oversee the conduct of the said the seminar-workshop.	2021	

4.2 Expected Outcomes/Outputs

AQD is expected to conduct a successful seminar-workshop which will enable AQD to collect valuable inputs from aquaculture officers from SEAFDEC Member Countries in terms of research areas and training opportunities where closer collaboration and partnership can be strengthened.

CONCEPT NOTE

Seminar-Workshop on Aquaculture Development in Southeast Asia (ADSEA) 2020

Executive Summary

Traditional aquaculture has been practiced by fish farmers of Southeast Asia for centuries. In the past years, however, the introduction and development of modern innovative aquaculture technologies have transformed this age-old occupation into a major industry that has increased the national fish production, produced much-needed export earning, and generated employment and business opportunities. Aquaculture slowly became a necessity in order to produce more fish in the face of decreasing supply from marine fisheries and increasing demand from the burgeoning population. The challenge now is how to make the best possible use of coastal and inland waters for aquaculture which are cost-efficient and causing no adverse environmental and socioeconomic changes.

Since its establishment more than 46 years ago, the Aquaculture Department of the Southeast Asian Fisheries Development Center (SEAFDEC/AQD) has generated technologies that contributed significantly to the development of aquaculture in the region. Aquaculture technologies must keep abreast of the present and future needs and challenges of the industry. Thus, the Seminar-Workshop on Aquaculture Development in Southeast Asia (ADSEA) is being proposed.

ADSEA was first conducted in 1987 in Iloilo City, Philippines with the main goal of re-examining the existing aquaculture technologies in Southeast Asia and identifying future directions for aquaculture in the region. It was then conducted every four years in 1991, 1994, and 1999. Through the revival of this Seminar-Workshop, AQD can collect valuable inputs from aquaculture officers from SEAFDEC Member Countries in terms of research areas and training opportunities where closer collaboration and partnership can be strengthened. Therefore, ADSEA wishes to review recent developments in aquaculture and provide a forum to discuss strategies to ensure further developments of responsible aquaculture in the region. Specifically, it aims to:

- a) assess the progress and developments of aquaculture technologies in the region;
- b) assess the progress of research and development within AQD concerning the current status aquaculture research and technologies in the Region;
- c) review recent advances in sustainable and responsible aquaculture elsewhere in the world; and
- d) identify strategies for sustainable and responsible aquaculture in the region.

In order to achieve these objectives, the seminar-workshop proposed the following topics:

- a) *Country Reports*. Status reports of SEAFDEC Member Countries on sustainable aquaculture including recent developments, pressing issues, gaps, possible strategies, and recommendations;
- b) *Review of Research and Development Activities at AQD*. Status, updates, and plans of the aquaculture technologies being developed by scientists and researchers in AQD;
- c) *Special Reports*. Updates on the latest research aquaculture technologies by scientists and researchers from distinguished research institutions and universities; and the industry
- d) *Workshop Discussion*. Identification of research gaps and collaborative activities among Member Countries.

At the end of the workshop, the participants will be updated on the recent activities on sustainable and responsible aquaculture technologies including the gaps and possible research areas. It also aims to put forward recommendations to address the gaps and issues identified during the workshop.

PIPELINE PROJECT CONCEPT NOTE

Project Title: Sustainable Management of Fisheries, Marine Living Resources and their Habitats in the Bay of Bengal Region for the Benefit of Coastal States and Communities: Support to SEAFDEC Member Countries

Prospect Funding Agency: FAO/GEF

Lead Department: Training Department

Proposed Budget: 2,000,000 - 3,000,000 USD for SEAFDEC Member Countries (to be finalized after project funding approval and project planning process)

Duration: 5 years (project planning process will tentatively start in 2020)

I. INTRODUCTION

The Bay of Bengal Large Marine Ecosystem (BOBLME) is an ~USD10 Million investment by the Global Environment Facility (GEF) to implement fisheries and critical habitats actions identified in the Bay of Bengal Strategic Action Programme that was endorsed by the 8 BOB coastal countries in 2015. SEAFDEC has been invited to become a project partner to implement actions for its Member Countries (*i.e.* Myanmar, Thailand, Malaysia and Indonesia). The budget for this implementation will be USD2 Million with a possible increase in budget associated with a mid-term review of activities. A description of the project is provided in Annex 1.

SEAFDEC will facilitate the implementation of activities to address:

1. Sustainable Management of Fisheries

To develop regional capacities and provide technical advice for the management planning for Indo-Pacific Mackerel, Anchovy and advice for Neritic Tuna. This includes EAFM plans, developing co-management arrangements, combating IUU and providing training in EAFM and MCS.

2. Restoration and conservation of critical marine habitats and conservation of biodiversity

To assist with its experience in marine spatial planning and its role in benefiting fisheries stock management. This will include incorporation of restoration of critical marine habitats in EAFM plans.

3. Improved Livelihoods and enhanced resilience of the BOBLME (mainly implement by IUCN)

To assist participating countries to implement the FAO Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF-Guidelines), as well as the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security.

4. Regional mechanisms for planning, coordination and monitoring of the BOBLME

To support a BOBLME wide monitoring and coordination systems, in particular existing sub-regional mechanisms (such as MCS networks).

Expected Outcomes from the SEAFDEC involvement:

- Implementation of EAFM plans for targeted transboundary fish stocks (*e.g.* Hilsa, Indo-Pacific Mackerel, and Anchovy).
- Reduction of IUU catch through establishment of MCS networks at sub-regional level.
- Enhancement of resilience and reduction of vulnerability of marine systems from natural and climate hazards.
- Strengthened institutional mechanisms at regional and national levels for planning, coordination and monitoring of fisheries and ocean ecosystems.

II. PROGRESS AND STATUS

FAO and SEAFDEC are in the process of finalizing the work plan, budget, and a Partnership Agreement.

Bay of Bengal LME

Project Title: Sustainable management of fisheries, marine living resources and their habitats in the Bay of Bengal region for the benefit of coastal states and communities: Support to SEAFDEC Member Countries

Prospect Funding Agency: FAO/GEF

Lead Department: Training Department

Proposed Budget: 2,000,000 - 3,000,000 USD for SEAFDEC Member Countries (to be finalized after detailed project planning)

Duration: 5 years with a tentative start date of June 2020

1. Background/Introduction

The Bay of Bengal Large Marine Ecosystem (BOBLME) is one of the largest LMEs globally and covers 6.2 million km² with depths ranging between 2 000 and over 4 000 m for most of its central area. The continental shelf around its perimeter is mostly narrow. About 66 percent of the BOBLME lies within the exclusive economic zone (EEZ) of BOBLME countries - Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka and Thailand, and the remainder being the high seas area. The BOBLME is rich in natural resources, including extensive mineral and energy resources; marine living resources that support major fisheries; and forest and land resources. The LME is the site of three important critical habitats - mangroves (12 percent of world mangrove resources); coral reefs (8 percent of the world's coral reefs) and seagrass. The BOBLME is an area of high biodiversity, with a large number of endangered and vulnerable species. The LME and its natural resources are of considerable social and economic importance to the bordering countries, with activities such as fishing, aquaculture, tourism and shipping contributing to food security, employment and national economies.

The first phase of the BOBLME project supported participating countries in the development and agreement of a Transboundary Diagnostic Analysis (TDA) and Strategic Action Plan (SAP). The TDA identified three priority transboundary concerns, including their more proximate causes: overexploitation of marine living resources, degradation of critical habitats and pollution and water quality. SEAFDEC was a strong partner during the first phase of the BOBLME in particular supporting its Member Countries through technical advice and capacity building for EAFM and combatting IUU.

A program framework document (PFD) was developed by FAO and ADB to address the priority issues identified by countries in the SAP. The PFD was endorsed by all BOBLME countries and by the GEF in May 2018.

This PFD includes the FAO project entitled "*Sustainable management of fisheries, marine living resources and their habitats in the Bay of Bengal region for the benefit of coastal states and communities*". The project is in the design phase with submission to the GEF planned for November 2019.

FAO has initiated dialogue with SEAFDEC and also Bay of Bengal Program-Intergovernmental Organization (BOBP-IGO) and IUCN to develop partnership agreements for a substantial part of implementation.

For SEAFDEC the areas of focus will be with areas of its mandate and for its shared BOBLME/SEAFDEC countries.

2. Goal/overall Objectives

The project objective is (for SEAFDEC countries) "*To contribute to sustainable management of fisheries, marine living resources and their habitats in the Bay of Bengal region for the benefit of coastal states and communities*".

3. Project Description

The project objective is to support sustainable management of fisheries, marine living resources and their habitats in the Bay of Bengal region, to reduce environmental stress and improve environmental status for the benefit of coastal states and communities.

This will be achieved through five interlinked Project components based on the BOBLME SAP themes, and with an added component to strengthen the institutional arrangements for regional partnerships coordination and collaboration, ecosystem-based monitoring and assessment. The GEF support to the implementation of the SAP is expected to leverage significant amounts of investments from the BOBLME countries, from both national and sub-national levels, multilateral and bilateral development partners.

SEAFDEC will be a sub regional implementation hub for the project.

National implementation in countries requesting this will be through a “Seascape Focus Area Approach” to ensure efficient and coordinated implementation. This approach will deliver all components in one area and ensure linking through regional action planning to national implementation at Fishery/community level.

The project includes the following tentative proposals which have emerged from consultations in SEAFDEC-BOBLME Member Countries (Myanmar, Thailand, Malaysia and Indonesia). These will be confirmed during the inception work planning. The project will work through multi Four countries in which Focus Areas or sub national activities are to be implemented. Advisory and coordination committees will be formed at an appropriate level and supported by local experts to advise on implementation of the project. Wherever possible the project will work through and strengthen existing mechanisms.

Component 1: Sustainable Management of Fisheries

The sustainability of fisheries and livelihoods in the BOBLME depends to a large extent on marine living resources. Illegal, Unreported and Unregulated (IUU) fishing has been shown to contribute to the overexploitation of fish stocks in the BOBLME and is a clear hindrance to the management and recovery of fish populations and ecosystems that are already overexploited. A systematic application of the ecosystem approaches to fisheries management (EAFM) and the reduction of threats from IUU fishing, as well as application of participatory and inclusive approaches is therefore essential for the improvement of ecosystem health and livelihoods in the BOBLME. This component thus has two major outcomes:

Outcome 1.1: The ecosystem approach to fisheries management institutionalized at national level

Regional level: Regional capacity development, technical advice and fisheries management planning for Indian Mackerel, Anchovy and advice for Neritic Tuna (in collaboration with IOTC).

National level

- Output 1.1.1 At least 2 EAFM plans implemented in each SEAFDEC country.
 - Species and fisheries include Indian Mackerel, Anchovy and Neritic Tuna. EAFM plans to be developed and implemented.
 - Hilsha (national and regional) for Myanmar.
 - Planning at Andaman Sea and Sub regional level and National level.
 - For Indonesia FMP areas 571 and 572
- Output 1.1.2. National and regional platforms established or strengthened to involve grassroots stakeholders in management decision-making:
 - Development of multi-stakeholder management groups to contribute to EAFM implementation.
 - Promotion of Co-Management and strengthening the operationalization of management bodies in FMA 571 and 572
- Output 1.1.3 EAFM training embedded in national and regional training institutions
 - Capacity building for training partners in countries where this is still required
 - Support to strengthen EAFM capacity development in countries where EAFM is already under implementation.
 - EAFM Training (Training of Trainer, Training for planners, training for implementers, Training for evaluators)
 - Development of EAFM Plans: For Indonesia review FMP for area 571 and 572 (can include the latest issues and or commodities that are of regional); strengthening fisheries and conservation area data
 - Promotion of Co-Management and strengthening the operationalization of management bodies in FMA 571 dan 572

Outcome 1.2: IUU catch in the BOBLME reduced:

- Output 1.2.1 BOBLME countries join and implement a Regional Plan of Action (RPOA) on IUU fishing
 - BOBLME working group to develop roadmap for BOBLME RPOA-IUU. Strengthening of RPOA-IUU and sub-regional mechanisms
- Output 1.2.2. National POAs-IUU and national IUU MCS systems and Vessel Monitoring System (VMS) strengthened
 - Indonesia has NPOA-IUU.
 - Lessons shared between SEAFDEC countries on MCS and VMS.
 -
- Output 1.2.3 Tools for promoting best practices, such as MCS, PSM and traceability, and policies and national actions to combat IUU fishing developed and implemented in national pilot/investment projects
 - Strengthening of Andaman MCS network
 - Indonesia has NPOA-IUU and endorsed PSMA.
- Output 1.2.4. Regional Capacity Development Program on port inspections, MCS and traceability implemented
 - Capacity needs assessment
 - Capacity development plan
 - Training on MCS, Port Inspections

Component 2: Restoration and conservation of critical marine habitats and conservation of biodiversity

This component will lead to improved management and status of degraded, vulnerable and critical coastal and marine habitats and Endangered, Threatened and Protected (ETP) species in the BOBLME by integrating marine spatial management tools, such as Marine Protected Areas (MPAs), and Vulnerable Ecosystems (VEs) into fisheries and biodiversity conservation management of critical habitats in SEAFDEC country region of the Andaman Sea (Myeik Archipelago).

Broadly this component will be implemented by IUCN at regional and national level in collaboration with the responsible ministries (including Environment) and national partners. At national level MPA's related work will be implemented through Focus Areas.

SEAFDEC's role will be to provide technical advice to SEAFDEC/BOBLME countries in areas where fisheries technical advice is needed in relation to conservation and planning.

Component 3: Management of coastal and marine pollution to improve ecosystem health

The health of the BOBLME is threatened by wastewater and solid waste from upriver and coastal cities and settlements, industrial zones, ports and shipping, and excessive nutrient application in agriculture and high nutrient loads in rivers and water courses.

The project aims to change attitudes and approaches so that wastewater and solid waste. Marine and coastal resources represent important natural capital assets, but increasingly are subject to negative impacts of upstream activities on land and along river systems. In this connection, the project will take steps to increase understanding of the complexities of source-to-sea management continuum - where ecosystems are degraded as an unintended consequence of economic activities that might happen far upstream or downstream in the source-to-sea system. The project aims to reduce pollution from discharge of untreated sewage and wastewater; solid waste and marine litter; and nutrient loading reduced or minimized in selected hotspots in river, coastal and marine waters; promotion of cleaner fishing ports and addressing abandoned fishing gears at 8 hotspots applying ICM approaches. It is expected that there will be an increase in fishing ports covered by sewage management systems and improved waste management, and that nutrient loading is significantly reduced at coastal and marine hotspots.

This component will be implemented by the ADB in Mandalay city.

At this stage there are no GEF funds available for other areas of implementation.

Component 4: Improved livelihoods and enhanced resilience of the BOBLME

This component will lead to positive changes in the overall well-being of coastal people and their involvement in both fisheries management and biodiversity conservation, which is expected to lead to both enhanced ecosystem resilience of the BOBLME and of local livelihoods and food security. Vulnerability to natural hazards, and climate variability and change will be reduced and livelihoods diversified for selected coastal communities, with equal opportunities for women, men and youth. This component will also constitute a platform to support implementation of key concerns of the FAO Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication SSF-Guidelines (VG-SSF), as well as the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VG-Tenure). ADB will contribute to this component through the regional training programme under 3.2 above on waste and waste water management with identification of investment opportunities that will contribute to improved well-being of coastal communities.

Where this component is implemented at national level it will link through the Focus Areas integrating with fisheries management planning and MPA strengthening.

Outcome 4.1. Enhanced resilience and reduced vulnerability to natural hazards, climate variability and change of selected coastal communities:

- Output 4.1.1 Resilience plans developed based on valuation of ecosystem services.
- Output 4.1.2 Inclusion of coastal fisheries and aquaculture in poverty reduction and development, as well as climate change policies, strategies and planning processes promoted
- Output 4.1.3. Gender considerations mainstreamed into relevant policy and regulatory frameworks

Outcome 4.2. Enhanced sustainable livelihoods and diversification for selected coastal communities:

- Output 4.2.1 Livelihood diversification for women piloted (in at least one site per country)
 - Sites to be selected in Indonesia, Malaysia, Myanmar and Thailand,
- Output 4.2.2. Access to innovative financial services and insurance mechanisms improved
- Output 4.2.3. Regional capacity development programme for selected coastal communities on alternative livelihoods, promoting decent work, social protection for empowerment.

SEAFDEC's role in this component will be to provide technical advice to SEAFDEC Member Countries where fisheries technical advice is needed. The project will support implementation of the VGSSF.

