

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

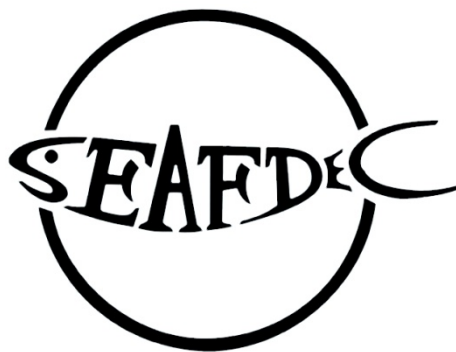
Online Meeting
15 – 17 November 2021



**THE SECRETARIAT
SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER**

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EXECUTIVE SUMMARY

The Forty-fourth Meeting of the Program Committee (44PCM) of the Southeast Asian Fisheries Development Center (SEAFDEC) was organized through an online platform on 15–17 November 2021. 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 2021 and scrutinized the programs to be implemented in 2022 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 2021 and those for implementation in 2022 appears in *Appendix 1*.

The 44PCM noted **Programs under the FCG/ASSP Mechanism**, which comprise sixteen (16) on going 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 four (4) new projects that are scheduled to commence in 2022. After the deliberations, the 44PCM approved the implementation of the projects in 2021 and those for implementation in 2022, and provided recommendations which could be 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

- SEAFDEC to consider assisting the pilot implementation of eACDS in Cambodia in 2022
- SEAFDEC to assist the countries to enhance their capacity in uploading their respective data in the RFVR Database
- SEAFDEC to consider providing training on inspection of fish importation using other modes of transportation *e.g.* sea in container vessels, land and air transportation
- SEAFDEC to consider harmonizing the eACDS with existing electronic certification schemes of importing countries such as those of the EU

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

- SEAFDEC to circulate the draft of SEASOFIA 2022 to all Member Countries for confirmation prior to its publication and dissemination at the forthcoming Council Meeting
- SEAFDEC to consider building the capacity of the AMSs on species identification and schemes to collect data, not only on statistics but also on CPUE of respective species, a concern which could be addressed through the other relevant projects of SEAFDEC as appropriate
- SEAFDEC to consider including some information in SEASOFIA 2022 that could be useful to support the development of action plan of the Member Countries, *e.g.* fishery production trend, impacts of COVID-19, future directions, and way forward

(3) Responsible Fishing Technology and Practice

- TD to indicate timelines for delivering the expected output, *e.g.* application of technologies by the Member Countries that contribute to improved fishery resources, livelihoods, and incomes of fishers
- TD to extend support to the Member Countries on fishing gear technologies to mitigate the negative impacts of fishing on marine mammals
- TD to collaborate with Thailand in the conduct of studies and experiments to modify fishing gears and methods commonly used in the region to reduce the impacts on marine mammals
- TD to obtain information from Thailand on the lessons learned from project carried out in Thailand on gear marking, *e.g.* testing of different types of gillnet markers, which could be useful in supporting the activities to enhance the capacity of the other Member Countries
- SEAFDEC to consider conducting activities that facilitate exchange of knowledge among the countries on MMPA requirements

- TD to share the knowledge and develop long-term plan for reducing the impacts of trawl fishing on the resources and ecosystems
 - TD to facilitate exchange of knowledge on gear marking including the possibility of linking this to the VMS, as well as knowledge on gear modification to mitigate bycatch of marine mammals
 - TD to share the results of experiments conducted by some countries showing that a positioning system could be applied in fishing gear marking
 - TD to discuss with fishing gear experts of the Member Countries on verifying the techniques to reduce bycatch of marine mammals in capture fisheries
- (4) Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region**
- MFRDMD to follow-up with Thailand its proposal to serve as data collection site for long-term landing data collection of sharks and rays that could be used for estimating the stock and biomass
- (5) Sustainable Utilization of Anguillid Eels in the Southeast Asian Region**
- IFRDMD to consider visiting and collecting data from other AMSs after the region has already recovered from the COVID-19 pandemic
 - SEAFDEC to consider possibility of incorporating the aquaculture component in this project, especially hatchery and aquaculture techniques of anguillid eels
 - IFRDMD to continue survey and collection of eel samples in Myanmar in 2022
- (6) Sustainable Utilization of Fisheries Resources and Resources Enhancement in Southeast Asia**
- SEAFDEC to expand research activities to focus not only on fishery resources/species but also on other areas, e.g. nutrient blooms, underexploited species, mesopelagic species (jellyfish)
 - TD to consult with Myanmar on the plan and cost-sharing details to conduct marine environmental survey in Myanmar, which could be scheduled in 2023
 - SEAFDEC to consider the “Guidelines for the Monitoring and Assessment of Plastic Litter in the Ocean” as a reference in the project implementation
 - SEAFDEC to consider come up with a model for the region in managing of marine litter taking into consideration the various guidelines that had already been developed
- (7) Fisheries Management Strategies for Pelagic Fish Resources in the Southeast Asian Region**
- The AMSs were encouraged to submit their inputs to the questionnaire on catch and effort data of three small pelagic species/groups, namely *Rastrelliger kanagurta*, *Rastrelliger brachysoma*, and *Decapterus* spp.
- (8) Management Scheme of Inland Fisheries in the Southeast Asian Region**
- IFRDMD to share results and lessons learned from the Special Area for Conservation and Fish *Refugia* (SPEECTRA) system pilot sites in Indonesia to the Member Countries
- (9) Small-scale Fisheries Management for Better Livelihood and Fisheries Resources**
- The 44PCM took note of the progress of this project in 2021
- (10) Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand**
- SEAFDEC to include a study on the impacts of collapsible fish traps used by local fishers at the coastal province in Cambodia
- (11) Strengthening the Effective Management of Inland Fisheries and Aquaculture in AMS with GIS and RS Technology**
- SEAFDEC to consider selecting the appropriate GIS software that the Member Countries could easily apply
 - SEAFDEC to consider utilizing the GIS and RS technologies for the management of inland fisheries including its application on specific types of inland water bodies
- (12) Development of Stock Assessment Methods and Strengthening of Resources Management Measures for Tropical Anguillid Eel in Southeast Asia**
- SEAFDEC to consider conducting field activities and data collection in other Member Countries when the COVID-19 situation has already improved

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 44PCM took note of the progress of this project in 2021

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 44PCM took note of the progress of this project in 2021

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

- SEAFDEC to consider organizing a training to build the capacity and enhance the knowledge of the legal officers of the Member Countries of international fisheries laws and to improve the prosecution of fisheries violations

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

- SEAFDEC to implement the activity on Regional Capacity Building Network (RECAB) in 2022 with the physical attendance of the representatives from the Member Countries

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

- AMSs and SEAFDEC to consider maximizing the utilization of the two vessels (M.V. SEAFDEC and M.V. SEAFDEC 2)
- TD to acquire the appropriate software to analyze the data from SIMRAD EK-80 to support resource mapping
- TD requested the support of the Member Countries that have experiences in the analysis of data from SIMRAD EK-80, *e.g.* Viet Nam, Indonesia, and Thailand, to support the other Member Countries

New Projects

(17) ASEAN-JICA Capacity Building Project on IUU Fishing Countermeasures in Southeast Asia

- SEAFDEC to avoid duplication of activities of this project with another project activities supported by the JTF and should be conducted in cooperation with JTF project to enhance the activities such as eACDS and PSM

(18) ASEAN-JICA Food Value Chain Development Project

- The 44PCM took note of the progress of this project in 2021

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

- SEAFDEC to consider conducting studies on marine litter on seabed especially in trawling areas
- SEAFDEC to consider using the Guidelines for the Monitoring and Assessment of Plastic Litter in the Ocean as well as the report and data on microplastics generated from the survey using the RV Dr Fridtjof Nansen in 2018 for the conduct of the proposed training

(20) 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 44PCM approved the project and activities proposed for 2022

The 44PCM endorsed the progress of the **Departmental Programs** in 2021 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 44PCM then provided recommendations on these programs which could be summarized as follows:

1. Aquaculture Department

- The 44PCM noted the progress and achievements of the Departmental programs of AQD

2. Training Department

- SEAFDEC to consider conducting more capacity building activities on non-technical marine and fisheries issues, *e.g.* gender, marginalized community in fisheries sector
- TD to consider conducting the training on promoting fishing technology that minimizes bycatch and non-target species in marine as well as inland fisheries

3. Inland Fishery Resources Development and Management Department

- IFRDMD to share the achievements of this project to other Member Countries for protecting and restoring aquatic biodiversity and ecosystem services.

The 44PCM took note of the activities of the **Other Programs** implemented in 2021 and approved the proposed activities for 2022 which comprise six (6) programs, five (5) of which were implemented by TD, namely: 1) Implementing the Lower Mekong Fish Passage Initiative in Cambodia, Thailand, and Viet Nam; 2) Gender Dimension in the Value Chain of Small-scale Fisheries & Aquaculture in Southeast Asia; 3) Implementing the Strategic Action Programme for the South China Sea; 4) Survey to Estimate levels of Abandoned, Lost or otherwise Discarded Fishing Gear in Thailand Gillnet and Trap Fisheries; and 5) Fishing Technologies and Operations in Thailand and Options for Innovation and Improvements; and one (1) program would be implemented by AQD on “Seminar-Workshop on Aquaculture Development in Southeast Asia (ADSEA).” The 44PCM then provided recommendations on these programs which could be summarized as follows:

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

- The 44PCM noted the progress and achievements of this Other Program of TD

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

- The 44PCM noted the progress and achievements of this Other Program of TD

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

- The 44PCM noted the progress and achievements of this Other Program of TD

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

- the ADSEA was postponed in 2021 until it is safe to travel and the face-to-face meeting is possible. The plan to conduct the ADSEA will be revisited in 2022 by the organizing committee
- SEAFDEC to inform the Member Countries on the requirements for traveling to the countries where the events would be organized. This request would also apply to other projects that plan to conduct the face-to-face events in 2022

(5) Survey to Estimate levels of Abandoned, Lost or otherwise Discarded Fishing Gear in Thailand Gillnet and Trap Fisheries

- TD to consider expanding the activity or sharing the results of the surveys of ALDFG in gillnet and trap fisheries with the other countries

(6) Fishing Technologies and Operations in Thailand and Options for Innovation and Improvements

- TD to consider expanding the implementation of the project to other provinces in Thailand

The 44PCM also took note of the status of the five (5) **Pipeline Projects** as follows:

- (1) Promoting the Blue Economy and Strengthening Fisheries Governance of the Gulf of Thailand through the Ecosystem Approach to Fisheries (GoTFish Project)**
 - The Project proposal was submitted by FAO to the GEF for funding support with SEAFDEC as one of the executing agencies. The project is now under the project preparatory grant (PPG) phase
- (2) Blue Horizon: Ocean Relief through Seaweed Aquaculture**
 - The Project proposal was submitted by WWF-US to the GEF for funding support with SEAFDEC as an executing agency. The project is now under PPG phase
- (3) Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity**
 - The Project proposal has been submitted to the Japan-ASEAN Integration Fund (JAIF) for funding support
- (4) Regional Technical Consultation on Aquatic Animal Health Emergencies in Southeast Asia**
 - The Project proposal was submitted to JAIF and received positive indication for funding. However, it was decided that the project should be postponed until the COVID-19 pandemic has improved
- (5) USAID Public International Organization (PIO) Grant Contribution to Southeast Asian Fisheries Development Center (SEAFDEC)**
 - SEAFDEC is currently under a co-creation process with the USAID to develop the project proposal for submission to USAID/RDMA for funding support

The 44PCM noted the statements sent to SEAFDEC Secretariat by non-member governments and international/regional organizations, namely: The United States Agency for International Development/Regional Development Mission for Asia (USAID/RDMA), and WorldFish.

While taking note of the progress of the Southeast Asian State of Fisheries and Aquaculture (SEASOFIA) 2022, the 44PCM was requested to provide comments for improvement and additional information to be included in the SEASOFIA 2022 by mid-December 2021. The 44PCM requested SEAFDEC to circulate the draft SEASOFIA 2022 among the Member Countries prior to launching at the Fifty-fourth Meeting of the SEAFDEC Council in 2022.

While noting the progress of the “Study on Impacts of COVID-19 Pandemic on the Fisheries Sector of ASEAN-SEAFDEC Member Countries,” the 44PCM was informed that Cambodia would share results of the national study on impacts of COVID-19 on fisheries and aquaculture supported by FAO under the CaPFISH-Capture programme to be undertaken in 2022.

The 44PCM noted on the JTF budget request process from the Government of Japan and the AMSs was sought the cooperation in promoting the roles and contribution of SEAFDEC to the sustainable fisheries development in the region as well as the significance of the current and future contribution of Japan to the fisheries development in the Southeast Asian region during the international/regional fora such as AMAF, AMAF+3, and related meetings.

Considering the changing operational mode of work *e.g.* online events, work from home, due to the COVID-19 pandemic, the 44PCM requested SEAFDEC to issue e-certificates for participants/ attendees of the events (*e.g.* training, workshop, etc.) to be organized by SEAFDEC in the future.

The 44PCM adopted the Report of the Forty-fourth Meeting of the SEAFDEC Program Committee for submission to the 54th Meeting of SEAFDEC Council, and to the ASEAN through the 24th Meeting of the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP).

SEAFDEC PROGRAMS AND PROJECTS FOR THE YEAR 2021–2022

I. Projects under FCG/ASSP Mechanism

Ongoing Project

Strategy/Project Title		Lead Department	2021	2022
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	TD	Y	Y
12	Development of Stock Assessment Method and Strengthening of Resources Management Measures for Tropical Anguillid Eel in AMS	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/Project Title		Lead Department	2021	2022
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 Projects

Project Title		Lead Department	Period
17	ASEAN-JICA Capacity Building Project on IUU Fishing Countermeasures in Southeast Asia	TD	2022–2024
18	ASEAN-JICA Food Value Chain Development Project	SEC	2022–2024
19	Regional Collaborative Research and Capacity Building for Monitoring and Reduction of Marine Debris from Fisheries in Southeast Asia	TD	2022–2023
20	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	2022–2026

II. Departmental Programs

No.	Program Title	Responsible Department	2021	2022
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 Socio-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 Activities	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	N

III. Other Programs

No.	Program Title	Responsible Department	Period
1	Implementing the Lower Mekong Fish Passage Initiative in Cambodia, Thailand, and Viet Nam	TD	2018–2022
2	Gender Dimension in the Value Chain of Small-scale Fisheries & Aquaculture in Southeast Asia	TD	2020–2022
3	Implementing the Strategic Action Programme for the South China Sea and Gulf of Thailand	TD	2018–2023
4	Seminar-Workshop on Aquaculture Development in Southeast Asia (ADSEA)	AQD	2022
5	Survey to Estimate Levels of Abandoned, Lost or otherwise Discarded Fishing Gear in Thailand Gillnet and Trap Fisheries	TD	2021–Jan 2022
6	Fishing Technologies and Operations in Thailand and Options for Innovation and Improvements	TD	2021

IV. Pipeline Projects

No.	Project Title	Responsible Department	Period
1	Promoting the Blue Economy and Strengthening Fisheries Governance of the Gulf of Thailand through the Ecosystem Approach to Fisheries (GoTFish Project)	TD	2023–2027
2	Blue Horizon: Ocean Relief through Seaweed Aquaculture	SEC and AQD	2022–2026
3	Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity	MFRDMD	2023–2024
4	Regional Technical Consultation on Aquatic Animal Health Emergencies in Southeast Asia	AQD	2022
5	USAID Public International Organization (PIO) Grant Contribution to Southeast Asian Fisheries Development Center (SEAFDEC)	TD	2022–2026

Y = Program implemented during the year

N = Program not implemented during the year

CONTENTS

	Paragraph No.
INTRODUCTION	1
I. OPENING OF THE MEETING	2
II. ADOPTION OF THE AGENDA AND ARRANGEMENTS OF THE MEETING	3
III. REVIEW OF SEAFDEC PROGRAM IMPLEMENTATION FOR THE YEAR 2021 AND PROPOSED PROGRAMS FOR THE YEAR 2022	4
3.1 Programs under the FCG/ASSP Mechanism	5–65
3.2 Departmental Programs	66–72
3.3 Other Programs	73–85
IV. PIPELINE PROJECTS AND EMERGING NEEDS FOR PREPARATION OF FUTURE PROJECT PROPOSALS	86–104
V. COOPERATION WITH DONORS, NON-MEMBER GOVERNMENTS AND INTERNATIONAL/REGIONAL ORGANIZATIONS	105–106
VI. OTHER MATTERS	
6.1 Southeast Asian State of Fisheries and Aquaculture (SEASOFIA) 2022	107–110
6.2 Study on Impacts of COVID-19 Pandemic on the Fisheries Sector of ASEAN-SEAFDEC Member Countries	111–113
6.3 Updating JTF Budget Request Process in Japan	114
6.4 Others	115
VII. CONCLUSION AND RECOMMENDATIONS OF THE FORTY-THIRD MEETING OF THE PROGRAM COMMITTEE	
7.1 Adoption of the Report of the Program Committee Meeting	116
7.2 Date and Venue of the Forty-fifth Meeting of the Program Committee	117
VIII. CLOSING OF THE PROGRAM COMMITTEE MEETING	118

ANNEXES

Annex	Page
1. List of Participants	17
2. Opening Remarks by <i>Ms. Malinee Smithrithee</i> , SEAFDEC Secretary-General	29
3. Agenda	31
4. Projects under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism for the Year 2021–2022	35
5. SEAFDEC Departmental Programs of Activities for the Year 2021–2022	265
6. Other Program: Implementing the Lower Mekong Fish Passage Initiative in Cambodia, Thailand, and Viet Nam	315
7. Other Program: Gender Dimension in the Value Chain of Small-scale Fisheries and Aquaculture in Southeast Asia	321
8. Other Program: Implementing the Strategic Action Programme for the South China Sea and Gulf of Thailand	325
9. Other Program: Seminar-Workshop on Aquaculture Development in Southeast Asia (ADSEA)	347
10. Other Program: Survey to Estimate levels of Abandoned, Lost or otherwise Discarded Fishing Gear in Thailand Gillnet and Trap Fisheries	349
11. Other Program: Fishing Technologies and Operations in Thailand and Options for Innovation and Improvements	353
12. Pipeline Project: Promoting the Blue Economy and Strengthening Fisheries Governance of the Gulf of Thailand through the Ecosystem Approach to Fisheries (GoTFish Project)	357
13. Pipeline Project: Blue Horizon: Ocean Relief through Seaweed Aquaculture	365
14. Pipeline Project: Implementation and Assessment of The ASEAN Regional Plan of Action for The Management of Fishing Capacity	377
15. Pipeline Project: Regional Technical Consultation on Aquatic Animal Health Emergencies in Southeast Asia	381
16. Pipeline Project: USAID Public International Organization (PIO) Grant Contribution to Southeast Asian Fisheries Development Center (SEAFDEC)	383
17. Statement by <i>Dr. Steven G. Olive</i> , The Mission Director of the United States Agency for International Development/Regional Development Mission for Asia (USAID/RDMA)	387
18. Statement by <i>Dr. Michael Phillips</i> , WorldFish	389
19. Progress in Preparation of Southeast Asian State of Fisheries and Aquaculture (SEASOFIA) 2022	391
20. Study on the Impacts of COVID-19 Pandemic on Fisheries Sector of the ASEAN-SEAFDEC Member Countries	397
21. Closing Remarks by <i>Ms. Malinee Smithrithee</i> , SEAFDEC Secretary-General	399

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
ASWGFi	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 Species	Endangered, Threatened and Protected Species
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-FOURTH MEETING OF THE PROGRAM COMMITTEE OF THE SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER

Online Meeting
15–17 November 2021

INTRODUCTION

1. The Forty-fourth Meeting of the Program Committee of the Southeast Asian Fisheries Development Center (SEAFDEC) was held through an online platform on 15–17 November 2021. The Program Committee Meeting 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, and the representatives from USAID/RDMA and WorldFish. The SEAFDEC Secretary-General, Deputy Secretary-General, and Department Chiefs together with officers from the SEAFDEC Secretariat and Departments, also attended the Meeting. 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 Forty-fourth Meeting of the SEAFDEC Program Committee, and reiterated that the Meeting would still have to be conducted through online platform because of the continuing COVID-19 situation in the region. However, she emphasized that the discussions and recommendations at this Meeting would be crucial for SEAFDEC and the Member Countries, as the progress and achievements of the SEAFDEC programs and projects in 2021 would be discussed and those proposed for 2022 would be scrutinized to ensure that these are beneficial to the Member Countries. She then expressed the appreciation to collaborating partners and donor agencies for their continued support to SEAFDEC and that this had enabled SEAFDEC to fulfill its mandates. She also advocated for the Members of the Program Committee to take active part in the deliberations and to provide advice on the SEAFDEC programs and projects to ensure that the concerns of the region with regard to sustainable fisheries development are addressed, and then declared the Meeting 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 Forty-fourth Meeting of the SEAFDEC Program Committee (44PCM) took note of the progress and achievements of the sixteen (16) ongoing projects and four (4) new projects under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism. Subsequently, the 44PCM also noted the progress and achievements of the ten (10) Departmental Programs, and six (6) Other Programs. The 44PCM was also informed that the recommendations and comments raised on the activities of the projects conducted in 2021 and those proposed for 2022 would be incorporated in the projects for improvement prior to their submission 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 44PCM took note of the progress and achievements of the projects implemented by the SEAFDEC Secretariat and the Departments in 2021 as well as the activities proposed for 2022 under the FCG/ASSP Mechanism (**Annex 4**). While approving the projects proposed for 2022, the 44PCM also suggested the ways and means of improving the implementation of the activities under 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 Japan expressed the willingness of the Government of Japan to continue its support to the activities of SEAFDEC, especially on combating IUU fishing, through the Japanese Trust Fund.

7. The Program Committee Member for Cambodia recalled that in 2019, a request was made for SEAFDEC to assist Cambodia in the application of the electronic ASEAN Catch Documentation Scheme (eACDS). As the activity could not be implemented in Cambodia in 2021 due to the COVID-19 pandemic, he suggested that SEAFDEC could consider assisting the pilot implementation of eACDS in Cambodia in 2022.

8. Regarding the Regional Fishing Vessels Record (RFVR), the Program Committee Member for Indonesia informed the Meeting that Indonesia is committed to update the data in the RFVR Database regularly including some adjustments at the national level for fishing vessels 24 meters in length and over; registered fishing vessels with active permit; fishing vessels with IMO number; and registered and active fishing vessels in Indonesia EEZ, areas adjacent to the EEZ of other AMSs, and high seas. He then encouraged the other AMSs to also update their respective data in the RFVR Database and requested SEAFDEC to assist the countries to enhance their capacity in uploading their respective data.

9. On the eACDS, the Program Committee Member for Indonesia informed the Meeting that Indonesia has already developed its own national certification system where the elements are aligned with the ACDS, and applied an electronic catch certification specific for the southern bluefin tuna.

10. While taking note and congratulating SEAFDEC for its achievements in facilitating the implementation of port State measures (PSM) in the region, the Program Committee Member for Indonesia expressed the support of Indonesia for the activities of SEAFDEC in 2022 that could help the countries in implementing the PSM. He added that after Indonesia had ratified the Port State Measures Agreement (PSMA) in 2016, Indonesia has assigned four (4) fishing ports to implement PSMA, notably: Bungus Fishing Port, Jakarta Fishing Port (Nizam Zahman), Benoa Fishing Port, and Bitung Fishing Port through Ministerial Decree No. 52 of 2020.

11. The Program Committee Member for Thailand expressed the appreciation to SEAFDEC for its achievements in the implementation of the project in 2021, especially the conduct of regional training on PSM implementation, and expressed the support to the activities proposed for 2022. However, she expressed the concern that there are other modes of transportation for importing fish and fishery products, *i.e.* sea in container vessels, land, and air transportation. She therefore requested SEAFDEC to consider providing training on inspection of fish importation using such modes of transportation.

12. While expressing the appreciation to SEAFDEC for its continuing activities on the RFVR, eACDS, and PSM, the Program Committee Member for Malaysia suggested that SEAFDEC could consider harmonizing the eACDS with the existing electronic certification schemes of importing countries such as those of the EU. She also expressed the support for the capacity building activities on PSM for trainers and other activities proposed for 2022.

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

13. The Program Committee Member for Indonesia expressed the appreciation to SEAFDEC for conducting the First Regional Technical Consultation (RTC) on Fishery Statistics and Information in Southeast Asia in September 2021. He added that the nomination of the country's new national focal point on fishery statistics would enable Indonesia to continue its active involvement in statistics-related activities in the future. He also informed the Meeting that Indonesia has contributed data and information to the Southeast Asian State of Fisheries and Aquaculture (SEASOFIA) 2022. While congratulating SEAFDEC for its hard work in coming up with the draft SEASOFIA 2022, he requested that the draft publication should be circulated to all Member Countries for confirmation prior to its publication and dissemination at to the forthcoming Council Meeting. Moreover, he also informed the 44PCM that Indonesia has been contributing several articles for the SEAFDEC Special Publication "Fish for the People" through IFRDMD, and will continue to contribute relevant articles to this publication in the future.

14. While also expressing the appreciation to SEAFDEC for conducting the RTC, the Program Committee Member for Thailand reiterated the importance of having statistics by species of several commercially important aquatic species, especially the Indo-Pacific mackerel, neritic tunas, and tuna-like species. She therefore encouraged SEAFDEC to consider building the capacity of the AMSs on species identification and schemes to collect data, not only on the statistics but also on the CPUE of the respective species. In this connection and while viewing such suggestion as technical in nature, the representative from the SEAFDEC Secretariat suggested that such concern could be addressed not by this project but through the other relevant projects of SEAFDEC as appropriate.

15. The Program Committee Member for Myanmar expressed the view that the SEASOFIA 2022 should also contain information that could be useful to support the development of the action plan of the Member Countries, *e.g.* fishery production trend, impacts of COVID-19, future directions, and way forward.

(3) Responsible Fishing Technology and Practice

16. While noting that the project has indicated the timeline for delivering the expected outputs, the Program Committee Member for the Philippines suggested that clear timelines for the project outcomes should also be determined, *e.g.* application of technologies by the Member Countries that contribute to improved fishery resources, livelihoods, and incomes of fishers. In response, the representative from TD explained that the project is still conducting the research and development, particularly on the reduction of the impacts of bottom trawl and design of otter board. TD will share the lessons learned and disseminate the results with the Member Countries for promotion in the Member Countries, however, the evaluation of impacts of the promotion of the technologies could be conducted later.

17. The Program Committee Member for Indonesia supported the proposal of SEAFDEC to conduct the remaining activities for the fourth quarter of 2021, and expressed the hope that the activities in 2022 could be conducted physically when the COVID-19 situation has already improved.

18. Considering that the Implementation of Fish and Fish Product Import Provisions of the Marine Mammal Protection Act (MMPA) of the United States of America will be entered into force for all exporting countries on 1 January 2023, the Program Committee Member for Thailand encouraged SEAFDEC to extend support to the Member Countries on fishing gear technologies to mitigate the negative impacts of fishing on marine mammals. She also expressed the willingness of Thailand to cooperate with TD in the conduct of studies and experiments to modify fishing gears and methods commonly used in the region to reduce the impacts on marine mammals. Consideration should also be given on the fisheries in the region which are mostly multigear and make use of multi fishing methods that are not species selective.

19. In addition, the Program Committee Member for Thailand also expressed the willingness of Thailand to share with SEAFDEC the lessons learned from project carried out in Thailand on gear marking, *e.g.* testing of different types of gillnet markers, which could be useful in supporting the activities to enhance the capacity of the other Member Countries. She then expressed the concern on the MMPA requirements, and suggested that SEAFDEC could consider conducting activities that facilitate exchange of knowledge among the countries on this matter.

20. The Program Committee Member for Myanmar emphasized the importance of reducing the impacts of trawl fisheries on the environment considering that this constituted high proportion of the country's fisheries production. He therefore requested TD to share the knowledge and develop long-term plan for reducing the impacts of trawl fishing on the resources and ecosystems. He also requested TD to facilitate exchange of knowledge on gear marking including the possibility of linking this to the VMS, as well as knowledge on gear modification to mitigate bycatch of marine mammals.

21. On the query of Myanmar regarding the applicability of VMS on fishing gear marking, the representative from TD responded that considering the results of experiments conducted by some countries showing that a positioning system could be applied in fishing gear marking, TD will follow up on these results and share these as reference during the conduct of project activities. With regard to MMPA, TD is currently verifying the techniques to reduce bycatch of marine mammals in capture fisheries and these techniques will be discussed with fishing gear experts of the Member Countries.

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

22. The Program Committee Member for Thailand expressed the appreciation to SEAFDEC for the achievements of the project activities, especially the development of field guides for sharks and rays species identification. She then informed the 44PCM that Thailand has implemented the National Plan of Action for the Conservation and Management of Sharks (NPOA-Sharks) for 2020–2024, and that Thailand is looking forward to participating in the upcoming Training Course and Workshop on Chondrichthyan Taxonomy and Biology in 2022. In this connection, she proposed that Thailand could also be considered as a data collection site for the long-term landing data collection of sharks and rays that could be used for estimating the stock and biomass.

23. The Program Committee Member for Indonesia informed the 44PCM that the Ministry of Marine Affairs and Fisheries of Indonesia has issued the Ministerial Decree No. 16 of 2021 concerning the National Conservation Action Plan for Whale Shark (*Rhincodon typus*) 2021–2025. In addition, he also informed the 44PCM that the Ministerial Decree No. 4 of 2014 was issued to provide full protection of two species of manta rays, *i.e.* *Mobula birostris* and *M. alfredi*, in the national waters of Indonesia.

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

24. While expressing the appreciation to IFRDMD for the continued support to this project considering that anguillid eels are of high commercial value in the region, the Program Committee Member for Indonesia suggested that IFRDMD could also consider visiting and collecting data from other AMSs after the region has already recovered from the COVID-19 pandemic. He also informed the 44PCM that Indonesia has issued the Ministerial Decree No. 80 of 2020 regarding eel protection in the country.

25. In response to the concern raised by the Chief of AQD regarding the decision made at the 43PCM in 2020 for the possibility of incorporating the aquaculture component in this project, especially hatchery and aquaculture techniques of anguillid eels, the SEAFDEC Secretary-General suggested that the Lead Technical Officer of the Project and JTF Manager could communicate directly with AQD to discuss this aspect.

26. The Program Committee Member for Myanmar congratulated SEAFDEC for the project activities conducted in 2021, and looked forward to sustaining the cooperation with SEAFDEC on survey and collection of eel samples in Myanmar in 2022.

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

27. The Program Committee Member for Indonesia took note of the progress of the activities under this project and looked forward to participating in the upcoming activities, particularly the Regional Training Course on the Relationship Between Ocean Environment Variability and Marine Resource Abundance and Oceanographic Sampling, scheduled on 22–26 November 2021, and the Regional Training Course on Geographic Information System (GIS) for Aquaculture, scheduled on 30 November–3 December 2021.

28. The Program Committee Member for Myanmar expressed the appreciation to SEAFDEC for the conduct of activities under this project, and suggested that the research activities could be expanded to focus not only on fishery resources/species but also on other areas, *e.g.* nutrient blooms, underexploited species, mesopelagic species (jellyfish). He then reiterated the request made in 2021 for the possibility of conducting marine environmental survey in Myanmar, specifically in the shallow waters using the M.V. SEAFDEC 2 in 2022. In response, the representative from TD expressed the concern that currently the M.V. SEAFDEC 2 is scheduled to be used for cruise surveys in Thailand and Philippines in 2022, which were postponed from 2021, as well as for the marine debris survey in the Gulf of Thailand. He therefore suggested that in-depth consultation should be conducted between TD and Myanmar in 2022 on the proposed activities and cost-sharing details, and that the actual survey could be scheduled in 2023.

29. The Program Committee Member for Thailand informed the 44PCM that there are several international guidelines and SOPs concerning management of marine litter, *e.g.* those developed by FAO, NOAA, and the United Nations, that could be referred to for the implementation of this project. She suggested that the “Guidelines for the Monitoring and Assessment of Plastic Litter in the Ocean” which is currently used by Thailand in the conduct of relevant activities, could be also used by the other AMSs.

30. The Program Committee Member for the Philippines extended the appreciation to SEAFDEC for the implementation of this project considering that the outputs could serve as basis for further planning and implementation by the respective countries. He therefore urged SEAFDEC to come up with a model for the region taking into consideration the various guidelines that had already been developed for the management of marine litter.

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

31. The Program Committee Member for Indonesia took note of the progress of this project and the proposed activities in 2022. He also informed the 44PCM that Indonesia is working on the inputs for the questionnaire on catch and effort of the pelagic fishes and encouraged the Member Countries to utilize and manage these pelagic fishery resources sustainably in their respective waters based on their national regulations.

32. The Program Committee Member for Malaysia expressed the appreciation to MFRDMD for implementing the project as this is valuable for application in the waters of Malaysia by the Department of Fisheries, and encouraged the AMSs to also submit their inputs to the questionnaire.

33. The Program Committee Member for the Philippines thanked MFRDMD for conducting the activities on the assessment of important pelagic fish species, particularly on transboundary species such as neritic tunas, and inquired for the possibility of establishing the reference points for sustainable management under harvest control to initiate the formulation of management plan of these species. In response, the representative from MFRDMD informed the 44PCM that the data is still being collected from the participating countries, and for the reference point which generally makes use of the MSY, the project is still in the process of exploring the appropriate reference point for transboundary species in the region. Moreover, the representative from SEAFDEC Secretariat also explained that the stock and risk assessment program has already come up with the risk and stock status of the neritic tuna species in the Pacific Ocean and Gulf of Thailand as well as in the Indian Ocean.

34. In response to the query of the Program Committee Member for the Philippines regarding the utilization of the results for managing the neritic tuna species, the representative from SEAFDEC Secretariat clarified that the function of SEAFDEC is technical in nature, while the implementation and management of the fishery resources depend on the respective national legislations. He added that SEAFDEC has already submitted the results of the stock assessment of neritic tunas to the SEAFDEC Council for consideration and the decision to utilize such results would depend on the countries.

35. The Program Committee Member for Thailand expressed appreciation to MFRDMD for their work on stock assessment, and informed the 44PCM that Thailand had shared the results of the “Stock and Risk Assessments of Kawakawa (*Euthynnus affinis*) and Longtail Tuna (*Thunnus tonggol*) Resources in the Southeast Asian Waters using ASPIC” to the 11th Session of the IOTC Working Party on Neritic Tunas held in 2021. In addition, the Department of Fisheries (DOF) of Thailand in collaboration with the Institute of Asian Studies and Chulalongkorn University is implementing the national project “Thai Short Mackerel: Knowledge Management Research Project Addressing Society’s Grand Challenge According to Sustainable Development Goals (SDGs)” which is in line with the SDG14, and Thailand would share the results of the study to other Member Countries.

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

36. The 44PCM took note of the progress and achievements of the project, and approved the activities proposed for 2022. In this connection, the Program Committee Member for Indonesia stated that Indonesia has compiled the national practices on inland stock assessment in Indonesia at the national level to reassure that the inland fishery resources will be sustainably utilized and managed. He also informed the 44PCM that Indonesia had issued the Minister Regulation No. 9 of 2020, related to inland fisheries management areas, and that currently, focus is made on estimating the current stocks and deciding on the appropriate policy to ensure the sustainable utilization of inland fishery resources.

37. While expressing the interest to visit the pilot sites of the Special Area for Conservation and Fish *Refugia* (SPEECTRA) system in Indonesia, the Program Committee Member for Thailand sought clarification if there is a similar system in pilot sites in other Member Countries. In response, the Chief of IFRDMD explained that currently the SPEECTRA system has two pilot sites in Sumatra and Kalimantan, and there is a plan to add more project sites in other countries. He added that IFRDMD is planning to organize a regional workshop in 2022 on the application of the SPEECTRA system, and the results and lessons learned from the pilot sites in Indonesia would be shared to Member Countries.

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

38. While commending TD for conducting training courses on Ecosystem Approach to Fisheries Management (EAFM) in Thailand, the Program Committee Member for Thailand informed the 44PCM that Thailand has been promoting the EAFM in developing the fisheries management plan in 21 sites along the coast of the Gulf of Thailand and Andaman Sea, and that the implementation of the plan also includes the promotion of the ecotourism.

39. While noting the progress and the achievements of the project, the Program Committee Member for Indonesia indicated that Indonesia had also been involved in several meetings conducted by SEAFDEC regarding the development of the EAFM plan and promoting the FAO Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines), and shared the relevant information especially on the ways to promote and implement EAFM principle in small-scale fisheries. In addition, he also cited that the outcomes of the Regional Workshop on Assessing the Needs of the AMSs in Implementing the SSF Guidelines to Support Access to Markets conducted in 2020 were reported to the ASEAN Sectoral Working Group on Fisheries (ASWGFi) as one of the priority deliverables for 2022. As this was aimed at accelerating the implementation of SSF Guidelines, Indonesia will closely communicate with SEAFDEC for the support to this initiative.

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

40. The Program Committee Member for Cambodia requested the project to continue assisting the Fisheries Administration (FiA) of Cambodia for the conduct of the study on the impacts of collapsible fish traps used by local fishers in the coastal province of Cambodia in 2020, which had been stopped due to COVID-19 pandemic in 2021. While apologizing for having no activities during the past one and half years due to the COVID-19 pandemic, the Project Director responded that Project Coordinating Unit (PCU) will raise this issue at the 6th Meeting of the Project Steering Committee on 30 November 2021 for consideration and approval to conduct the study in 2022. In the process, the PCU will consult with experts from TD and the National Focal Point for Cambodia and update the FiA of the progress.

41. While noting the progress of the project implementation, the Program Committee Member for Indonesia informed the 44PCM that a technical team on resource enhancement from the Ministry of Marine Affairs and Fisheries of Indonesia had conducted the face-to-face meetings in two project sites, *i.e.* Bangka Belitung and West Kalimantan, Indonesia. As Indonesia is a participating country of this project, the country will continue to provide the necessary information required for this project in a timely manner.

42. The Program Committee Member for Malaysia informed the Meeting that the focus of the project activities in Malaysia in 2022 will be on the development of the fisheries *refugia* management plan in consultation with local fisheries communities in two project sites in Johor and Miri.

43. While expressing appreciation to SEAFDEC for implementing the project and to UNEP for its support, the Program Committee Member for Thailand informed the 44PCM that the country will officially establish the fisheries *refugia* management scheme in 2022 including the establishment of network of management boards and volunteers for fisheries *refugia* site management.

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

44. The 44PCM noted that due to the COVID-19 pandemic, the project activities which were originally scheduled to be completed in 2021 would be continued until December 2022. In this regard, the Program Committee Member for Thailand expressed the support for the extension of the project implementation as proposed.

45. While making observations on the application of GIS mapping for effective management of inland fisheries, the Program Committee Member for Myanmar suggested that the project could consider selecting the appropriate GIS software that the Member Countries could easily apply. In response, the Project Lead Technical Officer explained that the GIS application will be selected during project implementation, and the selection will consider its applicability not only for scientists but also for the government officers.

46. While commending SEAFDEC for the implementation of the project, the Program Committee Member for Indonesia reiterated that the utilization of the GIS and RS technologies for the management of inland fisheries should also consider its application on specific types of inland water bodies (e.g. rivers, swamps, lakes).

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

47. The Program Committee Member for Indonesia took note of the progress of the project and encouraged SEAFDEC to consider conducting field activities and data collection in other Member Countries when the COVID-19 situation has already improved.

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

48. The Program Committee Member for Japan underscored the importance of enhancement of sustainable aquaculture in improving the livelihood of small-scale fish farmers and food security, and expressed the appreciation of Japan for the effective utilization of the JTF in the project. Moreover, she informed the 44PCM that in the keynote speech delivered by the Councilor of the Fisheries Agency of Japan, *Ms. Miwako Takase* during the Global Conference of Aquaculture with the side event South-South and Triangular Cooperation High-Level Roundtable Meeting for Sustainable Aquaculture Development organized in Shanghai, China in 2021, the programs of SEAFDEC that support the sustainable aquaculture in Southeast Asia were highlighted, including: 1) development of sustainable aquaculture management model through community-operated hatcheries; 2) development of sustainable feed technologies using alternative feeds made from agriculture or fishery by-products; and 3) development of diagnostic protocols for diseases by identifying and profiling unknown and emerging diseases. Finally, she expressed the willingness of Japan to continue to contribute to the development of sustainable aquaculture through SEAFDEC.

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

49. The Program Committee Member for Indonesia took note of the progress and the proposed activities under this project, and informed the 44PCM that Indonesia will assign officer(s) to participate in the Regional Training Course on High Pressure Processing (HPP) Technology.

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

50. While noting that there is no project implemented under this Strategy in 2021 and 2022, the Program Committee Member for the Philippines proposed some activities that could contribute to achieving this strategy in 2022. Specifically, he recalled that TD has facilitated the conduct of training in 2021 on the implementation of port State measures for port inspectors which focused on the technical aspects of implementation of PSMA. The said training was useful for the Philippines in the conduct of inspection of foreign-flagged fishing vessels. He then expressed the gratitude to TD, Government of Japan, FAO, and NOAA for supporting the said training.

51. In this connection, the Program Committee Member for the Philippines suggested that SEAFDEC could consider organizing a training to build the capacity and enhance the knowledge of the legal officers of the Member Countries of international fisheries laws and to improve the prosecution of fisheries violations. The training may include topics on the Law of the Sea, international fisheries law, international fisheries instruments (both binding and non-binding), international adjudicatory bodies, rights and responsibilities of States in fisheries governance, international fisheries violations, collection and preservation of evidence, prosecution of fisheries violations, and imposition of penalties permissible under international law, among others.

52. In response to the request, the SEAFDEC Secretary-General requested the Philippines to share to SEAFDEC the Concept Note of the proposed training for consideration and arrangements under appropriate projects.

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 Development in the Region to Address International Fisheries-related Issues

53. The Program Committee Member for Indonesia expressed the appreciation to SEAFDEC for providing the platform for discussion among the Member Countries on cross-cutting and trade-related issues, *e.g.* WTO fisheries subsidies draft consolidated text, impacts of COVID-19 pandemic on the fisheries sector, U.S. Marine Mammal Protection Act. He also expressed the hope that SEAFDEC would be able to implement the activity on Regional Capacity Building Network (RECAP) in 2022 with the physical attendance of the representatives from the Member Countries.

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

54. While expressing the understanding of the difficulties brought about by the COVID-19 pandemic in 2021, the Program Committee Member for Japan expressed the concern on the low number of operational days at sea of the M.V. SEAFDEC and M.V. SEAFDEC 2. He then encouraged the other SEAFDEC Member Countries and SEAFDEC to consider maximizing the utilization of the two vessels in order that the Government of Japan could continue to support the budget for these vessels. Nevertheless, he thanked Malaysia, Myanmar, and the Philippines for making the request during the 53rd Meeting of the SEAFDEC Council to utilize the M.V. SEAFDEC 2 in carrying out fisheries resources and marine environmental surveys in their respective countries.

55. The Program Committee Member for Thailand inquired whether the new hydroacoustic equipment (SIMRAD EK-80) installed in the M.V. SEAFDEC 2 has already been calibrated, and whether it could be used for detecting schools of demersal or pelagic fishes including other target species for the purpose of fisheries resource assessment. Moreover, she also suggested that TD could also acquire the appropriate software to analyze the data from SIMRAD EK-80 to support resource mapping.

56. With regard to the installation of SIMRAD EK-80 in the M.V. SEAFDEC 2, the representative from TD informed the 44PCM that the SIMRAD EK-80 is already calibrated during the trial cruise in early November 2021, and the results of which showed that the specific frequencies of SIMRAD EK-80 are suitable for small pelagic fishes. TD will carry out the cruise using the M.V. SEAFDEC 2 simultaneously with the cruise of research vessel of DOF Thailand to compare the CPUE of trawling, and at the same time TD researchers could practice on the operation and maintenance of the equipment in January 2022. On the suggestion to conduct capacity building to analyze the data from SIMRAD EK-80, the representative from TD requested the support of the Member Countries that have experiences in the analysis of data from SIMRAD EK-80, *e.g.* Viet Nam, Indonesia, and Thailand, to support the other Member Countries.

57. While expressing the appreciation to TD for the planned cruise to compare the CPUE of trawling using the M.V. SEAFDEC 2 and the research vessel of the DOF Thailand in the Gulf of Thailand in 2022, the Program Committee Member for Thailand informed the 44PCM that Thailand is also planning to utilize the M.V. SEAFDEC 2 in carrying out fishery resources survey in the Andaman Sea in 2022–2023. However, this plan is still in the process of internal discussion regarding the survey plan and budget.

58. The Program Committee Member for the Philippines expressed the appreciation to TD for supporting the proposal and developing the estimated budget for biomass survey of sardines in selected areas in the Philippines. He also supported the suggestion that capacity building activities should be provided by TD to the Member Countries on the analysis of data from SIMRAD EK-80.

3.1.7 New Projects

(17) ASEAN-JICA Capacity Building Project on IUU Fishing Countermeasures in Southeast Asia

59. While expressing the importance of the proposed activity on IUU fishing countermeasures, the Program Committee Member for Japan raised the concern that the activities of the project should proceed without duplicating the activities supported by the JTF, and should be conducted in cooperation with relevant JTF projects to enhance the activities such as eACDS and PSM.

60. As for the program activities in 2022 and beyond, the Program Committee Member for Indonesia took note of the project activities that will commence in 2022.

(18) ASEAN-JICA Food Value Chain Development Project

61. The 44PCM took note of the project as presented by the representative from the SEAFDEC Secretariat. While expressing the well wishes on the commencement of the project in 2022, the Program Committee Member for Indonesia hoped that since this project is implemented in parallel with the ASEAN Sectoral Working Group on Agriculture, the implementation of the project in the fisheries sector could be accomplished in a timely manner.

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

62. The Program Committee Member for the Philippines recognized the importance of the proposed activities of the project and expressed gratitude to JAIF as the donor. He informed the 44PCM that the Philippines is one of the participating countries of the IMO-FAO project with Indonesia as the lead country. In this regard, the Philippines is willing to collaborate with the project in the development of the fishing gear marking manual to address ALDFG.

63. The Program Committee Member for Myanmar informed the 44PCM that Myanmar is in the process of publishing the “Spatial Distribution of Microplastics in Surface Waters in the Bay of Bengal” under the EAF/Nansen Program including the morphology and types of the plastics. Moreover, he suggested that SEAFDEC should also consider conducting studies on marine litter on seabed sediments especially in trawling areas.

64. The Program Committee Member for Thailand reiterated that the Guidelines for the Monitoring and Assessment of Plastic Litter in the Ocean developed by the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection is useful as a reference for data collection and monitoring of marine debris in Southeast Asia. In connection with the conduct of the proposed training under this project, she suggested that SEAFDEC could consider using the report as well as the data on microplastics generated from the survey using the RV Dr Fridtjof Nansen in 2018.

(20) 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

65. The 44PCM took note of the progress of developing the full project document during the Project Preparation Grant (PPG) phase of the project, and approved the proposed activities in 2022.

3.2 Departmental Programs

66. While considering the progress and achievements attained from the implementation of the SEAFDEC Departmental Programs in 2021 and the proposed programs for 2022 (**Annex 5**), the 44PCM offered recommendations for the improvement of the programs and endorsed the proposed programs and requested SEAFDEC to take into consideration such recommendations in improving its programs and projects.

3.2.1 Aquaculture Department

67. The 44PCM took note of the progress and achievements of the Departmental Programs of AQD in 2021, 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 44PCM also endorsed the implementation of the program in 2022.

68. While expressing appreciation to AQD for the implementation of activities under its Department Programs, the Program Committee Member for Malaysia inquired whether AQD has expertise on genomic selection and application of artificial intelligence (AI) technology in broodstock development program for economically important fish species. In response, the representative from AQD expressed the willingness to cooperate with Malaysia on the genomic selection using genetic markers in conducting such activities.

69. The Program Committee Member for the Philippines expressed the appreciation to AQD for the implementation of collaborative projects with the Government of the Philippines, including programs on feeds for milkfish and tilapia which resulted in outcomes that are useful for the future collaboration with the public and private sectors, and looked forward to sustaining the implementation of the other thematic areas of AQD programs in the future.

3.2.2 Training Department

70. The 44PCM noted the progress of activities and the key 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) USAID Sustainable Fish Asia Local Capacity Development, and also approved the programs for implementation in 2022.

71. The Program Committee Member for Indonesia proposed that SEAFDEC could consider conducting more capacity building activities on non-technical marine and fisheries issues, *e.g.* gender, marginalized community in fisheries sector, and also requested TD to consider conducting the training on promoting fishing technology that minimizes bycatch and non-target species in marine as well as inland fisheries.

3.2.3 Inland Fishery Resources Development and Management Department

72. The 44PCM was informed of a Departmental Program of IFRDMD “Modernizing Irrigated Agriculture to Protect and Restore Aquatic Biodiversity and Ecosystem Services in South-East Asia.” The 44PCM noted that the achievements of this project would be shared to other Member Countries for protecting and restoring aquatic biodiversity and ecosystem services.

3.3 Other Programs

73. The 44PCM considered and endorsed the progress of implementation in 2021 and the corresponding plans for 2022 of the following programs:

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

74. The 44PCM was informed on the progress of the project implementation in 2021 and proposed activities of this project in 2022 in three countries, namely: Cambodia, Thailand, and Viet Nam (**Annex 6**).

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

75. The 44PCM took note of the progress of the project implementation in 2021 and proposed activities in 2022 in participating countries, namely: Lao PDR, Myanmar, Philippines, and Thailand (**Annex 7**).

(3) Implementing the Strategic Action Programme for the South China Sea and Gulf of Thailand

76. The 44PCM noted the progress of the project implementation in 2021 and proposed activities in 2022 in participating countries, namely: Cambodia, China, Indonesia, Philippines, Thailand, and Viet Nam (**Annex 8**).

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

77. The 44PCM was informed on the progress of the implementation in 2021 and proposed activities in 2022 (**Annex 9**), noting that the ADSEA was postponed in 2021 until it is safe to travel and the face-to-face meeting is possible. However, the organizing committee will revisit the plan to conduct the ADSEA in 2022.

78. The Program Committee Member for Myanmar requested SEAFDEC to inform the Member Countries on the requirements for traveling to the countries where the events would be organized. This request would also apply to other projects that plan to conduct the face-to-face events in 2022.

(5) Survey to Estimate levels of Abandoned, Lost or otherwise Discarded Fishing Gear in Thailand Gillnet and Trap Fisheries

79. The 44PCM was informed on the progress of the project implementation in 2021 and proposed activities for 2022. (**Annex 10**).

80. While noting that surveys of ALDFG in gillnet and trap fisheries under this project had been conducted in Thailand, the Program Committee Member for the Philippines requested TD to consider expanding the activity or sharing the results of the surveys with the other countries. In response, the representative from TD informed the 44PCM that TD is planning to organize a virtual meeting during the second week of January 2022 to present the results of the surveys and the global questionnaire on ALDFG. Currently, TD is coordinating with FAO to seek funding support for this activity and will inform the Member Countries on the progress in due course.

81. The Program Committee Member for Indonesia informed the 44PCM that Indonesia is also collaborating with FAO to implement the project on ALDFG, and is currently planning the launching of the activities in 2022.

(6) Fishing Technologies and Operations in Thailand and Options for Innovation and Improvements

82. The 44PCM was informed on the progress of the project implementation and its completion in 2021 (**Annex 11**).

83. The Program Committee Member for Thailand expressed the appreciation to TD for the outcomes of the project which will be useful as baseline information toward minimizing the number of fishers onboard fishing vessels and developing innovations and improvements of current fishing practices in the region. She then suggested expanding the implementation of the project to other provinces in Thailand.

84. While expressing gratitude to TD for the implementation of the project, the Program Committee Member for the Philippines inquired on the technologies that are subject to improvement and innovation in Thailand.

85. The representative from TD informed the 44PCM that he will communicate with FAO for the possibility of expanding the project implementation. He also added that the project did not only focus on technologies in Thailand but also on global technologies to raise the awareness and build the capacity of local fishers.

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

86. The 44PCM was informed on the five (5) project proposals that are under discussion with potential donors for funding support and implementation.

(1) Promoting the Blue Economy and Strengthening Fisheries Governance of the Gulf of Thailand through the Ecosystem Approach to Fisheries (GoTFish Project)

87. The 44PCM was informed of the project “Promoting the Blue Economy and Strengthening Fisheries Governance of the Gulf of Thailand through the Ecosystem Approach to Fisheries (GoTFish Project)” (**Annex 12**), and the proposal of which was submitted for funding support from GEF with FAO as implementing agency and SEAFDEC as one of the executing agencies. The Project Identification Form (PIF) has already been approved by GEF in June 2021 and the project is now under the project preparatory grant (PPG) phase with the participating countries, namely: Cambodia, Malaysia, Thailand, and Viet Nam.

88. While expressing gratitude to SEAFDEC for this project, the Program Committee Member for Cambodia informed the 44PCM that the FAO CaPFISH-Capture programme being implemented by Cambodia, particularly on the marine and inland fishery management plan based on EAFM. He then expressed the hope that the GoTFish Project would be useful for Cambodia in the implementation of the FAO CaPFISH-Capture programme.

89. Although Indonesia is not participating country, the Program Committee Member for Indonesia expressed the support to this pipeline project and took note of the proposed activities.



90. The Program Committee Member for Malaysia informed the 44PCM that Malaysia has appointed the national focal point for the PPG phase of the project. She then expressed the hope for the successful development of the project document during the PPG phase so that the project could commence in early 2023.

91. The Program Committee Member for Thailand expressed the appreciation to FAO, SEAFDEC, and GEF considering that Thailand will be involved in several project activities. Moreover, she informed the 44PCM that Thailand has already applied several management schemes, e.g. EAFM, fishing control, fishery improvement project, returning marine litter to the shore by fishers, which are in line with the objectives of the GoTFish Project.

(2) Blue Horizon: Ocean Relief through Seaweed Aquaculture

92. The 44PCM was informed of the project “Blue Horizon: Ocean Relief through Seaweed Aquaculture” (**Annex 13**), and the proposal of which was submitted to GEF for funding support with WWF-US as implementing agency and SEAFDEC as executing agency. The PIF has already been approved by GEF in December 2020 and the project is now under the PPG phase with the Philippines and Viet Nam as participating countries.

93. The Program Committee Member for Indonesia took note of the proposals of the project and expressed the willingness to be involved in some regional activities to be organized under this project.

94. The Program Committee Member for the Philippines expressed appreciation to SEAFDEC for including the Philippines as one of the pilot sites of the project and confirmed the full support of the Philippine Bureau of Fisheries and Aquatic Resources (BFAR) and National Fisheries Research and Development Institute (NFRDI) in the preparation and implementation of the project.

(3) Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity

95. The 44PCM was informed on the progress of the pipeline project “Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity” (**Annex 14**), and the proposal of which has been submitted to the Japan-ASEAN Integration Fund (JAIF) for funding support.

96. While thanking MFRDMD for providing updates on the status of this pipeline project, the Program Committee Member for Malaysia reiterated that under the International Plan of Action for the Management of Fishing Capacity (IPOA-Capacity) adopted since 2001, there is a need to review and assess the implementation of NPOA-Capacity and RPOA-Capacity. Therefore, Malaysia encouraged all AMSs to support this project in order to secure fund from the prospective donor.

97. The Program Committee Member for Indonesia took note of the status of the project, and expressed the support to this project.

98. The Program Committee Member for Thailand took note of the status of the project and expressed the willingness of Thailand to share the progress that have been made by the country. Although Thailand has no NPOA-Capacity, several measures have already been applied under the country’s fisheries management plan, e.g. management of fishing efforts based on the MSY level, restriction of fishing using high efficiency gears and low efficiency gears, etc.

(4) Regional Technical Consultation on Aquatic Animal Health Emergencies in Southeast Asia

99. The 44PCM was informed that the project “Regional Technical Consultation on Aquatic Animal Health Emergencies in Southeast Asia” (**Annex 15**), and the proposal of which was submitted to JAIF and received positive indication for funding. However, it was decided that the project should be postponed until the COVID-19 pandemic has improved and it is safe to gather and travel.

100. The Program Committee Member for Japan informed the 44PCM that Japan imports seeds of *Vannamei* shrimp from the AMSs, mainly from Thailand. In this regard, the development of early warning system for aquatic animal health emergencies at hatchery and providing the venue to identify the gaps in the contingency plans of the respective AMSs are important for the farmed shrimp production of Japan. She then expressed the support to AQD in the implementation of this activity.

101. While noting the proposal, the Program Committee Member for Indonesia informed the 44PCM that Indonesia will actively participate in the activities of the project.

(5) USAID Public International Organization (PIO) Grant Contribution to Southeast Asian Fisheries Development Center (SEAFDEC)

102. The 44PCM was informed of the pipeline project “USAID Public International Organization (PIO) Grant Contribution to Southeast Asian Fisheries Development Center (SEAFDEC)” (**Annex 16**). It was also noted that SEAFDEC is currently under a co-creation process with the USAID to develop the project proposal for submission to USAID/RDMA for funding support through its PIO Grant.

103. The Program Committee Member for Japan expressed the appreciation to USAID/RDMA for the technical assistance, and hoped that this project would be harmonized with other SEAFDEC projects, and that this project will be implemented to contribute to enhancing the activities of SEAFDEC in the region.

104. The Program Committee Member for Indonesia noted the project concept note and expressed support to the project.

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

105. The Mission Director of the United States Agency for International Development/Regional Development Mission for Asia (USAID/RDMA), *Dr. Steven G. Olive*, thanked SEAFDEC for the invitation extended to the U.S. Government to participate in the 44PCM. He stated that the USAID and SEAFDEC have been working together throughout the region since 2015, and currently for the USAID Sustainable Fish Asia (SuFiA) Project. He also added that USAID is grateful to be part of this partnership and will continue to facilitate the engagement of various agencies, *e.g.* U.S. Department of State, NOAA, Department of Interior, and other U.S. Government counterparts towards the sustainability of Southeast Asia’s fisheries. He expressed the support of the U.S. Government to the “ASEAN-SEAFDEC Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030,” and looked forward to continuing the support to SEAFDEC and its Member Countries through the ongoing programs and initiatives, including the upcoming Public International Organization grant to SEAFDEC. He reiterated that USAID will continue to strengthen the relationship with SEAFDEC and its Member Countries to deal with the national and regional priorities. His statement appears as **Annex 17**.

106. The representative from WorldFish, *Dr. Michael Phillips*, in his written statement thanked SEAFDEC for the invitation extended to WorldFish to attend the 44PCM. He provided the overview of the work of WorldFish on various aspects of small-scale fisheries and aquaculture production and management in Southeast Asia. While WorldFish is a member of the One CGIAR, the new strategy of the CGIAR and WorldFish emphasized on the “transformation of food, land and water systems in a climate crisis,” and a new research and innovation initiative is being designed for WorldFish on resilient aquatic food systems, with five components, namely: better use of data; enhanced partnerships; integration of aquaculture and fisheries into water; food and landscape planning; and aquaculture genetics and innovation hubs to accelerate innovation. He also reiterated that as part of the One CGIAR, there is an ongoing dialogue with ASEAN for future cooperation that could provide framework for strengthening regional cooperation with SEAFDEC. WorldFish therefore looked forward to cooperating with SEAFDEC and the Member Countries in the future, aligned with the recommendations and priorities of the SEAFDEC Member Countries. His Statement appears as **Annex 18**.

VI. OTHER MATTERS

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

107. The 44PCM took note of the progress of the Southeast Asian State of Fisheries and Aquaculture (SEASOFIA) 2022 (**Annex 19**). The 44PCM was requested to provide comments for improvement and additional information to be included in the SEASOFIA 2022 by mid-December 2021.

108. While congratulating SEAFDEC for its effort in the preparation of the SEASOFIA 2022 publication, the Program Committee Member for Indonesia reiterated that Indonesia has submitted the data and information for inclusion in the SEASOFIA 2022. In addition, he requested SEAFDEC to circulate the draft SEASOFIA 2022 among the Member Countries prior to launching at the Fifty-fourth Meeting of the SEAFDEC Council in 2022.

109. Considering that Cambodia has not yet provided inputs to the questionnaire for SEASOFIA 2022, the Program Committee Member for Cambodia assured the 44PCM that Cambodia would follow up and provide inputs to the publication by mid-December 2021.

110. The Program Committee Member for Thailand thanked SEAFDEC for the preparation of the SEASOFIA 2022. She also informed the 44PCM that Thailand would go through the draft publication and provide their comments by mid-December 2021.

6.2 Study on Impacts of COVID-19 Pandemic on the Fisheries Sector of ASEAN-SEAFDEC Member Countries

111. The 44PCM took note of the progress of the “Study on Impacts of COVID-19 Pandemic on the Fisheries Sector of ASEAN-SEAFDEC Member Countries” (**Annex 20**).

112. The Program Committee Member for Cambodia thanked SEAFDEC for providing the preliminary results of the regional study on the impacts of COVID-19 on fisheries and aquaculture. He also apologized for the inability of Cambodia to conduct survey and provide inputs to the study questionnaire due to the travel restrictions during lockdown. He then informed the 44PCM that with the technical support from FAO, the CaPFISH-Capture programme will conduct a national study on impacts of COVID-19 on fisheries and aquaculture would be undertaken in 2022, and Cambodia would share the results of their study to SEAFDEC and other Member Countries.

113. While thanking SEAFDEC for conducting the regional study, the Program Committee Member for Indonesia took note of the progress of the study.

6.3 Updating JTF Budget Request Process in Japan

114. The Program Committee Member for Japan informed the 44PCM on the JTF budget requests from the Government of Japan and the required cooperation of other Member Countries. While informing the 44PCM that the Government of Japan has been providing funding support to SEAFDEC through the 5-year JTF-VI Phase 2 starting from 2020, he informed the 44PCM that the Fisheries Agency of Japan is currently on the negotiation process with the Ministry of Finance of Japan requesting to secure budget for SEAFDEC for the fiscal year 2022 with the same amount as that of 2021. During the negotiation process, the importance of the contribution of Japan to SEAFDEC as well as to the potential improvement of fisheries in the region had been raised. He therefore sought the cooperation of the AMSs in promoting the roles and contribution of SEAFDEC to the sustainable fisheries development in the region as well as the significance of the current and future contribution of Japan to the fisheries development in the Southeast Asian region during the international/regional fora such as AMAF, AMAF+3, and related meetings.

6.4 Others

115. The Program Committee Member for Indonesia raised the concern on the changing operational mode of work *e.g.* online events, work from home, due to the COVID-19 pandemic. He informed the 44PCM that Indonesia has made adjustments for the working mode of staff who attend online regional trainings or workshops are required to present proof of their attendance. In this regard, he requested SEAFDEC to issue e-certificates for participants/attendees of the events (*e.g.* training, workshop, etc.) to be organized by SEAFDEC in the future.

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

7.1 Adoption of Report of the Program Committee Meeting

116. The Program Committee adopted the recommendations of its Forty-fourth Meeting on 17 November 2021. The 44PCM also took note that the Report would be submitted to the 54th Meeting of SEAFDEC Council and to ASEAN through the 24th Meeting of the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP).

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

117. In considering the date and venue of the Forty-fifth Meeting of the Program Committee, the Chief of Aquaculture Department (AQD) informed the Program Committee that AQD would host the Forty-fifth Meeting of the Program Committee in the Philippines. He also informed the 44PCM that AQD would seek the guidance of the SEAFDEC Secretariat in finalizing the schedule and related arrangements for the Meeting.

VIII. CLOSING OF THE PROGRAM COMMITTEE MEETING

118. In her Closing Remarks, the Chairperson of the Program Committee extended her gratitude to the Program Committee Members and collaborating partners for their valuable inputs and recommendations for improving the programs and projects of SEAFDEC. She reiterated that the results of the 44PCM would be submitted to the forthcoming meeting of the FCG/ASSP, as well as to the SEAFDEC Council for consideration and approval. She then declared the Meeting closed. Her Closing Address appears as **Annex 21**.

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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,
SEAFDEC Deputy Secretary-General and Advisor, SEAFDEC Department Chiefs and Deputy Chiefs, and
SEAFDEC officials, Ladies and gentlemen, good morning.