Component 5: Regional mechanism for planning, coordination and monitoring of the BOBLME

The ability to implement ecosystem management at the regional level in the BOBLME depends on the capacity to undertake monitoring of the whole ecosystem and to plan and coordinate management activities at regional level. This can only be achieved through strengthened regional cooperation between countries and between government agencies within countries and the engagement of civil society and the private sector. The Programme will therefore focus on achieving the following outcomes under this component:

Outcome 5.1. Strengthened institutional mechanisms at regional and national levels for planning, coordination, and monitoring of the BOBLME

Output 5.1.1 CCR-BOBLME established to promote stakeholder participation and awareness, ecosystem assessment, and application of best practices in implementation of the SAP

- 5.1.2 Long-term partnership arrangements agreed for sustainable regional coordination mechanism and sustainable financing for ecosystem-based management in the BOBLME
- 5.1.3 National inter-sectoral coordination committees to support SAP implementation established.
- 5.1.4 Stakeholder consultation mechanism established for engagement of civil society, cooperatives, and the private sector
- 5.1.5 Baseline data collection and analysis systems developed for monitoring systems and sharing information.

Outcome 5.2. Adaptive results-based management and sharing of information and lessons learned

- Output 5.2.1 Communication Strategy developed and implemented
 - SEAFDEC will support the development of a
- Outcome 5.2.2. Programme findings and lessons learned identified and contribute to IWLearn and LME Learn
- Output 5.2.3. Regional information sharing mechanism developed enabling broad access to best practices and lessons learned in the participating countries
- Output 5.2.4. Monitoring system operating and providing systematic and regular information updates on progress towards reaching BOBLME SAP targets

SEAFDEC's role in this component will be to support project efforts to develop a BOBLME wide monitoring and coordination systems, building on existing sub regional mechanisms (such as SEAFDEC MCS networks, IUU reporting mechanisms).

4. Expected Outputs/Outcomes

Describe the expected complete results or finished products at the end of project.

The key project Outputs include (in SEAFDEC/BOBLME countries)

- The ecosystem approach to fisheries management (EAFM) institutionalized at national level for targeted transboundary fish stocks (*e.g.* Hilsa, Indian Mackerel, Anchovy)
- IUU catch in the BOBLME reduced
- Coastal and marine managed areas (MMAs) contribute to conservation of biodiversity and blue carbon
- National MMAs established or strengthened resulting in improved MMA management effectiveness at national level (with STAR funding; without STAR funding, mainly bilateral donor funding to be used; CCM funding for Bangladesh will be used for the Sundarbans (Reserve) Forest)
- Regional consensus and agreements on reduction of threats to marine biodiversity in coastal and open waters
- Pollution from discharge of untreated sewage and wastewater; solid waste and marine litter; and nutrient loading reduced or minimized in selected hotspots in river, coastal and marine waters; promotion of cleaner fishing ports and addressing abandoned fishing gears at 8 hotspots applying ICM approaches
- Enhanced resilience of the BOBLME and reduced vulnerability to natural hazards, climate variability and change of selected coastal communities
- Enhanced sustainable livelihoods and diversification for selected coastal communities
- Strengthened institutional mechanisms at regional and national levels for planning, coordination and monitoring of the BOBLME
- Adaptive results-based management and sharing of information and lessons learned

PIPELINE PROJECT CONCEPT NOTE

Project Title: Promoting the Blue Economy of the Gulf of Thailand through the Ecosystem Approach to Fisheries (GoTFish Project)

Prospect Funding Agency: Green Climate Funds (GCF) and/or Global Environment Facilities (GEF)

Lead Department: Training Department

Proposed Budget: USD 11,000,000

Duration: 5 years

I. INTRODUCTION

The Gulf of Thailand (GoT) covers an area of 391,665km² and is bounded by Cambodia, Malaysia, Thailand and Viet Nam. The GoT Large Marine Ecosystem (LME) is well recognized for its important habitats and abundance of aquatic resources, being a highly productive marine ecosystem and a global centre of shallow water marine biological diversity. The natural resource use of the GoT LME and the neighboring South China Sea LME provides a wide variety of additional marine-based cultural and provisioning ecosystem services, such as food security, nutrition and livelihoods, critical to the GoT's coastal populations as well as the export economies of its neighboring countries.

Despite these important contributions, the GoT is facing unsustainable fishing pressures, largely due to illegal, unreported and unregulated (IUU) fishing, alongside pressures from other users of the coasts and the sea (*e.g.* tourism, aquaculture, and gas and oil exploitation). These anthropogenic drivers of ecosystem change are degrading this globally important LME and diminishing the ecosystem services upon which the GoT communities depend; leading to environmental and socioeconomic losses. In fact, the Transboundary Water Assessment Programme carried out by the Global Environment Facility (GEF, 2015) identified coastal communities bordering the GoT (and the larger South China Sea) as being among the most at risk from coastal and marine environmental degradation. Urgent action is required to assist the bordering countries to manage the shared, common resources of the GoT, and to implement collaborative fisheries management for transboundary stocks (*e.g.* important commercial species including anchovy, Indo-pacific mackerel and blue-swimming crab).

Whilst the issues appear overwhelming, it is also true that there has been considerable progress in recent years. The resolution of many territorial disputes has helped countries to make the first steps in bringing fisheries under control. Thailand has made significant cuts to its fishing fleet and Viet Nam and Malaysia have implemented seasonal and area closures to help protect resources. The recent years focus on controlling IUU fishing has resulted in significant investments in national vessel monitoring and enforcement abilities, with early work suggesting that this is having real progress in terms of restoration of the integrity of ecosystem structure and function. All this progress has been guided by agreements such as Regional and National Plans of Action, guidance documents such as the Asia Pacific Fisheries Commission Guidelines for Tropical Trawl Fisheries, the Regionalized Code of Conduct for Responsible Fisheries, and commitments under the umbrella of ASEAN and SEAFDEC. Nevertheless, much remains to be done, particularly in finding a pragmatic approach to lasting sustainability of these highly diverse multispecies fisheries, something classic fisheries management approaches have not serviced well. Despite the existence of fisheries related data (particularly in Thailand and Malaysia), there are still gaps transforming this data into effective decision-making to tackle the complexity of management of multispecies and transboundary fisheries.

The proposed project aims to enhance the Blue Economy potential of the Gulf of Thailand by improving the governance of shared fishery resources and implementing the Ecosystem Approach to Fisheries. The project is designed to directly strengthen the implementation of the fisheries component of the Strategic Action Programme for the South China Sea (SCS-SAP) to address fisheries governance issues in the Gulf, develop and implement fisheries management plans for shared key fisheries species, and directly work with the private sector to build consensus for a sustainable future and, where consistent with available yields, enhance the returns to fishers and the wider seafood community. The project is also in line with three ASEAN Regional Plans of Action (RPOA) on IUU fishing, fisheries capacity and sharks, the regionalized Code of Conduct for Responsible Fisheries, the Sustainable Development Goal 14, the APFIC Guidelines, and will support the implementation of other relevant international and regional instruments, such as the Port State Measures Agreement and the Voluntary Guidelines in Support of Small-scale Fisheries.

II. GOAL/OVERALL OBJECTIVES

Project Objective: Improved governance of the Gulf of Thailand fisheries through the implementation of the Ecosystem Approach to Fisheries (EAF)

Component 1: Regional fisheries governance and management

Outcome 1.1: Strengthen regional governance of fisheries in the Gulf of Thailand (GoT)

Output 1.1.1: Agreed mechanism for a regional approach to transboundary fisheries management in the Gulf of Thailand

Output 1.1.2: Updated and regionally coherent fisheries policies across the GoT countries and strengthened national legal frameworks

Outcome 1.2: Enhanced capacity of fisheries stakeholders to implement an Ecosystem approach to fisheries (EAF) management in the Gulf of Thailand

Output 1.2.1: Regional stakeholder platforms for improved trans-boundary fisheries management

Output 1.2.2: Regional fisheries management plans are developed to identify and address priority risks and opportunities to human well-being, ecosystem integrity and governance including the implications of climate change on these fisheries

Output 1.2.3: National fisheries management plans are developed, strengthened, integrated and implemented through the EAF approach

Output 1.2.4: Regional stakeholder task forces for addressing key regional issues

Output 1.2.5: Action plans to address common fisheries issues (*e.g.* overfishing, overcapacity, IUU (illegal, unreported and unregulated) fishing, by-catch, ALDFG (abandoned, lost and otherwise discarded fishing gear), lack of adequate fisheries information systems, role of coastal protection in a fisheries context, fisheries livelihoods, poverty, gender, labor and other social issues, as well as market inefficiencies including harmful subsidies, post-harvest losses) are developed to enable concrete and targeted actions for shared concerns

Component 2: Alignment of incentive mechanisms

Outcome 2.1: Incentive mechanisms supporting the transition to sustainable and climate-resilient fisheries

Output 2.1.1: Identification of incentive mechanisms to support sustainable and well managed GoT fisheries and aquaculture value chains

Output 2.1.2: Market and other innovative incentive mechanisms implemented to enhance sustainable fisheries value chains aimed to promote sustainable sourcing of fish and aquatic products, as well as to transition to low impact fishing practices

Output 2.1.3: National and regional systems for communicating the sustainability of GoT fisheries established.

Component 3 – Ecological Corridor of Critical and Important Habitat for Aquatic Resources in the Gulf of Thailand (Malaysia and Viet Nam)

Outcome 3.1: Strengthened national and transboundary protection and management of critical and important habitats for biodiversity conservation and management of key fish stocks in East Coast Peninsular Malaysia

Output 3.1.1: Assessment of management effectiveness of existing fisheries management areas including the conservation areas on the East Coast of Peninsular Malaysia, with recommendations to enhance biodiversity targets and fisheries management targets.

Output 3.1.2: Integrated database system of the ecological corridor of critical and important habitat for aquatic resources in the east coast of peninsular Malaysia including spatial mapping

Output 3.1.3 Management measures (revised management plans, zonation schemes, co-management arrangements, increased compliance with regulations, etc.) in fisheries management areas (including MPAs, EBSA, *refugia*, and other effective conservation measures) designed to provide the highest potential return for achieving biodiversity conservation and fisheries management targets.

Output 3.1.4 Identification of new MPAs, *refugia*, EBSA and Other Effective Area-based Conservation Measure (OECM) areas as part of broader Marine Spatial Planning (MSP) policy for the east coast of Malaysia which also takes into account additional coastal sectors *e.g.* tourism sector, ports and harbors etc.

Output 3.1.5: National, Sub-national Policy for Integrated Coastal and Fisheries Resources Management, and Marine Spatial Planning (MSP) for the east coast of Malaysia.

Output 3.1.6: Lessons learned shared with other GoT countries, providing baseline inputs to enhance co-management of transboundary stocks in the GoT large marine ecosystem (LME) especially on how it is connected in the overall management of critical and important habitats.

Outcome 3.2: Enhanced resilience of ecosystem and coastal communities in East Coast of Peninsular Malaysia in support of blue sector livelihoods in the Gulf of Thailand

Output 3.2.1: Participatory monitoring system for fisheries replenishment zones and conservation areas.

Output 3.2.2: Vulnerability assessment for coastal/ island communities, through mapping of the threats and impacts to critical habitats, including climate change and other natural and human-induced hazards at priority sites.

Output 3.2.3: Resilience plans for pilot coastal/island communities.

Output 3.2.4: Livelihood options for the coastal/ island communities through effective business modelling and mentoring and exploring opportunities to engage fisher cooperatives with impact investors (*e.g.* eco-tourism).

Outcome 3.3: Strengthened national and transboundary protection and management of critical and important habitats for biodiversity conservation and management of key fish stocks (Viet Nam)

Output 3.3.1 Assess the effectiveness of Phu Quoc MPA, including zoning and existing regulations to provide the highest potential for biodiversity conservation and fisheries management targets, attending to sustainable livelihoods needs and connectivity with other MPAs in the GoT.

Output 3.3.2 Management plans for Phu Quoc MPA are revised and updated with zoning and regulations providing the highest potential for biodiversity conservation and fisheries management targets.

Output 3.3.3 Rights-based fisheries co-management agreements negotiated and operationalized.

Output 3.3.4 Destructive fishing in and around MPA demonstrably reduced.

Output 3.3.5 Transboundary provincial working group established and actively coordinating on MPA/Fisheries management network planning within the broader GoT.

Outcome 3.4: Enhanced resilience of coastal communities and their transboundary resources in support of blue sector livelihoods in the Gulf of Thailand (Viet Nam)

Output 3.4.1: Applicable livelihood alternatives targeting local fishers identified and implemented in 3 MPAs.

Output 3.4.2: User fee-based financing mechanism and impact investment strategy developed for 3 MPAs.

Output 3.4.3 Best practices guidelines for nature-based tourism developed in 3 MPAs.

Component 4: Stakeholder engagement, communication, monitoring and evaluation

Outcome 4.1: Efficient knowledge management and targeted communication

Output 4.1.1: Project monitoring system established and implemented.

Output 4.1.2: Communication strategy and information management system established and implemented.

Output 4.1.3: GoTFish gender and stakeholder engagement strategy developed.

Output 4.1.4: Participation in the activities of the IW Learn Project.

III. PROGRESS AND STATUS

Endorsement of the project participating countries is ongoing progress. It is envisaged that such national endorsement will take place within early 2021 where the project activities detail planning can start soon after getting budget approval from GEF.

PIPELINE PROJECT CONCEPT NOTE

Project Title: Piloting the Electronic ASEAN Catch Documentation Scheme (eACDS) in Viet Nam
Prospect Funding Agency: World Bank
Lead Department: Training Department
Proposed Budget: approx. 50,000 USD
Duration: 1 year (2021)

I. BACKGROUND/INTRODUCTION

Following the successful outcomes of the first investment project for Viet Nam's fisheries sector by the World Bank (WB) "Coastal Resources for Sustainable Development Project (CRSD)", the WB is in the process of preparing a new fisheries investment project titled, "Sustainable Fishery Development Project (SFDP)." While an electronic catch documentation system (VNFishbase) was introduced to the project provinces under CRSD, Viet Nam's catch documentation and traceability systems currently in place need further strengthening. To this end, the WB team is planning to 1) conduct a study to look at how VNFishbase and eACDS can complement each other to enhance the traceability of fishery products; and 2) support pilot application of eACDS in Binh Thuan Province and/or another project province under SFDP.

II. GOAL/OVERALL OBJECTIVES

eACDS successfully piloted in Binh Thuan Province and/or another SFDP project province and the lessons learned from the pilot shared with other project provinces and nationwide

III. PROJECT DESCRIPTION

SEAFDEC has introduced and conducted the implementation of eACDS in Viet Nam since 2018. Pilot sites are in Binh Thuan Province, 300 km south of Nha Trang City or 300 km northeast of Ho Chi Minh City. There are 50 vessels from 4 fishing ports participating in the project. Training/capacity-building were conducted for all stakeholders (administrative officials, fishing masters, vessel owners, port officers, buyers, processors and those of the manager level) to provide them with understanding on eACDS and to introduce as pilot project in cooperation with Directorate of Fisheries (D-Fish), Viet Nam by SEAFDEC. This Pipeline Project would future support eACDS piloting and training stakeholders in Viet Nam through the following activities;

- 1) *To promote eACDS by supporting testing & trial of eACDS implementation in the pilot site; Binh Thuan Province*
- 2) *Study on the linkage of VNFishbase and eACDS as a complementary tool at another province (a province under WB SFDP pilot project site, Khanh Hoa as priority candidate site)*
- 3) User friendly modification of eACDS application during testing & trial and study of linkage to eACDS application with VNFishbase

IV. EXPECTED OUTPUTS/OUTCOMES

- Stakeholders including D-Fish and DARD officials and fishers from Binh Thuan Province and/or another selected province trained on the use of eACDS
- Systematic and continuous data collection through eACDS conducted at the pilot sites

V. PROGRESS AND STATUS

The Pipeline Project is subject to approval by the World Bank and SEAFDEC prior to contract signing.

PIPELINE PROJECT CONCEPT NOTE

Project Title: Blue Horizon - Ocean Relief through Seaweed Aquaculture in Southeast Asia

Prospect Funding Agency: GEF Trust Fund

Lead Department: Aquaculture Department

Proposed Budget: USD 6,000,000

Duration: 48 months

I. PROJECT DESCRIPTION

Seaweeds can be grown with no external inputs, removing eutrophying nutrients from the water and turning them into valuable protein, oils, green chemical feedstock and a range of industrial products. Producing large volumes of seaweeds for human food, animal feed and additives, pharma & medical, fertilizer and food additives could represent a transformational change in the global food security equation and in the way we view and use the oceans. The key to making the seaweed industry a driver of poverty alleviation and shared prosperity is to be able to add more value closer to the production areas, thus creating more and better jobs for low-income coastal communities. To this end, the project is intended to: 1) connect rapidly evolving, cutting edge science in the processing and use of seaweed to practical production technology; 2) create a forum for partnering technology to investors in developing countries; 3) establish norms of operation to ensure that production systems remain among the most environmentally positive economic activities.

Referring to the environmental problem and root causes, the literal erosion of the ocean's foundation is occurring - coral bleaching destroys reefs, mangrove loss reduces key habitat, calcium carbonate to buffer the water's pH is dissolving, nutrient pollution requires greater oxygen for decay of organic matter, suspended solids reduce photosynthesis, and rising temperature accelerates all of these processes. These impacts are most acutely observed in coastal and estuarine environments, and the stressors on these nearshore ecosystems are inhibiting ocean restoration interventions. The challenge is to find ways of capturing the carbon as CO₂ to reduce ocean acidity and allow for greater capacity of the ocean to slow the rate of climate change. Moreover, the extraction of nitrogen and phosphorus, which are the key nutrients that cause eutrophication in marine environments, is necessary to limit pollution and attempt to mitigate rising ocean temperatures. This is a global challenge and the solutions need to be tested and then scaled.