On behalf of SEAFDEC, it is my honor to welcome all of you to the Forty-fourth Meeting of SEAFDEC Program Committee through virtually connected. As we all know that the COVID-19 pandemic has remaining disrupted numerous activities in the region and around the world, we are adapting to organize the Program Committee Meeting this year by utilizing the online platform.

Ladies and gentlemen this year is another challenging year for all of us that we have been facing the difficulties in the implementation of the project activities, nonetheless SEAFDEC has tried our best to undertake activities under this unusual situation throughout the year. For the agenda of this Meeting, we will begin with the reviewing of progress of the projects in 2021 and endorsing the proposed activities for 2022 under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism which are categorized into six SEAFDEC Strategies. The succeeding agenda would be the presentation of the progress and proposed activities under the Departmental Programs and Other Programs as well as those Pipelines Projects that are still in the project formulation process and would be submitted to the potential donors for securing funds. The outputs of the Meeting would be submitted to the forthcoming meeting of SEAFDEC Council in 2022 for consideration and approval, as well as report to the ASEAN mechanism through the Twenty-fourth Meeting of the FCG/ASSP next week and subsequently the ASEAN Sectoral Working Group on Fisheries or ASWGF_i in 2022.

I wish to express our sincere gratitude to all of the delegations for your inputs and comments. Please be assured that we would always value your recommendations for the improvement of the projects performance.

With that note, ladies and gentlemen, I now declare the Forty-fourth 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 Programs Implementation for the Year 2021 and Proposed Programs for the Year 2022

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*

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

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

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
- USAID Sustainable Fish Asia Local Capacity Development 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)
- Survey to Estimate Levels of Abandoned, Lost or Otherwise Discarded Fishing Gear in Thailand Gillnet and Trap Fisheries
- Fishing Technologies and Operations in Thailand and Options for Innovation and Improvements

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

- 4.1 Promoting the blue economy and strengthening fisheries governance of the Gulf of Thailand through the Ecosystem Approach to Fisheries (GoTFish Project)
- 4.2 Blue Horizon: Ocean Relief through Seaweed Aquaculture
- 4.3 Implementation and Assessment of The ASEAN Regional Plan of Action for The Management of Fishing Capacity
- 4.4 Regional Technical Consultation on Aquatic Animal Health Emergencies in Southeast Asia
- 4.5 USAID Public International Organization (PIO) Grant Contribution to Southeast Asian Fisheries Development Center (SEAFDEC)

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

- 5.1 The United States Agency for International Development/Regional Mission to Asia Development
- 5.2 WorldFish

Agenda 6: Other Matters

- 6.1 The Southeast Asian State of Fisheries and Aquaculture (SEASOFIA) 2022
- 6.2 Study on Impacts of COVID-19 Pandemic on Fisheries Sector of the ASEAN-SEAFDEC Member Countries
- 6.3 Updating JTF Budget Request Process in Japan
- 6.4 Others

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

- 7.1 Adoption of the Report
- 7.2 Date and Venue of the Forty-fifth 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 2021–2022**

Project Categorized under Strategies	Lead Department	2021	2022	Appendix No.
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	TD	Y	Y	1
Harmonization and Enhancing Utilization of Fishery Statistics and Information	SEC	Y	Y	2
Responsible Fishing Technology and Practice	TD	Y	Y	3
Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region	MFRDMD	Y	Y	4
Sustainable Utilization of Anguillid Eels in the Southeast Asian Region	IFRDMD	Y	Y	5
Sustainable Utilization of Fisheries Resources and Resources Enhancement in Southeast Asia	TD	Y	Y	6
Fisheries Management Strategies for Pelagic Fish Resources in the Southeast Asian Region	MFRDMD	Y	Y	7
Management Scheme for Inland Fisheries in the Southeast Asian Region	IFRDMD	Y	Y	8
Small-scale Fisheries Management for Better Livelihood and Fisheries Resources	TD	Y	Y	9
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
Strengthening the Effective Management Scheme with GIS (Geographic Information System) & RS (Remote Sensing) Technology for Inland Fisheries and Aquaculture at AMS	TD	Y	Y	11
Development of Stock Assessment Method for Strengthening of Resources Management Measures of Tropical Anguillid Eels in AMS	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				
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				
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				
Assistance for Capacity Development in the Region to Address International Fisheries-related Issues	SEC	Y	Y	15
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	TD	Y	Y	16

New Projects

Strategy/Project Title	Lead Department	Period	Appendix No.
ASEAN-JICA Capacity Building Project on IUU Fishing Countermeasures in Southeast Asia	TD	2022–2024	17
ASEAN-JICA Food Value Chain Development Project	SEC	2022–2024	18
Regional Collaborative Research and Capacity Building for Monitoring and Reduction of Marine Debris from Fisheries in Southeast Asia	TD	2022–2023	19
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	2022–2026	20

Y = Program implemented during the year

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2021
AND
PROPOSED ACTIVITIES FOR THE YEAR 2022**

Project ID: 202001011			
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 2022:	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 Illegal, Unreported and Unregulated (IUU) fishing, SEAFDEC Training Department (TD) has been implementing the project titled “Promotion of Countermeasures to reduce IUU Fishing” in coordination and cooperation with international/regional fisheries organizations (FAO, NOAA, RPOA-IUU, *etc.*) and the SEAFDEC Member Countries to reduce IUU fishing activities in the region from 2013 to 2019 since implementation of activities under the first phase of JTF 6. The activities such as the development of a regional database on fishing vessels (Regional Fishing Vessels Record: RFVR), regional cooperation to support the implementation of Port State Measures (PSM) through the capacity development, and the development and promotion of the electronic ASEAN Catch Documentation Scheme (eACDS) were undertaken. To continue to support the Member Countries in the region 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 overall objectives “Sustainable utilization and sound management of fisheries resources in the Southeast Asia”, the project expects four outputs; 1) enhancing RFVR, 2) strengthening national capacities in the implementation of PSM and MCS, 3) further promoting eACDS, and 4) coordinating and promoting a national/regional/international network for collaborative activities to combat IUU fishing.

2. Background and Justification

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

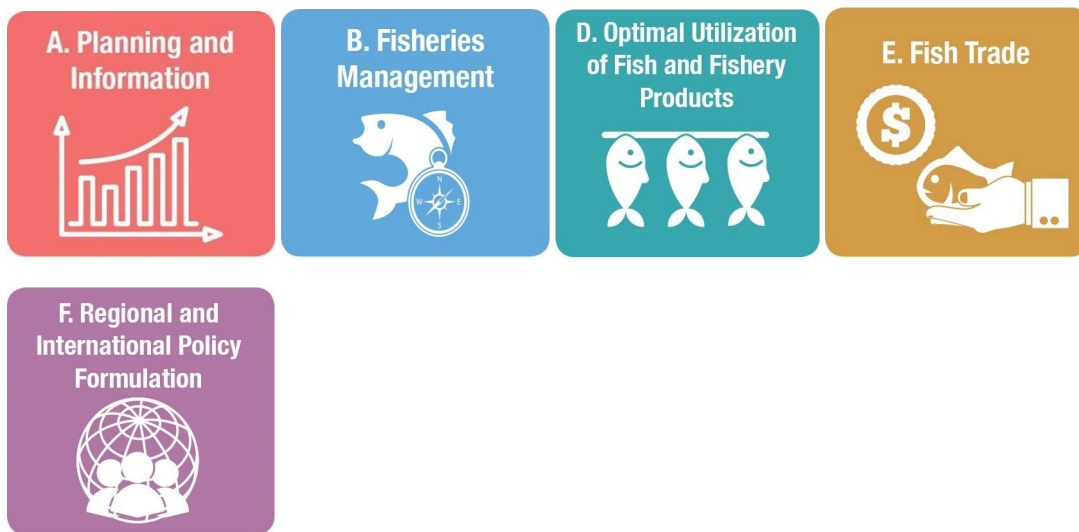
The international organization emphasize and implement activities relevant to combat IUU fishing such as the FAO Global Record of Fishing Vessels, Refrigerated Transport Vessels and Support Vessels; Global Information Exchange System (GIES) by FAO; ASEAN Roadmap on Combating IUU Fishing (2021–2025) which aims to enhance and strengthen collaborative efforts to combat IUU fishing in the region thereby improving fisheries management, sustaining fish resources, and optimizing the benefit of adopting responsible fishing practices.

In the Southeast Asian region, SEAFDEC organized the “High-level Consultation on Regional Cooperation in Sustainable Fisheries Development Towards the ASEAN Economic Community: Combating IUU Fishing and Enhancing the Competitiveness of ASEAN Fish and Fishery Products” in Bangkok, Thailand, on 3 August 2016. 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 in Bangkok, Thailand, also emphasized on 1) Implement measures to prevent unauthorized fishing and eliminate illegal fishing practices, 2) Strengthen the implementation of measures and activities to combat IUU fishing by ensuring compliance with national laws and regulations, and the provisions of international instruments; encourage the development and implementation of national plans of action to combat IUU fishing; promote inter-agency coordination for effective implementation of 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 for 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.

In reference to the following “Resolution and Plan of Action for 2030” and the Declaration above mentioned, the 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. Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



4. 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.

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

5.1 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 - Updates of the information for RFVR Database
Activity 1	Indicators	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 (10) of participants from AMSs per meeting 	<ul style="list-style-type: none"> - Consultation report - Number (10) of participants from AMSs per meeting
Activity 1.2: National training to promote RFVR Database to ASEAN Member States (AMSs)	<ul style="list-style-type: none"> - National training conducted - Expected number (20) of participants per training 	<ul style="list-style-type: none"> - Training report - Number (20) of participants per training
Activity 1.3: Sub-regional or bilateral meeting to develop the application of RFVR to support the Port State Measures (PSM) requirements (<i>e.g.</i> Myanmar and Thailand)	<ul style="list-style-type: none"> - Sub-regional / bilateral meeting organized - Expected number (16) of participants per meeting (8 persons from each country) 	<ul style="list-style-type: none"> - Meeting report - Number (16) of participants per meeting (8 persons from each country)
Activity 1.4: Information, education and communication materials to support the RFVR Database developed	Information, education and communication materials disseminated	Number of production and dissemination of the materials
OUTPUT 2	Indicators	Means of Verification
Increased number of fisheries inspectors and strengthened implementation of PSM, and national capacity development of MCS in Southeast Asia	<ul style="list-style-type: none"> - Expected number (more than 30) of fisheries officers understanding inspection duties of PSM - Smooth capacity building on the 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

Activity 2	Indicators	Means of Verification
Activity 2.1: Capacity development on port inspection to support the PSM Implementation including the introduction on the PSM implementation (in general) to non-ratified AMSs and capacity building on MCS	<ul style="list-style-type: none"> - Capacity development trainings conducted - Number of trainings conducted - Expected number (18) of participants per training 	<ul style="list-style-type: none"> - Training reports - Number of trainings at least 2 times for 5 years - Number of participants at least 36 persons in total
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	<ul style="list-style-type: none"> - Regional meeting organized - Expected number (18) of participants per meeting 	<ul style="list-style-type: none"> - Meeting report - Number (54) of participants in total
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)	<ul style="list-style-type: none"> - Regional workshop organized - Expected number (18) of participants per meeting - A gap analysis in legal frameworks conducted 	<ul style="list-style-type: none"> - Workshop report - Number (at least 36) of participants in total - Gap analysis report
OUTPUT 3	Indicators	Means of Verification
Application of the electronic ASEAN Catch Documentation System (eACDS) and other tools for traceability to eliminate IUU fisheries products in AMSs	<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	Means of Verification
Activity 3.1: Continued coordination, facilitation, development and expansion of eACDS in AMSs, particularly for Viet Nam, Malaysia, Myanmar, <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	<ul style="list-style-type: none"> - Regional workshop organized - Expected number (20) of participants per workshop 	<ul style="list-style-type: none"> - Workshop report - Number of participants (at least 30) 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	<ul style="list-style-type: none"> - 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 (e.g. FAO, Regional Fisheries Management Organizations (RFMOs), Regional Fisheries Bodies (RFB) and national agencies) in and beyond the region to support AMSs in the 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/national 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 (at least 5) of meetings	- Meeting reports - Number (at least 5) of meetings in total

5.2 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																				
Activity 3.2																				
Activity 4:																				
Activity 4.1																				
Activity 4.2																				

5.3 Activity, Sub-activity and Proposed Budget for 2020–2024

(Unit: USD)

Output	Activity	Y1 2020	Y2 2021	Y3 2022	Y4 2023	Y5 2024
Output 1	Activity 1.1: Regional Technical Consultation to Improve the Utilization of Regional Fishing Vessel Record 24 meters	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 the PSM requirements (e.g. Myanmar and Thailand)	-	-	-	-	-
	Activity 1.4 Information, Education and Communication materials to support RFVR Database	-	-	1,000	-	-
Output 2	Activity 2.1:	-	20,000	20,000	20,000	-

Output	Activity	Y1 2020	Y2 2021	Y3 2022	Y4 2023	Y5 2024
	Capacity Building on Port Inspection to Support PSM Implementation including the Introduction on the PSM implementation (in general) to non-ratify AMSs, and capacity building on MCS					
	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 the implementation of the PSM includes gaps analysis in the respective the legal frameworks of the AMSs (together with 2.1)	-	-	-	-	-
Output 3	Activity 3.1: Facilitation and development eACDS for Viet Nam, Malaysia, Myanmar and <i>etc.</i> (in collaboration with MFRDMD)	47,000	57,000	15,000	57,000	37,000
	Activity 3.2: Regional Workshop on exchange information on fisheries catch documentation and traceability	-	-	21,000	-	20,000
Output 4	Activity 4.1: Coordination with International organizations <i>e.g.</i> FAO, Regional Fisheries Management Organizations (RFMOs), Regional Fisheries Bodies (RFB) and National agencies in and beyond the 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		90,000	90,000	90,000	90,000	90,000

PART II: PROJECT ACHIEVEMENTS IN 2021

1. Project Achievements in the Present Year (2021)

Due to the Covid-19 pandemic, the implementation of the planned activities in 2021 were adjusted and re-scheduled *via* online platform as follows;

- Teleworkshop on Development and Improvement of Regional Fishing Vessels Record (RFVR) for Combating IUU fishing in Southeast Asia " was organized from 28 to 30 September 2021 *via* online platform. The workshop discussed and exchanged updated information of vessels registration and fishing license and implementation of activities to combat IUU fishing among AMSs, as well as introduces and discussed the use of new template/format of CSV/Excel file to conduct self-uploading of the KDEs to the RFVR database in near future.
- The Online Regional Training Course to Support Implementation of PSM for Inspector was organized from 26 to 29 October 2021.

- The Online Training on the Use of eACDS Application Version 2 was organized for Brunei Darussalam, Malaysia, and Viet Nam including trial and monitoring the use 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	III. <u>Information activities</u> (Update later when activity is completed)							400
Output 2:								
Activity 2.1	II. Training activities (Update later when activity is completed)							800
Output 3:								
Activity 3.1	II. Training activities	22	29	15	13			1,650

3. Expected Outcome/Outputs and Achievements

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"> • Updated information of vessels registration and fishing license and implementation of activities to combat IUU fishing among AMSS • Understanding the use of template/format of CSV/Excel file for uploading the KDEs to the RFVR database 	<ul style="list-style-type: none"> • Teleworkshop on Development and Improvement of Regional Fishing Vessels Record (RFVR) for Combating IUU fishing in the Southeast Asia from 28 to 30 September 2021
Output 2:	Increased number of fisheries inspectors and strengthened implementation of PSM, and national capacity development of MCS in Southeast Asia	
Activity 2.1	Enhanced national capacities in the implementation of PSM in the region	<ul style="list-style-type: none"> • Online Regional Training Course to support implementation of PSM for inspectors was organized from 26 to 29 October 2021
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 the use of eACDS application version 2 	<ul style="list-style-type: none"> • Online training on the use of eACDS version 2 was organized for each country • Trial on the use of eACDS in Brunei Darussalam, Malaysia, Myanmar and Viet Nam for traceability

Activities	Expected Outcome/Outputs	Results/Achievements
Output 4:	National/regional/international network for collaborative activities to eliminate IUU fishing	
Activity 4.1	<ul style="list-style-type: none"> Good coordination with international/regional/national organizations to support AMSs in the implementation of relevant activities to eliminate IUU fishing 	<ul style="list-style-type: none"> Bilateral discussions with the relevant collaborative partners, including FAO/HQ and NOAA, Department of Fisheries Thailand, and Department of Agriculture, Water and the Environment, Australia. Continued coordination and cooperation with partners to further support AMSs strengthened.
Activity 4.2	<ul style="list-style-type: none"> Enhanced national capacities and updated information relevant to combat IUU fishing for project staff Shared information on the implementation of combating IUU fishing activities 	<ul style="list-style-type: none"> Participation in the Third Meeting of the Parties to the PSMA (MoP3) from 31 May to 4 June 2021 Participation in the Virtual Port State Measures Inspector Training Workshop which organized by NOAA from 14 to 19 June and 2-6 August 2021 Participation and presentation in International Workshop on Eradication of Illegal, Unreported and Unregulated Fishing for Regional Plan of Action to Promote Responsible Fishing Practices Including Combating IUU Fishing in the Region (RPOA-IUU) Participating Countries and Pacific Countries hosted by RPOA-IUU from 9 to 11 August 2021

4. List of Publications in 2021

Publications	Type of Media	Attached e-file
1. Report on Teleworkshop on Development and Improvement of Regional Fishing Vessels Record (RFVR) for Combating IUU fishing in the Southeast Asia	Document	Ongoing
2. eACDS user's manual part 1: Introduction	Document	http://hdl.handle.net/20.500.12067/1624
3. eACDS user's manual part 2: Catch Declaration	Document	http://hdl.handle.net/20.500.12067/1625
4. eACDS user's manual part 3: Movement Document	Document	http://hdl.handle.net/20.500.12067/1626
5. eACDS user's manual part 4: Statement of Catch	Document	http://hdl.handle.net/20.500.12067/1627
6. eACDS user's manual part 5: Transshipment Document	Document	http://hdl.handle.net/20.500.12067/1727

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

Activities	Evaluation
Output 1:	
Activity 1.1	(Update later when activity is completed)
Output 2:	
Activity 2.1	(Update later when activity is completed)
Output 3:	
Activity 3.1	The online training on the use of eACDS version 2 was organized for Brunei, Malaysia, Myanmar, and Viet Nam. The online evaluation was conducted <i>via</i> Google platform. There were 27 respondents in total. The results of evaluation indicated that most participants (69.35%) understood how to use eACDS application version 2. The satisfaction of training's day and time per day was good, rated about 67.95% and 61.42%

Activities	Evaluation
	respectively. While the satisfaction of practical use of eACDS was good, rated 59.52%. However, the participants further expressed their concerns that if there was no COVID19 pandemic, the training should have been organized face-to-face for better understanding in practical sessions.

6. Major Impacts/Issues

- Main impacts to the project activities in 2021 were the COVID-19 pandemic. The implementation of the planned activities was adjusted and re-scheduled by teleworkshop or/and online training. However, the results of online meetings/training were not as expected like normal face-to-face meetings/training.
- The information on the RFVR database has been updated annually (twice per year) based on the information submitted by the Member Countries. In 2021, there was updated information from Brunei Darussalam, Cambodia, Malaysia, Myanmar, Singapore, and Thailand.
- All participation in the project activities are open to men and women. There were no specific gender issues in the implementation of the project activities.
- Emerging issues planning for the project activities in the future include: a new set of regional programs for AMSs, including: (1) Training on risk assessment for national VMS program for effectively implementation of IUU fishing countermeasures in their respective countries; (2) Technical workshop on applications of new technologies and innovations in supporting the effective implementation of national MCS program.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2022

1. Project Summary in 2022

In 2022, the project titled “Strengthening a regional cooperation and enhancing national capacities to eliminate IUU fishing in Southeast Asia” will follow up, monitor, and facilitate AMSs to use of template/format of CSV/Excel file for uploading the KDEs to the RFVR database which aims to reduce the possibility of error occurrence in the database as the country can verify the data at any time. Moreover, the Regional Meeting to share information on MCS will be organized. The project also continues to implement, trial, monitor and transfer eACDS application for Brunei Darussalam, Viet Nam, Malaysia, Myanmar and other countries as required. The project will continue to enhance national capacities and update information on IUU fishing and strengthen coordination with other partners including participating in international/regional meetings/workshops relevant to IUU fishing.

In addition, the project would explore a new set of regional programs to support AMSs in combating IUU fishing in their respective countries, such as enhancing efficiency of national VMS system through risk assessment program, promoting application of new technologies and innovations for national MCS program, conducting a training course for AMSs on ASEAN-IUU network. These are subjects to be consulted with the Member Countries as planned in 2022.

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 Utilization of Regional Fishing Vessels Record	The Regional/National Meeting on Development and Improvement of RFVR will be organized (face-to-face/online will be considered), aiming to follow up, monitor and facilitate AMSs to upload the KDEs to the RFVR database <i>Estimated expenditures:</i> - Airfares and transportation (for 10 persons): USD 2,750 - Accommodation (for 4 nights): USD 2,400 - DSA (for 3 days): USD 2,100 - Meeting package, etc.: USD 2,750 Sub-total: USD 10,000	10,000



Proposed Activity	Description	Proposed Budget
Activity 1.4: Information, education, and communication material	Production of information, education, and communication material	1,000
Output 2:	Increased number of fisheries inspectors and strengthened implementation of PSM and MCS in Southeast Asia	
Activity 2.1: Capacity Building on Port Inspection to support PSM Implementation including the Introduction on the PSM implementation (in general) to non-ratify AMSs, and capacity building on MCS	Capacity building on MCS in Southeast Asia (The scope of subject will come up for regional meeting in Activities 2.2)	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 ratified and non-ratified MCs), and/or regional meeting to share information on MCS	<p>The Regional Meeting is organized to share information on MCS among AMSs, as well as to clarify the capacity development needs of AMSs on the improvement of their MCS system, and to review legal framework for the implementation of PSM.</p> <p><i>Estimated expenditures:</i></p> <ul style="list-style-type: none"> - Airfares and transportation (for 20 persons): USD 5,500 - Accommodation (for 4 nights): USD 4,800 - DSA (for 3 days): USD 4,200 - Training package, etc.: USD 5,500 Sub-total: USD 20,000 	20,000
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: Facilitation and development of eACDS for Viet Nam, Malaysia and Myanmar.	<p>1) SEAFDEC/TD continues to facilitate, trial, monitor and transfer eACDS application for Brunei Darussalam, Viet Nam, Malaysia and Myanmar. A new set of regional programs related to applications of new technologies and innovations to support the respective national traceability system is discussed with MCs.</p> <p><i>Expected expenditures of facilitation participating countries:</i></p> <ul style="list-style-type: none"> - Airfares and transportation (for 4 persons): USD 2,300 - Accommodation (for 3 nights): USD 840 - DSA (for 5 days): USD 1,000 - Training costs, etc.: USD 860 Sub-total: USD 5,000 <p>2) A study on development of traceability for small-scale fisheries is carried out</p> <p>Subtotal USD 10,000</p>	15,000

Proposed Activity	Description	Proposed Budget
Activity 3.2: Regional workshop to exchange information on fisheries catch documentation and traceability in AMSs	Regional Workshop is organized at the end of eACDS activities. The workshop aims to conclude the implementation of all activities in pilot participating countries, discuss participating country reports, and recommend for traceability strategies and implementation in AMSs in the future.	21,000
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	For strengthening cooperation with other organizations, enhancing capacity and updating information on IUU fishing related issues, the project staff participate in international meetings/workshops relevant to IUU fishing. Future capacity building needs to support the implementation of ASEAN AN-IUU network are identified in consultation with AMSs. Expected expenditures: - Airfares and transportation: USD 1,010 - Accommodation (for 3 nights): USD 210 - DSA (for 4 days) USD 280 Subtotal: USD 1,500 x 2 times = USD 3,000	3,000

3. Implementation Plan of Activities in 2022

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 1.1												
Activity 1.4												
Activity 2.1												
Activity 2.2												
Activity 3.1												
Activity 3.2												
Activity 4.1												
Activity 4.2												

4. Expected Activity Results in 2022

Planned activity	Expected Activity Results
Activity 1: Regional Fishing Vessels Record (RFVR)	
Activity 1.1 The Regional Meeting on Development and Improvement of RFVR is organized and aims to follow up, monitor and facilitate AMSs to upload the KDEs to the RFVR database	<ul style="list-style-type: none"> Supporting AMSs for the use of updated platform on RFVR database Close monitoring on the use of updated platform on RFVR database to avoid information error Information on possible collaborative work between SEAFDEC and other relevant organizations to share information on fishing vessels record at regional and global levels
Activity 1.4: Production of information, educational and communication materials for combating IUU fishing	<ul style="list-style-type: none"> A set of information, educational and communication materials Promotion and dissemination of information on activities to combat IUU fishing to the public
Activity 2: Regional Cooperation to support implementation of PSM and MCS	
Activity 2.1 Capacity building on MCS in Southeast Asia	<ul style="list-style-type: none"> Enhanced awareness, better understanding, skill development and implementation experience of MCS in Southeast Asia and applying for the Member Countries



Planned activity	Expected Activity Results
<p>Activity 2.2 The Regional Meeting to share information on MCS</p>	<ul style="list-style-type: none"> • Sharing information, enhancement of skill and experience on the MCS implementation in Southeast Asia • Cooperation with partners to support the implementation of MCS • A set of new regional programs on capacity development for the effective implementation of national MCS in consultation with the Member Countries and collaborative partners.
<p>Activity 3: Electronic ASEAN Catch Documentation Scheme (eACDS)</p>	
<p>Activity 3.1 Facilitation and transfer of eACDS application for Brunei Darussalam, Viet Nam, Malaysia and Myanmar as well as other countries</p>	<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 • Transferred eACDS system to Brunei Darussalam • A set of information on the needs of AMSs for improving national traceability system (in consultation with the Member Countries and collaborative partners)
<p>Activity 3.2 Regional workshop to exchange information on fisheries catch documentation and traceability in AMSs</p>	<ul style="list-style-type: none"> • Sharing information on eACDS implementation to AMSs and identifying recommendations for traceability in Southeast Asia for the future
<p>Activity 4: Strengthen on Coordination with international/regional/national organizations</p>	
<p>Activity 4.1 Coordination with international organizations <i>e.g.</i> FAO, Regional Fisheries Management Organizations (RFMOs), Regional Fisheries Bodies (RFB) and National agencies in and beyond the region in order to support AMSs in the implementation of activities to eliminate IUU fishing</p>	<ul style="list-style-type: none"> • Strengthening continued coordination/cooperation with partner organizations to support AMSs • Establishing good coordination with new partner (s) to support AMSs in the implementation of national countermeasures related to IUU fishing
<p>Activity 4.2 Participation in a national/regional/international meeting relevant to IUU fishing. To cooperate with other organizations, strengthen national capacities and update information on IUU fishing-related issues. Project staff participate in international meetings/workshops 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 2021
AND
PROPOSED ACTIVITIES FOR THE YEAR 2022**

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 2022:	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 used for the compilation of fishery statistics from the Southeast Asian countries to SEAFDEC since 2008.

Nevertheless, after 2008, there was 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 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 Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030, #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. Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



4. 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.

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

5.1 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	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

<p>Activity 1.2: Regional Technical Consultation(s) to gather inputs for revising the regional Framework for Fishery Statistics of Southeast Asia</p> <p><i>Remarks: A series of RTC to be organized to update the Statistics Framework:</i> <i>Year 1: Overall workplan, Part of General Note, Marine and Inland Capture Production, and Export and Import of Fishery Commodities</i> <i>Year 2: Part of Aquaculture and Producer Price</i> <i>Year 4: Finalizing the revision of regional framework</i> <i>Year 5: Monitoring the new questionnaires</i></p>	<ul style="list-style-type: none"> - Regional Technical Consultation organized - Revised Regional Framework drafted - Expected number (40 persons) of participants 	<ul style="list-style-type: none"> - Consultation report(s) - Number of global standards accommodated in the revised Regional Framework - Revised Regional Framework (draft) - Number (40 persons) of participants
<p>Activity 1.3: 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 (SEASOFIA 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</p>	<p>Means of Verification</p>
<p>Activity 2.1: 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: 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: 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>

ACTIVITY 3	Indicators	Means of Verification
Activity 3.1: Preparation, production and dissemination of the publication “Fish for the People”	“Fish for the People” published and disseminated in three times per year (April, August, and December)	Number of production and dissemination of “Fish for the People”

5.2 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.

** The Second RTC which was originally scheduled in 2021 will be postponed to the 3rd quarter of 2022.

5.3 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 2021

1. Project Achievements in the Present Year (2021)

In 2021, 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 Coordinating Working Party (CWP) Task Group Meeting on Catch Concept and Fishing Effort (6 July 2021, online meeting), the Task Group Meeting on Aquaculture (September 2021, online meeting), FIRM Technical Working Group on the Global Record of Stock and Fisheries (30 September and 1 October 2021), the 12th FIRM Steering Committee (18–21 October 2021), and the 27th CWP Intersessional Meeting (1–5 November 2021, online meeting) to share view situation on fishery statistics of the region.

SEAFDEC organized the First Regional Technical Consultation on Fishery Statistics and Information in Southeast Asia on 21–22 September 2021 where the discussion focused on revision of the Regional Framework for Fishery Statistics of Southeast Asia in the part of the Explanatory Notes, inclusion of statistics on fish processing and statistics on fish trade (export and import) for regional compilation, overall workplan for revising the Regional Framework, as well as update on the progress made and difficulties faced by the ASEAN Member States in reporting of fishery statistics.

In preparation for “Southeast Asian State of Fisheries and Aquaculture (SEASOFIA) 2022”, SEAFDEC organized the Third Inter-Departmental Consultation on Preparation of SEASOFIA 2022 on 18 and 20 October 2021 to finalize the draft articles for SEASOFIA 2022 for further submission to the 44PCM.

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. In 2021, three issues of “Fish for the People” (Volume 19 No.1, No.2 and No.3) were published and disseminated.

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	-	-	4	7	-	-	0
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	15	18	13	12	1	-	1,000
Output 2:								
Activity 2.2 Departments of input articles and consultations for finalizing the articles for SEASOFIA 2022	III. Information activities	-	-	18	16	-	-	1,000 (estimated)
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 2021

** As the conduct of in-person meeting is not possible due to COVID-19, the consultation will be postponed to organize in 3rd Quarter 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 First 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 in the part of the Explanatory Notes, inclusion of statistics on fish processing and statistics on fish trade (export and import) for regional compilation that also reflected the new global standards on fishery statistics
Output 2:		
Activity 2.2	Draft article for SEASOFIA 2022	SEAFDEC Secretariat and Departments agreed on draft articles of SEASOFIA 2022 for further submission to the 44PCM

Activities	Expected Outcome/Outputs	Results/Achievements
Output 3:		
Activity 3.1	Three issues of “Fish for the People” produced and disseminated to readers	Well disseminated the information of activities and achievements of SEAFDEC programs and projects in the countries and region through “Fish for the People”

4. List of Publications in 2021

Publications	Type of Media	Attached e-file
1. Report of the 1 st Regional Technical Consultation on Fishery Statistics and Information in Southeast Asia	Technical Report	PDF
2. Report of the 3 rd Inter-Departmental Consultation on Preparation of SEASOFIA 2022	Technical Report	PDF
3. Fish for the People Vol.19 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 2.2	Draft articles for SEASOFIA 2022 that include the updated issues at the 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 RTC on Fishery Statistics and Information in Southeast Asia was conducted through an on-line platform due to the Covid-19 situation.
- Draft SEASOFIA 2022 was prepared with article contributions of the concerned officers of SEAFDEC who were responsible for gathering information on and assessing the status and trends of fisheries and aquaculture through the project implementation in support of the sustainable management of fisheries.
- The Special Publication “Fish for the People” promotes sustainable fisheries for food security in the Southeast Asian region through the article contributions of various authors who have significant experiences and work in the region in the sustainable development of fisheries and aquaculture. Key issues and challenges as well as way forwards to promote sustainable development of fisheries on specific topics were highlighted through this publication.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2022

1. Project Summary in 2022

In 2022, 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 fishery statistics. Specifically, FAO has made 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. For the SEASOFIA in 2022, the final contents of publication prepared in consultation with the National Coordinators of ASEAN Member States and SEAFDEC Departments will be introduced at the 54th Meeting of SEAFDEC Council. Furthermore, three issues of Special Publication “Fish for the People ” will be published and disseminated in the year 2022 to promote initiatives and activities undertaken by SEAFDEC to the wider audience in the countries and region.

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 fora in relation to the 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> <ul style="list-style-type: none"> - Travel costs USD 2,300 - Daily subsistence allowances USD 700 - Accommodation USD 500 - Others USD 500 Sub-total: USD 4,000 	4,000
Activity 1.2	<p>Organization of the Second Regional Technical Consultation to gather inputs for revising the Regional Framework for Fishery Statistics for Southeast Asia</p> <p>The second RTC originally scheduled in 2021 will be conducted in 2022 with the participation of representatives from the ASEAN Member States to discuss views and inputs for updating the Regional Framework of Fishery Statistics in Southeast Asia (<i>Year2: Marine and Inland Capture Production, Aquaculture, Producer Price, and Fishers and Farmers</i>). It is expected that the RTC will result with a revision of the statistics frameworks that enhances regional and global compilation of future fishery statistics in the future.</p> <p>Remarks: the second RTC will be organized in Thailand (for 3 days)</p> <p>Estimate expenditures:</p> <ul style="list-style-type: none"> - Traveling costs USD 7,000 (1 prs. from each AMS and 1 prs. from each SEAFDEC Department) - 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 2021 budget)
Output 2:	SEAFDEC publication “Southeast Asian State of Fisheries and Aquaculture 2022”	
Activity 2.3	<p>Publication and dissemination of SEASOFIA 2022</p> <p>The SEASOFIA 2022 will be published and disseminated to the AMSs, international/regional organizations, institutional, academy, and relevant partners.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Printing USD 7,000 - Mailing USD 3,000 Sub-total: USD 10,000 	10,000

Proposed Activities	Descriptions	Proposed Budget
Output 3:	SEAFDEC publication “Fish for the People”	
Activity 3.1	Preparation, production and dissemination of the publication “Fish for the People” Three issues of SEAFDEC Special Publication “Fish for the People” will be published 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 2022

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

4. Expected Activity Results in 2022

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 the 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 revising the Regional Framework for Fishery Statistics of Southeast Asia	<ul style="list-style-type: none"> The revision part of Marine and Inland Capture Production, Aquaculture, and Producer Price for the Regional Framework of Fishery Statistics for Southeast Asia
Activity 2 Preparation and publication of “Southeast Asian State of Fisheries and Aquaculture 2022”	
Activity 2.3 Publication and dissemination of SEASOFIA 2022	<ul style="list-style-type: none"> Publication “SEASOFIA 2022” published and disseminated
Activity 3 Preparation and publication of “Fish for the People”	
Activity 3.1 Preparation, publication and dissemination of “Fish for the People”	<ul style="list-style-type: none"> Three issues of Special Publication “Fish for the People” published and disseminated

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2021
AND
PROPOSED ACTIVITIES FOR THE YEAR 2022**

			Project ID: 202001013
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 2022:	USD 60,000
Project leader:	Nopporn Manajit (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 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 require more amounts of fuel than other passive fishing gear such 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 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 such as traps and hooks or other stationary fishing.

In line with the 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. Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



4. 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.

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

5.1 Logical Framework

GOAL (Overall Objectives, Impact)	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 Countries 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	Indicators	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	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 	<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

	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	be members of IFCOME network. 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 ecosystem, <i>e.g.</i> light fishing, stationary fishing gear, marking of fishing gear, etc.	- 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	- 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	- 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	- 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 have 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	Means of Verification
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)	- 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	- Report on the regional technical meetings - Number (60 persons) of the marine engineers will be a 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 the 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
<p>OUTPUT 3</p>	<p>Indicators</p>	<p>Means of Verification</p>
<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 have been trained applicable fish handling on board fishing vessel training package for promotion in SEAFDEC MCs 	<p>Report in the project end meeting</p>
<p>ACTIVITY 3</p>	<p>Indicators</p>	<p>Means of Verification</p>
<p>Activity 3.1: Human resource development on fish handling techniques onboard fishing vessels (Trainer level)</p>	<p>Three (3) regional training of trainers (TOT) on fish handling techniques onboard fishing vessels</p>	<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
<p>Activity 3.2: Human resource development on fish handling techniques onboard fishing vessels (National Scale)</p>	<p>Two (2) National training courses on the fish handling onboard fishing vessels</p>	<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	- 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

5.2 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																				

5.3 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	-	6,500	-	20,000
	Activity 1.2	-	20,000	13,300	-	-
	Activity 1.3	-	-	200	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	36,000	-	-
	Activity 2.3	-	-	500	20,000	-
	Activity 2.4	(Budget with Activity 2.1)	(Budget with Activity 2.2)	(Budget with Activity 2.2)	(Budget with Activity 2.3)	(Budget with Activity 2.1)
Output 3	Activity 3.1	20,000	-	500	-	20,000
	Activity 3.2	-	20,000	3,000	20,000	-
	Activity 3.3	(Budget with Activity 3.1)	(Budget with Activity 3.2)	(Budget with Activity 3.2)	(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 2021

1. Project Achievements in the Present Year (2021)

Under the COVID-19 situation in Thailand and the SEAFDEC Member Countries, 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 4th quarter of 2021. Alternatively, an online platform to conduct any events (*e.g.* workshop, meeting, training) has been applied.

For the year 2021, the project intended to complete all proposed activities within the 4th quarter. The following activities were planned for the 3rd and 4th quarters of 2021.

Activity 1.2: The research study of the comparative efficiency and impact of Vee type and rectangular flat otter boards for trawling experiments in the Gulf of Thailand by M.V. Plalung.

Activity 1.3: Human resources development on techniques to reduce bycatch and discards, and mitigate impacts to habitat and vulnerable species.

Activity 1.4: Information dissemination on the fishing techniques, *i.e.* fishing gear, fishing accessories and fishing practices, to reduce bycatch and discards, and mitigate impacts to vulnerable species.

Activity 2.2: Research/study/survey on appropriate techniques to manage the fuel consumption, carbon emission, and/or safety of fishing operations.

Activity 2.3: Human resources development on techniques to minimize the fuel consumption, carbon emission, and/or safety of the fishing operation.

Activity 3.1: Human resource development on fish handling techniques onboard fishing vessels (Trainer level)

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 1.2	R							18,900 (to be organized)
Activity 1.3	T							1,100 (to be organized)
Output 2:								
Activity 2.2	R	-	-	-	15	-	6	39,000 (On going)
Activity 2.3	T	2	30	-	10	-	-	500
Output 3:								
Activity 3.1	T	3	25	-	10	2	2	500
Activity 3.2								

Remarks:

- For Activity 1.2 to be conducted in the 4th quarter of 2021, the expected number of participants is 8.
- For Activity 1.3 to be conducted in the 4th quarter of 2021, the expected number of participants is 60.

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 the	

Activities	Expected Outcome/Outputs	Results/Achievements
	national and regional level to reduce negative impacts on the marine ecosystem	
Activity 1.2 1.2.1) The research study of the comparative efficiency and impact of Vee type and rectangular flat otter boards for trawling experiment in the Gulf of Thailand by M.V. Plalung	1. Report on the research study of the comparative efficiency and impact of Vee type and rectangular flat otter boards for trawling experiment in the Gulf of Thailand by M.V. Plalung 2. Innovation of otter boards	On-going process: - Scientific results with preliminary data on catch composition comparison - Evidence on the impact of both types of otter boards - Fuel efficiency results - Characteristics of otter board functions during the fishing operations (In consideration of the weather and sea conditions in the upper Gulf of Thailand, the planned activities are implemented in December 2021, and a research report will be completed in 2022)
1.2.2) ALDFG data verifying, inputting to Google-form format and analysing	1. Verified data 2. Analyzed data 3. ALDFG data in Digital format	On-going process: Draft report on the preliminary investigation to estimate the Abandoned, Lost and Discarded Traps (Pots) and Gillnets (ALDFG) along the coast of Thailand (Activities to be completed in December 2021)
Activity 1.3 a) Online seminar entitled “Knowing our fishing gear” b) Online workshop/seminar on the impact of towing fishing gear, <i>i.e.</i> , trawl and dredge to fisheries resources and ecosystem c) Online Regional Technical Meeting on the ALDFG Research in Southeast Asia	1. Enhanced knowledge and awareness building of 60 participants from the SEAFDEC Member Countries on the impact of fishing gears and practices on the marine ecosystem 2. Information updated on trawl fishing technology and practices in the SEAFDEC Member Countries 3. Networking for fishing gear technologists developed 4. Capacity development of SEAFDEC Fishing Technology staff for the responsible fishing technology and practices 5. Awareness and knowledge on ALDFG issues in the SEAFDEC Member Countries through the online regional technical meeting improved	On-going process: (Activities to be organized in the 4 th quarter 2021) The expected results are as follows. 1. Enhanced knowledge and built awareness of participants from the SEAFDEC Member Countries on the impact of trawl fishing gear and practices on the marine ecosystem 2. Report of the online workshop/seminar/meeting 3. VDO clips on the online workshop/seminar/meeting 4. Publication list used in the regional technical training/workshop 5. Sixty (60) participants from the SEAFDEC Member Countries in the meeting 6. Human resources development for fishing gear technology staff concerned about the impact of trawl fishing gear and practices on the marine ecosystem 7. Increased understanding and awareness on best practices to prevent and reduce abandoned, lost or otherwise discarded fishing gear (ALDFG)
Activity 1.4 Information dissemination on the fishing techniques, <i>i.e.</i> fishing gear, fishing accessories and fishing practices, to reduce	Enhanced knowledge and awareness built on the fishing techniques, <i>i.e.</i> fishing gear, fishing accessories and fishing practices, to reduce bycatch and discards, and	About 50 articles of publications on fishing techniques, (<i>i.e.</i> fishing gear, fishing accessories and fishing practices, to reduce bycatch and discards, and mitigate impacts to habitat and ecosystem) are shared and disseminated to the Member Countries through e-mails in 2021.

Activities	Expected Outcome/Outputs	Results/Achievements
bycatch and discards, and mitigate impacts to vulnerable species	mitigate impacts to vulnerable species	
Output 2:	Marine engineering technologies (<i>i.e.</i> fuel efficiency, green-house gas reduction and safety of fishing operations at sea) improved at national and regional levels	
Activity 2.2 Research/study/survey on appropriate techniques to manage the fuel consumption, carbon emission, and/or safety of fishing operations	<ol style="list-style-type: none"> 1. The new SEAFDEC/TD research and training vessel is utilized as a learning model vessel to improve small fishing activities in the Southeast Asian Member Countries 2. Improved appropriate fishing gear and machinery, vessel construction 3. The applied concept of Low Impact and Fuel Efficiency (LIFE) 4. Awareness building on the modernized vessel as a smart vessel that encourages young generations to be engaged in working onboard 5. Improved fish handling technique <i>via</i> hybrid refrigeration and technology transfer to SEAFDEC Member Countries 	<ol style="list-style-type: none"> 1. Improved responsible fishing to reduce the negative impacts of trawling vessels by examining the efficiency of energy-saving ability, and performance of fishing gear design by installing the hydraulic net drum, multipurpose crane, tow line winch, Vee shape otter board, outrigger, or beam trawl (adjustable gallows), recondition of a propulsion engine, the appropriate engine to the vessel type, and engine size to the generator, monitoring, and awareness building by the installation of the fuel flow meter. 2. The concept of an appropriate fishing vessel was designed and promoted based on the standard of living of the crew onboard. Appropriate food and clean drink water are provided and stores, shower and toilet facilities must be equipped. 3. Appropriate fishery machinery, tools, fishing operation techniques by installing the power take-off for winch drives, split shaft power take-offs for a hybrid refrigeration system with non-CFC, and live fish preservation onboard improved.
Activity 2.3: Human resources development on techniques to manage the fuel consumption, carbon emission, and/or safety on the fishing operation.	<ol style="list-style-type: none"> 1. Participants gained knowledge and information on hauling devices, energy-saving and safety at sea for capture fishery through the training course 2. The participants were enabled to identify threats, issues, and the way forward for promoting hauling devices, optimizing energy used, and safety at sea in capture fishery and fishing fleet 3. Information and technology on hauling devices, optimizing 	<ol style="list-style-type: none"> 1. Thirty-two (32) participants from 5 SEAFDEC Member Countries enhanced their knowledge and experiences through the online training platform on the existing methods and techniques in deck machinery and hauling devices to reduce manpower on the fishing vessel and safety in fishing operations 2. A total of forty-two (42) persons participated in the meeting 3. Training report submitted 4. Clip VDOs on the regional training program distributed

Activities	Expected Outcome/Outputs	Results/Achievements
	energy used, and safety at sea shared and exchanged at the network of stakeholders	
Output 3:		
Activity 3.1: Human resource development on fish handling techniques onboard fishing vessels (Trainer level)	<ol style="list-style-type: none"> 1. Technical knowledge and practical skills enhanced on the reduction of post-harvest losses, which will help reinforce extension and promotion activities in their respective countries 2. Increased awareness of hygiene and good practices of fish handling on-board of the Southeast Asian fishing fleets 3. Technical information on fish handling disseminated to the SEAFDEC Member Countries 	<ol style="list-style-type: none"> 1. Twelve (12) participants from 5 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 2. A total of forty-two (42) persons participated in the meeting 3. Training report submitted 4. Clip VDO on the regional training program distributed

4. List of Publications in 2021

Publications	Type of Media	Attached e-file
1. Training report on the online regional training course on deck machinery and hauling devices to reduce manpower in fishing vessels and enhance safety in fishing operations, 5–6 May 2021	Training Report	
2. Electronic documents and media clips https://drive.google.com/drive/folders/1rxvDz4MeYhIAfSpiZC297xDS-9bed01L	Presentation & VDO	
3. Training report on the online regional training course on fish handling techniques onboard fishing vessels, 12–13 May 2021	Training Report	
4. Electronic documents and media clips https://drive.google.com/drive/folders/1hUIbTDS2tbClodIBHpj_tv0_J8iK9D	Presentation & VDO	
5. Total of 20 publications information shared with and disseminated on fishing techniques, (<i>i.e.</i> fishing gear, fishing accessories, and fishing practices, to reduce bycatch and discards, and mitigate impacts to habitat and ecosystem) to the Member Countries through e-mails	Technical article	

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

Activities	Evaluation
Output 1:	
Activity 1.1	No workshop/training in 2021
Activity 1.2	Research activities (no participants)
Activity 1.3	It is an ongoing process (Activities planned in the 4 th quarter of 2021)
Output 2:	
Activity 2.1	No workshop/training in 2021
Activity 2.2	Research activities (No participants)

Activities	Evaluation
Activity 2.3	Thirty-two (32) participants from 5 SEAFDEC Member Countries participated in the online regional training course on deck machinery and hauling devices. The participants expressed their satisfaction with the smooth arrangement and management of the training course and fulfilled their expectations on the updated situation of global issues on labor and energy saving on fishing vessels. They actively participated in the training and discussions. MCs expressed their interest in research/study/awareness building enhancement. Time allocations for presentations and discussions should be extended since the keynote presentations were interesting. The training course through the online platform can be an alternative under the COVID-19 situation.
Output 3:	
Activity 3.1	80% of the participants out of twelve (12) participants from 5 SEAFDEC Member Countries in the online regional training course on fish handling techniques onboard fishing vessels expressed their satisfaction to gain the expected knowledge. The 2-day training duration and timing were appropriate. Overall, the online training was well-organized.
Activity 3.2	No workshop/training in 2021

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 were 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 for the online training course instead of face-to-face training. Two online training courses were organized.

The Regional Training Course on “Deck Machineries and Hauling Devices to Reduce Manpower in Fishing Vessels and Enhance Safety in Fishing Operations” and The Regional Training Course on “Fish Handling Techniques Onboard Fishing Vessels” were successfully conducted by SEAFDEC/TD. The participants were satisfied with the overall training course by the online platform.

Another activity renovating the small wooden training vessel of the Training Department, namely M.V. Plalung, to be a multi-purpose training vessel was affected by the COVID-19 pandemic. As a result, the planned renovation is expected to be completed before the end of 2021.

In the situation of the COVID-19, meetings or training events would be organized *via* the online platform. The implementation of research activities such as field surveys and on-site training in Thailand would be considered case by case based on safety and the country’s measures. Overseas travelling is temporarily restricted. The remaining activities were shifted to complete in the 4th quarter of 2021.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2022

1. Project Summary in 2022

In 2022, to achieve the output of fishing technologies improvement at the national and regional level to reduce negative impacts to the marine ecosystem, the project will emphasize the ALDFG and fishing gear marking. Webinars and technical workshops will be organized to support the HRD of SEAFDEC MCs. In addition, the research plan and research contract agreement for the research study on the lost fishing gear and/or fishing gear marking will be respectively developed and signed with participating countries.

Focus on energy optimization, the project will provide a training course on an energy audit to improve fuel consumption, carbon emission, as well as safety in fishing operations. The research study on the appropriate fish handling techniques system for purse seiner *i.e.* sherbet ice system will be implemented by SEAFDEC engineers. SEAFDEC/TD will provide training courses at both the national level and regional level in handling techniques onboard a fishing vessel.

In addition, the project would disseminate the techniques to manage the fuel consumption, carbon emission, safety of the fishing operations and fish handling techniques onboard fishing vessels.

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> <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 2.3	<p>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</p> <p>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</p>	
Activity 2.4	Information dissemination	Shared with Act. 2.1 and 2.2

Proposed Activities	Descriptions	Proposed Budget
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 - Accomodation: 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 2022

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 2.4												
Output 3:												
Activity 3.1												
Activity 3.2												
Activity 3.3												

4. Expected Activity Results in 2022

Planned activity	Expected Activity Results
Activity 1	
Activity 1.1 Technical workshop on developing a work plan on lost fishing gear and/or fishing gear marking study at the pilot site	1. Agreement among SEAFDEC and participating countries 2. A work plan on lost fishing gear and/or fishing gear marking study at the pilot site developed
Activity 1.2 Research study on lost fishing gear and/or fishing gear marking study at the pilot site in participating countries	1. Research contract agreement signed between SEAFDEC and participating countries 2. Research equipment was prepared
Activity 1.3 Human resource development program on fishing technology by using online technology	1. Improved knowledge and the updated situation on lost fishing gear and/or fishing gear marking 2. Network of lost fishing gear and/or fishing gear marking
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	1. Report of the technical workshop on developing a working plan on lost fishing gear and/or fishing gear marking study at the pilot site 2. One (1) video clip of webinar on sharing knowledge and experiences on ALDFG and/or fishing gear marking. Improved knowledge and the updated situation on lost fishing gear and/or fishing gear marking



Planned activity	Expected Activity Results
Activity 2	
Activity 2.2 Research/study/survey on appropriate techniques to manage the fuel consumption, carbon emission, and/or safety of fishing operations	<ol style="list-style-type: none"> 1. Reduction of the impacts and management of the fuel consumption, carbon emission, and/or safety of fishing operations/preservation onboard. 2. Reduction of the operational costs from fishing operations/fish handling and preservation process and transportation activities
Activity 2.3 Human resources development on techniques to manage the fuel consumption, carbon emission, and/or safety of the fishing operations/practices	<ol style="list-style-type: none"> 1. Report on the online regional training course on energy audits. 2. Twenty (20) participants of the SEAFDEC Member Countries participated in the online training. 3. Three (3) publications used in the online regional training
Activity 2.4 Information dissemination on techniques to manage the fuel consumption, carbon emission, and/or safety on the fishing operations/practices.	<ol style="list-style-type: none"> 1. Three (3) publications on the fishing techniques, <i>i.e.</i> fuel consumption, carbon emission, and/or safety on the fishing operations/practices 2. Presentation in the national, regional or international symposium/conference
Activity 3	
Activity 3.1 Human resource development on fish handling techniques onboard fishing vessels (Trainer level)	<ol style="list-style-type: none"> 1. Report on the regional training of trainers (TOT) on fish handling techniques onboard fishing vessels 2. Twenty (20) participants of SEAFDEC Member Countries participated in the training/workshop 3. Four (4) publications used in regional technical training/workshop
Activity 3.2 Human resource development on fish handling techniques onboard fishing vessels (National scale)	<ol style="list-style-type: none"> 1. Report on the onsite training on fish handling onboard. 2. Thirty (30) participants were in the onsite training.
Activity 3.3 Information dissemination on fish handling techniques onboard fishing vessels	<ol style="list-style-type: none"> 1. One (1) publication was used in onsite training. 2. Presentation, Video clip, article, research paper related to onboard fish handling.

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2021
AND
PROPOSED ACTIVITIES FOR THE YEAR 2022**

			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 2022:	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. 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 decrease of the resources. SEAFDEC has undertaken the important effort of formulating the Regional Plan of Action (RPOA-Sharks) to conserve and manage sharks and rays in the region. RPOA-Sharks emphasizes the need to manage and exploit the shark resources at a sustainable level while safeguarding the livelihood of the fishers in the region.

Although sharks and rays are not the targeted fishes for 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 prepare management plans when required. Identifying species of elasmobranchs (sharks & rays) 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 to enhance understanding of the importance of sharks and rays in the Southeast Asian region and the necessity of fisheries management measures.

2. Background and Justification

Information on the 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 are most probably misidentified. In general, data collections and shark and ray studies are limited in many countries in the region, such as 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 fish. Most countries in this region still record 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, and spatial and temporal distribution of sharks and rays is still lacking in some countries.

Since the landing of sharks and rays recorded less than 2% of the total marine landing commonly (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 resources of sharks and rays. Landing sites are also scattered, and there are too many private landing sites in some countries. Most countries are also facing a lack of expertise and competent officers in elasmobranch taxonomy as well as references in their national languages.

However, the pressure on the 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*), the 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 sharks (*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 prepare management plans when required. Expertise on identification, landings, and biological data needs to be strengthened. In addition, information on the utilization of sharks and rays is very useful in order to enhance understanding of the importance of the socio-economy of sharks and rays in the Southeast Asian region.

These activities correspond to the ASEAN-SEAFDEC RES&POA-2030, Resolution (No. 12: Strengthen knowledge, including local knowledge, and science-based development and management of fisheries by enhancing the national capacity to collect, analyses, and share fisheries data and information) and Plan of Action (No.5: Strengthen the collection of data and information, where relevant, on species under international concern, e.g., sharks and rays, sea turtles, catadromous eels, aquatic mammals, etc., and harmonize/standardize data collection methods among countries in the region); (No. 82: Strengthen cooperation and mechanism 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 Subcommittee on Fish Trade, Office International des Epizooties (OIE), Codex Alimentarius Commission (CAC), and Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)) on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030, and the United Nations' Sustainable Development Goals (SDGs), particularly SDG 14: Life below Water.

3. Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



4. 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.

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

5.1 Logical Framework

GOAL (Overall Objectives, Impact)	Indicators	Means of Verification
Sustainable Utilization of Sharks and Rays in the Southeast Asian region.	<ul style="list-style-type: none"> - Incomes of workers (e.g., fishers, traders, processors, etc.) related to the fishery industry will not decrease through sustainable fishery production - Number of AMSs incorporating the management advice on resource utilization in their national policies 	<ul style="list-style-type: none"> - Historical by-catch data on sharks and rays provided by enumerators - Data from socio-economic surveys of workers (e.g., fishers, traders, processors, etc.) related to the fishery industry in 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 though 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 four 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 identifying CITES-listed species during an 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	Means of Verification
Activity 1.1: One training course and workshop on chondrichthyan taxonomy and biology	<ul style="list-style-type: none"> - 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

<p>Activity 1.2: On-site training on taxonomy and biology at selected landing sites</p>	<p>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</p>	<ul style="list-style-type: none"> - Training reports - At least 10 local officers at each training
<p>Activity 1.3: Meetings on chondrichthyan research and Access and Benefit Sharing in the region</p>	<p>Regional meetings will be organized by MFRDMD to compile and sharing information in 2020 and 2024</p>	<ul style="list-style-type: none"> - Meeting reports - At least 2 participants of participating Member Countries, TD and Secretariat
<p>Activity 1.4: Publication of updated guidebook on the identification of chondrichthyans in the region</p>	<p>One new guidebook will be published to update the latest information, including new species and new records in the region in 2024</p>	<p>Guidebook in the last year of the project (2024)</p>
<p>Activity 1.5: Supporting data collection at least one site in Indonesia, Malaysia, Myanmar, Philippines, Viet Nam, and Thailand (Proposed by TD and MFRDMD)</p>	<p>Targeting at least one site/year from 2020, 2021, 2022, 2023, and 2024</p>	<p>Long-term landing data is beneficial for estimating stock and biomass using models like the Bayesian Surplus Production model and Bayesian State-Space Surplus Production Model</p>
<p>Activity 1.6: Training workshops on sharks for stock assessment models (Proposed by TD)</p>	<p>Four-day training workshops in 2021 and 2023.</p>	<ul style="list-style-type: none"> - Workshop reports - Participants of participating Member Countries, TD and Secretariat
<p>OUTPUT 2</p>	<p>Indicators</p>	<p>Means of Verification</p>
<p>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>	<p>Biomass at least two common species estimated from 2022</p>	<p>Information on the biomass of six common species in participating countries</p>
<p>ACTIVITY 2</p>	<p>Indicators</p>	<p>Means of Verification</p>
<p>Activity 2.1: Study of stock structures of selected species of sharks and rays by genetic markers</p>	<p>12 populations for mtDNA studies in 3 species (<i>Chiloscyllium hasseltii</i>, <i>Carcharhinus sorrah</i>, and <i>Sphyrna lewini</i>) in the four regions (WCPM, ECPM, Kota Kinabalu, and Tawau)</p>	<ul style="list-style-type: none"> - Study report - Report presented at international fora and published
<p>OUTPUT 3</p>	<p>Indicators</p>	<p>Means of Verification</p>
<p>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</p>	<p>Enhancement of legal exports on products of sharks and rays in the SAE region through development of NDF documents.</p>	<p>Government transparencies in marketing and trade control of CITES-listed species and endangered species</p>

ACTIVITY 3	Indicators	Means of Verification
Activity 3.1: Survey on fishers' dependencies, marketing and trade of sharks and rays in the region/country visited	Five regions covered: mid-Viet Nam, north-Viet Nam, Irrawaddy, Mindanao (Sulu and Sulawesi Seas), and Bali in years 2021, 2022 and 2023	<ul style="list-style-type: none"> - Survey report - Information on marketing trade and channels of sharks and rays in participating countries - Development of NDF documents for selected CITES-listed species is widespread in this region, such as <i>Sphyrna lewini</i>, <i>Alopias pelagicus</i>, <i>Alopias superciliosus</i>, <i>Carcharhinus falciformes</i>, <i>Mobula japonica</i>, and <i>M. thurstoni</i>.

5.2 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																				

5.3 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			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 2021

1. Project Achievements in the Present Year (2021)

Sub-activity 1.2: On-site training on taxonomy and biology at selected landing sites.

MFRDMD planned to conduct one on-site training on taxonomy and biology in Viet Nam 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 in the second quarter of 2021. Due to circumstances arising from the COVID-19 pandemic, this training could not be implemented in 2021.

Sub-activity 1.5: Supporting data collection at least one site in Indonesia, Malaysia, Myanmar, Philippines, Viet Nam, and Thailand (proposed by TD and MFRDMD)

In 2021, monthly landing data collection on sharks and rays up to species in Sabah (Kota Kinabalu and Tawau) were continued. Monthly data was received from January – August 2021 collected by two assigned enumerators for each location. These activities were undertaken in collaboration with DoFM. A new enumerator was assigned at Tawau, Sabah, to replace the previous enumerator who had transferred to a new department. An online ‘Training Data Collection’ was conducted on 26th June 2021 to train this new enumerator of standard operating procedures to collect landing data on sharks and rays. A total of seven participants participated in this training, including two enumerators from Tawau, two enumerators from Kota Kinabalu, one research officer from FRI Kg. Aceh, Perak, one fishery officer from Likas, Sabah, and one fishery officer from Johor Bahru, Johor.

Sub-activity 1.6: Training workshops on sharks for stock assessment models (Proposed by TD)

The project planned to hold a training workshop on sharks for stock assessment models like Bayesian Surplus Production and Bayesian State Space Surplus Production Model in the third quarter of 2021. MFRDMD will collaborate with SEAFDEC/TD to organize this training workshop online or postpone it to 2022 due to the COVID 19 pandemic.

Sub-activity 2.1: Study of stock structures of selected species of sharks and rays by genetic markers

This project continued the study on stock structures of two shark species (*C. hasseltii* and *C. sorrah*) and one CITES listed species (*S. lewini*) implemented in 2020. The project involved four sampling locations namely Kuantan, Pahang; Larut Matang, Perak; Kota Kinabalu and Sandakan, Sabah. All sampling locations were in Malaysia but covered the Andaman Sea, South China Sea, and the Sulu Sea.

In 2020 DNA sampling was completed for these three species from Kuantan. In 2021, DNA samples were collected from Bagan Panchor and Larut Matang, Perak on 5-7 April 2021, collaborating with DoF Perak and Fisheries Research Institute (FRI) Kg. Aceh. Twenty-six samples of *C. hasseltii*, 35 samples of *C. sorrah*, and seven *S. lewini* were collected. MFRDMD will collect nine and twenty-eight more samples of *C. hasseltii* and *S. lewini*, respectively, from Perak. Sampling also will be conducted in Sabah (Kota Kinabalu and Sandakan) after receiving an access and export license from Sabah Biodiversity Centre (SaBC) and depending on the COVID-19 pandemic situation.

The study uses the mitochondrial DNA *D-loop* region. The necessary tools and kits were purchased, and DNA analysis of samples collected is in progress.

Sub-activity 3.1: Survey on fishers’ dependencies, marketing and trade of sharks and rays in the region/country visited

A survey on fishers’ dependencies, marketing, and trade of sharks and rays is planned to be conducted in Pontianak, Indonesia, in the third quarter of 2021. The objectives of this activity were to assess the dependencies of fishers; the impacts on socio-culture-economy of fishers after several shark and ray 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. This activity could not be implemented due to the COVID-19 pandemic, where overseas travelling was restricted.

Two physical training workshops were planned before the end of 2021 in collaboration with UMT depending on the COVID-19 situation:

- 1) Workshop on Landing Data Analysis of Sharks and Rays by Species to Determine Value of Maximum Sustainable Yield (MSY), and
- 2) Workshop on Conservation of Sharks and Rays Through Parasites’ Perspective.

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 1.2 On-site training on taxonomy and biology at selected landing sites	T							
Activity 1.5 Supporting data collection at least one site in Indonesia, Malaysia, Myanmar, Philippines, Viet Nam, and Thailand (Proposed by TD and MFRDMD)	R			2	5		5	4,878
Activity 1.6 Training workshops on sharks for stock assessment models (Proposed by TD)	T							407
Output 2:								
Activity 2.1 Study of stock structures of selected species of sharks and rays by genetic markers	R			3	3		3	3,497
Output 3:								
Activity 3.1 Survey on fishers' dependencies, marketing and trade of sharks and rays in the region/country visited	R							

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

Activities	Expected Outcome/Outputs	Results/Achievements
Outcome		
Output 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. 	Not implemented due to the COVID-19 pandemic
Activity 1.5 Supporting data collection at least one site in Indonesia, Malaysia, Myanmar, Philippines, Viet Nam, and Thailand (Proposed by TD and MFRDMD)	At least one site of long-term landing data collection for estimating stock and biomass	Sharks and rays landing data at species level were collected every month in two sites at Sabah (Kota Kinabalu and Tawau). Other information collected includes biology, marketing destination, and price.