Barriers to scaling seaweed aquaculture to the point where climate change gains are significant and meaningful. Few existing markets and new "bridge" markets for seaweed to absorb the increased amounts of biomass. Without an increase in biomass demand provided by these bridge markets, private investment will be very difficult to obtain. The growth of seaweed farming is constrained primarily by lack of proper marine spatial plans. The current industry in the tropics is based on inshore and intertidal areas where multiple conflicting users vie for space. In addition, current seaweed farming is operating in small-scale systems. This does not allow for realizing the potential of seaweed farming for transformative global scale impacts on ecosystem health to larger-scale systems. Systems for large-scale seaweed production have not yet been deployed in tropical conditions, and this is required to move beyond small-scale intertidal seaweed farming. Such a system, adaptable to a wide variety of conditions, both temperate and tropical, and species, both red and brown, has been developed by Seaweed Seed Supply A/S in Denmark. The main phases of production are: seaweed spawning sporophyte attachment and hatchery rearing grow-out on long lines and harvest.

One innovation of the project will be the creation of technologies that would allow for the expansion of seaweed cultivation into offshore areas. When appropriately sited, seaweed farms are a cleansing agent for coastal and offshore ecosystems. Siting farms further offshore will require significant engagement with the local municipalities and the national governments to identify feasible locations with upwellings, moderate currents and protection from heavy wind and storm surges as well as to address the issue of tenure and resource rights. The technology for farms and for siting has been advanced to a large degree by the US DOE ARPA-E program. It has modelled globally where seaweed farms would be most productive and protected. Another innovation of the project will be linking communities to a blue carbon market, whereby they can access credits for engaging in seaweed farming. The project will support a proof of concept for this innovative market tool.

II. EXPECTED OUTPUTS/OUTCOMES

The project will build on the existing capacity of relevant institutions in Viet Nam and the Philippines, including a strong baseline of existing government and partner programs and initiatives, and by the involvement of relevant stakeholders (including communities and private sector) in project development and implementation. By building on these capacities, the project will ensure long-term sustainability.

The project will be achieved through the following components and outcomes:

Component 1: Regional capacity building for seaweed aquaculture

Outcome 1.1: Strengthened capacity and uptake of best practices throughout seaweed value chains, and increased participation in global seaweed coalitions.

Component 2: Enabling Environment for Seaweed Aquaculture in Philippines and Viet Nam

Outcome 2.1: Improved planning to facilitate seaweed aquaculture and capture of nutrients from the ocean.

Outcome 2.2: Strengthened governance, institutional and legal frameworks conducive for planning and accounting for seaweed aquaculture impacts – positive and negative

Component 3: Seaweed Value Chains (production + processing)

Outcome 3.1: Improved technologies and testing for seaweed aquaculture and ecosystem services

Outcome 3.2: Increased community benefits from seaweed aquaculture

Outcome 3.3: Expanded collaboration with the finance sector and private sector

Component 4: Knowledge Management, M&E, and IW Learn (regional)

Outcome 4.1: Full participation in IW: LEARN and knowledge management/communication

Outcome 4.2: Monitoring and evaluation system in place

III. PROGRESS AND STATUS

This proposal was officially re-submitted the Seaweed PIF to GEF on 28 September 2020. WWF-US is still waiting for the Letter of Endorsement (LOE) from the Philippines in order to move the project further next step. If WWF-US receives the LOE in time, the project will be considered for the December Council Work Program.

PIPELINE PROJECT CONCEPT NOTE

Project Title: Improving Healthy Ocean Ecosystems through Trawling Best Practices and Fishing Technology Innovation

Prospect Funding Agency: Green Climate Funds (GCF) of Global Environment Facilities (GEF)

Lead Department: Training Department

Proposed Budget: USD 50,000,000

Duration: 5 years

I. INTRODUCTION

The South China Sea and Gulf of Thailand are geographically located on the important Sunda Shelf as a southeast extension of the continental shelf of Southeast Asia that includes the Malay Peninsula, Sumatra, Borneo, Java, Madura, Bali, and their surrounding smaller islands (Ben-Avraham 1973). It covers an area of approximately 1.85 million km² (Van Bemmelen 1949) and comprises large fishing areas suitable for bottom trawl fishing since the past.

Bottom trawl fishing in Southeast Asia has emerged since early 1970s, as a major industrialized fishing method, and became a dominant fishing method in offshore and coastal areas. Rapid expansion of trawl fishing effort, conversion of vessels, expansion of the geographical range of fishing, and retention of most animals caught have resulted in rapid depletion of stocks and changes to stock composition, destroying critical habitats, causing high impacts on benthic communities, catching of bycatch species, threatening and endangering major aquatic species, and even altering the associated ecological communities (Kongprom *et.al.* 2003; Nurhakim 2003; Campos 2003). This declining trend is compatible however with the fishing ‘down marine food web’, reported from well-studied parts of the South China Sea, notably the Gulf of Thailand (Christensen *et.al.* 2003). (to be added here, a short summary of the current situation of bottom trawl fisheries in Southeast Asian countries – based on RYBIC II project implemented during 2012 to 2019 and other relevant regional/national initiatives)

In terms of impacts on socio-economic and fishery resources, more valuable fish caught by bottom trawl fisheries has decreased sharply and that there has been proportionate increase in juvenile of commercial important species and low-value species. These results provide a clear picture of the extent of stock rehabilitation and management efforts that are required to restore the maximum economic value to the fisheries of the region (Silvestre *et.al.* 2003).

On carbon footprint in fisheries, global fisheries burned almost 200 billion liters of fuel in 2016 compared to 47 billion liters in 1950 (Greet *et.al.* 2019). The most fuel-intensive fishing practices not only contribute most to the damaged seabed habitats and reef formations but also worsen the impacts of climate change. Bottom trawling techniques are the most fuel intensive fishing techniques. Additionally, the intensity of fuel consumption by fisheries in Southeast Asia is high, about 500-2000 liters km⁻² (EC 2007). Reducing the carbon footprint of fisheries, particularly in bottom trawling with less fuel consumption and causing less impact from trawling is therefore needed.

Achieving effective fisheries management for bottom trawling is therefore increasingly important as it threatens fish stocks globally, reduces biodiversity, alters ecosystem functioning, and jeopardizes the food security and livelihoods of hundreds of millions of people worldwide (Golden *et al.* 2016; Jackson *et al.* 2001; Pauly *et al.* 2005; Szuwalski *et al.* 2017; World Bank 2009). As such, the Project intends to come up with effective fisheries management policies, fishing technology innovations for best practices, climate mitigation and adaptation.

II. GOAL/OVERALL OBJECTIVES

The goals of this Project are to contribute to improved seabed ecosystems particularly on the Southeast Asia continental shelf and other critical seabed habitats through mitigation of the impacts from bottom trawl fisheries; improved national fisheries policies of better management of the destructive fishing including bottom trawling that threatens the demersal and pelagic fish stocks and critical seabed habitats; and enhanced uptake of the best practices in fisheries management and biodiversity conservation in the design and implementation of regional and national fisheries management systems.

The objectives are to build the resilience of Southeast Asian bottom trawl fisheries to the effects of fishing effort on seabed habitats; improve the understanding among stakeholders, including fisherfolk, scientists, policy-makers, and fisheries managers, of the seabed ecosystem and fishery linkages as basis for integrated fisheries and ecosystem/habitat management; and build the capacity of fisheries departments/ministries and all relevant private partnerships to engage in meaningful activities regarding the improvement of fisheries and management of interactions between fisheries and critical seabed habitats. The related end-of-project targets are:

- Effective fisheries management policies through applicable/effective management tools/systems and national monitoring program on impact of bottom trawling developed, one or two countries in Southeast Asia applied/developed;
- Effects of bottom trawling on seafloor/benthic habitats reduced through national fisheries management policy on innovative technology and best practice, one or two countries in the Southeast Asia applied;
- Demersal catch production increased, and seafloor/benthic habitats improved; one/two countries, and the regional level;
- Cooperation and coordination platforms for reduction of effects from trawling and reduction of carbon footprint from trawling established at national and regional levels.

III. PROJECT DESCRIPTION

This project Concept Note entitled “**Improving Healthy Ocean Ecosystems through Trawling Best Practices and Fishing Technology Innovations in Southeast Asia**” is being developed to meet the need of the Resolution and Plan of Action on Sustainable Fisheries Development for Food Security for the ASEAN Region Towards 2030 and Implementing the Strategic Action Programme for the South China Sea (SAP-SCS). The Project would be executed regionally by the Southeast Asian Fisheries Development Center (SEAFDEC) in partnership with the government agencies responsible for fisheries in Southeast Asia: focusing all ASEAN Member States. It is expected that a full proposal will be further developed to meet the requirement of the DONORS such as Green Climate Funds (GCF), Global Environment Facilities (GEF). The required fund is about 50 Million for 5 Years implementation. In case for GCF, the relevant countries to the project have to coordinate with the National Designated Authority (NDA) and seek for “No Objection Letter” for the Project Preparation Facility (PPF).

The Concept Note integrates the fisheries and habitats management through the development of effective national/regional fishery policies on sustainable fisheries and innovative technology for bottom trawl gears and methods including reduction of green-house gas emission from fishing activities. Additionally, building partnerships between multiple public and private sectors, *e.g.* local government/communities, research institutions, net makers, fisheries associations, fish meal industry, fish processors, etc. would be among the approaches to improve and change this production practice into more environmentally positive. The project includes resources enhancement activities that aim to rebuild and rehabilitate the seabed habitats as well as shelters of both demersal and pelagic fish in either offshore or coastal areas to protect and enhance demersal fish stocks due to loss of seabed habitats affected by the bottom trawl net. Cooperation among country partners (regional) and concerned inter-agencies (national) are needed taking into account the demersal fish stocks on the continental shelves that have already depleted. The project also enhances public-private partnership on innovative and eco-friendly technologies through creation of business opportunities and economic considerations, as well as building capacity and knowledge specifically in the field by collaborating with stakeholders for exchanging best practices.

The project comprises the following 4 project components:

Component 1 will consider the results of the impact assessment and management of bottom trawl fisheries through enhanced social dimensions and developed supportive fisheries management policies appropriate for the country. The outcome of this component is improvement of management for trawl fisheries and enhancement of effective fisheries management policies through applicable management tools in the countries. Taking into account the social dimensions concerns, the economic value of fishes and economic efficiency in the industries as well as data collection and management are improved for long term achievements of the Project. Supporting activities are:

- 1.1. Closing the knowledge gap on the ecosystem/environmental impacts of bottom trawling via effective/applicable trawl management tools/policies;
- 1.2. Reduction of the pressures of bottom trawling on marine ecosystem and environment via effective fisheries management policies;
- 1.3. Catalyzing the public-private sectors on the actions to build resilient fishery resources and reduce the impacts of bottom trawling via enhanced stakeholder engagement taking into account gender mainstreaming in fisheries management;
- 1.4 Establishment of cross-sectorial agreement on national program for effective management of bottom trawl fishing;
- 1.5 Facilitating formulation/improvement of policy, legal, and planning frameworks, both at national and regional levels, for improving the ecosystem health through trawl best practices and fishing technology innovations;
- 1.6 Improvement of economic efficiency in the industry and the individual fishers via enhanced traceability system along the value chain of fish and fishery products from bottom trawling;
- 1.7 Increasing the economic value of fishes via promotion of marketing and branding as well as marine tourism at local communities;
- 1.8 Sharing of the knowledge and lessons learned to serve as useful platforms for data and information management for utilization by various stakeholders, the wider public and practitioners.

Component 2 focuses on reduction of the impacts caused by the bottom trawl fisheries to be more eco-friendly and fuel-efficient gears through the development of innovative technologies and best practices. The outcome of this component is reduced effects of bottom trawling on seafloor/benthic habitats and to improve the air quality through enhanced innovative technology and best practices in trawl fisheries. Supporting activities are:

- 2.1 Mitigation of the impacts of bottom trawling on marine ecosystem including the seabed habitats (also including feasibility study on application of other type of trawl net such as mid-water trawl), fish stocks, by-catch, ghost fishing, etc. via enhanced ecosystem-friendly fishing gears and methods, bottom trawling best practices, fishing technology innovations, and use of alternative fishing gears;
- 2.2 Enhancement of energy saving trawling including the low environmental impact and fuel-efficient fishing activities through innovative technology for increased fuel-efficient gear and reduced energy consumption or carbon footprint;
- 2.3 Reduction of post-harvest losses of the catches from bottom trawlers through improved preservation technology and increased quality of catches;
- 2.4 Mitigating abandoned, lost or otherwise discarded fishing gear in the Region by applying integrated land-to- sea policy approaches, including promotion of FAO Voluntary Guidelines on the Marking of Fishing Gear.

Component 3 focuses on enhancing management of fishery resources through intensified efforts in habitat conservation and rehabilitation. The outcome of this component is increased fisheries production through fisheries enhancement and rehabilitation of seabed habitats programs within the EEZ where no MPAs established and no fish shelters existed. Using the data management system, especially spatial data on fishing effort, the project will monitor the pressures of bottom trawling on seabed and identify the seabed/grounds for installing the artificial fish habitats to increase fish production in Southeast Asia. Supporting activities are:

- 3.1. Investigation of the suitable grounds for deployment of the artificial fish habitats through the assessment of critical seabed habitats using high-resolution spatial data on fishing effort;
- 3.2. Provision of platform for knowledge sharing and exchange of the best practices and innovations to enhance the management of fishery resources, habitat conservation and rehabilitation;
- 3.3. Increasing the artificial fish habitats or shelters of fishes in the areas where habitat loss through science-based management;
- 3.4. Catalyzing the inter-agencies cooperation for management of fishery resources, habitat conservation and rehabilitation of critical sea-bed habitats

Component 4 will foster national and regional cooperation and coordination in enhancing the healthy ecosystems through the development and/or strengthening Public-Private-Partnership and improvement and/or establishment of data management system, development of a regional/national communication strategy on the bottom trawl best practices and alternative fishing gears. At national level, the project will strengthen cross-sectorial coordination and will harness the national scientific and technical expertise and knowledge necessary to promote the policy, legal and institutional reforms for fisheries *refugia* management. Regionally, this component will foster regional cooperation on the integration of scientific knowledge and research outputs with effective fisheries management policies; and in enhancing the healthy ocean through the Best Practices in Trawl

Fisheries. This component also includes project coordination and management activities aimed at: ensuring the timely and cost-effective implementation of the regional and national-level activities; and satisfying the reporting requirements of UNEP and the Donors. Supporting activities are:

- 4.1. Strengthening of the cross-sectoral coordination in improving the ecosystem health;
- 4.2. Harnessing of the national scientific and technical expertise and knowledge in promoting policy, legal and institutional reforms for enhancing the healthy oceans and implementing the best practices and fishing gear innovations;
- 4.3. Regional cooperation in the integration of scientific knowledge and research outputs with effective fisheries management policies;
- 4.4. Regional cooperation in enhancing the healthy ocean ecosystems;
- 4.5. Effective coordination of regional and national-level activities and satisfying the reporting requirements of UNEP and Donors

IV. PROJECT STATUS

This Concept Note was submitted to the 52nd Meeting of SEAFDEC Council in May 2020. The Meeting suggested that once the full proposal of this project is available, SEAFDEC would seek the comments of the SEAFDEC Program Committee and approval of the Council. SEAFDEC TD in collaboration with the Secretariat is now communicating with the UNEP Office to further develop a full proposal and subsequent submit for approval by GEF through UNEP.

PIPELINE PROJECT

Project Title: Implementation and Assessment of Fishing Capacity and Zoning System for Southeast Asia

Prospect Funding Agency: ASEAN

Lead Department: SEAFDEC/MFRDMD

Proposed Budget: USD 351,010

Duration: 2 Years

1. BACKGROUND/INTRODUCTION

Capture fisheries production of 16.6 million metric tons in 2014 contributed approximately 20.1% to the global marine capture fisheries production. In the past three to four decades, ASEAN Member States (AMSs) ranked among the top ten countries with the largest fishing industries in the world, which could be due to the introduction of new fishing gear technologies as well as post-harvest and processing facilities since 1960s leading to the rapid and intensive development of the fisheries industry in the region. The rising number of fishing fleets in the Southeast Asian region coupled with rapid increase in harvesting capacity has not been matched with the development of national capacities and regional or sub-regional cooperation to manage fishing effort with due consideration given to the sustainability of fishery resources.