Activities	Expected Outcome/Outputs	Results/Achievements
Activity 1.6 Training workshops on sharks for stock assessment models (Proposed by TD)	<ul style="list-style-type: none"> - Four-days training workshop for at least 10 persons. - Workshop report 	Not implemented due to the COVID-19 pandemic
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"> - Equipment, chemicals, disposable laboratory consumables, and kits purchased - Specimen collection - PCR and DNA sequence analysis 	<ul style="list-style-type: none"> - DNA samples were collected from Bagan Panchor and Larut Matang, Perak, on 5-7 April 2021, collaborating with DoF Perak and Fisheries Research Institute (FRI) Kg. Acheh. Twenty-six samples of <i>C. hasseltii</i>, 35 samples of <i>C. sorrah</i>, and seven <i>S. lewini</i> were collected. MFRDMD will collect nine and 28 more samples of <i>C. hasseltii</i> and <i>S. lewini</i>, respectively, from Perak. Sampling also will be conducted in Sabah (Kota Kinabalu and Sandakan) after receiving an access and export license from Sabah Biodiversity Centre (SaBC) and depending on the pandemic COVID-19 situation. - The study used the mitochondrial DNA <i>D-loop</i> region. The necessary tools and kits were purchased, and DNA analysis of samples collected is in progress.
Output 3:		
Activity 3.1 Survey on fishers' dependencies, marketing and trade of sharks and rays in the region/country visited	The dependencies of fishers assessed; the impacts on socio-culture-economy of fishers after several shark, and ray 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	Not implemented due to the COVID-19 pandemic

4. List of Publications in 2021

Publications	Type of Media	Attached e-file
1. Report of The First Core Expert Meeting on Fisheries Management Strategies for Pelagic Fish Resources in the Southeast Asian Region 24 November 2020.	Hard copy and PDF	
2. Data Collection on Sharks and Rays by Species in Malaysia (August 2017 – July 2018).	Hard copy and PDF	
3. Data Collection on Sharks and Rays by Species in Malaysia (August 2018 – July 2019).	Hard copy and PDF	
4. Evidence of Kuala Pahang as an Important Nursery Ground for Sharks and Rays.	Hard copy and PDF	
5. Special Report: Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region. SEAFDEC Newsletter Vol. 44 No. 1.	Hard copy and PDF	
6. DNA Barcoding Approach to Ratify Sharks Species in Malaysia.	PDF	

Publications	Type of Media	Attached e-file
7. Evidence of Kuala Pahang Waters in the South China Sea as An Important Nursery Ground of Sharks and Rays.	PDF	
8. Penemuan Pari Air Tawar Sungai Perak – Rekod Baharu untuk Malaysia. Berita Perikanan No. 117 Jun 2021.	Hard copy and PDF	

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

Activities	Evaluation
Output 1:	
Activity 1.2	None
Activity 1.5	None
Activity 1.6	None
Output 2:	
Activity 2.1	None
Output 3:	
Activity 3.1	None

6. Major Impacts/Issues

Under the situation of the Covid-19 pandemic, MFRDMD was unable to carry out some of the activities as initially planned in 2021. Overseas travel was temporarily pending. The planned activities were adjusted and re-scheduled from face-to-face to tele workshop or/and online training. However, the online meeting/training results were not as expected as usual face-to-face meeting/training, and some activities could not be implemented, such as our planned on-site training and survey on fishers' dependencies, marketing, and trade. For the research activities such as field surveys in Malaysia, the implementation would be considered case by case based on safety and country's measures.

Collecting the specimens of *S. lewini* (CITES listed) for DNA analysis was quite difficult because this species occurs seasonally with a low number of landings. MFRDMD cooperated with local staff for sample collections and shipment.

These project activities enhanced cooperation between women and men. Main Technical Officers played a crucial role in 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 2022

1. Project Summary in 2022

In 2022, MFRDMD will conduct one training course and workshop on chondrichthyan taxonomy and biology at MFRDMD, which involves at least two participants from each member country and SEAFDEC/TD. One on-site training is organized on taxonomy and biology at selected landing sites (Viet Nam) 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. TD and MFRDMD continue to support landing data collections in selected participating countries. This project also continues the study on stock structures of 2 shark species (*C. hasseltii* and *C. sorrah*), and one CITES listed species (*S. lewini*). A survey on fishers' dependencies, marketing, and trade of sharks and rays is conducted in Pontianak, Indonesia. The objectives of this activity are to assess the dependencies of fishers; the impacts on socio-culture-economy of fishers after several shark and ray 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)

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 1.1 One training course and workshop on chondrichthyan taxonomy and biology	A five-day regional training conducted at MFRDMD in 2022. <i><Estimates></i> Travel Costs (MCs + TD): <i>Air fare (16 person):</i> USD 7,200 <i>DSA:</i> USD 2,800 <i>Terminal allowances:</i> USD 640 <i>Accommodations:</i> USD 4,320 Training Costs <i>Lecturer's fee (2 person):</i> USD 1,000 <i>Facilitator's fee (4 person):</i> USD 700 <i>Secretariat & drivers (2 person):</i> USD 350 <i>Specimens and shipping for collected specimens:</i> USD 2,046 <i>Reprint guide book:</i> USD 2,500 <i>Training-related costs and miscellaneous:</i> USD 3,444 <i>Sub-total: USD 25,000</i>	25,000
Activity 1.2 On-site training on taxonomy and biology at selected landing sites	MFRDMD organizes one on-site training on taxonomy and biology at selected landing sites (mid-Viet Nam). <i><Estimates></i> <i>- Hotel accommodation (3 person):</i> USD 420 <i>- DSA & Terminal allowances:</i> USD 330 <i>- Airfare (3 person):</i> USD 2,100 <i>- DSA for local delegate:</i> USD 140 <i>- Airfare for one local delegate:</i> USD 300 <i>- Hotel accommodation for one local delegate:</i> USD 140 <i>- Samples:</i> USD 1,410 <i>- Meeting-related costs and miscellaneous:</i> USD 660 <i>Sub-total: USD 5,500</i>	5,500
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 <i><Estimates></i> <i>Enumerators: = \$ 5,000</i> <i>Sub-total: USD 5,000</i>	5,000
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)	

Proposed Activities	Descriptions	Proposed Budget
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>C. hasseltii</i> , <i>C. sorrah</i> , and <i>S. lewini</i>) in the 4 regions (WCPM, ECPM, Kota Kinabalu, and Tawau) MFRDMD continues sample analysis using DNA molecular markers. <Estimates> Research Expenses: - Consumable equipment supplies: USD 3,500 - Extraction kit: USD 600 - Hire of supporting staff (6 months): USD 2,700 Consultant Fees: - Sequencing: USD 3,200 Sub-total: USD 10,000	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	
Activity 3.1 Survey on fishers' dependencies, marketing and trade of sharks and rays in the region/country visited	The overall objective of the survey is to collect information on socio-culture-economic, marketing, and trade data in Pontianak, Indonesia. <Estimates> Travel Costs (MFRDMD): - Airfare: USD 1,000 - DSA & terminal allowances: USD 660 - Accommodations: USD 700 Travel Costs (Local): - DSA: USD 250 - Accommodations: USD 350 - Miscellaneous: USD 40 Sub-total: USD 3,000	3,000

3. Implementation Plan of Activities in 2022

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

4. Expected Activity Results in 2022

Planned activity	Expected Activity Results
Activity 1	
Activity 1.1. One training course and workshop on chondrichthyan taxonomy and biology	<ul style="list-style-type: none"> • Two participants from each participating member country. • The training enhanced human resource capacities in elasmobranch taxonomy and biology.
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 2	
Activity 2.1. Study of stock structures of selected species of sharks and rays by genetic markers	<ul style="list-style-type: none"> • Equipment, chemicals, disposable laboratory consumables, kit, and samples for genetic structure study of 3 shark species purchased • Findings from PCR and DNA sequence analysis
Activity 3	
Activity 3.1 Survey on fishers' dependencies, marketing and trade of sharks and rays in the region/country visited	<ul style="list-style-type: none"> • The survey identified: <ol style="list-style-type: none"> i) marketing and trade in Pontianak, Indonesia; 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 Pontianak, Indonesia if required.

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2021
AND
PROPOSED ACTIVITIES FOR THE YEAR 2022**

			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 2022:	USD 45,000
Lead Technical Officer:	Toshiya Suzuki (IFRDMD)	Project Participating Country:	All Members Countries

PART I: PROJECT DESCRIPTION

1. Executive Summary

This project is a five-year activity involving all Member Countries. The 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 the tropical zone increase dramatically. In order to avoid the over exploitation of glass eel, the Indonesian government issued the regulation to prohibit export of eel seeds less than 150g from Indonesia's territory. 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 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 fisheries management, the information on genetic population structure or stocks is 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. Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



4. 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.

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

5.1 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/regulation
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	Indicators	Means of Verification
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

GOAL (Overall Objectives, Impact)	Indicators	Means of Verification
ACTIVITY 2	Indicators	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	Means of Verification
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 improvement 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

5.2 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 2:																				
Activity 3.1																				

5.3 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 2021

1. Achievements of the Project Implementation for the present year 2021

In 2021, some of the planned activities could not be undertaken because of the Covid-19 pandemic issues and needed to be adjusted.

The project on the sustainable utilization of anguillid eel in the Southeast Asia region planned survey on catch and biological data (Activity 1.1 and Activity 1.2). There was no glass eel catch activity in Palabuhan Ratu due to no demand from the eel farm in Indonesia. Although IFRDMD could collect the data from Cilacap, Indonesia, from January to July, but the data collection could not continue due to the Covid-19 situation. The total catch of elver and yellow eels in Cilacap from January to July was 1,092.89 kg. The highest catch occurred in June 530.58 kg, an increase of 30% compared to the previous year's first semester. The data from the Philippines also could not be collected. The field survey was conducted in March in Poso, Indonesia. The survey successfully collected nine yellow samples from the Poso river, dominated by the longfin species (ADTL% > 9%, but it still needs further observation for species identification). The result of sample measurement was 68 cm and 46.1 cm as the maximum and minimum length.

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 the D-LOOP region marker. In 2021, the target species is *A. marmorata*. A total of 324 samples from Anguillid eels have been identified. Based on the comparison between sample sequences and genetic data provided by GenBank, the highest percentage of sample species similarity was concluded as the type of sample species. The result showed that the target species (*A. marmorata*) was identified as 69.44% of the samples. The other samples were identified as 16.05% *A. bicolor pacifica*, 8.33% *A. bicolor bicolor*, 3.09% *A. celebesensis*, 2.47 % *A. interioris*, and 0.62% *A. nebulosa*.

Under Activity 3, the semi-annual meeting was conducted in September 2021, and the annual meeting will be held at the end of 2021 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. Information of Present Year Activity including Involved Stakeholders

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		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	0	0	16,000
Activity 1.2	Conducting a survey to collect the biological data of Anguillid eel fisheries	0	1	2	1	0	3	10,000
Output 2:								
Activity 2.1	Conducting a survey to collect tissue sample of tropical eels in Southeast Asia	2	3	3	3	0	2	9,000
Activity 2.2	Conducting genetic analyses in laboratory	0	0	3	1	0	0	5,500
Output 3:								
Activity 3.1	Project monitoring and evaluation lead by Project Leader undertaken	0	0	10	10	0	0	4,500

3. Achievements and Expected Outcomes/Outputs of the Activity

Activities	Expected Outcome/Outputs	Results/Achievements
Outcome		
Output 1:		
Activity 1.1	<ul style="list-style-type: none"> Database of catch and CPUE of Anguillid eel fisheries; Survey report 	<ul style="list-style-type: none"> Database of catch and CPUE of Anguillid eel fisheries (Indonesia: Cilacap) Article for the “Fish for the People” Magazine
Activity 1.2	Survey report	<ul style="list-style-type: none"> Successful survey to collect the biological data of Anguillid eel in Poso (3 samples). Staff capacities improved in otolith analysis through the participation in the training on the basic theory, operation and maintenance of the otolith equipment (polisher).
Output 2:		
Activity 2.1	Report of collection eel tissue sample from the field	<ul style="list-style-type: none"> The samples collected in the Philippines were unable to be sent to IFRDMD due to the restrictions under the Covid-19 pandemic. There were some difficulties in collecting samples from Myanmar.
Activity 2.2	<ul style="list-style-type: none"> Report of laboratory work Submit an article to the Journal 	<ul style="list-style-type: none"> The samples from Viet Nam were received by the IFRDMD laboratory and are on the process of morphometric checking
Output 3:		
Activity 3.1		

4. List of Completed Publications in 2021

Publications	Type of Media	Attached e-file
1. Muthmainnah, D., N.K. Suryati, A. Wibowo, Samuel, M, Marini, K. Kasim, S. Makmur, K. Fatah, I. Trismawati, Y.P. Pamungkas, Y.S. Mulyani. 2021. <i>Overview and Perspective of Anguillid Eels Fishery in Southeast Asia</i> . Editor: N.N. Wiadnyana, T. Suzuki, V.T. Sulit & D. Luspa. IPB Press. Bogor. ISBN 978-623-258-497-8.	Book	
2. Marini, M. Ivane, R., Mudjiekeewis, D.S., Shibuno, T., Daryani, A., Maria, R.R., & Wibowo, A. 2021. <i>Genetic diversity, population structure and demographic history of the tropical eel <i>Anguilla bicolor pacifica</i> in Southeast Asia using mitochondrial DNA control region sequences</i> . Global Ecology and Conservation 26(3). https://doi.org/10.1016/j.gecco.2021.e01493	Journal	
3. Muthmainnah, D., Suryati, N.K., Koya, I., Sulit, V.I., & Shibuno, T. 2021. <i>Management of Catadromous Eel Resources in Southeast Asia Toward Sustainability: a Synthesis</i> . Fish for the People. Vol. 19 No. 2. Bangkok.	Magazines	

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

Activities	Evaluation
Output 1:	
Activity 1.1	Note: the implementation of the planned activities has been delayed due to the Covid-19 pandemic.
Activity 1.2	Note: the implementation of the planned activities has been delayed due to the Covid-19 pandemic.

Activities	Evaluation
Output 2:	
Activity 2.1	Note: the implementation of the planned activities has been delayed due to the Covid-19 pandemic.
Activity 2.2	Note: the implementation of the planned activities has been delayed due to the Covid-19 pandemic.
Output 3:	
Activity 3.1	

6. Major Impacts/Issues

Due to the Covid-19 pandemic, the implementation of the planned activities has been adjusted and re-scheduled.

- The field surveys and gender issue were postponed due to the Covid-19 pandemic.
- Since there was no request for glass eel from the farm company, the capture activity decreased, impacting the fishers' livelihood.
- The sample transfer process to IFRDMD depends on the COVID19 situation.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2022

1. Project Summary in 2022

Although the survey activities could not be undertaken as planned due to the Covid-19 pandemic in 2021, the project activities will recommence with conducting a survey for collecting the catch and biological data (Activity 1.1 and Activity 1.2) in 2022. The survey will contribute to the sustainable eel fisheries and standardize the data collection system in the Member Countries.

Under the 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 D-LOOP region marker. The samples and/or tissues of *Anguilla marmorata* will be collected and analyzed in the selected Member Countries which have *A. marmorata* (i.e., Indonesia, Philippines, Viet Nam, and Myanmar).

Under the 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 2022.

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	<p>Conducting a survey to collect the data of catch and CPUE of Anguillid eel fisheries.</p> <p>The Surveys are conducted in Indonesia and Philippines for updating status and collecting the data of catch and effort of Anguillid eel fisheries</p> <p>Estimated expenditures: - Enumerator fee (2 countries): USD 16,000 Sub-total: USD 16,000</p>	16,000

Proposed Activities	Descriptions	Proposed Budget
Activity 1.2	<p>Conducting a survey to collect the biological data of Anguillid eel fisheries.</p> <p>The survey to collect the biological data (<i>i.e.</i>, length-weight, reproduction biology, otolith) of Anguillid eel is conducted in the Philippines.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - 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 <p>Sub-total: USD 10,000</p>	10,000
Output 2:	Genetic population structure of tropical eel in Southeast Asia	14,500
Activity 2.1	<p>Conducting a survey to collect tissue samples of tropical eel.</p> <p>This budget is used for the collection of eel tissue sample in Indonesia (Bali and Kalimantan) and purchasing samples from Viet Nam. The samples from regional countries (Philippines and Myanmar) are collected simultaneously with the survey activity of biological data of Anguillid eel fisheries.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Purchase samples from Viet Nam: USD 1,000 <p>Bali, Indonesia:</p> <ul style="list-style-type: none"> - Transportation to Bali, 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 <p>Kalimantan, Indonesia:</p> <ul style="list-style-type: none"> - 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 <p>Sub-total: USD 9,000</p>	9,000
Activity 2.2	<p>Conducting laboratory work to analyze genetic population structure of tropical eel.</p> <p>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.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Sequence analysis: USD 5,500 <p>Sub-total: USD 5,500</p>	5,500
Output 3:	Successful project management through regular monitoring and evaluation	4,500
Activity 3.1	<p>Project monitoring and evaluation led by Project Leader undertaken</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 <p>Sub-total: USD 4,500</p>	4,500

3. Implementation Plan of Activities in 2022

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 2022

Planned activity	Expected Activity Results
Activity 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
Activity 1.2 Conducting a survey to collect the biological data of Anguillid eel fisheries	<ul style="list-style-type: none"> • Survey report
Activity 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
Activity 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 2021
AND
PROPOSED ACTIVITIES FOR THE YEAR 2022**

			Project ID: 202001014
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 2022:	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 resources are a primary source of protein and contribute to the wellbeing and livelihoods of people. Thus, they are significant in the social and economic aspects of the world. However, the growing human populations as well as development of aquaculture and fishery-related industries in Southeast Asia during the past several decades have made great demands on marine fish and fishery products which resulted in the overexploitation of many species as well as deterioration of marine habitats and ecosystems. To conserve the fisheries resources, sustainable resource management is urgently needed.

Over the past decade, SEAFDEC and its Member Countries have conducted several activities at national and regional level aiming at the sustainable utilization and enhancement of marine and coastal fisheries resources and the ecosystem, *e.g.* exploring under-utilized offshore fisheries resources, carrying out fisheries and environment survey, assessing stock of economic species, installing enhanced fisheries resources tools, developing plans of action, organizing meeting, workshop and training course, etc. However, marine catch statistics of Southeast Asian fisheries are still in the declining trend although the number of fishing vessels continues to increase. Therefore, the sustainable utilization and enhancement of marine and coastal fisheries resources are ongoing challenges in the region.

In this connection, SEAFDEC/TD has formulated the project entitled “Sustainable Utilization of Marine Fisheries Resources and Resource Enhancement in Southeast Asia” since 2020. The expected output for this project is the strengthened sustainable management of marine fisheries resources in Southeast Asia through improved technical and research capacities by organizing capacity building training courses, meeting and seminar, conducting fisheries and environment research surveys, developing the application of Fisheries Geographic Information System (FGIS) and Remote Sensing (RS), publishing SOPs for evaluating the implementation of enhanced fisheries resources activities, etc.

In the implementation of the project activities, it is expected that the wellbeing and livelihoods of marine fishers would be further improved through the sustainable utilization of marine fisheries resources and resource enhancement in the Southeast Asian region in future.

2. Background and Justification

Over a 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 a high abundance of fisheries resources because the coastal ecosystem in the region is very productive, and the high biodiversity of marine fish species provides multiple ecosystems which are suitable habitats for fisheries resources.

However, over several decades, fisheries in Southeast Asia have exceeded its point of sustainability. Some of the commercially important fish resources in the region have declined due to various factors, *e.g.* overfishing, illegal fishing, use of destructive fishing practices and environmental degradation. In support of ending 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 JTF-6 conducted two (2) projects, namely “Off-shore Fisheries Resource Exploration in Southeast Asia” and “Promotion of Sustainable Fisheries Resources Enhancement Measures in Critical Habitats/Fishing Grounds in Southeast Asia” over the last 7 years. These were implemented in line with the United Nations’ Sustainable Development Goals 14 (Conserve and Sustainably Use the Oceans, Seas and Marine Resources for Sustainable development) and the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030 (RES&POA-2030). Regarding the support to the RES&POA-2030, the activities under his project are implemented in line with the POA-203: Marine Fisheries #35 “Promote resource enhancement approaches with appropriate monitoring and evaluation programs, *e.g.* deployment of appropriate resource enhancement structures, restocking of commercially-important aquatic species, and restoration and degraded habitats, taking into consideration possible socio-ecological impacts.”

Based on the lessons learnt from the activities promoting sustainable fisheries, it reveals that effective strategies and management as well as science-based knowledge on marine resources are a prerequisite for sustainable fisheries. The effective strategies and management could not be developed if there is no support of science-based knowledge on marine resources.

Hence, the project entitled “Sustainable Utilization of Marine Fisheries Resources and Resources Enhancement in Southeast Asia” aims to improve science-based knowledge and build the technical capacity of fisheries officers and researchers in the Member Countries to conduct related research.

3. Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



4. Gender Sensitivity of the Project

Project involves men and women with neutral and equalized opportunities.

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

5.1 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 secured and stable 	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	Means of Verification
Activity 1.1: Regional training on design of sampling gear on board fisheries resource survey	<ul style="list-style-type: none"> • One (1) 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 of participants
Activity 1.2: Regional training on fisheries oceanographic survey	<ul style="list-style-type: none"> • One (1) regional training on relationship between ocean environment variability and fisheries resource abundance and oceanographic sampling conducted • Expected number (11) of persons trained 	<ul style="list-style-type: none"> • Training report • Number of participants
Activity 1.3: Regional training on research cruise planning for marine fisheries resources and oceanographic survey	<ul style="list-style-type: none"> • One (1) 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 of participants
Activity 1.4: Regional training on data collection and fisheries resources stock assessment	<ul style="list-style-type: none"> • One (1) 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 of participants
Activity 1.5: Regional training on marine pollution	<ul style="list-style-type: none"> • One Regional Training Course on Marine Debris and Microplastics • Sampling collection and Analysis conducted • Expected number (11) of persons trained • One (1) marine debris and microplastic survey conducted in ASEAN water 	<ul style="list-style-type: none"> • Training report • Number 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	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	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	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"> our 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	<ul style="list-style-type: none"> 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	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)	<ul style="list-style-type: none"> Four (4) events (regional training course or technical meeting) on utilization of FGIS and RS organized Expected number (20) of participants 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> SEAFDEC participated in the five (5) trainings, meetings, or seminar 	<ul style="list-style-type: none"> Back to office report
OUTPUT 6	Indicators	Means of Verification
Technical capacities of human resources to conduct resource enhancement	<ul style="list-style-type: none"> Number of competent researchers The resource enhancement evaluated 	<ul style="list-style-type: none"> Training report Evaluate artificial reefs installation to enhance marine resources
ACTIVITY 6	Indicators	Means of Verification
Activity 6.1: Regional Consultation Workshop on Developing a Plan of Activities for Resources Enhancement in Southeast Asian region	<ul style="list-style-type: none"> One regional Consultation Workshop organized Expected number (20) participants 	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> Three events (Training course/research study) regarding fisheries resources conducted in the 2nd, 3rd and 4th year At least one research study is published 	<ul style="list-style-type: none"> Training Reports Published research study
Activity 6.3: Seminar on the Resources enhancement in Southeast Asia (Year 2024)	<ul style="list-style-type: none"> One seminar to share the knowledge of fisheries resources enhancement among Southeast Asian researchers is conducted Expected number 20 participants 	<ul style="list-style-type: none"> Seminar report Technical report

5.2 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																				

5.3 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					18,000
	Activity 1.4				18,000	
	Activity 1.5	5,000	5,000	20,000	5,000	5,000
	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	5,000	5,000	5,000	5,000	5,000
Output 4	Activity 4.1	15,000				
	Activity 4.2		15,000			
	Activity 4.3			15,000	15,000	15,000
Output 5	Activity 5.1	12,000	12,000	13,000	13,000	13,000
	Activity 5.2	3,000	3,000	2,000	2,000	2,000
Output 6	Activity 6.1	17,500				
	Activity 6.2		20,000	20,000	20,000	18,000
	Activity 6.3					2,000
Sub-Total		80,000	80,000	80,000	80,000	80,000

PART II: PROJECT ACHIEVEMENTS IN 2022

1. Project Achievements in the Present Year

The project aimed to improve science-based knowledge and build capacity of fisheries officers/researchers to conduct a research survey. In 2021, four main activities were undertaken including:

- 1) Human resource development: It was conducted through organizing three regional online training courses namely, “The Relationship Between Ocean Environment Variability and Marine Resource Abundance and Oceanographic Sampling”, “Fish Population Dynamics and Fisheries Management Using R-statistical Program” and “GIS for aquaculture”;
- 2) Development of two research cruise plans using M.V. SEAFDEC 2: It is in process to develop a cruise plan for Myanmar and the Philippines;
- 3) Research study on microplastics in the northern part of the Gulf of Thailand; and
- 4) Publishing the Evaluation SOPs for Artificial Reefs Installation to Enhance Marine Resources: Case Study of Fish Enhancing Devices-FEDs (the duration is 18 months). SOPs can be published in early 2023.

A total of 119 trainees attended the SEAFDEC training courses. Their technical knowledge on oceanography, GIS and stock assessment has been improved. 15 training VDOs were produced and are available for researchers of the Member Countries to revisit on the SEAFDEC website. A discussion on an acoustic survey cruise for the biomass distribution of sardines in the Philippine Water and a fisheries resource survey in shallow water in Myanmar was initiated. First draft survey plans were developed, and the final drafts are expected in 2022. Microplastic samples in the Gulf of Thailand were sorted out and its analysis is in process. Fish Enhancing Devices (FEDs) were installed as part of the research for the Evaluation SOPs for Artificial Reefs Installation to Enhance Marine Resources: Case Study of FEDs

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 1.2 (expected)	T	15	15	2	2			3,000
Activity 1.5	R			2				0
Output 3:								
Activity 3.1	C	1	7		3			0
Output 4:								
Activity 4.3	T	15	23	6	6			932
Output 5:								
Activity 5.1 (expected)	T	10	10	2	1			1,500
Output 6:								
Activity 6.2	R, I			3				6,500 USD in 2021 and 13,500 USD in 2022-23

Remarks: Activity 1.2, the Regional Online Training Course on Relationship Between Ocean Environment Variability and Marine Resource Abundance and Oceanographic Sampling will be organized on 22–26 November 2021. Three (3) junior Fisheries Officers/Researchers and SEAFDEC Researchers are invited to participate in the training. Activity 5.1, the Regional Online Training Course on GIS for Aquaculture will be organized in October 2021 (date: tbc). Two (2) Fisheries Officers/Researchers and SEAFDEC Researchers will be invited to participate in the training.

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

Activities	Expected Outcome/Outputs	Results/Achievements
Outcome		
Output 1:		
Activity 1.2: The Regional Online Training Course on the Relationship Between Ocean Environment Variability and Marine Resource Abundance and Oceanographic Sampling	<ul style="list-style-type: none"> Improved knowledge on the relationship of environment and fisheries resources Building capacity for oceanographic sampling 	<ul style="list-style-type: none"> 20 Trainees enhanced knowledge and practical skills on the Relationship Between Ocean Environment Variability and Marine Resource Abundance and Oceanographic Sampling 9 training videos on the Relationship between Ocean Environment Variability and Marine Resource Abundance and Oceanographic Sampling were uploaded and launched on the SEAFDEC/TD website (The results/achievement are expected when the workshop is organized on 22–26 November 2021)
Activity 1.5: Research study on microplastics in the northern part of the Gulf of Thailand	<ul style="list-style-type: none"> Capacity development of SEAFDEC Researchers on micro-plastic analysis 	<ul style="list-style-type: none"> Microplastic samples in the Gulf of Thailand are analysing
Activity 1.6: IEC materials for regional trainings	<ul style="list-style-type: none"> Report on the Regional online training on the Relationship Between Ocean Environment Variability and Marine Resource Abundance and Oceanographic Sampling 	<ul style="list-style-type: none"> Report on the Regional online training on the Relationship Between Ocean Environment Variability and Marine Resource Abundance and Oceanographic Sampling was disseminated to participant and available to download at SEAFDEC/TD website
Output 2:		
Activity 2.1: Participation of SEAFDEC staff or/and 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 <i>e.g.</i> M.V. SEAFDEC 2 and other National Research Vessels 	<ul style="list-style-type: none"> Not conducted, postponed due to COVID-19 pandemic
Output 3:		
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"> Support survey plan development and monitor and evaluation progress of fisheries resource survey in the Southeast Asian countries 	<ul style="list-style-type: none"> Malaysia, Myanmar and the Philippines requested to utilize M.V. SEAFDEC 2 to carry out the national fisheries resources and marine environmental survey at 53CM First draft cruise survey for Myanmar and the Philippines was developed. The final versions are expected in of 2022 Developing the cruise survey plan has been postponed in Malaysia from 2021 to 2022 until national budget for the survey has been finalized and secured

Activities	Expected Outcome/Outputs	Results/Achievements
Output 4:		
Activity 4.3: The Regional Training Course on Fish Population Dynamics and Fisheries Management Using R-statistical Program	<ul style="list-style-type: none"> Enhanced capacity of human resources and researchers from the SEAFDEC Member Countries on fish population dynamics and fisheries management using R-statistical program 	<ul style="list-style-type: none"> The training was organized on 19–23 July 2021 Trainees enhanced knowledge on fish population dynamics and fisheries management using R-statistical program 6 training videos on fish population dynamics and fisheries management using R-statistical program were uploaded and launched on the SEAFDEC/TD website
Output 5:		
Activity 5.1: The Regional Online Training Course on GIS for Aquaculture	<ul style="list-style-type: none"> Enhanced capacity of human resources and researchers from the SEAFDEC Member Countries on the utilization of GIS for Aquaculture Strengthened network of FGIS and RS researchers in the region 	<ul style="list-style-type: none"> Enhanced knowledge of trainees on the utilization of GIS for Aquaculture Network of FGIS and RS researchers in the region was strengthened on the discussion and experience sharing during the training program <p>(Expected results/achievements as to be organized in October 2021)</p>
Output 6:		
Activity 6.2: Evaluation SOPs for Artificial Reefs Installation to Enhance Marine Resources: Case Study of Fish Enhancing Devices	<ul style="list-style-type: none"> Evaluation SOPs (research activity 12 months and preparing publication 6 month) 	<ul style="list-style-type: none"> Research proposal was approved FEDs were constructed by a group of fishing community Three of twelve field surveys were carried out (a field survey could be conducted during October – December 2021)

4. List of Publications in 2021

Publications	Type of Media	Attached e-file
1. Nine (9) Training Videos for the Relationship Between Ocean Environment Variability and Marine Resource Abundance and Oceanographic Sampling	Videos	(E-Presentation)
2. Six (6) Training Videos for Fish Population Dynamics and Fisheries Management Using R-statistical Program	Videos	(E-Presentation)
3. Training Report on the Relationship Between Ocean Environment Variability and Marine Resource Abundance and Oceanographic Sampling (the report to be published in the beginning of December 2021)	Hard copy	(E-Copy)
4. Training Report on GIS for Aquaculture (the report to be published in November 2021)	Hard copy	(E-Copy)
5. Training report Fish Population Dynamics and Fisheries Management Using R-statistical Program	Hard copy	(E-Copy)

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

Activities	Evaluation
Output 1:	
Activity 1.2	Training course is ongoing

Output 4:	
Activity 4.3	More than 85% of the participants of the Regional Online Training of Fish Population Dynamics and Fisheries Management Using R-statistical Program expressed their satisfaction to gain the expected knowledge in attending this online training program. The success of training could be observed by the results of their response on the evaluation question and score of pre- and post-test. Average scores of pre- and post-test from trainees were 12.11 and 23.84, respectively. The 4-day training duration and the organized month was appropriate. Overall, the online training was well-organized.
Output 5:	
Activity 5.1	Training course is on going

6. Major Impacts and Issues

To conserve and enhance the fisheries resources, sustainable resource management is urgently needed. However, the management of fisheries resources is not effective if it is developed based on only the data on fishers and fishery resources but excluding the environmental and other relevant data. The knowledge of Fisheries Officers/Researchers on the relationship between fish and environment and stock assessment is limited. In this connection, SEAFDEC/TD improved knowledge of Fisheries Officers/Researchers on the relationship between ocean environment variability and marine resource abundance as well as on fish population dynamics and fisheries management using R-statistical program through organizing the online training course. Additionally, the network of Fisheries Officers/Researchers was established among the Member Countries. All of these activities are tools for supporting sustainable fisheries management and also strengthening the collaboration among the countries in Southeast Asia.