The fishing areas since the 1970s have been largely expanded to cover international waters particularly the South China Sea and towards the offshore areas of the Southeast Asian countries. The Economic Exclusive Zones (EEZs), which used to be only 12 nautical miles from shore and increased to 200 nautical miles after the adoption of the United Nations Convention on the Law of the Sea (UNCLOS) in 1982, has created significant impacts in many Southeast Asian countries. The expansion of EEZs to 200 nautical miles without effective Monitoring, Control and Surveillance (MCS) and fisheries management schemes was considered as one of the primary reasons that drives the fishing industries to operate illegal fishing activities, later identified as Illegal, Unreported and Unregulated (IUU) fishing in the EEZs of neighbouring countries. There could be many forms of IUU fishing activities but among the major forms are unlicensed fishing, landing of fish in neighbouring states, using double flags, and use of illegal fishing gears and practices, among others.

Pelagic species has high possibility of shared transboundary stocks in Southeast Asia region which requires strategic and collective efforts between AMSs to manage its resources to ensure sustainability. The current studies on longtail tuna (*Thunnus tonggol*) in Southeast Asia region covering South Andaman Sea and South China Seas indicates that longtail tuna belong to one single stocks, while the studies on Indian Mackerel (*Rastrelliger kanagurta*) in South Andaman Sea and Strait of Malacca confirms that they shared the same genetic makeup.

Limited management or regulation and control of active fishing capacity allow fisheries to operate in an “open-access regime” leading to continued increase in the number of vessels and people engaged in fisheries. It has therefore become necessary to improve and implement licensing schemes and other capacity management measures that would effectively limit entry into the fisheries by replacing the present inadequately designed systems.

2. GOAL/OVERALL OBJECTIVES

The project will only cover marine fisheries focusing on pelagic species in the Southeast Asia region.

The main objectives of this project are as stated in the Works Plan of the ASEAN Fisheries Consultative Forum (AFCF) (2016-2020) as follows: -

Objective 1: To engage with regional and international processes to enhance ASEAN cooperation to improve the governance of trans-boundary fishing to improve the regulation and control of fishing vessels

Objective 2: To examine and improve policy settings as necessary to ensure that they do not distort incentives for output increases and new technology adoption while ensuring that they incorporate fully the value of environmental assets and costs of resource depletion

3. PROJECT DESCRIPTION

Activities	Description
Activity 1: Study on the Status of the RPOA Fishing Capacity Implementation in the region	MFRDMD will study the status implementation of the Regional Plan of Action (RPOA) Fishing Capacity in SEA region through questionnaires. MFRDMD will analyse the feedback from the questionnaires. Regional Technical Consultation (RTC) will be held to discuss RPOA fishing capacity.
Activity 2: Assessment of pelagic fishing capacity	MFRDMD will lead and conduct assessment of fishing capacity and stock status of pelagic fishes in the SEA region. RTC on fishing capacity of pelagic fishes will be held to discuss the result of the assessment conducted.
Activity 3: Assessment and Gap Analysis of the current Fisheries Information System (FIS) and relevant statistics	RTC and regional workshops will be conducted to review existing FIS and relevant statistics and identify gaps. Mechanism for the development of a regional Fishery Information Systems (FIS) and standardization of definitions and classifications, and data analysis for a regional FIS (Report and publication on FIS and statistics) will be proposed.
Activity 4: Develop indicators in supporting planning and monitoring of sustainable fisheries of pelagic fish	MFRDMD will lead the development of user-friendly indicators in supporting planning and monitoring of sustainable fisheries for pelagic fishes in the SEA region. MFRDMD will conduct RTC on data sharing and exchange, review and standardization of definitions and classifications, and data analysis for development of user-friendly indicators.
Activity 5: Study on current status and proposed establishment of <i>refugia</i> , closed season and closed areas (for pelagic fishes) in AMSs;	MFRDMD will conduct RTC on data sharing and exchange, review and standardization of definitions and classifications, and data analysis for establishment of <i>refugia</i> , closed season and closed areas for pelagic fishes in AMSs. Assessment on the current and proposed new <i>refugia</i> area (pelagic fish); also, current and proposed new closed season and closed area (pelagic fish) will be conducted.
Activity 6: Increase awareness and enhance knowledge of fishers in fisheries management	MFRDMD will assist stakeholder consultation in AMSs to increase awareness and enhance knowledge of fishers in fisheries management. MFRDMD also will assist AMSs to conduct awareness programs on fishing capacity (pelagic fish).

4. EXPECTED OUTPUTS/OUTCOMES

Objective	Outputs	Outcomes
<p>Objective 1: To engage with regional and international processes to enhance ASEAN cooperation to improve the governance of trans-boundary fishing to improve the regulation and control of fishing vessels</p> <p>Objective 2: To examine and improve policy settings as necessary to ensure that they do not distort incentives for output increases and new technology adoption while ensuring that they incorporate fully the value of environmental assets and costs of resource depletion</p>	<p>Outputs 1: Status of the RPOA Fishing Capacity Implementation in the region;</p> <p>Outputs 2: Report of the overall assessment of pelagic fishing capacity;</p> <p>Outputs 3: Assessment and Gap Analysis of the current Fisheries Information System and relevant statistics;</p> <p>Outputs 4: Proposed mechanism for the development of a regional Fishery Information Systems (FIS);</p> <p>Outputs 5: Introduce user-friendly indicators in supporting planning and</p>	<p>Outcome 1: To improve the governance of trans-boundary fishing through management of fishing capacity</p> <p>Outcome 2: To increase the governance capacity through timely strategic information based on scientific evidence/ analysis</p>

Objective	Outputs	Outcomes
	<p>monitoring of sustainable fisheries of pelagic fish;</p> <p>Outputs 6: Proposed standardization of definitions and classifications, and data analysis for a regional FIS (Report and publication on FIS and statistics);</p> <p>Outputs 7: Current status and proposed establishment of <i>refugia</i>, closed season and closed areas (for pelagic fishes) in AMSs; and</p> <p>Output 8: Increase awareness and enhance knowledge of fishers in fisheries management</p>	

5. PROGRESS AND STATUS

Proposal for this project was discussed during ASWGFi meeting in 2018 and was further emphasized during the same meeting in 2019. This is a new project and seeking for funding from ASEAN or another potential donor.

PIPELINE PROJECT CONCEPT NOTE

Project Title: ASEAN Regional Technical Consultation on Aquatic Emergency Preparedness and Response Systems for Effective Management of Transboundary Disease Outbreaks in Southeast Asia – Phase 2 (*tentative title*)

Prospect Funding Agency: Japan-ASEAN Integrated Fund

Lead Department: Aquaculture Department

Proposed Budget: USD 90,000

Duration: 1 year

1. BACKGROUND/INTRODUCTION

Aquaculture production in Southeast Asia has grown rapidly over the last two decades contributing approximately 10% of the annual world aquaculture production. However, irresponsible aquaculture practices including the irresponsible transfer of aquatic species, particularly farmed stocks carrying pathogens, have brought about the emergence of a number of infectious diseases thereby posing serious threats to the sustainability of aquaculture in the region. A consultative meeting back in 2016 which tackled the Acute Hepatopancreatic Necrosis Disease (AHPND) or Early Mortality Syndrome (EMS) affecting several ASEAN Member States (AMSs) led to the focus on aquatic emergency preparedness response systems (AEPRS) in the region and the need to have a well-defined AEPRS that each member country could adapt. The project ASEAN Regional Technical Consultation (RTC) on Aquatic Emergency Preparedness and Response System for Effective Management of Transboundary Disease Outbreaks in Southeast Asia has already brought together representatives of ASEAN member states, technical experts, and farmers/industry practitioners back in 2018 to examine the status of each country's AEPRS, to identify gaps in their systems as well as to get inputs from member states and experts in order to develop a well-defined regional AEPRS that will yield a more systematic management of aquatic animal disease outbreaks in the region. The main objective of the project was achieved; however, the other goals were just partially achieved. The Regional Technical Guidelines on Early Warning System for Aquatic Animal Health Emergencies that the member states of the region could follow was formulated. To ensure sustainability, the project warrants for another assembly of the same people back in 2018 with the addition of more people from the private sector as well as from the academe to participate. The Phase 2 of the project will prepare Contingency Plans for high profile diseases, manuals and other EPRS toolkits needed in the implementation of the Technical Guidelines on EPRS prepared in the Phase 1 of the project.

2. GOAL/OVERALL OBJECTIVES

Relevant to the ASEAN Community Blueprints of enhanced connectivity and sectoral cooperation and a Global ASEAN, the main objective of this proposed meeting is to bring together the representatives of ASEAN Member States and Technical experts again with the addition of people from the private sector and the academe to prepare Contingency Plans for high profile diseases, manuals and other EPRS toolkits needed in the implementation of the Technical Guidelines on EPRS prepared in the Phase 1 of the project. Specifically, the objectives are to:

1. To contribute to systematically managing aquatic animal disease outbreaks in the region through a well-defined aquatic emergency preparedness and response systems; and
2. To enhance cooperation among ASEAN Member States, regional/international organizations, and other relevant stakeholders on initiatives that support emergency preparedness and response systems for effective management of aquatic animal disease outbreaks.

3. PROJECT DESCRIPTION

1. Conduct Technical Session 1/ Country Reports (Day 1 and 2), which will discuss each of the AMS's current status on its contingency plan(s) regarding aquatic emergency preparedness and response systems concomitant to national laws, legislations, SOPs, and aquatic animal health management strategies, among others.
2. Conduct Technical Session 2/ Invited Resource Speakers (Day 1 and 2), which will comprise presentations of invited experts (organizers will identify speakers) who will explicate the importance of

having contingency plans already set up in relation to aquatic emergency preparedness and response systems for effective management of transboundary disease outbreaks.

3. Conduct Technical Session 3/ Workshop (Day 1 and 2), which will identify gaps in each AMS's contingency plans and prepare well-defined contingency plans for high profile diseases that each AMS could use or adapt.
4. Conduct a Field Trip (Day 3), which will enhance the participants' awareness/understanding of AEPRS contingency plans being adapted at the farm level.

4. EXPECTED OUTPUTS/OUTCOMES

1. A meeting (consultation) is held to assess the contingency plans of each AMS regarding AEPRS, find gaps in each contingency plan, and formulate well-defined contingency plans for high profile diseases that ASMs could adapt.
2. Cooperation arrangements/agreements between and among institutions on identified initiatives (particularly in addressing aquatic emergency preparedness and response systems for effective management of aquatic animal disease outbreaks) are established.

5. PROGRESS AND STATUS

SEAFDEC/AQD is still preparing the full proposal for submission to potential donors.

STATEMENT

By *Mr. Simon Funge-Smith*
Senior Fishery Officer, FAO Regional Office for Asia and the Pacific (FAO/RAP)

Distinguished members of the SEAFDEC Program Committee, on behalf *Mr. Jong-Jin Kim*, Assistant Director General and Regional Representative of the FAO Regional Office for Asia and the Pacific, I have the pleasure of providing a statement concerning the cooperation between FAO and SEAFDEC.

The Southeast Asian Fisheries Development Center and FAO have a long history of cooperation and collaboration in the promotion and operationalization of responsible fisheries and aquaculture in Southeast Asia. As an example, just over the past few months, FAO has provided the active participation of many FAO technical officers sharing their technical expertise in SEAFDEC webinars with themes ranging from small-scale fisheries to subsidies. This demonstrates that we are now increasingly able to access technical advice in webinar format, from across the FAO global technical network.

These are challenging times for everyone, as the COVID-19 pandemic affects lives, livelihoods and the way we work. Those who depend on fishing and fish farming for their livelihoods, such as small-scale fishers and fish farmers, crew members, fish processors and fish traders, among others, have, in one way or another been negatively affected by the measures implemented to contain the spread of the COVID-19 pandemic. This has also impacted our way of working as global and regional intergovernmental organizations. Project operations have been affected along with our ability to provide advice on site. We have had to adjust how we work at national and regional levels and virtual interaction has moved from a rare event to the new normal. In your deliberations at the Program Committee, it will be important to consider and reflect how to deliver the SEAFDEC regional work program and activities at national level within a context of reduced mobility and travel.

In July of this year, the *2020 State of World Fisheries and Aquaculture (SOFIA)* was launched virtually. The theme of this year's SOFIA is *Sustainability in Action*, which is very relevant to your deliberations in the Program Committee. Let me take this opportunity to reiterate the key messages of SOFIA 2020, as presented by Manuel Barange, Director of the FAO Fisheries and Aquaculture Division, during its virtual launch, as follows:

1. Now more than ever, fish and fish products are essential in the fight against hunger and poverty
2. Sustainable intensification, adequate frameworks and innovative value chains are essential for further aquaculture growth
3. Effective management is the only path to sustainability – management is the best conservation
4. Development of sustainable value chains essential to enhance market access and increase global trade in fish and fish products
5. Enhance efforts towards social sustainability in fisheries and aquaculture
6. There is no alternative to sustainability – the world needs programmes to further improve fisheries and aquaculture

The analysis presented in SOFIA 2020 showed that stocks under effective management are increasingly sustainable and those not under effective management are increasingly deteriorating.

As a leading regional organization in Asia, SEAFDEC and its Member countries have a big role to play in advancing and realizing the sustainability agenda at the regional, national and local levels. Towards this shared goal of fisheries and aquaculture sustainability, FAO is pleased to continue its collaboration with SEAFDEC in areas of mutual concern.

FAO is looking to build and finance regional partnerships for capacity building in the assessment of marine fish stocks that can provide meaningful advice for decision making, under the data poor situations that face many fishery managers.

FAO is also looking forward to cooperating with SEAFDEC as executing agency for two regional projects under the International Waters Programme of the Global Environment Facility (GEF).

The first is the *Sustainable management of the Bay of Bengal Large Marine Ecosystem (BOBLME) Phase II*, which is geared towards the implementation of the BOBLME Strategic Action Programme in four of eight participating countries, *i.e.* Indonesia, Malaysia, Myanmar, and Thailand and expected to commence in 2021.

The second regional project is *Promoting the blue economy and strengthening fisheries governance of the Gulf of Thailand through the Ecosystem Approach to Fisheries (GoTFish)*, involving Cambodia, Malaysia, Thailand and Viet Nam. This project is in the concept note stage for submission to and consideration by the GEF Council and development of the full project is expected to commence in 2021.

I would also like to mention a number of other areas where FAO is already cooperating with SEAFDEC.

The ongoing project on *Gender dimension in the value chain of small-scale fisheries and aquaculture in Southeast Asia*, which is funded under the Global Umbrella Programme for the implementation of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication.

Survey work to assess abandoned lost and discarded fish gear (ALDFG) in Thailand, and hopefully other SEAFDE Member Countries.

Under various country and regional projects, further development and roll out of the ecosystem approach to fishery management training, which has been a long running cooperation between FAO and SEAFDEC.

In closing, we would like to reiterate FAO's commitment to our continued cooperation and collaboration in the realization of sustainable fisheries and aquaculture in Southeast Asia.

Please accept our best wishes for a successful organization and completion of the Forty-third Meeting of the Program Committee.

STATEMENT

*By Ms. Shirlene Maria Anthonysamy
Director, INFOFISH*

Honorable Chairman, Secretary General, Distinguished Council Directors, Ladies and Gentlemen

It gives me great honor to associate myself with this important SEAFDEC event. It is heartening to acknowledge the growing cooperation and collaboration between INFOFISH and SEAFDEC. At this point, let me also express our wish that everyone is safe and in good health amidst these challenging times.

INFOFISH set up in 1981 as a project of Food and Agriculture Organization, with Headquarters in Kuala Lumpur, Malaysia, became an Intergovernmental Organization with ten Member Countries in 1987. Since its inception, INFOFISH has established itself as the premier regional organization responsible for disseminating trade, price, marketing and technical information to the industry. It also serves as a channel of conveying results of research and developmental work to the global industry, thus facilitating trade and investment. In this respect the dissemination machinery of the organization, which consists of regular publications such as *INFOFISH International* and *INFOFISH Trade News*, an extensive communication network, as well as trade and commodity conferences, training programmes, industry seminars etc conducted by INFOFISH play an important role in promoting fisheries trade and investment in the region.

The advent of the COVID-19 pandemic has not changed the organisation's focus and activities. Instead, INFOFISH has adapted to the new circumstances, made some changes in approach, and adopted new communication technology. Accordingly, webinars, podcasts and online trainings are currently being used as the vehicle to ensure that information dissemination and activities for Member Countries are uninterrupted.

Amidst the new challenges with the COVID-19 pandemic, it is important to acknowledge that the regional industry continues to grow while its needs are developing. All the more, there is an urgent need to strengthen domestic markets and local stakeholders for the survival of the industry. Moreover, regulatory requirements and increased emphasis on safety and quality related issues continue play crucial roles. In this respect the FISHINFO network set up by FAO, with INFOFISH as the Asia-Pacific arm, could play a very important role. The network consists of sister organizations in Latin America (INFOPECSA), Africa (INFOPECHE), Arab Region (INFOSAMAK), Eastern Europe (EURO) and China (INFOYU).

Recognizing the long term relationship between SEAFDEC and INFOFISH and the mutual benefits both organizations could achieve through enhanced cooperation, we are delighted with the recent signing the MoU between SEAFDEC and INFOFISH. This MoU is significant milestone in our on-going co-operation and collaboration. Let me take this opportunity to thank SEAFDEC for mooting this thought.

INFOFISH expertise in gathering and disseminating knowledge on fisheries and aquaculture policy, practice, and data will continue to underpin its on-going activities, projects, and events as well as new planned projects. The organization's activities will also focus on capacity building via various training programmes through which a platform for sharing of knowledge between Member Countries for the mutual benefit of all parties is developed. Emphasis will also be on the Sustainable Development Goals (SDGs), implementation of guidelines for securing sustainable small-scale fisheries, IUU fishing, traceability, climate change etc. In this context, the MoU we have signed brings in line all the activities being planned for the coming year.

As spelt out in the MoU, our areas partnership comprise, cooperation on exchange of information including publications, cooperation for joint research and capacity building activities of mutual interest; participation in each other organization's training activities and other activities/cooperation which may be mutually determined. In this regard, let me record our sincere appreciation to SEAFDEC for granting of 5 allocations for Observers from INFOFISH Member Countries at the Regional Training on Port State Measures Implementation for Inspectors which took place from 22-26 July 2019. We are also grateful to the opportunity to be able to participate at SEAFDEC's Teleseminar on Way Forward for Combating Illegal, Unreported and Unregulated (IUU) Fishing in Southeast Asia held from 24 – 26 August 2020. INFOFISH also looks forward to availing SEAFDEC's assistance on Post-Harvest Losses/Fish Handling, Training of Trainers (TOT) on Fish Handling Techniques On-board Fishing Vessels as well as Online Training of eACDS.

We are pleased to also have had SEAFDEC participate at INFOFISH Training Webinar on Market Intelligence and Market Analysis which was held on 23 June, 2020 that provided training on market analysis skills development. We are also organizing a Virtual Regional Training Programme on Certification with technical support from FAO-Globefish, Rome and the invitation is also extended to SEAFDEC to participate. The programme is scheduled from 11-12 November 2020 and the aim of this two-day activity is to cover certification schemes criteria, implementing tools and guidelines to capacitate the government on Certification for Sustainable Fisheries. Similar programmes being planned is the Regional Workshop/Training on Sustainable Development Goals (SDGs) with the aim of assisting INFOFISH Member Countries in harmonising relevant SDG targets, particularly SDG14, with their national policies. This activity is being planned with assistance from FAO-Globefish. Other areas of cooperation and collaboration are through upcoming potential consultancies through which the technical expertise of SEAFDEC could be availed.

INFOFISH is optimistic in this milestone endeavour through the MoU with SEAFDEC to strengthen the co-operation and collaboration as we work towards a resilient industry.

I conclude by wishing a very successful and productive Council session.

Thank you.

STATEMENT

By the Mekong River Commission

The Mekong River Commission (MRC) is an inter-governmental organization established in 1995 by the 1995 Mekong Agreement, and works directly with the governments of Cambodia, Lao PDR, Thailand, and Viet Nam. The Agreement has provided legal mandate for the MRC and states its Basin Vision as “economically prosperous, socially just and environmentally sound Mekong River Basin”. The MRC serves its Member Countries with technical knowledge and basin-wide perspectives, and strengthens the joint management of shared water resources and sustainable development of the Mekong River Basin with the aim of ensuring that the Mekong River Basin is developed in the most efficient manner mutually benefiting all Member Countries, while minimizing harmful effects on the people and the environment.

MRC and SEAFDEC agreed on the Memorandum of Understanding (MOU) on “The Promotion of Sustainable Development of Fisheries and Aquaculture in the Lower Mekong Basin and Southeast Asia” to formalize relevant collaborative efforts in fostering research and development (R&D) on inland fisheries in the countries of the Mekong River Basin that comprise the MRC-SEAFDEC partnership. To strengthen this regional cooperation, the MRC-SEAFDEC MOU was signed in August 2017.

Under the signed MOU, MRC-SEAFDEC had co-organized a regional consultation workshop to strengthen the institutional platform of the Sub-Expert Group on Fisheries and participated in a regional consultation on development of a Project-Based Action Plan (PBAP) for implementing the Basin-wide Fisheries Management and Development Strategy (BFMS) in December 2017. The final PBAP has composed of seven project proposals and budget estimations. These project proposals are (1) Improvement of fisheries monitoring for supporting water development and management; (2) Transboundary fisheries and key habitat management in the Lower Mekong Basin; (3) Development and support responsible aquaculture on regional and transboundary levels in the Lower Mekong Basin; (4) Development of standard methodology and technical guidance to manage interaction and interdependency of water development and fisheries; (5) Support and promote fish friendly irrigation and agriculture development; (6) Strengthening capacity in fisheries and aquaculture for sustainability to be resilient to climate change in the Lower Mekong Basin; and (7) Promotion and improvement of gender equality and equity in inland fisheries of the Lower Mekong Basin. The MRC Joint Committee has endorsed the PBAP in October 2020 which has been ready to use for raise funds from interested development partners for the full implementation of the BFMS, in addition to MRC Basket Funds, in the next MRC Strategic Planning (2021-2025).

The MRC has currently developed two-technical guidance for transboundary fisheries management and for restoring and protecting key important habitats to secure ecological health system and enhance fish stocks along transboundary areas in the Mekong River Basin. The technical guidance for transboundary fisheries management in the Lower Mekong Basin will be application to manage many stocks of fish, other aquatic resources, its ecosystem are shared by two or more countries. The technical guidance for restoration and protection of key fish habitat in the Lower Mekong Basin will be a tool to prevent and manage the diversity and abundance of inland fisheries to secure livelihood and employment, contribute the Articles 3 and 7 of the 1995 Mekong Agreement. These two final drafts of the technical guidance will be available by December 2020. Therefore, the technical guidance for restoration and protection of key fish habitat will be implemented by setting a pilot site in each MRC Member Country under the multi-year work plan 2021-2022 of the MRC Strategic Plan 2021-2025. Also, MRC is updating its two fisheries monitoring programmes: (1) fish abundance and diversity monitoring; and (2) fish larval drift monitoring for standardising the monitoring methodologies among the Member Countries as well as for capturing a rapid change of the environment due to the development projects in the Lower Mekong Basin.

The BFMS and its PBAP are the regional cooperation frameworks to facilitate, support, and strengthen coordination and collaboration among the MRC, SEAFDEC and other relevant regional and international organizations for sustainable inland fisheries and aquatic resources development and management in the Mekong Basin.

**PREPARATION FOR
SOUTHEAST ASIAN STATE OF FISHERIES AND AQUACULTURE (SEASOFIA) 2022**

I. 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,” and the first volume of the publication was published in 2012. Such endeavor provided a 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.

While taking into consideration the usefulness of the “SEASOFIA 2012,” the SEAFDEC Council during its 44th Meeting in 2012 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. In response to the directives of the Council, the SEAFDEC Secretariat in collaboration with all Departments came up with the second volume of the publication, the “SEASOFIA 2017”; and to further sustain this initiative, the Secretariat is also planning on the preparation of the next “SEASOFIA 2022,” the proposal of which was noted by the SEAFDEC Program Committee during its 42nd Meeting in 2019, and the SEAFDEC Council at its 52nd Meeting in 2020, where the Council supported the production of the publication and confirmed on the frequency of the publication to be produced every 5-year. To follow-up on this, SEAFDEC conducted two Inter-Departmental Consultations (on 6-7 August 2020 and 1 October 2020) to discuss and come up with the outline and workplan for SEASOFIA 2022. Furthermore, considering that there would be necessary information from the AMSs that are required to support the publication, a set of Questionnaires were also developed and will be tabled together with the outline and workplan for views/comments of the SEAFDEC Program Committee during its 43rd Meeting in 2020.

II. SEASOFIA 2022

In line with the directive given by the SEAFDEC Council, the Secretariat therefore plans to prepare the next SEASOFIA to be published in 2022. The following outline of SEASOFIA 2022 was proposed by SEAFDEC Secretariat and Departments:

Topics	By	Inputs
Part I. Overview of the Status and Trends of Capture Fisheries and Aquaculture in Southeast Asia		
1. Global Production and Utilization of Fish	Sec (IPC Office)	Write-up on fishery production of the AMSs based on statistics data and analysis (from SEAFDEC Fishery Statistical Bulletin 2005-2019, FAO Yearbook 2005-2019, and other sources). Explanation would also be provided on changing trends of fishery production in respective Southeast Asian countries. Remarks: - Tuna-like species also include seerfishes
2. Fishery Production of Southeast Asia		
3. Marine Capture Fisheries Production of Southeast Asia		
3.1 Economically Important Marine Species		
3.1.1 Tuna and Tuna-like Species		
3.1.2 Small Pelagic Species		
3.1.3 Demersal Fish Species		
3.1.4 Crustaceans		
3.1.5 Mollusks		
3.1.6 Seaweeds		

Topics	By	Inputs
4. Inland Capture Fisheries Production of Southeast Asia		<p>- Under Inland Capture Fisheries Production, if possible also provide information by important inland species</p> <p>- In case of drastic changes in the status and trends, clarification would later on be sought from the concerned countries and included in the publication.</p>
5. Aquaculture Production of Southeast Asia		
5.1 Mariculture		
5.2 Brackishwater Culture		
5.3 Freshwater Culture		
6. Fishing Vessels		
7. Fishers and Fish Farmers		
8. Fish Processing Industry		
9. Fish Trade		
9.1 Global Trading of Fish and Fishery Products		
9.2 Southeast Asian Trading of Fish and Fishery Products		
Part II. Issues and Challenges in Sustainable Development of Fisheries of the Southeast Asian Region		
1. Marine Fishery Resources		The write-up for all species under this topic should cover the importance of the species for the region, overall stock status, and particular species being studied, issues and concerns, management measures.
1.1 Status, Issues and Concerns	MFRDMD (and SEC (PPC Office))	<p>Sec: Results from stock and risk assessment on the <i>Thunnus tonggol</i> (2 times), and seerfish (1 time) conducted by SEAFDEC can be included in this session. Moreover, issues/concerns could be checked with the IOTC and WCPFC relevant documents. Other inputs to this session will be the outputs from the workshop that MFRDMD will organize in 2020 and may be in 2021 where the update the progress of RPOA-Neritic Tuna should be discussed with the Member Countries.</p>
1.1.1 Tuna and Tuna-like Species		
1.1.2 Round Scads		
1.1.3 Mackerels		
1.1.4 Anchovies		
1.1.5 Sardines		
1.1.6 Marine shrimps		
1.1.7 Seaweeds	AQD	Seaweeds play a significant role in marine ecosystems providing food and shelter to numerous marine organisms. The write-up will focus on the economic importance of seaweeds, particularly species that are formed for human consumptions <i>e.g. Caulerpa, Eucheuma</i> ,

Topics	By	Inputs
		<i>Gracilaria</i> , and <i>Kappaphycus</i> with a background on the rising international demands of seaweed farming. It will also discuss the aquaculture practices and innovations <i>e.g.</i> minimal culture requirements, short grow-out cycles, and tissue culture as well as issues <i>e.g.</i> pollution, diseases, and production inconsistencies.
1.2 Challenges and Future Direction	MFRDMD (AQD and Sec)	MFRDMD: Any issues, challenges and future direction for the target species will be discussed.
2. Inland Fishery Resources		
2.1 Status, Issues and Concerns 2.1.1 Contribution of Inland Fisheries to Food Security and Poverty Alleviation	IFRDMD	Write up on the roles of inland fisheries in providing high-quality protein, essential nutrients, and minerals that are often difficult to obtain from other sources of food, as well as on the livelihood of small-scale inland fishers. Inland fisheries also provide economic opportunity and continued food production when other sectors may fail.
2.1.2 Data Collection on Inland Capture Fisheries	IFRDMD	Write-up that the catch statistics are one of the ways to monitor the present status of both fisheries and fish resources. We need to establish the method and application on catch statistics to consider the conservation zone, sustainable use and future development.
2.1.3 Impacts and Mitigation of Impacts of Water Barrier Construction on Inland Fisheries	IFRDMD (and TD)	IFRDMD: Write-up the impact of the construction of dams and weirs that rampart upstream/downstream migration of aquatic species, construction of other obstacles such as roads that impede larval dispersal, threaten the survival of aquatic organisms, and eventually effects the productivity and sustainability of inland capture fisheries. The write-up will also include mitigation of the impacts, such as fish passage, stock release, etc.
2.1.4 Increased Production through Culture-based Fisheries	IFRDMD (and AQD)	IFRDMD: Write up that there is a link between inland fisheries and aquaculture and the interaction of these two sub-sectors, <i>e.g.</i> the use of inland fishery resources in capture-based aquaculture and the use of hatcheries in support of culture-based fisheries.
2.1.5 Inland Water Use Conflicts on Use of Water Resources with Other Sectors	IFRDMD	Write up the information that there is a competition among the various sectors and it will cause the alterations of habitats of aquatic organisms and impact the fishery production. Many development projects are proposed to enhance the economy and quality of life of people in low-income countries, but it will also lose the high potential for productivity and

Topics	By	Inputs
		aquatic ecosystem services. Need to identify human uses and values for water to resolve the conflicts.
2.2 Challenges and Future Direction	IFRDMD (AQD and TD)	<p>IFRDMD: Write up a need for improvement of data collection systems and methods or develop the mobile application that are applicable to the various conditions and background of inland capture fisheries in the region, not only in terms of quantity, but also in species composition of the catch, in order that the contribution from this sub-sector could be more visualized. The data and information could provide understanding to people and policy makers, considering the importance of sustainability of inland capture fisheries.</p> <p>Remark:</p> <ul style="list-style-type: none"> • Novel Methods of Data Collection, Analysis, and Dissemination • Habitat Conservation and Restoration • Application of Fish Passage to Mitigate the Impacts of Cross-river Obstacles • Mitigating the Impact of Freshwater Aquaculture on the Environment (include responsible use of inland water resources)
3. Aquatic Species Under International Concern		Write-up for all species under the topic should cover the species status, cause of decline, international/national regulations for conservation and management.
3.1 Status, Issues and Concerns 3.1.1 Sharks and Rays	MFRDMD, (TD, Sec (PPC Office))	MFRDMD: Update information on status, issues and concerns for shark and rays.
3.1.2 Anguillid Eels	IFRDMD (and Sec (JAIF))	Write up that the need for conservation and management of Anguillid eel resources has been attracted attention, and the manner to not listed in CITES Appendix II.
3.1.3 Sea Cucumbers	AQD (and MFRDMD)	<p>AQD: The sandfish (<i>Holothuria scabra</i>) is a tropical sea cucumber that has an important function in the marine ecosystem. The write-up will start with a background on severely endangered species including its status as one of the highly-sought invertebrates in the market. It will also discuss the regulations implemented by SEA countries when collecting sea cucumbers in the wild. If any of the countries has cultural efforts in place, it will also be included.</p> <p>MFRDMD: Update information on status, issues and concerns for sea cucumbers</p>
3.1.4 Seahorses	AQD	Seahorses were classified under the International Union for Conservation of Nature (IUCN) as

Topics	By	Inputs
		vulnerable as their populations are steadily decreasing. The write-up will start with a background and history of seahorses, particularly <i>Hippocampus comes</i> and <i>H. barbouri</i> in a form of explainer as to why they were included in IUCN. It will also discuss the main causes of the species dwindling numbers in the wild such as overharvesting, pollution, and habitat destruction. The efforts done by SEA countries in restoring the population of seahorse in the wild e.g. resource enhancement, tagging of wild-caught seahorse compared to culture ones will be included in the write-up.
3.1.5 Corals (hard and soft corals) and Coral Reef Ornamental Species	MFRDMD, (and TD)	MFRDMD: Update information on status, issues and concerns for corals and coral reef ornamental species
3.1.6 Irrawaddy Dolphin 3.1.7 Asian Arowana	IFRDMD	Write up that need the coordination on constructing the dam, for the survival of the critically endangered Irrawaddy river dolphins. While declining habitat is a major threat for Asian arowanas.
3.2 Challenges and Future Direction	MFRDMD (TD, IFRDMD, SEC, and AQD)	MFRDMD: Any issues, challenges and future direction for the target species will be discussed. IFRDMD: Write up the improvement of selective fishing gears to minimize by-catches of juveniles and non-target species and also developing the technologies to raise economical values of unavoidable by-catches are also the another measure
4. Responsible Fishing Practices 4.1 Status, Issues and Concerns 4.1.1 Reduction of Fishing Impact to Environment	TD	Write-up on the overview negative impacts of fishing operations and practices to fisheries resources and environment. Nationals' concerns of fishing technology and practices that impact on the environment. Examples of tool and measures to mitigate negative impacts of fishing practices applied by SEAFDEC Member Countries
4.1.2 Optimizing Energy Use in Fisheries and Reducing Carbon Emission	TD	Write-up on improving energy efficiency used and recommended fuel-saving options of fishing vessel operation
4.1.3 Gear Marking (ALDFG)	TD	Write-up to describe the global issues in fisheries that contributes to Abandoned, Lost and Discarded Fishing Gear-ALDFG, and updated information on relevant research/surveys being undertaken. Also include updates on the implementations of Gear Marking (i.e. preliminary survey/pilot site) as a measure to reduce the ALDFG and facilitating