Under this project, SEAFDEC has been engaged in not only capture fisheries but also aquaculture. Aquaculture industry in the Southeast Asian region is an important source of animal protein for human consumption in the overpopulated region, as well as to supply other markets through exportation. In order to manage the aquaculture, GIS technology is used as one of the tools to collect and analyze data and information and visualize these data and information for providing more clear images, which could be utilized by the managers and decision makers for making appropriate management plans in aquaculture in the region.

To restore fisheries resources, the Southeast Asian countries began using FEDs (Fish Enhancing Devices). However, Relevant reports on successful synthesis, impact and relationships to marine life by applying FEDs are still limited. One of the reasons is lacking a protocol on the step of evaluation technique. To alleviate the limitation, this project is in process to develop and publish the evaluation SOPs for the FEDs based on the lessons learnt from the field experiment at the pilot site in Thailand. The evaluation SOPs is planned to publish in 2023. After the Evaluation SOPs is published, SEAFDEC will organize a training course to transfer knowledge and exchange of information/experiences on the evaluation methods to/with the SEAFDEC Member Countries and relevant collaborative partners.

This project supports the Member Countries to develop a national fisheries resources survey by using M.V. SEAFDEC 2 in the waters of Myanmar and the Philippines. The two cruises were requested to survey marine environment and fisheries abundance by using hydro acoustic, scientific echosounder (SIMRAD EK-80) and fishing gear operations.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2022

1. Project Summary in 2022

The planned activities emphasize to improve the knowledge of Fisheries Officers/Researchers through organizing the three (3) physical training courses both lectures and practical classes as well as build capacity of Fisheries Officers/Researchers through participating the onboard survey. The activities are as follows.

- Training Course on Marine Debris and Microplastic Survey and Analysis
- Training Course on GIS for Marine Resources Management
- Training Course on Fish Larvae Identification and Determining Spawning-nursing Ground and Season Using Larvae Survey Results
- Support Researchers of the Member Countries to participate in the onboard survey

Additionally, the Project will encourage the Member Countries to carry out a national fisheries and marine environmental survey, and to support SEAFDEC's staff and Researchers of the Member Countries for participating in a seminar, meeting or workshop in order to disseminate research knowledge and project results.

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	<p>Regional training course on microplastic and marine debris in Southeast Asia</p> <p>Regional training on microplastic and marine debris is designed for the researchers who are studying the marine environment and pollution. The training course focuses on collection and analytical techniques. Trainees from SEAFDEC Member Countries will be invited.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Travel costs: USD 10,000 - Daily subsistence allowances: USD 2,500 - Accommodation: USD 4,500 - Resource Persons: USD 1,000 - Others (<i>e.g.</i> stationery, refreshments, etc.): USD 2,000 <p>Sub-total: USD 20,000</p>	20,000
Activity 1.6	<p>IEC materials for regional trainings</p> <p>Report and presentation of the regional training course on microplastic and marine debris will be disseminated</p> <p>Sub-total: USD 0</p>	
Output 2:	Technical knowledge, technical skills and field experience of SEAFDEC staff and Member Countries' researchers improved	
Activity 2.1	<p>Participation of SEAFDEC staff or/and the Member Countries' researchers in a research/survey cruise</p> <p>This activity will support 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 and environment exploration.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Traveling costs: USD 1,000 - Daily subsistence allowances: USD 1,000 - Accommodation: USD 200 - Others: USD 300 <p>Sub-total: USD 2,500</p>	2,500

Proposed Activities	Descriptions	Proposed Budget
Activity 2.2	<p>Participation of SEAFDEC staff or/and the Member Countries in a regional or international meeting on fisheries resources and stock assessment</p> <p>This activity will support researchers of the SEAFDEC Member Countries and SEAFDEC/TD technical staff 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.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Traveling costs: USD 500 - Daily subsistence allowances: USD 500 - Accommodation: USD 1,000 - Others: USD 500 <p>Sub-total: USD 2,500</p>	2,500
Output 3:	Research cruise plan for research/training vessels of SEAFDEC and the Member Countries developed	
Activity 3.1	<p>Technical consultation meeting to develop a research cruise plan for research/training vessels of SEAFDEC and the Member Countries.</p> <p>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.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Accommodation: USD 1,000 - Local transportation: USD 500 - Others (e.g. stationery, refreshments, etc.): USD 500 <p>Sub-total: USD 2,000</p> <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 <p>Sub-total: USD 3,000</p>	5,000
Output 4:	Scientific knowledge to support the fisheries management on transboundary fisheries resources in the sub-region enhanced	
	<p>Second year of the 2 year regional training course on fish population dynamics and fisheries management using R-statistical program</p> <p>Regional training on fish population dynamics and fisheries management using R-statistical program is designed for the researchers who study on the stock assessment. The training course focuses on practical with their own national data of the participating countries. Fourteen (14) participants of the SEAFDEC Member Countries will participate in the training.</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. stationery, refreshments, etc.): USD 1,000 <p>Sub-total: USD15,000</p>	15,000

Proposed Activities	Descriptions	Proposed Budget
Output 5:	Application of Fisheries Geographic Information System (FGIS) and Remote Sensing (RS) for monitoring marine fisheries resources and environment in Southeast Asia learnt	
	<p>Regional training course on GIS for Marine Resources Management</p> <p>SEAFDEC/TD will organize the regional training course on GIS for Marine Resources Management. 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 6,020 - Daily subsistence allowances: USD 1,500 - Accommodation: USD 2,730 - Resource Persons: USD 1,500 - Others (e.g. stationery, refreshments, etc.): USD 1,250 <p>Sub-total: USD 13,000</p>	13,000
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 1,000 - Daily subsistence allowances: USD 500 - Accommodation: USD 400 - Others: USD 100 <p>Sub-total: USD 2,000</p>	2,000
Output 6:	Resource enhancement through the installation of artificial habitat improved	
Activity 6:2	<p>Regional training course on Fisheries Resource Enhancement</p> <p>SEAFDEC/TD will organize a regional training course on fish larvae identification and determining spawning-nursing ground and season using larvae survey results. Participants of the SEAFDEC Member Countries will attend the training to build capacity on utilizing data from fish larvae survey to determine spawning-nursing ground and season together with providing basic knowledge of larvae identification to family level.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Traveling costs: USD 12,000 - Daily subsistence allowances: USD 3,000 - Accommodation: USD 3,000 - Resource Persons: USD 1,000 - Others (e.g. stationery, refreshments, etc.): USD 1,000 <p>Sub-total: USD20,000</p>	20,000

3. Implementation Plan of Activities in 2022

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Output 1:												
Activity 1.5												
Activity 1.6												
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 2022

Planned activity	Expected Activity Results
Output: 1	
Activity 1.5	<ul style="list-style-type: none"> Improved skill and experience on marine debris survey by researchers of SEAFDEC Member Countries. The network of scientists/researchers in marine debris and microplastics in Southeast Asia developed Research publication of marine debris or microplastics published
Activity 1.6	<ul style="list-style-type: none"> Report and presentation of the regional training course on microplastic and marine debris was disseminated to participant and available to download at SEAFDEC/TD website
Output: 2	
Activity 2.1	<ul style="list-style-type: none"> Technical staff of TD and the Member Countries joined a cruise survey, e.g. M.V. SEAFDEC 2 and other National Research Vessels
Activity 2.2	<ul style="list-style-type: none"> Technical staff of TD participated 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	<ul style="list-style-type: none"> Survey plan development, monitoring and evaluation progress of fisheries resource survey in the Southeast Asian countries supported Number of skilled and experienced scientists and researchers on marine fisheries resources and environment of SEAFDEC Member Countries increased List of scientists and researchers as network of marine fisheries resources and environmental scientists in the Gulf of Thailand developed 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 published
Output: 4	
Activity 4.3	<ul style="list-style-type: none"> Improved knowledge of human resources and researchers from the SEAFDEC Member Countries on fish population dynamics and fisheries management using R-statistical program Enhanced information on the population dynamics of transboundary species in the region Strengthened network of human resources and researchers on fish population dynamics and fisheries management in the Southeast Asian region

Planned activity	Expected Activity Results
Output: 5	
Activity 5.1	<ul style="list-style-type: none"> • Human resource development regarding the utilization techniques of GIS for Marine Resources Management promoted • Training report prepared • Strengthened network of human resources and researchers on the utilization of GIS in fisheries management
Activity 5.2	<ul style="list-style-type: none"> • One (1) or two (2) researcher(s) of SEAFDEC participated 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 prepared
Output: 6	
Activity 6.2	<ul style="list-style-type: none"> • Improved understanding on larval fish terminology and identification technique • Survey activities of fish larvae and spawning ground and season in Southeast Asian region improved and standardized • Information of spawning ground and season in Southeast Asian region increased • The network of fish larvae researchers in Southeast Asia developed

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2021
AND
PROPOSED ACTIVITIES FOR THE YEAR 2022**

			Project ID: 2020040101
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:	None
Donor/Sponsor:	Japanese Trust Fund (JTF)	Total Project Budget:	USD 280,000
Project Partner(s):	Nil	Budget for 2022:	USD 51,500
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 a 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 and is developing the life-history study of the targeted species through 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” aims at:

1. To evaluate the current status of three 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 Southeast Asian region.
4. To carry out the life-history study for neritic tuna species in the Southeast Asian 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 Southeast Asian region.

2. Background and Justification

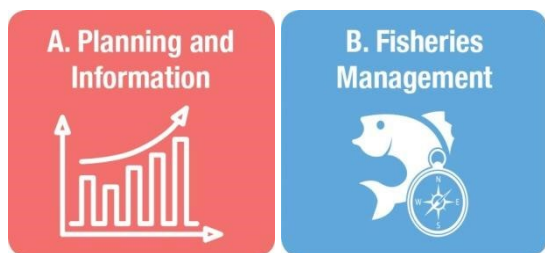
The previous JTF projects namely JTF 2 and JTF 6 undertook research on major targeted pelagic fishes in the Southeast Asian region with the different goals. The JTF 2 project aimed to ascertain the migration route and existence/absence of sub-populations of small pelagic fishes in the ASEAN region. Meanwhile, the JTF 6 project, which aimed to develop the reliable management strategies for purse seine fisheries in the Southeast Asian 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 Southeast Asian region. Further study is required to acquire more extensive information and data for the assessment and management of four dominant pelagic species in the Southeast Asian region. In line with 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 dominated the catch in each AMS in the Southeast Asian region.

The transboundary fish *i.e.* tunas, anchovies and mackerels are the economically important pelagic species that are high consumptions within the Southeast Asian countries, as well as dominated the fishery exports of the Southeast Asian countries 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). Shorthad anchovy (*Encrasicholina heteroloba*) and Indian anchovy (*Stolephorus indicus*) are two dominant anchovies in the Southeast Asian 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 ASEAN-SEAFDEC Resolution 2030 No. 12 (strengthened 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) and ASEAN-SEAFDEC Plan of Action 2030 No. 4 (establish 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) and No. 27 (foster cooperation with other countries for conduct of stock assessment on straddling, transboundary, highly migratory, and shared fishery resources as appropriate, to serve as inputs for formulating science-based fishery management plan; and strengthen sub-regional and bilateral cooperation including inter-agency cooperation for management of such resources) as well as the United Nations' Sustainable Development Goals (SDGs), particularly "SDG 14 Life Below Water."

3. Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



4. 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.

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

5.1 Targets, Outcome, Output and main Activity of the Project

GOAL (Overall Objectives, Impact)	Indicators	Means of Verification
Sustainable Utilization of Pelagic Fishes in the Southeast Asian region	Incomes of workers (e.g. 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 (e.g. fishers, traders, processors, etc.) related in the fishery industry in the Southeast Asia
OUTCOME	Indicators	Means of Verification
Efficient Management Strategies for Small Pelagic Fishes and Neritic Tunas in the Southeast Asia 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 AMSs
OUTPUT 1	Indicators	Means of Verification
Stock Assessments and Risk Assessments for small pelagic fishes in the Southeast Asian region	Number of assessments for small pelagic fish in SCS and AS (for targeted species, i.e. anchovies and mackerels/scads)	Conference presentations and technical reports
ACTIVITY 1	Indicators	Means of Verification
Activity 1.1: Stock Assessments and Risk Assessments for small pelagic fishes in the Southeast Asian 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 Southeast Asian region	2 workshops (1 internal workshop and 1 regional workshop)	Workshop reports
Activity 1.3: Meetings for small pelagic fishes in the Southeast Asian 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 Southeast Asian 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	Means of Verification
Activity 2.1: Stock Assessments and Risk Assessments for neritic tunas in the Southeast Asian 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 Southeast Asian region	Number of regions studied for Microsatellite DNA for kawakawa Microsatellite DNA conducted in 12 locations in SCS, AS and SSS	Genetic workshop and scientific paper
Activity 2.3: Life-history study for major neritic tuna species in the Southeast Asian 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 Southeast Asian region	4 workshops including stock assessment and genetic (2 internal workshops and 2 regional workshops)	Workshop reports

5.2 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																				

5.3 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 2021

1. Project Achievements in the Present Year

MFRDMD collaborated with other AMS countries and related agencies to work on the regional studies of shared stocks entitled "Fisheries Management Strategies for Pelagic Fish Resources in the Southeast Asian Region" under the JTF 6-II. Linking with the previous JTF 6-I project, MFRDMD conducted activities to evaluate the pelagic fish resources in the Southeast Asian region to establish a sustainable management strategy for the pelagic fisheries.

In 2021, the project focused on gathering and compiling the catch and effort data for three (3) selected small pelagic species/groups, namely *Rastrelliger kanagurta*, *Rastrelliger brachysoma*, and *Decapterus* spp. from all the 8 AMSs. To obtain the catch and effort data, MFRDMD distributed a set of questionnaires to all the eight (8) AMSs in the first quarter of 2021.

In the fourth quarter of 2021, MFRDMD was unable to organize the neritic tuna practical workshop at regional level due to the increment of covid-19 cases and inter-countries movement restrictions. However, an internal workshop was planned in collaboration with DOF Malaysia entitled "Workshop on Seerfish in Malaysian Waters using ASPIC in Collaboration with DOF Malaysia." This collaboration involved the usage of Malaysia's catch and effort data for seerfish (*Scomberomorus guttatus* and *Scomberomorus commerson*) as well as teaching staff (resources person) from DOF Malaysia. Based on this internal practical workshop, a report will be published and shared with all AMSs for their reference and guidelines.

MFRDMD also submitted a technical report on tuna in this region, which will be published in the Southeast Asian State of Fisheries and Aquaculture 2022 (SEASOFIA 2022). In this tuna technical report, the sub-topic also includes the result of the SEAFDEC Practical Workshop on Stock and Risk Assessments of Kawakawa (*Euthynnus affinis*) and Longtail Tuna (*Thunnus tonggol*) Resources in the Southeast Asian Waters using ASPIC held in the SEAFDEC/TD in February 2020.

MFRDMD also published the printed version of the report on the SEAFDEC Practical Workshop on Stock and Risk Assessments of Kawakawa (*Euthynnus affinis*) and Longtail Tuna (*Thunnus tonggol*) Resources (1950-2018) in the Southeast Asian Waters using ASPIC in September 2021. This report was approved and endorsed during the ASWGFi meeting. This report (softcopy) was published on the IOTC website and a representative from DOF Thailand submitted the report at the previous meeting of the IOTC Working Party on Neritic Tunas.

MFRDMD is also in the progress of analyzing DNA samples for "Clarification of the Stock Structure for One Neritic Tuna species (*Euthynnus affinis*) in the Southeast Asian Region." In the MFRDMD laboratory, these DNA samples were analyzed using mitochondrial DNA *d-loop* region. During the past study (2016-2018), a total number of 710 *E. affinis* samples were collected from 15 different locations in Southeast Asia. From all the samples collected, 213 DNA samples were successfully sequenced.

MFRDMD has collected otolith samples of neritic tuna (*Euthynnus affinis*) since February 2021. Currently, 338 samples of otolith were collected. The ages for the kawakawa samples in the East Coast of Peninsular Malaysia ranged from 2 to 7 years. However, sampling and data analysis is still going on until December 2021.

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 Stock Assessments and Risks Assessments for small pelagic fishes in the Southeast Asian region	Data collection and compilation				2			\$5,550
Activity 1.2 Workshops for small pelagic fishes in the Southeast Asian region	Online workshop	(19)*		(6)*	(8)*		(2)*	

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Output 2:								
Activity 2.1 Stock Assessments and Risk Assessments for major neritic tuna species in the Southeast Asian region	Data collection and compilation				2			\$3,450
Activity 2.2 Clarification of the stock structure for one neritic tuna species in the Southeast Asian region	Genetic structure study of kawakawa			3	1			\$9,000
Activity 2.3 Life-history study for major neritic tuna species in the Southeast Asian region	Study for otolith analysis of kawakawa			3	2		1	\$6,500
Activity 2.4 Workshops for major neritic tuna species in the Southeast Asian region	Practical internal workshop of seerfish			(5)*	(10)*	(3)*	(1)*	

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 Assessments and Risks Assessments for small pelagic fishes in the Southeast Asian region	<ul style="list-style-type: none"> Compilation of catch and effort data of three targeted small pelagic species for stock and risk assessments. 	A set of questionnaire templates was sent to 8 AMSs for 3 targeted small pelagic species/group, namely <i>Rastrelliger kanagurta</i> , <i>Rastrelliger brachysoma</i> , and <i>Decapterus</i> spp. during the early second quarter of 2021. This questionnaire is designed to gather information focusing on catch and effort data. The process of gathering and compiling the catch and effort data for selected species are still in progress.
Activity 1.2: Workshops for small pelagic fishes in the Southeast Asian region	<ul style="list-style-type: none"> Online workshop for targeted small pelagic fishes using available data from AMSs Available or complete data of catch and efforts from some AMSs Suitable method for stock assessment identified. 	Under the situation of the COVID-19 pandemic, MFRDMD were unable to carry out this activity as originally planned in 2021. However, an online workshop will be organized at the end of 2021 or early 2022 to evaluate the stock assessment of targeted species using data provided by AMSs through the questionnaire's feedback.

Activities	Expected Outcome/Outputs	Results/Achievements
Output 2: Stock and Risk Assessment for major neritic tuna species in the Southeast Asian region		
Activity 2.1: Stock Assessments and Risk Assessments for major neritic tuna species in the Southeast Asian region	<ul style="list-style-type: none"> Two neritic tuna species were chosen by SWG of Neritic Tuna members. Landing data for two targeted neritic tuna species from AMSs complied 	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 the stock structure for one neritic tuna species in the Southeast Asian region	<ul style="list-style-type: none"> Equipment, chemicals, disposable laboratory consumables, kit and samples purchased for genetic structure study of one neritic tuna in the SEA region Findings from PCR and fragment analysis 	A total no. of 710 Kawakawa samples from 15 locations collected throughout Southeast Asia region during the SEAFDEC-Sweden project will be analyzed for this activity. The new primer sets for mitochondrial DNA <i>Cytochrome b</i> and <i>D-loop</i> regions designed last year were unstable to produce PCR products. The project proceeds with using only <i>D-loop</i> primers used for the last project study on <i>Thunnus tonggol</i> . The required tools and kit were purchased, and analysis of samples are in progress. From all the samples collected, 213 DNA samples were successfully sequenced.
Activity 2.3: Life-history study for major neritic tuna species in the Southeast Asian region	<ul style="list-style-type: none"> 60 samples of kawakawa collected each month Small size of-kawakawa collected to differentiate the age by the size group 	By February 2021, 301 samples of mixed size and 39 samples of small size of kawakawa were collected. The small size samples were collected in July. Due to the pandemic, there was no samples collected in May and June because of the MCO. A total of 80 samples from February and March were successfully analyzed by their ages. The ages ranged from 3 to 7 years.
Activity 2.4: Workshops for major neritic tuna species in the Southeast Asian region	<ul style="list-style-type: none"> Internal practical workshop of seerfish by using Malaysia data. Report for the internal practical workshop 	Due to the increasing of COVID-19 cases and inter-countries movement restrictions, MFRDMD planned the practical workshop internally in Kuala Terengganu in the last quarter of 2021. This internal workshop is entitled "Workshop on Seerfish in Malaysian Waters using ASPIC in Collaboration with DOF Malaysia." The collaboration with DOF Malaysia involves the use of Malaysia's catch and effort data for seerfish (<i>Scomberomorus guttatus</i> and <i>Scomberomorus commerson</i>) as well as teaching staff (resource person) from DOF Malaysia. Based on this internal practical workshop, a report is published and shared with all AMSs for their reference and guidelines.

4. List of Publications in 2021

Publications	Type of Media	Attached e-file
Marine Fishery Resources Development and Management Department. (2021). Stock and Risk Assessments of Kawakawa (<i>Euthynnus affinis</i>) and Longtail Tuna (<i>Thunnus tonggol</i>) Resources (1950-2018) in the Southeast Asian Waters Using ASPIC. Southeast Asia Fisheries Development Center. SEAFDEC/MFRDMD/SP/56. 40 pp.	Print and online	http://repository.seafdec.org.my/handle/20.500.12561/1508
Annie-Nunis, B., Adam-Luke, P., Mohammad-Faisal, M.S., Wahidah, M.A., Mazalina, A. Hamizah-Nadia, A.Y., Muhammad-Amirullah, A. and Katoh, M. 2020. First Core Expert Meeting on Fisheries Management Strategies for Pelagic Fish Resources in the Southeast	Print and online	Manuscript completed will be printed before the end of 2021

Publications	Type of Media	Attached e-file
Asian Region 24 November 2020, SEAFDEC MFRDMD, Kuala Terengganu, Malaysia. 20 pp.		
Annie-Nunis, B., Adam-Luke, P., Mohammad-Faisal, M.S., Wahidah, M.A., Mazalina, A. Hamizah-Nadia, A.Y., Muhammad-Amirullah, A. and Katoh, M. 2020. Sixth Meeting of Scientific Working Group on Neritic Tunas Stock Assessment in the Southeast Asian Waters 2 December 2020, SEAFDEC MFRDMD, Kuala Terengganu, Malaysia. 22 pp.	Print and online	Manuscript completed will be printed before the end of 2021

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

Activities	Evaluation
Output 1:	
Activity 1.1	None
Activity 1.2	
Output 2:	
Activity 2.1	None
Activity 2.2	
Activity 2.3	
Activity 2.4	

6. Major Impacts/Issues

Under the situation of COVID-19 pandemic, MFRDMD were unable to carry out most of the activities as originally planned in 2021. MFRDMD had to redesign the original plan according to the standard protocol provided by the SEAFDEC Secretariat. The regional practical workshop for neritic tuna was originally scheduled in the third quarter of 2021. Due to the increment of COVID-19 cases and inter-countries movement restrictions, MFRDMD had to reschedule the workshop to the fourth quarter of 2021 and it was planned internally in collaboration with DOF Malaysia. The collaboration involves the use of Malaysia's catch and effort data for seerfish (*Scomberomorus guttatus* and *Scomberomorus commerson*) as well as teaching staff (resource person) from DOF Malaysia.

The new primer sets of mitochondrial DNA *Cytochrome b* and *D-loop* regions designed last year was unstable to produce PCR products. Because of low quality of DNA genome due to long-term storage, the DNA sequence analysis could not produce a full length of these two genes. The project proceeded with using only *D-loop* primers used for the last project study on *Thunnus tonggol*.

This project enhanced cooperation between women and men. They played a crucial role as main technical officers for their part and were assisted by both women and men with equal opportunity to participate during the project implementation.

Overall, a total of five (5) staff members of MFRDMD was involved in the Life-history Study for Major Neritic Tuna Species in the SEA Region. Two (2) male and three (3) females were assisted by one (1) male intern in collecting and processing samples in the laboratory. The main technical officer (female) was assisted by 1 (one) female staff and 1 (male) intern in extracting, embedding, sectioning, mounting, and reading otolith. Main technical officer also took turns with staff and interns to operate Isomet® 1000 Precision Saw.

Under the situation of Covid-19, field samplings were aborted in January, May, and June 2021 since the Enhanced Movement Control Order (EMCO) was enforced in Malaysia. As a result, there was a gap for data collections during this period. The Main Technical Officer could only rely on data obtained from 2020 for the analysis.

Due to lack of manpower, the entire process of age determination for 60 individuals, from collecting samples, extraction (1 week), embedding (1 week), sectioning (3 days), mounting (1 week), and reading (1 week), was not only time-consuming but also labor intensive. Hence, the Main Technical Officer was assisted by 1 Assistant.

Due to lack of expertise, each step of preparing the otolith, from extracting until reading stages was a delicate task that required specialized skills to ensure that it was intact. Hence, the Main Technical Officer was assisted by 1 Assistant.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2022

1. Project Summary in 2022

MFRDMD will continue directing the collaboration from the Member Countries and relevant organizations to conduct regional studies on share stocks entitled "Fisheries Management Strategies for Pelagic Fish Resources in the Southeast Asian Region" under the JTF 6-II. Considering the earlier-related projects under the same funding (JTF), MFRDMD will initiate some activities to evaluate the pelagic fish resources in the Southeast Asian region to establish a sustainable management strategy for the pelagic fisheries. In 2022, the project will continue collecting and compiling the regional information for stock and risk assessment study for three (3) selected pelagic species/group and two (2) neritic tuna species. Furthermore, MFRDMD will arrange the Core Expert Meeting to discuss the current status of targeted pelagic species/groups in the South China Sea and the Andaman Sea. Opinions and recommendations from the participating AMSs about the project's future plans are highly appreciated and will be considered. The meeting reports will be produced and disseminated once available.

This project also continues the study on the clarification of the genetic structure of kawakawa including samples stored by Research Institute of Marine Fisheries (RIMF), Indonesia. Necessary equipment and samples for those studies will be purchased.

Data analysis for samples from 2020 to 2021 will be conducted to finalize the age group of kawakawa. The data analysis includes the Von Bertalanffy Growth Curve and Ford-Walford Plot. Editing of otolith's picture will be done by using Adobe Photoshop. All the data obtained will be used in writing a technical report and publishing a paper on age determination of kawakawa in the East Coast of Malaysia. If there is additional funding available, this project plans to be continued in the West Coast of Malaysia. Since the West Coast of Malaysia was not affected by the monsoon season, full data from January until December will be available. Besides, the comparison between the age group of kawakawa in East Coast and West Coast of Malaysia can be done.

2. Outcome, Outputs and Activities and Proposed Budget

(Unit: USD)

Proposed Activities	Descriptions	Proposed Budget
Outcome	Efficient Management Strategies for Small Pelagic Fish and Neritic Tunas in the Southeast Asia region are adopted by governments and fishers	
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	MFRDMD will collect and compile regional information of targeted small pelagic species from AMS for stock assessment and risk assessment study. <Estimate> • Research Expense: Hire of supporting staff: USD 575 x 1 person x 6 months = USD 3,450 Communication: USD 1,800 Stationery: USD 300	5,550
Activity 1.3 Meetings for small pelagic fishes in the Southeast Asian region	MFRDMD will organize the 2 nd Core Expert Meeting (CEM) 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. Focal persons from each participating member country will be invited to attend the 2 nd CEM. <Estimates> Meeting Expenses Travel Costs: • Member Countries Air fare= USD 3,940 (2 prs. from participating AMS) Land transport = USD 200	25,000

Proposed Activities	Descriptions	Proposed Budget
	<p>(1 pr from Malaysia) Daily Subsistence Allowances (DSA) = USD 3,360 Accommodation = USD 4,690</p> <ul style="list-style-type: none"> • SEC/TD (Total 2 prs.) Air fare: USD 500 DSA = USD 420 Accommodation = USD 536 • MFRDMD Air fare: USD 960 DSA = USD 1,670 Accommodation= USD 2,613 Local transportation = USD 519 • Resource Persons: Air fare = USD 1,230 DSA = USD 600 Accommodation = USD 402 • Terminal Allowance: = USD 1,200 <p>Meeting Costs: <ul style="list-style-type: none"> • Stationery: USD 280 • Contingency: USD 380 </p> <p>Publication: <ul style="list-style-type: none"> • Publication of Meeting report: USD 1,500 </p>	
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	<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: <ul style="list-style-type: none"> • Hire of supporting staff: USD 575 x 1 person x 6 months = USD 3,450 </p>	3,450
Activity 2.2 Clarification of stock structure for one neritic tuna species in the Southeast Asian region	<p>MFRDMD will continue the study on the clarification of genetic structure of kawakawa.</p> <p><Estimates> Research Expenses: <ul style="list-style-type: none"> • Sample analysis by MFRDMD Consumable equipment supplies: USD 1,500 Extraction and PCR kit: USD 1,500 Hire of supporting staff: USD 450 x 1 person x 6 months = USD 2,700 DNA Sequencing: USD 1,800 • Sample analysis by RIMF, Indonesia Consumable equipment supplies: USD 2,000 Extraction and PCR kit: USD 1,700 DNA Sequencing: USD 1,800 </p>	13,000
Activity 2.3 Life-history study for major neritic tuna species in the Southeast Asian region	<p>MFRDMD will continue the age determination of kawakawa in the East Coast of Malaysia.</p> <p><Estimates> Research Expenses: <ul style="list-style-type: none"> • Hire of supporting staff: USD 400 x 1 person x 11 months = USD 4,400 • Consumable supplies: USD 100 </p>	4,500

3. Implementation Plan of Activities in 2022

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 1.3												
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												

4. Expected Activity Results in 2022

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"> Catch and effort data of targeted two small pelagic species from AMSs compiled for stock and risk assessment
Activity 1.3: Meetings for small pelagic fishes in the Southeast Asian region	<ul style="list-style-type: none"> Current status of targeted small pelagic fisheries in South China Sea and Andaman Sea updated to AMSs 2nd Core Expert Meeting
Activity 2	
Activity 2.1: Stock Assessments and Risk Assessments for major neritic tuna species in the Southeast Asian region	<ul style="list-style-type: none"> Catch and effort data kawakawa from AMSs compiled for stock and risk assessment
Activity 2.2: Clarification of the stock structure for one neritic tuna species in the Southeast Asian region	<ul style="list-style-type: none"> Equipment, chemicals, disposable laboratory consumables, kit and samples purchased 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 the age structure of <i>E. affinis</i> in the east coast of peninsular Malaysia.

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2021
AND
PROPOSED ACTIVITIES FOR THE YEAR 2022**

			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 2022:	USD 45,000
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 establishing a catch database and profiles of freshwater fish biodiversity, and also publishing a manual book for fish biological characteristics collecting/sampling.

2. Background and Justification

Inland fisheries are economically important at the national and local levels 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, SEAFDEC/IFRDMD established 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, interviews, 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, IFRDMD will be responsible for maintaining 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. The Catch database could be a tool for monitoring the present status of fisheries itself and also the fish resources.

3. Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



4. Gender Sensitivity of the Project

Women have also assumed a leading role in inland fisheries, with their participation along the 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.

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

5.1 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	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
Activity 1.6 Building demonstration plot as a model for floodplain fishery management and conservations	Monitoring Program SPECTRA and SPECTRA model application in several provinces in Indonesia	Demonstration plot SPECTRA system
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	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	Means of Verification
Activity 3.1 Coordination by the project leader	Progress meetings are held twice a year to confirm the improvement 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.

5.2 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																				

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 2:																				
Activity 2.1																				
Activity 2.2																				
Activity 2.3																				
Output 3:																				
Activity 3.1																				

5.3 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	8,107	7,387		
	Activity 1.2		3,600	3,600		
	Activity 1.3					13,875
	Activity 1.4				14,100	6,375
	Activity 1.5	3,570			6,600	
	Activity 1.6		5,635	11,888		
Output 2	Activity 2.1	13,025	19,663	9,125	3,600	
	Activity 2.2	7,225	7,393	8,500	5,100	6,375
	Activity 2.3				11,100	13,875
Output 3	Activity 3.1	4,500	5,602	4,500	4,500	4,500
Sub-Total		45,000	50,000	45,000	45,000	45,000

PART II: PROJECT ACHIEVEMENTS IN 2021

1. Project Achievements in the Present Year

IFRDMD has conducted 3 sub-activities under two main activities (Activities 1 and 2) in 2021. Under these sub-activities, IFRDMD conducted field surveys and data collection. The study site for 2021 has been focusing and implementing only in Indonesia *i.e.*, Riau, Central of Kalimantan, and South Sumatra Province. IFRDMD collected data of fish biology, fishery activity, and socio-economic status in those provinces. Through the surveys, interviews, and information gathered the literature, online discussion, the present situation, and issues were assessed and shared for further taking any measures on inland capture fisheries in AMSs.