Topics	By	Inputs
		its recovery in the major types of fishing gear used in the region to address the concern on the negative impact on the environment in the region.
4.1.4 Innovations in Responsible Fishing (fishing vessel design, deck machinery, gear innovation, fish handling facilities)	TD	Write-up on implement/adaptation the new technology to improve good practices in fishing activities.
4.2 Challenges and Future Direction	TD	Write-up on compiling challenge of SEAFDEC Member Countries to apply the technology to reduce impact of technology and practices to the environment, reducing energy used, and enhance safety in fishing operations. Summarizing the future direction to support SEAFDEC Member Countries on the mitigation of the negative impacts from fishing operation to the ecosystem and to apply marine engineering technologies to enhance capability of fuel consumption efficiency and reducing the emission of greenhouse gas, as well as enhancing the safety-at-sea in fishing operations.
5. Utilization of Fishery Resources 5.1 Status, Issues and Concerns 5.1.1 Fish Utilization (food, and non-food) 5.1.2 Management of Food Losses and Wastes (Preservation and Processing, cold chain management) 5.1.3 Food Safety (pending consultation with SFA) <ul style="list-style-type: none"> • Marine Biotoxins and Scombrototoxin 	MFRD (and AQD for non-food as aquaculture feed)	MFRD: <ul style="list-style-type: none"> • Describes the proportion of utilization of fishery resource of AMSs (<i>e.g.</i> for food: fresh, frozen, processed), and non-food use (<i>e.g.</i> as feed for livestock and aquaculture) • Describe the estimated quantities at various parts of the seafood supply chain (if data is available) and how each AMSs manage food losses and wastes focusing on preservation and processing techniques used. • Initiatives and current monitoring of food safety in AMSs focusing on marine biotoxins and scombrototoxin • Current trends and observations of marine biotoxin and scombrototoxin in the region AQD: Utilization of fish for non-food purpose as aquaculture feed
5.2 Challenges and Future Direction	MFRD	<ul style="list-style-type: none"> • Describes the importance of maximizing utilization of fish resources. • Discuss about management strategies (<i>i.e.</i> cold chain management, traceability and quality assessment), preservation and value-adding technologies to minimize loss and waste • Discuss about initiatives to enhance regional food safety capabilities.
6. Fishery Management 6.1 Status, Issues and Concerns 6.1.1 Management of Fishing Capacity	MFRDMD	The progress on implementation of RPOA fishing capacity in the Southeast Asian region

Topics	By	Inputs
and Combating IUU Fishing • Management of Fishing Capacity		through questionnaires and literature review.
• Fishing Vessel Registration and Fishing Licensing • Catch Documentation Schemes • Port State Measures	TD	Write-up on • Overview and updates on fishing vessels registration and fishing licensing of AMSs (including SSF) • Summarize general information for RFVR Database, benefits of RFVR, differentiate of RFVR and GR, and way forward of RFVR Database, • Overviews of traceability system adopted by AMSs including eACDS, CDT, etc. • Status, actions and needs of PSM implementation in ASEAN
• MCS Systems and Networking	Sec (PPC office) (and MFRDMD)	Sec: Write-up on the progress of initiatives in establishing MCS network in the Southeast Asian region, and also status of MCS systems in AMSs MFRDMD: Write-up on the summary of the progress of MCSs (and other aspects of combating IUU fishing) based on results of AMSs self-evaluation of the implementation of the ASEAN Guidelines on the Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain
• Strengthening Regional Cooperation for Combating IUU Fishing	Sec (PPC office) (and MFRDMD)	Sec: Write-up on the progress of strengthening regional cooperation for combating IUU fishing at various levels (bilateral, sub-regional and regional).
• Combating IUU Fishing in Inland Fisheries	IFRDMD	Write up the complex relationship with other sectors surrounding the inland fisheries and fishers' livelihood in legal or illegal manner. The human activities vary related with the present status of the countries, national development plans and priorities of socioeconomic background. needed the harmonization among all components and sectors the way how to use inland waters (using the friendly environment fishing gears) in considering a balance between prosperity, environment, and sustainability of the resources.
• Application of Innovative Technologies for Combating IUU Fishing	Sec (PPC office)	Write-up on the review of different innovative technologies for combating IUU fishing <i>e.g.</i> artificial intelligence (AI), drones, on-board cameras, etc.
6.1.2 Management Concepts and Approaches • Ecosystem Approach to Fisheries Management (EAFm) and Ecosystem Approach to Aquaculture (EAA)	TD (IFRDMD, and AQD)	TD: • Write-up on the short progress of SEAFDEC in promotion of EAFM in SEA (in marine, coastal, and inland ecosystems). The trend includes opportunity and constraints of Member Countries in adopting the EAFM. • Write-up on the overview of the community

Topics	By	Inputs
<ul style="list-style-type: none"> Community-based and co-management 		<p>based/co-management implementation in both inland and coastal fisheries in SEAFDEC MCs Project sites by TD.</p> <p>IFRDMD: Write up about management of the inland fishery in ensuring a balance between short term economic viability and need for longer term sustainability of catch including conservation stocks.</p>
<p>6.1.3 Habitats Protection and Fishery Resources Enhancement</p>	<p>TD, (MFRDMD, and AQD, IFRDMD)</p>	<p>TD: Write up on the current situation and issue in Southeast Asia, Available Management Approach, future Activities, the effectiveness Assessment of implementing the program and Recommendation on the way forward.</p> <p>MFRDMD: Update information on habitats protection and resources enhancement in AMSs</p>
<p>6.1.4 Application of GIS and Remote Sensing for Fisheries Management</p>	<p>TD (MFRDMD, and AQD)</p>	<p>TD: Write-up on the overview of the application of GIS and Remote for Fisheries Management. Examples of GIS and Remote Sensing applied for fisheries management by SEAFDEC Member Countries.</p> <p>MFRDMD: Write-up on the Fish Site Identification System to forecast the fishing location for pelagic fish.</p>
<p>6.2 Challenges and Future Direction</p>	<p>Sec (PPC Office)</p>	
<p>7. Aquaculture Development</p>		
<p>7.1 Status, Issues and Concerns 7.1.1 Socio-economic Importance of Aquaculture for Food Security and Poverty Alleviation</p>	<p>AQD</p>	<p>Aquaculture is known as a billion-dollar industry envisioned to be able to supply the ever-growing demand for food worldwide. It is expected to serve as a way for these nations to attain food security and provide millions of jobs to their people. With this, the write-up will include the socioeconomics studies and/or efforts conducted by SEA countries on important aquatic commodities. Research done to gauge the real impact of aquaculture in the lives of the locals will also be included. If any programs were designed and implemented with the aquaculture stakeholders' welfare in mind, it will be discussed in this write-up.</p>
<p>7.1.2 Fish Health Management (including Aquatic Emergency Preparedness and Response Systems)</p>	<p>AQD</p>	<p>Proper fish health management is necessary in order to avoid or reduce the dire effects of diseases on stocks and to prevent or at least alleviate the financial burden brought on to the farmers. The write-up will include the status, concerns, and efforts done by SEA countries in fish health management based on the reports</p>

Topics		By	Inputs
			gathered from the Regional Technical Guidelines on Aquatic Emergency Preparedness and Response System in Southeast Asia. If there's innovation efforts published by each country such as vaccine development, rapid diagnostics, parasite eradication, and others it may be included in the write-up.
7.1.3	Fish Meal Dependence in Aquaculture	AQD	The problem with fish meal is that it is an expensive component of aquaculture feeds along with other feed additives causing feeds comprise about 50% of the total production cost in aquaculture. Research done by SEA countries on aquatic feed formulation. The write-up will include research done by SEA countries on aquatic feed formulation, particularly cost-efficient and environmental-friendly ones that uses alternative ingredients. Feeding practices and efforts done to reduce production costs will also be included.
7.1.4	Production and Dissemination of Good Quality Seedstock	AQD	For an aquaculture enterprise to be successful, a steady and sustainable supply of high-quality seedstocks is needed. The focus of this write-up will be the methods of quality seedstocks production including breeding techniques, refined hatchery and nursery management methods, and others done by SEA countries. Policies that led to providing small-scale farmers with quality aquaculture seedstocks will also be included.
7.1.5	Production of Safe and Quality Aquaculture Products	AQD	As with any type of food production facility, aquaculture farms need to abide by the standards on food safety to guarantee that the products they are putting out are high quality and safe for their intended consumers. This write-up will touch on the GAqP implemented in SEA regions as well as technologies developed or studied to yield safe and good quality aquaculture products.
7.1.6	Impacts of Intensification of Aquaculture on the Environment	AQD	With the intensification of aquaculture to cater to more people, problems on sustainability and environmental effects were observed. The write-up will collate information on the negative effects caused by aquaculture across SEA as well as efforts and research conducted to prevent the negative impacts such as being mindful of carrying capacities of ponds and cages.
7.1.7	Genetics in Aquaculture	AQD	The advances in the field of genetics from techniques to tools coupled with fast generation times of the organisms of interest and the ability to produce a sizable brood have made selective breeding easier and faster. Genetics also plays a

Topics	By	Inputs
		significant role in determining the overall quality of stocks. The write-up will include research, practices, and efforts done by SEA countries in pushing the boundaries producing aquaculture products with the aid of genetics. If any genetics-related innovations lead by each country, it will be included.
7.1.8 Traceability of Aquaculture Products	MFRD	Write-up on status of implementation of traceability systems in each AMSs and initiatives
7.2 Challenges and Future Direction	AQD	A summary of the notable challenges in aquaculture and advances in aquaculture practices in Southeast Asia
8. Fisheries-related Issues		
8.1 Climate Change and Natural Disasters	Sec (and AQD)	Write-up on the impacts of climate change on fisheries and aquaculture in the region, progress in development of National Adaptation Plans (NAP) by the respective AMSs, and programs at national/regional levels that aim at building adaptive capacity and resilience to reduce vulnerability to the impacts of climate change and natural disasters to the fisheries sector. (Questionnaire is prepared to gather inputs from SEAFDEC MCs (AMSs))
8.2 Impact of Marine Debris and Microplastic on Marine Life	TD	Write-up on Marine debris and microplastic status and trend in southeast Asia, and also include status of studies on marine debris and microplastic and their impacts on marine life conducted by AMSs and other institutions in the region (and results if any). Fishing challenges against marine debris and the relevant regional policies, <i>e.g.</i> ASEAN Declaration. The on-going project of SEAFDEC to study marine debris and microplastic will be mentioned to include the rationale for conducting such study.
8.3 Impacts of Pandemics to Fisheries and Aquaculture	Sec	Write-up on impacts of COVID-19 pandemic (and disease control measures) to fisheries and aquaculture-related activities of AMSs, and measures/programs promoted by the respective AMSs to mitigate the impacts of COVID-19. (Results from study on COVID-19 impacts would be used for write-up)
8.4 Fisheries Subsidies	Sec	Review on the status of discussion on fisheries subsidies
9. Socio-economic Well-being in the Fisheries Sector		
9.1 Labor in Fisheries and Fish Workers (working conditions, safety at sea, migrant workers, etc.)	TD	Write-up the current situation on labor in the fisheries sector including their working condition, rule and regulation or policy to

Topics	By	Inputs
		facilitate safety at sea of labor in fisheries, both migrant and local workers.
9.2 Micro-finance, Credit, Insurance in Support of Small-scale Fisheries	TD	Write-up the recognition of micro-finance, Credit, Insurance in SSF Guidelines and update the situation and the implementation of micro-finance, Credit, Insurance in Southeast Asian Region. (case study in MCs)
9.3 Gender Equity in Fisheries	TD	Write up the status of gender sensitivities and responsive in fisheries and way forward to promote gender equity in fisheries
Part III. Outlook of Fisheries and Aquaculture for the Southeast Asia		
1. Growing Demand for Fish and Fishery Products	Sec (IPC Office)	Write up on anticipated the demand for fish and fishery products that may arise in the future.
2. Issues and Challenges Towards Sustainable Utilization of Fishery Resources	Sec (PPC Office)	Write up on anticipated fisheries-related issues that may arise in the future, and will impact on Southeast Asian fisheries development

List of Contact Person:

Secretariat	Ms. Saivason Klinsukhon/ Ms. Nualanong Tongdee
TD	Mr. Kongpathai Saraphaivanich (cc: Mr. Isara Chanrachkij, Mr. Suthipong Tanasarnkorn, Dr. Taweekiat Amornpiyakrit, and Ms. Panitnard Taladon)
MFRD	Mr. Ong Yihang (cc: Ms. Chan Huili)
AQD	Ms. Joesyl Marie dela Cruz (cc: Dr. Leobert D. de la Peña)
MFRDMD	Dr. Ahmad bin Ali (cc: Ms. Mazalina binti Ali)
IFRDMD	Dr. Dina Muthmainnah (cc: Mr. Siswanta Kaban)

III. QUESTIONNAIRES FOR GATHERING INFORMATION

Considering that the subjects under the SEASOFIA 2022 could be broad, the Secretariat and Departments could encounter difficulties in obtaining information and in writing-up some topics where information is not sufficient. The Secretariat and Departments therefore developed a set of questionnaires that could be useful in gathering the necessary supplementary inputs from the ASEAN Member States (AMSs) as appears as *Appendix 1*.

IV. WORKPLAN AND TIMEFRAME

Activity	2020			2021												2022			
	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A
• Finalization of the proposed outline of SEASOFIA 2022 and a set of questionnaires at Inter-Departmental Consultation																			
• Submit the proposed outline and a set of questionnaires to 43 rd PCM and DCM																			
• Sending out set of																			

Activity	2020			2021												2022			
	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A
questionnaires to AMSs (CDs)																			
• Receiving inputs from AMSs on the questionnaires																			
• Preparation of inputs from contributors																			
• Reporting the progress and outlines of SEASOFIA 2022 to the 53 rd Council Meeting																			
• Submission of inputs from contributors to the Secretariat																			
• Discussion on the draft content of SEASOFIA 2022 at the Inter-Departmental Consultation																			
• Harmonization of inputs																			
• Submission of the Draft SEASOFIA 2022 to the 44 th PCM																			
• Finalization of content and layout for publishing																			
• Publication available for the 54 th Council Meeting																			

V. REQUIRED CONSIDERATION BY THE PROGRAM COMMITTEE

- 1) To take note and provide comment on the proposed outline and workplan of the SEASOFIA 2022
- 2) To provide comments on the set of questionnaires developed to gather inputs from AMSs for the SEASOFIA 2022

QUESTIONNAIRE FOR SEASOFIA2022

This questionnaire is designed to gather national inputs from the respective AMSs on particular subject matters to support the preparation of the SEAFDEC publication “The Southeast Asian State of Fisheries and Aquaculture 2022” or SEASOFIA. The respective AMSs are requested to fill in the questionnaire, particularly in topics where country’s information is available; and the filled questionnaire should be sent back to SEAFDEC Secretariat (e-mail: saivason@seafdec.org) by **28 February 2021**. The item numbers correspond to the numberings indicated in the Draft Outline of SEASOFIA 2022.

Country: _____

(1.1.2-1.1.6) Marine Fisheries Resources

Focal Person: _____ E-mail: _____

1. Have there been any research studies or data collection programs/activities undertaken by your country (including those by government agencies, academes, organizations, etc.) during the past decade on the following economically important species:

- a) Tuna and tuna-like species Yes No
- b) Round scads Yes No
- c) Mackerels Yes No
- d) Anchovies Yes No
- e) Sardines Yes No
- f) Marine shrimps Yes No

2. If **Yes**, please provide details on the research studies/data collection programs/activities conducted; and indicate the status of the resources and management plan for each of the species.

Species: _____
 Details on research studies/data collection programs/activities: _____

 Status of the resources: _____
 Management plan: _____

Species: _____
 Details on research studies/data collection programs/activities: _____
 Status of the resources: _____
 Management plan: _____

...

3. If **No**, please indicate the issues and constraints.

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(4.1.1) Reduction of Fishing Impact to the Environment

Focal Person: _____ E-mail: _____

1. What are the fishing gears (except trawl*) used in your country that have created tangible impacts on the fisheries resources or habitats? Please elaborate the details of the impacts and the extent of the impacts, as well as the management or mitigation measures (including fishing technology improvements, etc.) adopted to address the negative impacts.

Fishing gears creating tangible impacts	Impacts and extent of the impacts in the country	Management or mitigation measures

** As information on impacts from trawl fishing is already available, please provide information on the impacts of other fishing gears, i.e. Trawl; Purse seine (without luring light); Seine net (Danish seine, beach seine); Lift net (without luring light); Cast net (without luring light); Gillnet; Pot/trap; Set net, bamboo stake trap, fyke net, stow net; Hook and line; Push net; Dredge; Fishing gear associated with light; and others*

(4.1.3) ALDFG and Fishing Gear Marking

Focal Person: _____ E-mail: _____

1. If your country (including government agencies, academes, organizations, etc.) has conducted research studies or surveys on “Abandoned, Lost or Otherwise Discarded Fishing Gear (ALDFG)” during the past decade, please elaborate the details and results of the studies/surveys.

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2. If your country is in the process of or has plans for the implementation of “Marking of Fishing Gear,” please elaborate the details, specifying the pilot site(s), targeted gear type, and the scheme of implementation.

Pilot site(s)	Targeted gear type(s)	Scheme of implementation

(5.1.1 – 5.1.2) Fish Utilization (food, and non-food) and Management of Food Losses and Wastes (Preservation and Processing, Cold Chain Management)

Focal Person: _____ E-mail: _____

1. Please describe estimated proportion of the utilization of fish catch for food and non-food purposes. Specifically, for non-food use please provide details on the utilization.

2. If your country has measured or estimated the quantities of food loss and waste across the fishery supply chain, please elaborate the methodology used.

3. What are the critical stages of supply chain segment (from production, processing, distribution to consumption) where food loss and waste occur most in your country? Please elaborate details.

4. What are the interventions that your country does to minimize food loss and waste in the fishery supply chain?

Food Supply Chain Segment	Interventions / Measures
Production	<i>(e.g. Invest in process automation, use of traceability systems)</i>
Processing	<i>(e.g. Analytical tools to track food loss and waste, valorization of trimmings, conversion to ready-to-eat products)</i>
Distribution	<i>(e.g. Better packaging)</i>
Consumption	<i>(e.g. Consumer awareness)</i>

(5.1.3) Biotoxins and Scombrototoxin

Focal Person: _____ E-mail: _____

1. Whether poisoning of marine biotoxins and scombrototoxin has become an issue in your country; and **if yes**, what is the countermeasures. Please provide specific example (*e.g.* what kind of fish, where/when (season) of fish poisoning case, symptom of fish poisoning, countermeasures, monitoring and reporting program, etc.)

2. Is there any research institution or laboratory that can conduct testing for biotoxins and scombrotoxins in your country?

Yes – Please provide details:

Name of institution/laboratory: _____

	Ability for testing (Yes/No)	Priority rank (1 = most important)	Equipment and detector used	Food products of the most interest for analysis
Amnesic Shellfish Poisons (ASP)				
Paralytic Shellfish Poisons (PSP)				
Diarrhetic Shellfish Poisons (DSP)				
Neurotoxin Shellfish Poisons (NSP)				
Tetrodotoxin				
Histamine				
Azaspiracids Poisons (AZP)				
Ciguatoxins				
Others, please specify				

No – What are constraints and issues for the establishment of laboratory?

3. Is there a Monitoring Programme for Marine Biotoxins and Scombrotoxins in your country? If Yes, please provide details, *e.g.* Type of Marine Biotoxins and Scombrotoxins, product type tested, total samples tested, no. of detected cases and the levels detected, no. of failed cases and the levels detected, etc *e.g.* Table below

Type of Marine Biotoxins and Scombrotoxins	Product type tested	Test sensitivity, mkg/kg (ppb)	Number of samples		Results of tests (if detected and please indicate the values, ranges of values)	Of all tested samples		
			Planned number of samples	Total samples tested		Number of positive results	Number of negative results	Number of failed results

(6.1.1) Management of Fishing Capacity

Focal Person: _____ E-mail: _____

1. Has your country developed, or is in the process of developing the NPOA-Capacity or other legal framework toward improving management of fishing capacity?

Yes – Please elaborate the progress and challenges faced in the implementation, and provide examples of successful cases, if any

Progress of implementation _____
Constraints/Challenges _____
Successful cases _____

No – Please elaborate the issues and constraints in the development of the NPOA-Capacity or other legal framework for management of fishing capacity

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(6.1.1) Application of Innovative Technologies for Combating IUU Fishing

Focal Person: _____ E-mail: _____

1. If your country has introduced innovative technologies* for combating IUU fishing (regular practices or project-based activities), please provide the details.

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* Innovative technologies *e.g.* use of drones for vessel monitoring, CCTV cameras as observers on-board fishing vessels, AI with VMS data for risk assessment, AI for monitoring small-scale fishing activities, etc.

(6.1.2) Management Concepts and Approaches

Focal Person: _____ E-mail: _____

1. If your country has been making substantial progress in applying the concept of Ecosystem Approach to Fisheries Management (EAFM) (for marine coastal, and inland areas) and Ecosystem Approach to Aquaculture (EAA) during the past decade, please elaborate the details on the progress of implementation, constraints/challenges, including examples of successful cases (if any).

Progress of implementation _____

Constraints/Challenges _____

Successful cases _____

2. If your country has been making substantial progress in applying the concept of Community-based and Co-management Approaches during the past decade, please elaborate the details on the progress of implementation, constraints/challenges, including examples of successful cases (if any).

Progress of implementation _____

Constraints/Challenges _____

Successful cases _____

(6.1.3) Habitat Protection and Fishery Resources Enhancement

1. Please mark (x) on the reason(s) inducing your country to implement habitat protection and fishery resources enhancement activities:

- To increase population/production of some selected species
- For food security of the nation
- To protect and to increase endemic species resources
- To enhance endangered species resources
- To restore degraded natural habitats due to human activities and natural disasters
- To protect spawning, nursery and feeding grounds
- To increase fish sanctuaries area
- To conduct research for comping information *e.g.* biological control
- To gather information for planning aquaculture program in future
- To develop suitable area for recreational fisheries activities and to promote this activity as a new source of income for fishers
- To increase income of traditional fishers in coastal waters
- Others, if any (please specify) _____

2. Please mark (x) on the habitats protection and fishery resources enhancement and management approaches that have been or currently applied in your country.

- Fisheries management measure
- Artificial habitat
- Re-establishing of nature condition
- Management area (Such as Marine Protected Area, Marine Park etc.)
- Recruitment
- Others, if any (please specify) _____

3. Based on the response to question number 2, please provide further information on the past, present, and future activities (*See examples below) toward habitat protection and fishery resources enhancement in your country.

Resource enhancement approaches	Past activities	Present (on-going) activities	Future activities
Fisheries management measures			
Artificial habitat			
Re-establishing of nature condition			
Management area (Such as Marine Protected Area, Marine Park etc)			
Recruitment			
Others if any			

Remark* Examples of inputs for question number 3:

Resource enhancement approaches	Example
Fisheries management measures	<ul style="list-style-type: none"> - Move trawl fishery from Zone B to zone C (further from shorelines) - Total ban on catch of sharks or other species - Enlarge of trawl codend mesh size (e.g. from 2.5 to 4 cm)
Artificial habitat	<ul style="list-style-type: none"> - Construction and installation of small-size artificial reefs or FEDs - Installing of fish enhancing device (FED) - Installing of large artificial reefs (rig to reef), e.g. in collaboration with national petroleum company
Re-establishing of nature condition	<ul style="list-style-type: none"> - Replanting mangroves, seagrass, or corals - Pollution mitigation - Construction artificial reef for coral reef
Management area (Such as Marine Protected Area, Marine Park etc)	<ul style="list-style-type: none"> - Establish <i>refugia</i> areas - Establish MPAs - Establish fishery management, e.g. close area, close season - Gazette close area and closes season during spawning season of Indian Mackerel
Recruitment	<ul style="list-style-type: none"> - Releasing fry or fingerlings (of fish, shrimps, etc.) in the estuarine - Crab bank program - Evaluate the progress of public release program

4. If effectiveness assessment(s) have been conducted for habitats protection and fishery resources enhancement activities in your countries, please indicate the indicator(s) used for different resource enhancement approach, and provide summary on results from the effectiveness assessment.

List of resource enhancement approaches	Indicator	Results from effectiveness assessment
Fisheries management measures		
Artificial habitat		
Re-establishing of nature condition		
Management area		
Recruitment		
Others if any		

(7.1.8) Traceability of Aquaculture Products

Focal Person: _____ E-mail: _____

1. If your country has adopted any traceability systems for and aquaculture products, please indicate and elaborate the details, the major issues and constraints encountered in the application, including examples of successful cases (if any).

Details on the application of traceability (*e.g. How is it implemented, what is the guidelines followed, what is the technology used?*) _____

Major issues and constraints _____

Successful cases _____

(8.1) Climate Change and Natural Disasters

Focal Person: _____ E-mail: _____

1. If your countries (including those by government agencies, academes, organizations, etc.) has conducted studies on the impacts of climate change to fisheries and aquaculture (including fishing communities) during the past decade, please provide the details and results of the studies.

2. If there have been tangible impacts of climate change and natural disasters to fisheries and aquaculture, what are the impacts (incl. extent of impacts) and mitigation measures adopted by the country?

Impacts and extent of impacts	Adaptation/mitigation measures/programs

(8.2) Marine debris and microplastics

Focal Person: _____ E-mail: _____

1. If your country (including those by government agencies, academes, organizations, etc.) has conducted research studies or data collection activities related to **solid waste** during the past decade, please provide the details and results of the studies or data collection.

2. If your country (including those by government agencies, academes, organizations, etc.) has conducted research studies on **marine debris and microplastics** during the past decade, please provide the details and results of the studies.

3. Please describe the most tangible impacts of marine debris and microplastics to the fisheries resources that your country experienced, and provide information on national policies and measures to mitigate such impacts.

4. What are the initiatives of the fisheries sector to alleviate the impacts of marine debris (*e.g.* collecting garbage from the sea, other advocacies) on marine life?

(9.1) Labor in Fisheries and Fish Workers

Focal Person: _____ E-mail: _____

1. If your country has collected data on fishers, workers in fish processing, and fish farmers during the past decade, please provide the most recent information on the data collection method and the number of fishers (by type of fishing gears), workers in fish processing, and fish farmers if available. If not, please specify constraints.

2. What are the current situation on labor in fisheries and fish workers in different fisheries sub-sectors in your country, and the main issues and concerns encountered (*e.g.* in terms of availability, welfare and working conditions, access to social services)?

	Current situation, issues and concerns
Capture fisheries	
Aquaculture	
Processing	

3. If there are national laws and regulations that specifically aim to improve safety at sea for small-scale fishers in your country, please elaborate the details.

(9.2) Micro-finance, Credit, and Insurance in Support of Small-scale Fisheries

Focal Person: _____ E-mail: _____

1. If your country has policies or programs/activities in relation to micro-finance, credit, insurance in support of small-scale fisheries, please provide details, and specify issues or constraints faced during the implementation.

	Policies or programs/activities	Future Plan	Issues/Constraints
Micro-financing			
Credit schemes			
Insurance			

**CONCEPT PROPOSAL
OF STUDY ON IMPACTS OF CORONAVIRUS-2019 PANDEMIC ON THE
FISHERIES SECTOR OF THE ASEAN-SEAFDEC MEMBER COUNTRIES**

I. BACKGROUND

The Coronavirus-2019 (COVID-19) was declared a global pandemic by the World Health Organization (WHO) on 11 March 2020 due to alarming levels of spread and severity as well as distressing levels of inaction by some countries. As a result, countries all over the world including those in the Southeast Asian region have taken several measures such as home confinement, travel bans, and business closures in order to control the infection and widespread disease. Such measures, however, resulted in drastic impacts to people's livelihood, and food security, social activities, and economies of the countries at various levels and scales. As for the fisheries sector, measures in response to the COVID-2019 have resulted in drastic impacts to relevant activities, ranging from capture fisheries, aquaculture, transportation, post-harvest processing, and to trading of fish and fishery products. Such measures also resulted in impacts on fisheries regulations and management, including monitoring, control and surveillance toward combating illegal, unreported and unregulated (IUU) fishing which has been one of the priorities for several countries in Southeast Asia.

At the global level, FAO in 2020 undertook a study on COVID rapid impacts assessment as well as regional assessment of the food supply chain development. In July 2020, SEAFDEC also conducted a "Webinar on Impact of COVID-19 on Fisheries and Aquaculture in Southeast Asia" that brought together international, regional and national fisheries agencies, and industry representatives, and gathered information on some key impacts of the pandemic on the region's food supply chain of the local, national, regional, and international trade. Although some initial information on the impacts of COVID-19 could be gathered through the past rapid data collection, however, it is viewed that dedicated studies should also be conducted to gather more concrete information on the impacts of COVID-19 to the fisheries sector of the respective SEAFDEC Member Countries, as well as on the actions and mitigation measures that have been taken to mitigate the impacts. SEAFDEC therefore proposes to conduct a more detailed study on the impacts of the COVID-19 pandemic on the fisheries sector of the ASEAN-SEAFDEC Member Countries.

II. THE STUDY ON IMPACTS OF COVID-19 PANDEMIC

Coverage: The study covers the 11 SEAFDEC Member Countries

Objectives: To share information among the SEAFDEC Member Countries on the impacts and mitigation of the impacts of COVID-19 pandemic on the fisheries sector.

Methods:

In order to obtain information from SEAFDEC Member Countries, SEAFDEC will request the countries to nominate their respective focal persons who will be taken to provide information based on the study framework and questionnaire developed by SEAFDEC.

Expected Outputs:

It is expected that from the Study, SEAFDEC will come up with:

1. Report on the impacts of COVID-19 pandemic on the fisheries sector of the ASEAN-SEAFDEC Member Countries
2. Analysis for a long-term implication towards sustainable food security and livelihood (development of Fisheries and Aquaculture: Regional Issues and Policy Responses)
3. Policy brief on the impacts of the COVID-19 pandemic on the fisheries sector of the ASEAN-SEAFDEC Member Countries

Timeframe:

	2020
Mid of Sep.	Development of Concept Proposal and Draft Study Framework (Completed)
End of Sep.	SEAFDEC Inter-Departmental Workshop to gather views on the conduct of the Study on Impacts of COVID-2019 Pandemic on the Fisheries Sector of the ASEAN-SEAFDEC Member Countries (Completed)
10-12 Nov.	Submission of the Concept Proposal to the 43 rd Program Committee Meeting (PCM)
18-19 Nov.	Submission to the 23 rd Meeting of Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP)
Dec.	Sending of invitation letters to the SEAFDEC Member Countries for the first Regional Workshop, and seeking nomination of the focal points for whom information materials would be provided
	2021
Feb.	First Regional Workshop on the Study on Impacts of COVID-2019 Pandemic on the Fisheries Sector of the ASEAN-SEAFDEC Member Countries
Feb.-May	Compilation of inputs by AMSs
Apr.	Submission of the progress of the Study to the 53 rd Meeting of SEAFDEC Council
May	Submission of inputs from AMSs to SEAFDEC
Jun.	Preparation of the draft Study Report
Jul.	Second Regional Workshop on the Study on Impacts of COVID-2019 Pandemic on the Fisheries Sector of the ASEAN-SEAFDEC Member Countries
Aug.-Sep.	Finalization publishing of the Study Report

Budget from the JTF Project titled “Assistance for Capacity Building Development in the Region to Address International Fisheries-related Issues” would be allocated to support the respective countries to undertake necessary works to collect data and provide such data to SEAFDEC based on the study framework and questionnaire.

III. REQUIRED CONSIDERATION BY THE PROGRAM COMMITTEE

The Program Committee is requested to provide comments on the concept proposal developed by SEAFDEC for gathering of views from the respective countries.

30% GLOBAL TARGET OF MARINE PROTECTED AREA IN POST-2020 GLOBAL BIODIVERSITY FRAMEWORK

I. BACKGROUND

The ‘Aichi Targets’ were adopted by the Convention on Biological Diversity (CBD) at the tenth meeting of the Conference of the Parties (COP10) which took place in Japan in October 2010. It contains 20 ambitious targets, categorized 5 Strategic Goals, for the 2011-2020 period.

Aichi Target 11 is a target of protected areas: “By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes”. This 10% coverage target of Marine Protected Areas (MPAs) has still drawn worldwide attention. Consequently, it was addressed in the outcome document of the United Nations Conference on Sustainable Development, Rio+20 in 2012. It was also stipulated at the Sustainable Development Goals (SDGs) in 2015.

Global Biodiversity Outlook 5 (GBO-5) has been published by CBD secretariat since September 2020 in order to assess the progress toward the “Aichi Targets” as below.

<Target 11>

The proportion of the planet’s land and oceans designated as protected areas is likely to reach the targets for 2020 and may be exceeded when other effective area-based conservation measures (OECMs) and future national commitments are taken into account. However, progress has been more modest in ensuring that protected areas safeguard the most important areas for biodiversity, are ecologically representative, connected to one another as well as to the wider landscape and seascape and are equitably and effectively managed. The target has been partially achieved. By August 2020, the World Database on Protected Areas showed that about 7.5% of the world’s marine area were covered by protected areas (including 17.2% of marine areas within national jurisdiction, and 1.2% of marine areas beyond national jurisdiction).*

* The definition of OECM was adopted at CBD in 2018. OECM is geographic areas not formally defined as protected areas, while it is governed or managed in ways that achieves positive and sustained outcomes for conservation.