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	Research							8,107
Activity 1.2: Conducting trainings on data and information in AMSs	Training	5	5	15	10	5	10	3,600
Activity 1.5: Conducting a writeshop for drafting publications	Training							1,300
Activity 1.6: Building demonstration plot as a model for floodplain fishery management and conservations (Patra Tani 9 February, 17 March, and 26 June; Palembang 31 March; and Jambi 14 April)	Research	6	35	8	9	0	0	5,635

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Output 2:								
Activity 2.1: Conducting a survey to assess the status of inland fisheries (Riau 26-30 March and 26-28 May; Central of Kalimantan 4-10 April)	Research	2	12	4	6	5	20	19,663
Activity 2.2: Conducting data monitoring in target countries (Patra Tani and Riau)	Research	0	3	0	0	0	13	7,393
Output 3:								
Activity 3.1: Coordination by the project leader	Coordination	0	0	10	10	0	0	4,302

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 AMSs and promoting the fisheries management model in a flood plain ecosystem	Questionnaire of conservation management in Southeast Asian will be delivered in October
Activity 1.2 Conducting trainings on data and information in AMSs	Capacity building information of technology (MikroTek)	Training will be conducted in October 2021.
Activity 1.5: Conducting a writeshop for drafting publications	IFRDMD will conduct training of make a good Policy Brief	Draft Policy Brief
Activity 1.6 Building demonstration plot as a model for floodplain fishery management and conservations	Building demonstration plot as a model for floodplain fishery management and conservations	<ul style="list-style-type: none"> 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.
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 AMSs	<ul style="list-style-type: none"> IFRDMD conducted monitoring and evaluation in some areas for SPEECTRA application. IFRDMD identified some major components and features on inland fisheries habitat.

Activities	Expected Outcome/Outputs	Results/Achievements
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 2021. 14 enumerators were hired, and the data were submitted by mail. The data of fisheries activities were collected in Patra Tani, South Sumatra Indonesia by using form. Three enumerators were hired. The data will be collected until December 2021.
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 was 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 is prepared.

4. List of Publications in 2021

None

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.	It is necessary to scale up the location and improve the method.
Activity 1.5 Conducting a writeshop for drafting publications.	
Activity 1.6 Building demonstration plot as a model for floodplain fishery management and conservations	
Output 2:	
Activity 2.1 Conducting a survey to assess the status of inland fisheries.	
Activity 2.2 Conducting data monitoring in target countries.	
Output 3:	
Activity 3.1 Coordination by the project leader.	

6. Major Impacts and Issues

1. It needs to find out the critical issues regarding the 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 2022**1. Project Summary in 2022**

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. Indonesia and Cambodia will be the site locations in 2022. 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 Cambodia and Indonesia) Estimated expenditures: -Transportation to AMs: USD 2,293 -Accommodation fees: USD 2,000 -DSA: USD 1,881 -Meeting package: USD 713 -Office expenditures and contingency: USD 500 Sub-total: USD 7,387	7,387
Activity 1.2	Conducting training on data and information in AMSs (in Cambodia). Estimated expenditures: -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	Monitoring and evaluation program for SPECTRA system, demonstration plot as a model for floodplain fishery management and conservation Estimated expenditures: -Transportation to AMSs: USD 6,500 - Accommodation fees: USD 480 - Local transport: USD 500 - DSA: USD 2,850 - Meeting package: USD 1,150 - Office expenditures and contingency: USD 408 Sub-total: USD 11,888	11,888

Proposed Activities	Descriptions	Proposed Budget
Output 2:	Fish catch data and information assembled.	
Activity 2.1	Conducting a survey to assess the status of inland fisheries (in Cambodia and Indonesia). Estimated expenditures: -Transportation to AMs: USD 5,500 -Accommodation fees: USD 1,197 -Local transport: USD 400 -DSA: USD 900 -Meeting package: USD 450 -Office expenditures and contingency: USD 678 Sub-total: USD 9,125	9,125
Activity 2.2	Conducting data monitoring in target countries (conducted together with Activity 2.1; location in Cambodia and Indonesia). Estimated expenditures: -Enumerators: USD 6,500 -Meeting package: USD 800 -Office expenditures and contingency: USD 1,200 Sub-total: USD 8,500	8,500
Output 3:	Project management to lead to success.	
Activity 3.1	Progress meetings are held twice a year to confirm the improvement of each activity. The evaluation at the end of year by experts. Hiring one assistant to carry out the project effectively. Estimated expenditures: -Travel cost of 2 evaluators (share): USD 2,200 -Meeting costs (share): USD300 -Salary of Assistant (share): USD 2,000 Sub-total: USD 4,500	4,500

3. Implementation Plan of Activities in 2022

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

4. Expected Activity Results in 2022

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 Cambodia and Indonesia	Database from Cambodia and Indonesia
Activity 1.2 Conducting data collection trainings in Cambodia and Indonesia	Training (online training)
Activity 1.6 Monitoring and evaluation program for SPECTRA system, demonstration plot as a model for floodplain fishery management and conservation	Publication and demonstration plot SPECTRA system

Planned activity	Expected Activity Results
Activity 2	
Activity 2.1. <ul style="list-style-type: none"> • Conducting a survey to assess the biodiversity of inland fisheries in Cambodia and Indonesia. • 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 Cambodia and Indonesia • Technical meeting report
Activity 2.2 <ul style="list-style-type: none"> • Conducting data monitoring in Cambodia and Indonesia. It will be conducted together with activity 2.1 	<ul style="list-style-type: none"> • Database from Cambodia and Indonesia
Activity 3	
Activity 3.1 The project leader will coordinate and assist all researches and dissemination	<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 2021
AND
PROPOSED ACTIVITIES FOR THE YEAR 2022**

			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 2022:	USD 60,000
Lead Technical Officer:	Panitnard Weerawat (TD)	Project Participating Country:	All Member Countries

PART I: PROJECT DESCRIPTION

1. Executive Summary

In the Southeast Asian 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 at the sustainable management of SSF for improving the livelihood and well-being of fishers in Southeast Asia. There will be continuing efforts in strengthening human resource development and further promoting the Ecosystem Approach to Fisheries Management (EAFM) under the project. The lessons 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.

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 2030” 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. Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



4. 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.

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

5.1 Logical Framework

GOAL	Indicators	Means of Verification
Sustainable management of small-scale fisheries (SSF) for improving the livelihood and well-being of fishers in Southeast Asia	<ul style="list-style-type: none"> • Livelihood and well-being of small-scale fishers are improved and secured • Healthy fisheries resources in Southeast Asia 	<ul style="list-style-type: none"> • 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 includes human wellbeing become more strengthened in selected pilot sites through the implementation on EAFM	<ul style="list-style-type: none"> • Pilot learning site of Tonle Sap • Pilot learning sites of SSF Thailand-Myanmar
ACTIVITY 1	Indicators	Means of Verification
Activity 1.1: Regional training or workshop to strengthen national capacities (participants) in Small-scale Fisheries Management for Better Livelihood and Fisheries Resources	<ul style="list-style-type: none"> • Number of regional training/workshops conducted • Number of participants attend in the workshop 	<ul style="list-style-type: none"> • 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 (Thailand) and Koh Song (Myanmar) Learning site 2: Tonle Sap (Cambodia)	<ul style="list-style-type: none"> EAFM plan for Ranong-Thailand, Koh Song-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	<ul style="list-style-type: none"> EAFM implementation results reviewed in the pilot sites Write-shop for drafting Regional Recommendation on EAFM implementation and application 	<ul style="list-style-type: none"> 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 implementation of the SSF guidelines for improving the livelihood and well-being of small-scale fishers	<ul style="list-style-type: none"> Survey and capacity development activities conducted 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 	<ul style="list-style-type: none"> Survey report Improved technical capacities and knowledge of SEAFDEC staff and government officials as well as fishers in SSF
ACTIVITY 2	Indicators	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 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: Enhancing the livelihood and well-being of small-scale fishers in Southeast Asia	<ul style="list-style-type: none"> Two regional workshops organized in Thailand in 2021 and 2023 2 participants from each member country About 25 participants participated in each workshop 	<ul style="list-style-type: none"> Workshop reports About 25 participants participate in each workshop, (a 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 program 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	Means of Verification
<p>Activity 3.1: Capacity development on gender integration in SSF which include fisheries management processing and value chain through regional/national training courses</p>	<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 brings to 50 participants in a total of two regional courses. Two national training courses in inland and coastal fisheries will be 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. Technical advice to and follow-ups of the on-going co-management activities in Lao PDR 	<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 disadvantaged stakeholders in the fisheries management process and value chain New national or local programs/activities to ensure the opportunity for women and disadvantaged groups Technical report on co-management activities in Lao PDR
<p>Activity 3.2: Participation in the relevant international/regional forum and national activities/trainings</p>	<ul style="list-style-type: none"> Participation of SEAFDEC EAFM core team members and other staff in international/regional forum and national activities/trainings International/regional cooperation strengthened 	<ul style="list-style-type: none"> Meeting reports Back-to-Office reports Newsletter articles

5.2 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																				

5.3 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	4,950	18,500	0	0
	Activity 1.2	15,000	11,000	20,000	28,000	38,000
	Activity 1.3	8,500	300	3,000	500	500
Output 2	Activity 2.1	4,000	4,000	4,000	4,000	4,000

Output	Activities	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Year5 (2024)
	Activity 2.2	1,000	12,400	1,000	1,000	1,000
	Activity 2.3	0	15,950	2,000	15,000	0
Output 3	Activity 3.1	15,000	16,400	10,000	10,000	15,000
	Activity 3.2	1,500	0	1,500	1,500	1,500
Sub-total		60,000	65,000	60,000	60,000	60,000

PART II: PROJECT ACHIEVEMENTS IN 2021

1. Project Achievements in the Present Year

In 2021, due to the COVID-19 situation in the region, the project tried to cope up with the situation by making adjustments to the project activities. However, the project still focuses on the three main activities components. For Output 1, the regional training courses on SSF management for better livelihood and fisheries resources and the review of the EAFM implementation results in the pilot sites were conducted *via* online platform. The planned activities for implementing EAFM at the pilot learning sites of Cambodia and Thailand-Myanmar were adjusted accordingly. For Output 2, the 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 was carried out in Thailand, and a study on the community products, value added products and marketing assessment is carried out in 2021 for promoting income generations of SSF fishers. For Output 3, the capacity development on gender integration in SSF which includes fisheries management process and value chain were conducted in Thailand and Lao PDR in close cooperation with DLF of Lao PDR and DOF of Thailand.

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	Training or workshop to strengthen national capacities (participants) in SSF Management for Better Livelihood and Fisheries Resources							
	A. Online regional training on management tools for the Ecosystem Approach to Fisheries Management (EAFM)	9	14	6	7	-	2	4,250
	B. Online training on the Fish path (fisheries management application) in October 2021							700
	C. Participation in the training workshop on Fish Path (fisheries management application) in January 2021			5	5			-
Activity 1.2	Effective implementation of the EAFM at the pilot sites							
	A. Onsite workshops to develop EAFM plan for Tonle Sap Lake, Cambodia in October 2021							8,000
	B. Support the livelihood and poverty alleviation related to the EAFM plan (Ranong-Thailand) in September 2021							3,000

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
Activity 1.3	Review of the EAFM implementation results in the pilot sites							
	Online meeting on the EAFM training results and the EAFM implementation in the learning sites	8	8	5	5	-	-	300
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 baseline socioeconomic survey in Krabi province including microfinance issues	8	6	3	-			4,000
	B. Participation in the workshop on the use of transdisciplinary for small-scale management in Thailand			2				-
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. Participated in the online meeting in the establishment of a national network on financial service			2				-
	B. Online training program on financial service in cooperation with international/regional organizations (e.g. FAO, APRACA) to support the implementation of national pilot project in Thailand) in December 2021							1,000
	C. Pilot activity in promoting fishing community product and marketing accessibility in September–December 2021							11,400
Activity 2.3	Enhancing the livelihood and well-being of small-scale fishers in Southeast Asia							

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
	A. Regional Workshop on effective practices for supporting the livelihood and well-being of small-scale fishers in Southeast Asia							600
	B. National workshops to develop the fisheries management plans in supporting the livelihood and well-being of small-scale fishers for Krabi Province, Thailand							15,350
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 includes fisheries management process and value chain through a regional training course							
	A. Regional training on gender (equality and equity in integration in SSF in SEA) on 28–30 September 2021							500
	B. Study on gender integration in inland fisheries management in Thailand (in Buriram province) in September 2021							1,500
	C. Study on gender integration in Marine fisheries management in Thailand (in Rayong province) on 11–22 October 2021							3,200
	D. Online training on the gender in fisheries in Indonesia on 2–4 November 2021							3,000
	E. Monitoring and evaluation on gender integration in CBRM and co-management in Lao PDR on 9–13 and 23–27 August 2021	3						8,200
Activity 3.2	Participation in the relevant international/regional forum and national activities/trainings							None
	Participation in the FAO/Too Big To Ignore (TBTI) webinar on Unpacking the SSF Guidelines: Mainstreaming gender for SSF development strategies.			2				

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 national capacities (participants) in Small-scale Fisheries Management for Better Livelihood and Fisheries Resources	
	A. Online regional training on management tools for the Ecosystem Approach to Fisheries Management (EAFM)	The online regional training on management tools for the Ecosystem Approach to Fisheries Management was conducted on 23–27 August 2021. There were 38 persons (resource persons and participants) participating in the course. Participants built/strengthened their understanding on the right and appropriate fisheries management tools in addressing the issues and problems.
	B. Online training on the Fish path (fisheries management application) in October 2021	The online regional training course conducted on 5–8 October 2021
	C. Participated in the training workshop on Fish Path (fisheries management application)	SEAFDEC/TD's EAFM team strengthened its capacities in selecting fisheries management tools for the EAFM plan (the training was conducted in January 2021)
Activity 1.2	Effective implementation of the EAFM in the pilot sites.	
	A. Onsite workshops to develop EAFM plan for Tonle Sap Lake, Cambodia	Two onsite workshops to develop EAFM plan for Tonle Sap Lake, Cambodia is planned, and is carried out by the EAFM focal points of Cambodia in October 2021
	B. Support the livelihood and poverty alleviation related to the EAFM plan (Ranong, Thailand) in September 2021	The activity is scheduled in September 2021
Activity 1.3	Review of the EAFM implementation results in the pilot sites	
	Online meeting on the EAFM training results and the EAFM implementation in the learning sites	The online regional meeting was conducted on 20 July 2021. There were 26 participants attending the meeting. The meeting highlighted a set of results on the EAFM training and EAFM implementation in the learnings sites, and a set of suggestions to promote and adopt EAFM in the SEA region
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 microfinance, credit and insurance in the Member Countries in line with the implementation of the SSF guidelines in Southeast Asia	

Activities	Expected Outcome/Outputs	Results/Achievements
	A. The baseline socio-economic survey including micro finance issues was carried out in 8 districts of Krabi province, Thailand	Following information were obtained: <ul style="list-style-type: none"> • Baseline information prepared for EAFM plan development of Krabi province • Information on the status and issues of micro finance, credit, and insurances of fisheries communities in Krabi province • Information on gender integration in fisheries of Krabi province
	B. Participation in the workshop on the use of transdisciplinary for small-scale fisheries management in Thailand	<ul style="list-style-type: none"> • Two persons of project staff gained knowledge on the transdisciplinary and its use for small-scale fisheries management in Thailand
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. Participation in the online meeting on the establishment of a national network on financial service	The project staff participated in the online meeting on 8 April 2021
	B. Online training program on financial services in cooperation with international/regional organizations (e.g. FAO, APRACA) to support the implementation of national pilot project in Thailand	The online training course will be conducted in December 2021. The course related to microfinance scheme and the access to market for small-scale fisheries
	C. Pilot activity in promoting fishing community products and marketing accessibility	The activity is carried out from September to December 2021
Activity 2.3	Enhancing the livelihood and well-being of small-scale fishers in Southeast Asia	
	A. Regional Workshop on Effective Practice for Supporting the Livelihood and Well-being of Small-scale Fishers in Southeast Asia	Activities conducted on 27–28 October 2021
	B. National workshops to develop the fisheries management plans in supporting the livelihood and well-being of small-scale fishers for Krabi Province, Thailand	Activity is scheduled in November-December 2021
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	A. Capacity development on gender integration in SSF which includes fisheries management process and value chain through a regional training course	
	B. Regional training on gender (equality and equity in integration in SSF in SEA) on 28–30 September 2021	Activity is carried out on 28–30 September 2021
	C. Study on gender integration in inland fisheries management in Thailand (in Buriram province) in September 2021	Activity is carried out on 20–23 September 2021
	D. Study on gender integration in Marine fisheries management in Thailand (in Rayong province)	Activity is carried out on 11–22 October 2021

Activities	Expected Outcome/Outputs	Results/Achievements
	E. Online regional training on the gender in fisheries in Indonesia	The training is conducted from 28 to 30 September 2021
	F. Monitoring and evaluation on gender integration in CBRM and co-management in Lao PDR	The activity was carried out in Lao PDR on 9–13 and 23–27 August 2021.
Activity 3.2	Participation in the relevant international/regional forum and national activities/trainings	
	Participation in the FAO/Too Big To Ignore (TBTI) webinar on Unpacking the SSF Guidelines: Mainstreaming gender for SSF development strategies.	Two project staff participated in the webinar which was organized by FAO and TBTI on 3 June 2021. SEAFDEC gender strategy and the progress of implementation in the Member Countries were presented.

4. List of Publications in 2021

Publications	Type of Media	Attached e-file
1. Report of the regional training course on management tools for the Ecosystem Approach to Fisheries Management (EAFM)	Hard copy and electronic file	
2. Report of the online meeting on the EAFM training results and the EAFM implementation in the learning sites	Hard copy and electronic files	
3. Baseline information for the development of EAFM plan for Krabi province	Hard copy and electronic files	
4. Information on the status and issues of micro finance, credit and insurances of fisheries communities in Krabi province	Hard copy and electronic files	
5. Information on gender integration in fisheries of Krabi province	Hard copy and electronic files	
6. Report of the study on gender integration in inland fisheries management of Burirum province	(in progress)	
7. Report of monitoring and evaluation of gender integration in CBRM and Co-management in Lao PDR	(in progress)	

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 relevant to SSF Management for Better Livelihood and Fisheries Resources
	A. Online regional training on management tools for the Ecosystem Approach to Fisheries Management (EAFM) Evaluation result: 90 % of the participants fulfilled with their course expectations in gaining knowledge on the management tools for EAFM
	B. Online training on the Fish path (fisheries management application) The course is conducted in October 2021
	C. Participation in the training workshop on Fish Path (fisheries management application) Evaluation result: (none)
Activity 1.2	Effective implementation of the EAFM in the pilot sites.
	A. Onsite workshops to develop an EAFM plan for Tonle Sap Lake, Cambodia, Evaluation result: The workshop was part of the work in progress
	B. Support the livelihood and poverty alleviation related to the EAFM plan (Ranong-Thailand) in September 2021 Evaluation result: The activity was part of the work in progress
Activity 1.3	Review of the EAFM implementation results in the pilot sites
	Online meeting on the EAFM training results and the EAFM implementation in the learning sites Evaluation result: (none)

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	<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>A. The baseline socio-economic survey including micro finance issues was carried out in 8 districts of Krabi province Evaluation result: The activity was part of the work in progress</p> <p>B. Participation in the workshop on the use of transdisciplinary for small-scale management in Thailand Evaluation result: (none)</p>
Activity 2.2	<p>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</p> <p>A. Involved in the online meeting on the establishment of a national network on financial service Evaluation result: (none)</p> <p>B. Online training program on financial service in cooperation with international/regional organizations (e.g. FAO, APRACA) to support in the implementation of national pilot project in Thailand Activities is conducted on 27–28 October 2021</p> <p>C. Pilot activity in promoting fishing community product and marketing accessibility Activity is carried out from September to December 2021</p>
Activity 2.3	<p>Enhancing the livelihood and well-being of small-scale fishers in Southeast Asia</p> <p>A. Regional Workshop on Effective Practice for Supporting the Livelihood and Well-being of Small-scale Fishers in Southeast Asia The workshop conducted on 27–28 October 2021</p> <p>B. National workshops to develop the fisheries management plans in supporting the livelihood and well-being of small-scale fishers for Krabi Province, Thailand Activities carried out in November–December 2021</p>
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	<p>Capacity development on gender integration in SSF which includes fisheries management process and value chain through a regional training course</p> <p>A. Regional training on gender (equality and equity in integration in SSF in SEA) on 28–30 Sep.2021</p> <p>B. Study on gender integration in inland fisheries management in Thailand (in Buriram province) in September 2021 Evaluation result: The activity was part of the work in progress</p> <p>C. Study on gender integration in Marine fisheries management in Thailand (in Rayong province) Evaluation result: The activity was part of the work in progress</p> <p>D. Online regional training on the gender in fisheries The training is conducted from 28 to 30 September 2021</p> <p>E. Monitoring and evaluation on gender integration in CBRM and co-management in Lao PDR Evaluation result: The activity was part of the work in progress</p>
Activity 3.2	<p>Participation in the relevant international/regional forum and national activities/trainings</p> <p>Participation in the FAO/Too Big To Ignore (TBTI) webinar on Unpacking the SSF Guidelines: Mainstreaming gender for SSF development strategies. Evaluation result: (none)</p>

6. Major Impacts/Issues

The main problem of the project implementation in 2021 was the COVID-19 pandemic in the region, which affected the implementation of the planned activities. Some of the project activities were adjusted by using the online platform. While online training/workshops could be effectively utilized to implement the planned activities, it was also recognized that there were unexpected interruptions and technical issues during the meeting sessions because of poor internet connection, unclear voice, limited discussion time, etc. Due to the travel restrictions in the country and region, some of the planned field activities at the project sites were carried out and completed by MCs with technical guidance of SEAFDEC staff and financial support of the Project.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2022

1. Project Summary in 2022

In 2022, 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) In the effective use of fisheries management tools in the implementation of EAFM, the planned activities at each site is implemented by the EAFM core team in each country for improving livelihood and well-being of fishers, 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 relevant to SSF Management for Better Livelihood and Fisheries Resources	18,500
	<p>A. Regional training courses on Fisheries Management tools will be conducted by SEAFDEC/TD in Thailand in 2022. About 23 participants in total (2 persons from each member country).</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Travel costs for participants: USD 4,000 - Daily subsistence allowances: USD 3,500 - Accommodation: USD 2,000 - Training and Meeting package: USD 1,250 - Study visit to SSF learning sites: USD 1,250 <p style="text-align: right;">Sub-total: USD 12,000</p> <p>B. National training on fisheries management tools for fisheries officers of DOF-Thailand, about 30 participants expected</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Travel costs for participants: USD 1,000 - Daily subsistence allowances: USD 1,000 - Accommodation: USD 1,000 - Training and Meeting package: USD 3,500 <p style="text-align: right;">Sub-total: USD 6,500</p>	

Proposed Activities	Descriptions	Proposed Budget
Activity 1.2	<p>Effective implementation of the EAFM in the pilot sites.</p> <p>A. Fisheries management training at the learning site in Ranong province Estimated expenditures: - Travel costs for staff and focal points of Thailand: USD 1,000 - Daily subsistence allowances: USD 1,000 - Accommodation in Ranong Province: USD 1,000 - Meeting package and others: USD 1,000 - EAFM implementation in the learning sit USD 3,000 Sub-total: USD 7,000</p> <p>B. Online meeting with DOF-Myanmar on the implementation of EAFM at learning sites in Koh Song, Myanmar Estimated expenditures: Online meeting expenses - Meeting package: USD 500 Sub-total: USD 500</p> <p>C. Fisheries management training at the learning site in Koh Song, Myanmar Estimated expenditures: - Travel costs for staff and focal point in Myanmar: USD 1,000 - Daily subsistence allowances: USD 2,000 - Accommodation: USD 1,000 - Meeting package: USD 1,000 - EAFM implementation in the learning sit USD 3,000 Sub-total: USD 8,000</p>	20,000
	<p>Collaboration with FiA/Cambodia in implementing the inland EAFm for Boeng Tonle Chhmar, Northern part of the Tonle Sap Lake, Cambodia, will be continued.</p> <p>A. Online meeting with FiA/Cambodia in implementing the inland EAFm for Boeng Tonle Chhmar, Northern part of the Tonle Sap Lake, Cambodia Estimated expenditures: - Meeting package: USD 500 Sub-total: USD 500</p> <p>B. Fisheries management at the learning site in Tonle Sap Lake Estimated expenditures: - Travel costs for staff and focal points of Cambodia: USD 600 - Daily subsistence allowances: USD 1,000 - Accommodation in Cambodia: USD 650 - Meeting package: USD 1,750 Sub-total: USD 4,000</p>	
Activity 1.3	<p>Strengthened knowledge of the SSF team on the existed fisheries management tools</p> <p>Conduction of writeshop for understanding the existing fisheries management tools Estimated expenditures: - Travel costs for participants USD 500 - Daily subsistence allowances: USD 1,000 - Accommodation for participants at TD's dormitory USD 500 - Invited resource persons expenses and meeting package USD 1,000 Sub-total: USD 3,000</p>	3,000
Output 2:	Capability development in the implementation of SSF guidelines for improving the livelihood and well-being of small-scale fishers	

Proposed Activities	Descriptions	Proposed Budget
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 is carried out in selected countries</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Travel costs for SEAFDEC staff: USD 1,500 - Daily subsistence allowances: USD 1,200 - Accommodation for SEAFDEC staff: USD 750 - Materials and others for data collection and analysis: USD 550 <li style="text-align: right;">Sub-total: USD 4,000 	4,000
Activity 2.2	<p>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.</p> <p>SEAFDEC staff participate in the relevant meetings / workshops in order to gain knowledge and information on fisheries micro-finance, credit and insurance for small-scale fishers.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Travel costs for SEAFDEC staff: USD 400 - Daily subsistence allowances: USD 300 - Accommodation: USD 300 <li style="text-align: right;">Sub-total: USD 1,000 	1,000
Activity 2.3	<p>Enhancing the livelihood and well-being of small-scale fishers in Southeast Asia</p> <p>Study on a development plan for supporting fishing communities to enhance their product development and marketing (quality control, distribution, market access, etc.) and a support center model</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> -Travel cost for staff: USD 300 - Daily subsistence allowances: USD 300 - Accommodation at SEAFDEC/TD: USD 300 - Arrangement for community/stakeholder meetings: USD 1,100 <li style="text-align: right;">Sub-total: USD 2,000 	2,000
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	<p>Capacity development on gender integration in SSF which includes fisheries management process and value chain through a regional training course</p> <p>Conduction of national trainings/workshops on gender in fisheries. SEAFDEC conducts three national training workshops in selected 2 countries, which aims 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. About 40 participants in total: 20 persons for each selected country (40 persons) and 2 persons from SEAFDEC.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Travel costs for staff: USD 3,000 - Daily subsistence allowances: USD 4,000 - Accommodation at SEAFDEC/TD: USD 1,000 - Meeting package: USD 2,000 <li style="text-align: right;">Sub-total: USD 10,000 	10,000

Proposed Activities	Descriptions	Proposed Budget
Activity 3.2	<p>Participation in the relevant international/regional forum and national activities/training to gain knowledge and information on gender integration in SSF, promoting alternative livelihood and value chain.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Travel costs for SEAFDEC staff: USD 700 - Daily subsistence allowances: USD 400 - Accommodation: USD 400 <p style="text-align: right;">Sub-total: USD 1,500</p>	1,500

3. Implementation Plan of Activities in 2022

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 2022

Planned activity	Expected Activity Results
Activity 1 Implementation of the EAFM in the pilot learning sites	
<p>Activity 1.1. Conduct a regional workshop on SSF Management for Better Livelihood and Fisheries Resources</p> <p>A. Conduct a regional training course on EAFM management tools</p> <p>B. National training on fisheries management tools for fisheries officers of DOF-Thailand</p>	<ul style="list-style-type: none"> • About 23 participants strengthened in the EAFM management tools • Report of the training • About 30 participants familiarized with the fisheries management tools • Report of the training
<p>Activity 1.2. Effective implementation of the EAFM in the pilot sites</p> <p>A. Collaboration with DOF/Myanmar in the implementation of the EAFM for Koh Song (Myanmar)</p> <p>B. Continue in collaboration with DOF/Thailand in the implementation of the EAFM for Ranong (Thailand)</p> <p>C. Continue in collaboration with FiA/Cambodia and FAO in the implementation of inland EAFM for Boeng Tonle Chhmar, Northern part of the Tonle Sap Lake</p>	<ul style="list-style-type: none"> • EAFM plan for fisheries management of Koh Song, Myanmar • Case studies of EAFM implementation in Ranong, Thailand • EAFM plan for Boeng Tonle Chhmar, Northern part of the Tonle Sap Lake, Cambodia • Case studies of inland EAFM implementation in Boeng Tonle Chhmar learning site, Cambodia
<p>Activity 1.3. Review of the EAFM implementation results in the pilot sites</p> <p>Strengthen knowledge of the SSF team on the existing fisheries management tools (Inhouse write shop)</p>	<ul style="list-style-type: none"> • EAFM management tool training booklet in Thai language • The SSF team further familiarized existing fisheries management tools for EAFM
Activity 2 Capability development in the implementation of SSF guidelines for improving the livelihood and well-being of small-scale fishers	

Planned activity	Expected Activity Results
<p>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</p>	<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
<p>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</p>	<ul style="list-style-type: none"> • Strengthened collaboration with other sectors fisheries socio-economic development • Strengthened knowledge/understanding of the project staff on the fisheries socio-economic development
<p>Activity 2.3 Enhancing the livelihood and well-being of small-scale fishers in Southeast Asia. Study on a development plan for supporting fishing communities to enhance their product development and marketing (quality control, distribution, market access, etc.) and a support center model</p>	<ul style="list-style-type: none"> • Development plan for enhancing product development and marketing in fishing communities • Development plan for establishing a support center model
<p>Activity 3 Further promotion of the gender integration and empowerment in sustainable fisheries management in SEA and gender empowerment to promote alternative livelihood</p>	
<p>Activity 3.1 Capacity development on gender integration in SSF which includes fisheries management and value chain through a regional training course National trainings/workshops on gender in fisheries (2 selected countries)</p>	<ul style="list-style-type: none"> • Training/Workshop reports • About 40 participants participated in the training workshops
<p>Activity 3.2 Participation in the relevant international/regional forum and national activities/trainings</p>	<ul style="list-style-type: none"> • Meeting reports • Back to office reports

**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2021
AND
PROPOSED ACTIVITY FOR YEAR 2022**

		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 12,450,170)
Project Partner:	United Nations Environment	Budget for 2022:	USD 559,034
Project Director:	Dr. 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 survey 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. The project will finish all technical matter by the end of 2022, while the financial matter and terminal report should be completed by 30 June 2023.

2. 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 has 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.

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. Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



4. Gender Sensitivity of the Project

The project works closely with the SEAFDEC to implement the following guiding documents; 1) Gender Dimension in Coastal and Fisheries Resources Management in Southeast Asia, 2) Guidance to Monitoring and Evaluation of Gender Equity and Social Well-being in Fisheries Communities, and 3) capacity building on Gender Mainstreaming in Fisheries *Refugia* Management. The project has also been promoting women's participation in project activities and has included gender consideration in the draft guidelines on indicators for the establishment and management of fisheries *refugia*. Furthermore, the Regional Action Plan for Sustainable Management of Transboundary Species includes the gender aspects in the social dimension.

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

5.1 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 <i>via</i> 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	Increased institutional capacity in the 6 participating countries for the designation and operational management of fisheries <i>refugia</i> <i>via</i> the transformation of enabling	<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> 	Improving the management of critical habitats for fish stocks of transboundary significance <i>via</i> national and regional actions to strengthen the enabling environment and knowledge-based for

Objective/Targets	Outcomes	Key Expected Outputs	Main Activity
gear and practices designed to safeguard fish stock and critical habitat linkages at priority sites	environments and the generation of knowledge for planning	<ul style="list-style-type: none"> • 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 • Characterisations for 14 <i>refugia</i> sites accessible online • 1 modelling system online • 4 published reports of the results of demonstrations 	fisheries <i>refugia</i> management in the South China Sea and Gulf of Thailand
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	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	<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 	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

Objective/Targets	Outcomes	Key Expected Outputs	Main Activity
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	Cost-effective and efficient coordination of national and regional level cooperation for integrated fisheries and environmental management	<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 	National and regional cooperation and coordination for integrated fish stock and critical habitat management in the South China Sea and Gulf of Thailand

5.2 Overall Scope/Description of Project

Activity/COMPONENT	Description
Component 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.
Component 2 Improving the management of critical habitats for fish stocks of transboundary significance <i>via</i> 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/COMPONENT	Description
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	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> .
Component 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 <i>via</i> 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> .