Post-2020 Global Biodiversity Framework is scheduled to be adopted at CBD-COP15 which plans to be held in China in May 2021 (initially scheduled in October 2020, but postponed due to the COVID-19 pandemic.) Proposed targets related to MPA in the Framework inheriting Aichi Target 11 are as follows;

• *Zero draft: Protect sites of particular importance for biodiversity through protected areas and other effective area-based conservation measures, by 2030 covering at least [60%] of such sites and at least [30%] of land and sea areas with at least [10%] under strict protection.*

• *0.2 draft: By 2030, protect and conserve through well connected and effective system of protected areas and other effective area-based conservation measures at least 30 per cent of the planet with the focus on areas particularly important for biodiversity.*

II. REQUIRED CONSIDERATION BY THE PROGRAM COMMITTEE

Some CBD parties and NGOs are very eager for setting “30% target” of MPA. However, the necessity of using MPA as a management tool depends on the function of the ecosystem and the extent and quality of ocean management. It may also depend on the importance to address human well-being, sustainable ocean food and climate change of each country. Especially there is the most obvious possibility that it would also give a big impact on fishery sector including actual fishing activities. Actually, some NGOs have pointed out that industrial fishing is inevitably not allowed within MPAs.

Adding to it, in determining this target, Fisheries Agency of Japan believes that it is necessary to take into account each members’ feasibility in the coming 10 years up to 2030 because such consideration should include securing adequate personnel and budget to establish and manage protected areas.

AMENDMENT TO REGULATIONS ON DISCHARGE OR LOSS OF FISHING GEAR FROM SHIPS STIPULATED IN THE MARPOL ANNEX V

I. BACKGROUND

The International Convention for the Prevention of Pollution from Ships (MARPOL) is the main international convention instituted by International Maritime Organization (IMO), covering prevention of pollution of the marine environment by ships from their operational or accidental causes. The Annex V of MARPOL aims to prevent pollution by garbage from ships and “garbage” includes fishing gear.

In a growing recognition that we should seriously address issues on marine plastic litter from ships, the 73rd session meeting (October 2018) of the Marine Environment Protection Committee (MEPC) of IMO adopted the Action Plan to address marine plastic litter from ships.

In accordance with the Action Plan, IMO is examining an amendment to the MARPOL Annex V or a MEPC resolution to introduce new regulations related to marine plastic litter from ships, that would have a significant impact on fisheries operations.

II. CURRENT REGULATIONS ON DISCHARGE OR LOSS OF FISHING GEAR FROM SHIPS OF THE MARPOL ANNEX V

The MARPOL Annex V generally prohibits all vessels from discharging any kind of plastics including fishing gear into the sea.

Regulation 3.2

Except as provided in regulation 7 of this Annex, discharge into the sea of all plastics, including but not limited to synthetic ropes, synthetic fishing nets, plastic garbage and incinerator ashes from plastic products is prohibited.

Fishing gear is allowed to be discharged or lost under certain conditions as an exemption from Regulation 3.2.

Regulation 7.1

Regulation 3, 4, 5 and 6 of this Annex and section 5.2 of chapter 5 part II-A of the Polar Code

shall not apply to:

.3 The accidental loss of fishing gear from ship provided that all reasonable precautions have been taken to prevent such loss of; or

.4 The discharge of fishing gear from a ship for the protection of the marine environment or for the safety of that ship or its crew.

If the accidental loss or discharge of a fishing gear poses a significant threat to the marine environment or navigation, the vessel is obliged to report it to the flag state and the relevant coastal states.

Regulation 10.6

The accidental loss or discharge of fishing gear as provided for in regulations 7.1.3 and 7.1.4 which poses a significant threat to the marine environment or navigation shall be reported to the State whose flag the ship is entitled to fly, and, where the loss or discharge occurs within waters subject to the jurisdiction of a coastal State, also to that coastal State.

An accidental loss or discharge of fishing gear which is required to be reported according to Regulation 10.6 should be determined specifically by a Government according to the 2017 Guidelines for the implementation of MARPOL Annex V. In addition, The Guidelines encourage each State to report to IMO about their progress in implementing these measures, including summaries of where gear was lost and, if applicable, their specific actions taken to address the gear loss.

III. PROPOSED AMENDMENTS TO REGULATIONS ON DISCHARGE OR LOSS OF FISHING GEAR FROM SHIPS OF THE MARPOL ANNEX V

The Measure 22 in the Action Plan states “Consider extending the reporting requirement in regulation 10.6 of the MARPOL Annex V to include reporting data on discharge or accidental loss of fishing gear by the flag State to IMO via the Global Integrated Shipping Information System (GISIS) or other means if appropriate”.

At the 74th Session of MEPC (May 2019) and the 7th Session of Sub-Committee on Pollution Prevention and Response (PPR, February 2020), addressing the Measure 22 of the Action Plan, Vanuatu proposed the amendments to MARPOL Annex V as follows (additions/deletions):

New Regulation 10.6

The ~~accidental~~ loss or discharge of fishing gear as provided for in regulations 7.1.3 and 7.1.4 ~~which poses a significant threat to the marine environment or navigation~~ shall be reported to the State whose flag the ship is entitled to fly, and, where the loss or discharge occurs within waters subject to the jurisdiction of a coastal State, also to that coastal State.

New Regulation 10.7

Each Party shall notify the Organization of the loss or discharge of fishing gear as provided for in regulations 7.1.3 and 7.1.4."

The Correspondence Group (CG) established by PPR7 to consider how to amend the MARPOL Annex V and the 2017 Guidelines for the implementation of the MARPOL Annex V to facilitate and enhance reporting system of the accidental loss or discharge of fishing gear from ships, as currently provided in Regulation 10.6 of the MARPOL Annex V, and to consider an information to be reported to Administrations and IMO, the reporting mechanisms and the modalities.

The CG has completed their assignments by October 2020. However, various comments and opinions from participants have been submitted in the CG and there are still many works left undone. The CG will request to establish a working group to further consider on how amending the MARPOL Annex V in the next meeting of PPR. Main outstanding issues are as follows:

- .1 Objectives of the IMO data collection
- .2 Anonymisation of data
- .3 Thresholds for type or size of fishing gear
- .4 Type of vessel reporting
- .5 Frequency of reporting

Objectives of the IMO data collection

Most of participants supported the objectives of IMO data collection on discharge or loss of fishing gear from ships below:

- to accurately assess the extent and spatial distribution of the loss or discharge of fishing gear
- to provide to the IMO and Member States and stakeholders a database in order to measure its quantity and quality and to monitor those trends at the national and international levels
- to support consideration of further measures related to preventing and reducing lost and discharged fishing gear by enabling robust data analysis

On the other hand, some participants have requested to make clear on what purpose is the reported data/information specifically used for, or what reporting items/levels would appropriately satisfy that purpose.

Anonymisation of data

In order to achieve the proposed objectives of the IMO data collection, the database on discharge or loss of fishing gear from ships should be open to all states and public users. Otherwise, some participants have claimed the confidentiality of a vessel name or an operating position, and so on.

Thresholds for type or size of fishing gear

The majority of participants agreed not to set up thresholds for the reporting of loss or discharged fishing gears from ships. Several participants stated that establishing certain thresholds such as type or size of fishing gear

lost or discharged could compromise our actions to reduce lost and discharged fishing gears which actually contribute to marine plastic waste.

Other participants have pointed out that reporting all lost and discarded fishing gear would be infeasible particularly in cases of lost small materials (such as piece of rope, hooks, floating and so on) which would be of limited value and requested to establish certain thresholds to get rid of unnecessary workloads.

Type of vessel reporting

Regulation 2 of MARPOL Annex V states that: "Unless expressly provided otherwise, the provisions of this Annex shall apply to all ships". It means that the general prohibition on the discharge of waste at sea also applies to not only fishing vessels but also recreational vessels. Some participants have required to exclude artisanal and small-scale fishing vessels or recreational vessels from the scope of the mandatory vessel reporting.

Frequency of reporting

The CG's opinions were divided on this issue. The part of the group supported an annual reporting justifying their preference based on different rationales but primarily to avoid any additional administrative burdens. Also, in addition to that, some participants indicated that an annual submission of aggregated data would assure the confidentiality of the concerned fishing vessels.

The other part of the group preferred the choice of on-going reporting to the Organization (*i.e.* as soon as the Administration receives a notification/report from a fishing vessel or its representatives), illustrating by giving an example of the current RFMOs' reporting schemes imposing a real time reporting (<24h) from a fishing vessel to RFMOs or from flag States to RFMOs. The ongoing reporting would facilitate potential recoveries, enhance safety of navigation, allow for follow up actions if the fishing gear is marked and recovered.

IV. OTHER MATTERS ON FISHING GEAR IN IMO

The Action Plan to address marine plastic litter from ships has several measures on loss or discharged fishing gear as follows:

Measure

2 Consider making mandatory, through an appropriate IMO instrument (*e.g.* MARPOL Annex V), the marking of fishing gear with the IMO Ship Identification Number, in cooperation with the Food and Agriculture Organization of the United Nations (FAO)

3 Further investigate logging of the identification number for each item of fishing gear on board a fishing vessel

4 Preparation of a circular reminding IMO Member States to collect information from their registered fishing vessels regarding any discharge or accidental loss of fishing gear

5 Consider the development of best management practice to facilitate incentives for fishing vessels to retrieve derelict fishing gear and deliver it to port reception facilities, in collaboration with FAO

14 Consider the requirement for port reception facilities to provide for separate garbage collection for plastic waste from ships, including fishing gear to facilitate reuse or recycling

20 Consider tasking the HTW Sub-Committee with reviewing chapter III of STCW-F (Basic safety training for all fishing vessel personnel) to ensure that all fishing vessel personnel, before being assigned any shipboard duties, receive basic training on marine environment awareness oriented on marine plastic litter including abandoned, lost or otherwise discarded fishing gear (ALDFG)

22 Consider extending the reporting requirement in regulation 10.6 of MARPOL Annex V to include reporting data on discharge or accidental loss of fishing gear by the flag State to IMO via GISIS or other means if appropriate

Regarding the measure 2, Vanuatu has proposed the following draft wording supported with adequate amendments to the 2017 Guidelines for the implementation of MARPOL Annex V or a mandatory MEPC resolution, which could be considered as part of a new regulation 10.A:

New Regulation 10.A

Fishing gear shall be marked providing a simple, pragmatic, affordable and verifiable means of identifying ownership of fishing gear or parts of fishing gear and its link with the vessel(s) or operator(s) undertaking the fishing operation in case of accidental loss or discharge of fishing gear as provided for in regulations 7.1.3 and 7.1.4 or illegally discharged under regulation 3.

This proposal aims to mandate to make fishing gears or parts uniformly from the viewpoint of a shipboard waste management, while FAO has encouraged States and RFMOs to voluntarily introduce a gear marking in line with the actual fishery situation by the FAO Voluntary Guidelines for the Marking of Fishing Gear. This matter would be discussed at MEPC 75 (November 16-20, 2020).

V. REQUIRED CONSIDERATION BY THE PROGRAM COMMITTEE

In a growing worldwide recognition that fisheries sector should seriously address issues on marine plastic litter from ships, Japan also recognizes the importance of immediately addressing the issue on marine plastic litter from ships including fishing gears as well as the necessity to consider the feasibility, effectiveness and practicability of regulations or measures. As there is a certain possibility that the new regulations would place excessive burden on fishers and Administrations, Japan has requested the CG and PPR to adequately review the implementation of the current regulations so that we could consider what reporting methods/system would be practicable for all States.

Therefore, Japan would like to draw your attention to those issues on discharge or loss of fishing gears from ships in IMO mentioned above and ask all SEAFDEC Members to positively participate in the discussions on those IMO issues.

UPDATES ON JTF BUDGET REQUESTS IN JAPAN AND MEMBER STATES COOPERATION

I. BACKGROUND

While SEAFDEC formulates its programs and activities under Japanese Trust Fund (JTF) into five-year plans, the JTF budget request in Japan is made on a yearly basis.

Demonstrating the following two points to the Ministry of Finance in the budgetary request process is very important for the Fisheries Agency of Japan (FAJ) to obtain the necessary amount of budget.

- The necessity of Japan's continuous contribution to the Southeast Asian region
- These programs and activities reflect common interest of Southeast Asian countries and Japan

II. REQUIRED CONSIDERATION BY THE PROGRAM COMMITTEE

In order to facilitate the JTF budget request, Japan would like to ask the Member Countries to consider:

- Highlighting the importance and necessity of Japan's contribution to SEAFDEC by making a comment at high level meetings (*e.g.* SEAFDEC council meeting, AMAF+3 related meetings) and/or sending a letter to the Director-General of FAJ;
- Maintaining the current practice where all SEAFDEC Member Countries collaboratively work on the formulation of JTF programs and activities so that the programs and activities reflect the common interest of both Southeast Asian countries and Japan.

POTENTIAL OF MARINE ECO-LABEL

I. BACKGROUND

Marine eco-label is a certification scheme recently spreading globally as a tool to prove efforts for resource management and environmental consideration. In particular, acquisition of such certification has become one of the commercial terms especially in Europe and the United States. Such trends would continue and expand thereafter. Thus, it is important to promote marine products produced through sustainable fisheries and aquaculture systems.

II. Marine ECO-LABEL JAPAN (MEL)

There are various types of marine eco-labels in the world. Marine Eco-Label Japan (MEL) is one of them. There is a variety of fish species, catching methods, fish dishes and fishery-related industries in Japan and these are deeply linked with local communities and societies. MEL features such diversity of fisheries and supports taking actions to preserve our oceans, fish stocks and seafood culture for future generations.

It is beneficial that appropriate resource management in fishing areas leads to increased catches and incomes of fishermen in Southeast Asia countries. Marine eco-label is not an initiative to promote resource management itself. However, it leads to the appropriate utilization of marine resources through sustainable fisheries and aquaculture implementation. In the future, in order to mitigate impact of changes in the marine environment, the acquisition of eco-label as a policy measure will steer fisheries and aquaculture sectors in Southeast Asia countries toward more sustainable industries.

The Fisheries Agency of Japan (FAJ) considers that introducing an idea of MEL to the other SEAFDEC members is meaningful because the Southeast Asian region has a rich diversity of fishing industries and seafood culture. At that time, if requested, FAJ is willing to provide information about the procedure of MEL's acquisition of international certification.

III. EXPECTED OUTPUTS

The expected outputs from efforts to popularize the Eco-Label are as follows:

- 1) Each country can understand the reason why acquisition of marine eco-label is one of measures for achieving the SDGs.
- 2) Gaining an eco-label will lead to an increase of business opportunities.
- 3) From a public interest perspective, practicing marine eco-label initiative will enhance the level of fishery competitiveness without obtaining certification.
- 4) It can also be used as a benchmark when devising policies in each country.

IV. SUGGESTION FROM JAPAN

FAJ has focused on promoting marine eco-label as a tool for revitalization of fishing industries, and we continue improving eco-labels' quality that matches the actual condition of the fisheries.

If your government or counterpart would consider basic plans for building a marine eco-label scheme in order to boost fishing and fishing processing industries, FAJ would be happy to share our experience and to cooperate with you about strategic planning. In Southeast Asian countries where the fishery environment is similar to Japan to some extent, MEL will be one of prominent components for your strategic planning about marine eco-label.

If interested, FAJ would like to start discussions about the importance and usefulness of the marine eco-label for your fisheries policy and we would also like to cooperate in creating an Asian standard in order to sustain a wide variety of fisheries - mainly coastal fisheries.

CLOSING REMARKS

*By Ms. Malinee Smithrithee
SEAFDEC Secretary-General*

Distinguished Members of the SEAFDEC Program Committee,
Representatives from our Collaborating Partners,
My colleagues from SEAFDEC,
Good Afternoon!

On behalf of the SEAFDEC Secretariat and Departments, I would like to express our sincere gratitude to the members of the Program Committee and to our collaborating partners for your kind cooperation and contributions during the deliberation on SEAFDEC programs and crucial issues. As we are all now getting used to virtual meetings, we also appreciate the IT personnel and support staff who are working efficiently to make the Forty-third Meeting of SEAFDEC Program Committee run smoothly.

As you are already aware, the aforementioned report especially concerning the programs of SEAFDEC would be presented to the Twenty-third Meeting of the FCG/ASSP. Subsequently, the output of such Meeting would be discussed during the forthcoming SEAFDEC Council Meeting for final endorsement and approval, and possible inclusion in the overall activities of SEAFDEC. We have achieved the objectives of this Meeting because of your significant advice and proper guidance, therefore, we are very thankful to all of you once again.

To conclude, I pray for the safety of everyone and your families in your respective countries. For most of us, we will virtually meet again during the Twenty-third Meeting of the FCG/ASSP next week. I wish you all the best in fulfilling our duties and responsibilities in upholding sustainable fisheries in our region.

With that, ladies and gentlemen, I now declare the Forty-third Meeting of SEAFDEC Program Committee closed.

Thank you very much and keep safe.