5.3 Activity and Proposed Budget for 2016–2022, and as of 2023-Q2

(Unit: USD)

Components	2016	2017	2018	2019	2020	2021	2022	2023Q1+Q2	Sub Total
Component 1:		35,798.00	91,668.00	135,878.00	107,500.88	220,000.00	183,955.12		774,800.00
Component 2:		543.00	905.00	65,963.00	77,806.35	180,000.00	110,802.65		436,020.00
Component 3:	5,730.00	9,819.00	14,729.00	39,932.00	16,697.43	57,000.00	59,892.57		203,800.00
Component 4:	100,078.00	212,616.00	203,141.00	243,093.00	231,722.02	288,000.00	199,775.98	106,954.00	1,585,380.00
Total	105,808.00	258,776.00	310,443.00	484,866.00	433,726.68	745,000.00	554,426.32	106,954.00	3,000,000.00

Remarks: All technical activities end by 2022, 2023 Q1+Q2 budget for financial audit report and project Management

PART II: ACHIEVEMENT OF PROJECT IMPLEMENTATION (As of 30 June 2021)

1. Achievements of the Project Implementation

Towards outcomes

The project is well into implementation, and 15 selected Fisheries *Refugia* Sites were identified by six countries, namely Cambodia, Indonesia, Malaysia, Philippines, Thailand, and Viet Nam. Among these, the Government of Cambodia adopted two *refugia*: one in KEP Province (417 ha) for blue swimming crab and another one in KOH KONG Provinces (1,283 ha) for short mackerel in 2019 to increase of two species stocks as well as conserve the linked habitat in the areas for sustainable use. Towards the outcomes, Cambodia adopted the 5-years Action Plan for Marine Fisheries Management Area and Management measures in Kep and the Strategic Plan for Fisheries Conservation and Management for 2020-2029. Cambodia also included the Fisheries *Refugia* framework in the revised fisheries law. The Fisheries Administration (FiA) of Cambodia plays the role of fisheries management and habitat conservations. The relevant local stakeholders include the fishing community, private sectors, Civil Society Organization (CSO), and NGOs support the proposed fishing closure for blue swimming crab in Kep from 1 May to 31 July and short mackerel in Koh Kong from 1 December 2020 to 31 March 2021. The management measures are set to reduce 100% fishing pressures during the spawning seasons to protect recruitments of blue swimming crab and short mackerel. Another *refugia* site in Cambodia is, in process, for all relevant stakeholders to accept the proposed *refugia* boundary and management plan for grouper in Kampot Province. Implementation is underway, and outcomes are expected to be met by the end of December 2021.

For Thailand, two *Refugia* boundaries and management plans were accepted through the stakeholder consultations in which the environment agency representatives and more than 800 people engaged in the decision making such as the fishing community, CSO, Academy, and research institutions. Two *refugia* are 1) blue swimming crab

refugia in Surat Thani Province covers 900 ha, and 2) short mackerel *refugia* in Trat Province covers 154,600 ha. Both *refugia* are linked to the coral reef, seagrass, and mangrove habitats. To support the long-term management of *refugia*, the Department of Fisheries of Thailand (DOF/TH) reformed the law, regulation, and management plan for the establishment and operation of fisheries *refugia*. The engagement of local people at each *refugia* site covers 5 districts in Trat province and 7 districts in Surat Thani province, which shows the local people's attitudes in resources and habitat conservation for sustainable use. In Surat Thani province, stakeholders voted to support the proposed *refugia* boundary, which was identified from science-based information, and management plan to prohibit some fishing gears: 1) Crab trap, 2) Crab gill net, below 3.0 inch in mesh-size, and 3) all types of clam fishing operated in motor vessels. In Trat province, they voted to support the *refugia* boundary and management plan to prohibit purse seiners and trawlers from January – February every year. Approximately 7% of the total fishing boats (or 212 medium and large-scale fishing boats operated in this area) are prohibited for two months in Trat Province. And about 29% of total fishing boats in Surat Thani Provinces are prohibited

In Malaysia, two *Refugia* boundaries defined from the science-based information and national expert consultation are as follows: 1) spiny lobster *refugia* in Johor covers about 140,000 ha, and 2) tiger prawn *refugia* in Miri covers about 85,200 ha. Through socio-economic surveys along the coastal area, 88% of fishers from 8 towns in Johor and 69% of fishers from 2 towns in Miri, Sarawak, support spiny lobster *refugia* and tiger prawn, respectively. However, the Department of Fisheries of Malaysia (DOF/MY) is final to consult and receive the acceptance for the proposed *refugia* boundary and management plan in both sites by the end of December 2021. DOF/MY is in the process of evaluating and identify management measures based on the scientific findings.

For the Philippines, the National Fisheries Research and Development Institutions (NFRDi) are in the process of setting the fisheries *refugia* boundary based on the local knowledge and science-based information from the three project sites. Three tentative *refugia* boundary are map out but did not finalize yet as follows: 1) *Refugia* site for siganids in Bodinao, Pangasinan; 2) *Refugia* sites for *Caesio cunningg* and *Decapterus maruadsi* in Coron, Palawan; and 3) *Refugia* sites for *Auxis thazard*, *Pterocaesio teselleta* and *Sardinella fimbriata* in Masinloc, Zambales. The Local Government Units (LGUs), including the Coastal Communities and other stakeholders, have agreed and understood the importance of establishing Fisheries *Refugia* in three sites. Their willingness could be reflected in the results of several committee meetings, on-site stakeholder consultations, and information-driven events organized during 2017–2021. In addition, fisherfolks have strong disagreements with establishing MPAs in their municipalities; however, through the workshops, they have understood the difference and the boon of establishing fisheries *refugia* for a more productive fishing stock.

Viet Nam and Indonesia signed the contract for project initiatives in June 2019, the implementation is underway, and outcomes are expected to be met before project closure in December 2022.

Toward overall outcomes from the project implementation, it is expected that about 400,000 ha *refugia* boundaries will be established in six countries before the project closure in December 2022, which would be higher than the target set adopted by GEF. The percentage reduction of fishing pressures with *refugia* areas at times critical to the life cycles of fished species of transboundary significance will be analyzed accordingly. The project improved stakeholder engagements and acceptance of the area-based approaches to fisheries: more than 100 multi-stakeholders from various institutions such as inter-agency concerns from not only fisheries and environment agency, but also involved by the tourism department, public organization, navy, coastguards, NGOs, CSOs, academy, research institutes, local government at a provincial and state level, fishing community, private sectors, etc. Increased institutional capacity by endorsing the national policy, legal, and management plans for establishing fisheries *refugia* by Cambodia and Thailand as of 30 June 2021 results. Adoption of regional policy for managing transboundary fish stock, short mackerel under the ASEAN Policy framework in 2021. Furthermore, the implementing results enhanced the access to project information *via* the regional website and national web portal and to understand the status and trend of fisheries in Southeast Asia covering the SCS and GoT areas *via* the SEAFDEC Fisheries Statistic Database Network.

2. Information of Present Year Activity including Involved Stakeholders (As of 30 June 2021)

List of Activity By 4 Components	Type of activity*	Number of Participants			Actual Budget (USD)
		MCS	SEAFDEC	Others	
Activity COM-1	R	49			46,264.79
Activity COM-2	T	43			8,341.62
Activity COM-3	I	487	2		15,388.82
Activity COM-4	P	199	40		15,715.52
Total Expenditures in 2021 as of 30 June 2021					85,710.75
Balance Budget from 1 July – 31 December 2021					659,289.25

R = Research; T = Training; I = information; P = policy

3. Outcome/Outputs of the past Activity (As of 30 June 2021):

Planned activity	Expected outcome/output	Achievements/Outputs
<p>Outcome 1: <i>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</i></p>	<ul style="list-style-type: none"> Agreement among stakeholders on the boundaries of fisheries <i>refugia</i>, key threats to <i>refugia</i>, and priority management interventions for 14 sites 	<ul style="list-style-type: none"> At present, a total of 382,400 ha represents 6 <i>refugia</i> boundaries. In Cambodia consists of 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 are officially promulgated by the Minister of Ministry of Agricultural, Forestry and Fisheries (MAFF) in September 2019. In Thailand, 154,600 ha of short mackerel <i>refugia</i> in Trat province and 900 ha of blue swimming crab in Surat Thani province are accepted by the stakeholders in April 2021. In Malaysia, 85,200 ha for tiger prawn <i>Refugia</i>, and 140,000 ha for lobster <i>Refugia</i>. However, these two-<i>refugia</i> in Malaysia are waiting for final stakeholder acceptance.
	<ul style="list-style-type: none"> Guide to planning of <i>refugia</i> management developed and published in inter-governmentally endorsed regional guidelines and a need exists to apply this at the local level 	<ul style="list-style-type: none"> Adoption of the Regional Action Plan for Management of Transboundary Species: short mackerel in the Gulf of Thailand subregion is one of the management tools to guide the country in planning and managing fisheries <i>refugia</i>. This policy paper is adopted by SEAFDEC in 2020, and it is underway for endorsing and supporting the ASEAN Ministry of Agriculture and Forestry (AMAF) in October 2021.
	<ul style="list-style-type: none"> Networks of management boards and community-based fisheries and habitat management volunteers for <i>refugia</i> management established at 14 fisheries <i>refugia</i> sites. 	<ul style="list-style-type: none"> After the adoption of the <i>refugia</i>, Cambodia, in the process of setting up the working group and drafting a National Action Plan, in which the MCS framework included to support fisheries <i>refugia</i> management. Recently, the lead agency works with the local government partners to monitor control and surveillance. The networks will also apply to other countries after Fisheries <i>refugia</i> is set.
	<ul style="list-style-type: none"> Capacity building programmes at the community level focus on seafood quality and capacity issues with little emphasis on links between fisheries and environment 	<ul style="list-style-type: none"> Local capacity and coordination built, and Fisheries <i>Refugia</i> Working Group established to support the management of adopted <i>Refugia</i> in the long term.
	<ul style="list-style-type: none"> Operational partnership with the GEF Small Grants Programme to 	<ul style="list-style-type: none"> The Gef Small Grants program is underway consultation with relevant countries. It is

Planned activity	Expected outcome/output	Achievements/Outputs
	strengthen civil society and community organization participation	expected that by the end of 2021, at least a country proposal will be drafted for further consideration.
Outcome 2: <i>Increased institutional capacity in the 6 participating countries for the designation and operational management of fisheries refugia via the transformation of enabling environments and the generation of knowledge for planning</i>	<ul style="list-style-type: none"> Measures for the fisheries sector's sustainable use of fish habitats and biodiversity, and based on site-level models of ecosystem carrying capacity, incorporated in the fisheries policies of participating countries 	<ul style="list-style-type: none"> In Thailand, Laws, regulation and fisheries management measures are revised. The fisheries <i>refugia</i> concept is included in the national fisheries management plan. In Cambodia, the 5-year management plan is adopted by the government. The <i>Refugia</i> concept as a fisheries management area is included in the national master plan. Malaysia plans to review the legal aspects after stakeholders accepted the proposed <i>refugia</i> demarcation area.
	<ul style="list-style-type: none"> National guidelines on the use of fisheries <i>refugia</i> in integrating fisheries and habitat developed and endorsed by heads of national government departments responsible for fisheries and environment in the participating countries 	<ul style="list-style-type: none"> The Philippines started drafting the national guidelines through the consultations at three sites. Cambodia and Indonesia are in the process of drafting the national guidelines. Malaysia and Thailand plan in the next quarter.
	<ul style="list-style-type: none"> National policy, legal and planning frameworks for demarcating boundaries and managing <i>refugia</i> assessed and required reforms endorsed in the participating countries and reflected in an updated regional action plan 	<ul style="list-style-type: none"> Thailand and Cambodia endorsed the national policy, fisheries management plans.
	<ul style="list-style-type: none"> Annual synthesis reports of new and additional information and data relating to the stocks of priority fish, crustaceans and molluscs and their habitats published in each country and disseminated at national and regional levels 	<ul style="list-style-type: none"> The stock status and fisheries statistic data and information in the SCS and GoT are analysed from the SEAFDEC Fisheries Statistic Network. Due to the transboundary issues and long-term fisheries data needs for analysing stock status covered in the project areas which includes Brunei Darussalam and Singapore. The project therefore strengthens the cooperation with SEAFDEC and links the SEAFDEC network to the Fisheries <i>Refugia</i> project.
	<ul style="list-style-type: none"> Establishment and population of 6 online national databases, and 1 regional database, of fish egg and larvae distribution and abundance in national waters and the SCS basin 	<ul style="list-style-type: none"> The online national database and web portal are underway, Thailand has developed the Web portal that linked to the Regional Website. On a regional database, the project in collaboration with SEAFDEC will share the network link on distribution and abundance of fish larvae in the SCS and GoT.
	<ul style="list-style-type: none"> National and regional online Geographical Information Systems on fisheries and marine biodiversity featuring information on locations and management status of coastal habitats, fisheries <i>refugia</i>, MPAs, and critical habitats for threatened and endangered species 	<ul style="list-style-type: none"> In progress: The PCU worked on GIS of the <i>Refugia</i> site characteristic data on the <i>Refugia</i> website in Q4/2020. The updated <i>refugia</i> characteristics will be uploaded every quarter after receiving the inputs from the country.
	<ul style="list-style-type: none"> Fisheries and habitat data collection programmes operational to 	<ul style="list-style-type: none"> The fisheries <i>refugia</i> profiles including the site characteristics are published: three

Planned activity	Expected outcome/output	Achievements/Outputs
	<p>characterise 14 priority <i>refugia</i> sites in the South China Sea and Gulf of Thailand</p> <ul style="list-style-type: none"> • Modelling system linking oceanographic, biochemical, and fish early life history information developed & applied to improve regional understanding of fish early life history and links to critical habitats • Best practice fishing methods and practices to address key threats to fish stock and critical habitat linkages demonstrated at priority <i>refugia</i> 	<p><i>refugia</i> profiles in Cambodia, two profiles in Thailand and one draft profile from Philippines.</p> <ul style="list-style-type: none"> • Done as agreed at the RSTC2 and NSTC2, the Ocean modelling from IOC/Westpac will be applied and used in the project • The PCU is underway to compile and publish the best practice fishing methods and practices by the Q2/2022.
<p>Outcome 3 <i>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</i></p>	<ul style="list-style-type: none"> • Best practice approaches and measures for integrated fisheries and habitat management captured, documented and communicated nationally and regionally • Public awareness and outreach programme to promote local social, economic and environmental benefits of fisheries <i>refugia</i> implemented at 14 priority locations in the South China Sea and Gulf of Thailand • National knowledge management systems on the use of fisheries <i>refugia</i> in capture fisheries management established and operational • Regional Education and Awareness Centre on fisheries and critical habitats established and operating as a facility for the production and sharing of information and education materials for <i>refugia</i> management • Regional agreement on standardised information and data collection procedures in support of longer-term operation of a regional system of fisheries <i>refugia</i>, including design of 	<ul style="list-style-type: none"> • Numbers of best practices shared on the project websites such as: 1) Strengthening Regional cooperation for Management of Transboundary Species: 2) Best Practices for Blue Swimming Crab <i>Refugia</i> in Thailand • Linking the Science and Management Interface for Spiny Lobster <i>Refugia</i> In Malaysia. • At regional scale, the Regional Plan of Action for management of transboundary species in the Gulf of Thailand is adopted by Southeast Asian countries. • Through the stakeholder consultations at site levels, all 12 of the 15 sites accepted by the stakeholders. The remaining 3 <i>refugia</i> sites in Viet Nam are underway. • Thailand developed the web portals which are linked to the regional website and under the national lead agency website. • At present, a total of five articles shared and published under the GEF-IW LEARN • The Training Department of SEAFDEC, where the <i>Refugia</i> PCU is located, is the centre of fisheries knowledge including the fisheries <i>refugia</i> activities. All of the technical papers, meeting reports, national and regional policy papers and management tools, materials are stored in the <i>Refugia</i> Regional website. In addition, all publication is also recorded in the SEAFDEC repository system, where user can search using Fisheries <i>Refugia</i> key words • The 1st draft guideline is in progress through the technical consultation. It is expected to complete the final draft by Q1/2022.

Planned activity	Expected outcome/output	Achievements/Outputs
	stress reduction and environmental state indicators for managed <i>refugia</i>	
Outcome 4 <i>Cost-effective and efficient coordination of national and regional level cooperation for integrated fisheries and environmental management</i>	<ul style="list-style-type: none"> National Fisheries <i>Refugia</i> Committees (NFRC) established in 6 countries, functional and advising national decision-makers and regional <i>fora</i> 	<ul style="list-style-type: none"> 6 countries have completely set up the NFRC.
	<ul style="list-style-type: none"> National Technical and Scientific Committees (NTSC) established in 6 countries, functional and advising site-level management boards, the NFRC and the Regional Scientific and Technical Committee 	<ul style="list-style-type: none"> 6 countries completed set up the NTSC,
	<ul style="list-style-type: none"> Local community action catalysed <i>via</i> establishment and operation of site-based management boards for fisheries <i>refugia</i> at 14 locations in the South China Sea and Gulf of Thailand 	<ul style="list-style-type: none"> 6 countries completed set up the Site-based Management Boards,
	<ul style="list-style-type: none"> Regional Scientific and Technical Committee (RSTC) established and functioning as a bridge between the scientific community and decision-makers for operation of a regional system of fisheries <i>refugia</i> [annual meetings] 	<ul style="list-style-type: none"> In progress: Three meetings of the RSTC had been organized in 2018, 2019, and 2020. The PCU plans to conduct the RSTC4 on 22 July 2021 <i>via</i> the Zoom platform.
	<ul style="list-style-type: none"> Project Steering Committee established and functioning to oversee and act as a principal decision-making body for the project 	<ul style="list-style-type: none"> In progress: Two Meetings of PSC have been organized in 2018, 2019. It is expected to have PSC3 in 2020. But due to COVID-19 impacts, the PSC3 and PSC4 were made as a virtual meeting in June and October 2020.
	<ul style="list-style-type: none"> National Fisheries <i>Refugia</i> Committees (NFRC) established in 6 countries, functional and advising national decision-makers and regional <i>fora</i> 	<ul style="list-style-type: none"> In progress: The NFRC members are from different inter-Agencies and Ministries.

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		
1	FIA/Cambodia, 2021. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Internal Meeting Report with New Governor To Introduce Project Activities and Reform Site Based Management Board In Kep Province. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM83, 8 p.	E-doc.	http://hdl.handle.net/20.500.12067/1710

	List of completed publications as of September 2019–September 2020	Type of media	Attached e-file
2	FIA/Cambodia, 2021. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Local Meeting Report on Verification of Map of Marine Fisheries Management Area Including Grouper Fisheries <i>Refugia</i> In Kampot Province. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM84, 7 p.	E-doc.	http://hdl.handle.net/20.500.12067/1711
3	FIA/Cambodia, 2021. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Provincial Stakeholder Consultation Meeting Report To Verify The Map of Marine Fisheries Management Area Including Grouper Fisheries <i>Refugia</i> in Kampot Province. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM85, 8 p.	E-doc.	http://hdl.handle.net/20.500.12067/1720
4	FIA/Cambodia, 2021. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Field Trip Report to Follow Up the Implementation of Collaboration and Enforcement Program for Blue Swimming Crab <i>Refugia</i> at Koh Po, Kep Province. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/CAM86, 7 p.	E-doc.	http://hdl.handle.net/20.500.12067/1721
5	Department of Fisheries Conservation/Cambodia, 2021. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Fisheries <i>Refugia</i> Profile and Landing Site In Koh Kong Province. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/CAM-SP01, 27 p.	E-doc.	http://hdl.handle.net/20.500.12067/1722
6	Department of Fisheries Conservation/Cambodia, 2021. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Fisheries <i>Refugia</i> Profile and Landing Site In Kep Province. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/CAM-SP02, 28 p.	E-doc.	http://hdl.handle.net/20.500.12067/1723

	List of completed publications as of September 2019-September 2020	Type of media	Attached e-file
7	Department of Fisheries Conservation/Cambodia, 2021. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Fisheries <i>Refugia</i> Profile and Landing Site in Kampot Province. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/CAM-SP03, 23 p.	E-doc.	http://hdl.handle.net/20.500.12067/1724
INDONESIA REPORT			
1	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 Coordination Meeting for Project Implementation in Bangka Belitung: Meeting with local government, expert and fishing community in Bangka Belitung. Southeast Asian Fisheries Development Center, Training Department, SamutPrakan, Thailand; FR/REP/ID17, 7p.	E-doc.	http://hdl.handle.net/20.500.12067/1712
2	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 Baseline Survey for Establishing Fisheries <i>Refugia</i> in Province of Bangka Belitung Islands. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/ID18, 12 p.	E-doc.	http://hdl.handle.net/20.500.12067/1714
3	AMFRHR/Indonesia, 2021. 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 for Establishing Fisheries <i>Refugia</i> in West Kalimantan. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/ID19, 11 p.	E-doc.	http://hdl.handle.net/20.500.12067/1713
4	AMFRHR/Indonesia, 2021. 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 National Scientific and Technical Committee Meeting. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/ID20, 6 p.	E-doc.	http://hdl.handle.net/20.500.12067/1715

	List of completed publications as of September 2019-September 2020	Type of media	Attached e-file
	MALAYSIA REPORT		
1	DOF/Malaysia. 2021. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Way Forward Fisheries <i>Refugia</i> Project in South China Sea and the Gulf of Thailand. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/MY29, 10 p.	E-doc.	http://hdl.handle.net/20.500.12067/1718
2	DOF/Malaysia. 2021. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Seminar on the Establishment of Fisheries <i>Refugia</i> for Lobster in Tanjung Leman, Johor and Tiger Prawn in Kuala Baram, Sarawak. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/MY30, 8 p.	E-doc.	http://hdl.handle.net/20.500.12067/1726
	PHILIPPINES REPORT		
1	NFRDI/Philippines, 2021. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Fisheries <i>Refugia</i> Sites Profile, Philippines. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; Fisheries <i>Refugia</i> Rep-PH50, 38 p.	E-doc.	http://hdl.handle.net/20.500.12067/1716
3	Fisheries <i>Refugia</i> : A Concept to Conserve Spawning and Nursery Population In The Philippines	FISEARCH Newsletter NFRDI, Philippines	ISSN: 2362-9037
4	Training on Reproductive Biology Sampling For Conservation Of Priority Species In Fisheries <i>Refugia</i> Sites In The Philippines	FISEARCH Newsletter NFRDI, Philippines	ISSN: 2362-9037
	THAILAND REPORT		
12	DOF/Thailand, 2021. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of Local Consultation Workshops on Fisheries <i>Refugia</i> Boundary and Management Planning in Surat Thani Site, Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/TH35, 40 p.	E-doc.	http://hdl.handle.net/20.500.12067/1717

	List of completed publications as of September 2019-September 2020	Type of media	Attached e-file
13	DOF/Thailand, 2021. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the Eighth Meeting of Thailand's National Fisheries <i>Refugia</i> Committee. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/TH36, 17 p.	E-doc.	http://hdl.handle.net/20.500.12067/1725
SEAFDEC PCU			
1	SEAFDEC, 2021. Regional Action Plan for Management of Transboundary Species: Indo-Pacific Mackerel (<i>Rastrelliger brachysoma</i>) in the Gulf of Thailand Sub-Region. Southeast Asian Fisheries Development Center, Training Department, Samutprakarn, Thailand. 20p.	E-doc.	http://hdl.handle.net/20.500.12067/1719
2	SEAFDEC, 2021. Establishment and Operation of a Regional System of Fisheries <i>Refugia</i> in the South China Sea and Gulf of Thailand, Report of the 4 th Meeting of the Regional Scientific and Technical Committee. Southeast Asian Fisheries Development Center, Training Department, Samutprakarn, Thailand. 136 p.	E-doc.	http://hdl.handle.net/20.500.12067/1729
3	Highlights of the 4 th Regional Scientific and Technical Committee Meeting (RSTC4)	News/Article	https://fisheries-refugia.org/refugia-news
4	Southeast Asia: Fish Bank of the World	News/Article	https://news.iwlearn.net/southeast-asia-fish-bank-of-the-world
5	How Fisheries <i>Refugia</i> Approach Contributes To Integrated Coastal Zone Management (ICZM)	.News/Article	Will be launched online within September 2021

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

<NOT APPROPRIATED>

6. Major Impacts/Issues

- COVID-19 impacts

PART III: PROPOSED ACTIVITIES FOR YEAR 2022

1. Proposed Activity/Sub-activity, Work Plan and Estimated Budget for the Year 2022

(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	183,955	
COMPONENT 2	Improving the management of critical habitats for fish stocks of transboundary significance <i>via</i> national and regional actions to strengthen the enabling environment and knowledge-based for fisheries <i>refugia</i> management in the South China Sea	110,803	

Proposed Activity	Description of Proposed Activity	Proposed Budget (USD)	Notes
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	59,893	
COMPONENT 4	National cooperation and coordination for integrated fish stock and critical habitat management in the South China Sea	199,776	
		554,427	

2. Expected Outcomes/Outputs of Activity for the Year 2022

Proposed Activity / Component	Expected Outcomes/Outputs of Activity
Component 1	
Sub-activities	<ul style="list-style-type: none"> • 8 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 Endorsed FR Policy; • 4 Endorsed National Action plan; • 1 Endorsed/supported Regional Action Plan under ASEAN • 1 Regional Guidelines on Indicators endorsed by 6 countries
Component 3	
Sub-activities	<ul style="list-style-type: none"> • Regional Website updated: included Dashboard, dataset-link, • Catalogue of best practice approaches and measures published • 4 Outreach Programs from participating countries • 4 Published <i>Refugia</i> Article on IW-learn website or/and <i>Refugia</i> website • 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 • Report of Mid-term evaluation in the 1st Quarter of 2022.

3. Schedule of Activity for the Year 2022

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

**PROJECT DOCUMENT
ACHIEVEMENT FOR YEAR 2021
AND
PROPOSED ACTIVITIES FOR THE YEAR 2022**

Project ID: 201801011			
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	2019–2022
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 2022	USD 156,803
Lead Technical Officer	Takatsugu Kudoh, 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 fields, 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). Due to movement restrictions caused by Covid-19, the project is extended till end of 2022.

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, RS technology is a method that can be used anywhere in AMSs.

2.2 Rationality

In Southeast Asia, the inland fishery and aquaculture are important fields, 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 in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



4. 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.

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

5.1 Logical Framework

GOAL (Overall Objectives, Impact)		
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	Indicators	Means of Verification
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	1.1: To clarify the relationship between graphical/environmental data by remote sensing and catch data on the fishing ground by GIS Mapping and multivariate analysis.	1.1 Whether the guideline of the monitoring method is prepared or not. 1.2 An index value indicating the relationship between the

guideline of analytical method is created	1.2: The monitoring method for inland fisheries resources management by GIS Mapping /RS technology is proposed and a guideline of analytical method is created.	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		
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. 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. 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.		
OUTPUT 2	Indicators	Means of Verification
Dissemination of the monitoring and analyzing GIS Mapping /RS technical methods on geographical / environmental data and catch amount data in AMS.	2.1: A technical manual on analysis methods using GIS Mapping technology is produced. 2.2: The number of staff who can analyze using GIS Mapping / RS technology increases in AMSs countries.	2.: Technical manual on analysis methods using GIS Mapping technology The number of staff who can analyze using GIS Mapping / RS technology in target AMS.
ACTIVITY 2		
Technical analysis method of GIS Mapping / RS to clarify the relationship between geographical/environmental data and catch data is disseminated to AMSs. 2.1: To summarize the result of the catch monitoring method using GIS Mapping/RS technology obtained through activity 1. 2.2: To develop a technical manual on analysis methods using GIS Mapping technology. 2.3: To hold the workshop on catch analysis using GIS Mapping /RS technology for disseminating technology to AMSs		

5.2 Project Implementation Plan for 2020–2022

Activities	2020				2021				2022			
	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												

5.3 Proposed Budget for 2019–2022

(Unit: USD)

Output	Activities	Year 1 (2019)	Year 2 (2020)	Year 3 and Year 4 (2021 and 2022)
Output 1	Activity 1.1	49,336	27,026	
	Activity 1.2	9,095	5,800	
	Activity 1.3	5,800	8,000	28,740
Output 2	Activity 2.1		2,000	66,858
	Activity 2.2			10,063
	Activity 2.3			27,873
Project budget Sub-Total		64,231	42,826	133,534
Other budget (Management cost)		2,800	2,800	8,269

Output	Activities	Year 1 (2019)	Year 2 (2020)	Year 3 and Year 4 (2021 an 2022)
	contingency fee	500	10,000	15,000
	Total	67,531	55,626	156,803

PART II: PROJECT ACHIEVEMENTS IN 2021

1. Project Achievements in the Present Year

The achievement of the project in 2021 is as follows.

Due to the impact of the coronavirus in 2021, the planned analysis and meetings could not be carried out as originally planned.

1) Collection of environmental data by satellites

A method for collecting environmental data (Inland waters area, Temperature of water surface, rainfall, chlorophyll, etc.) by satellites has been established at five inland water sites. The collected environmental data were partly edited and processed. Collecting environmental data will be continued next year.

2) Data analysis

A multivariate analysis was partly 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.

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	Collection of catch data	This activity was not implemented in 2021						
Activity 1.2	Meeting for sharing the result of trail analysis	0	0	5	4	0	1	0
Activity 1.3								
Output 2:								
Activity 2.1	Summarize	These activities were not implemented in 2021						
Activity 2.2	Creating manual							
Activity 2.3	Work shop							

3. Expected Outcome/Outputs and Achievements

Activities	Expected Outcome/Outputs	Results/Achievements
Output 1:		
Activity 1.1	This activity was not implemented in 2021	
Activity 1.2	The environmental data required for GIS mapping analysis will be collected based on information from satellites.	A method for collecting environmental data (Inland waters area, Temperature of water surface, rainfall, chlorophyll, etc.) by satellites has been established at five inland water sites. Collecting environmental data will be continued next year.
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 partly 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	These activities were not implemented in 2021	
Activity 2.2		
Activity 2.3		

4. List of Publications in 2021

None

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

Activities	Evaluation
Output 1:	
Activity 1.1	None
Activity 1.2	
Activity 1.3	
Output 2:	
Activity 2.1	None
Activity 2.2	
Activity 2.3	

6. Major Impacts and Issues

In the 2021 project activities, due to the pandemic of Covid-19, sufficient field studies and data collection 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 2022

1. Project Summary in 2022

In 2022, the following activities will be carried out in the project.

1) Collecting catch data and creating a database

Compile and process catch data from 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 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:		
Activity 1.1	The collected catch data for each target site are compiled and processed, and a database is created	
Activity 1.2	The collected environmental data for each target site by the satellite are compiled and processed, and a database is created.	
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.	28,740
Output 2:		
Activity 2.1	Summarize the result of catch monitoring method using GIS Mapping/RS technology obtained through activity 1	66,858
Activity 2.2	Create technical manual on analysis methods using GIS Mapping technology.	10,063
Activity 2.3	Hold the workshop on catch analysis using GIS mapping /RS technology for disseminating technology to AMSs.	27,873

3. Implementation Plan of Activities in 2022

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 2022

Planned activity		Expected Activity Results
Output 1:		
Activity 1.1	Catch data will be verified through communication to AMSs	The quality of catch data will be increased through verification.
Activity 1.2	The environmental data required for GIS mapping analysis will be collected based on information from satellites.	The environmental data required for GIS mapping analysis will be collected.
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 partly conducted to clarify the relationship between catch data and environmental data.
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 partly conducted to clarify the relationship between catch data and environmental data, and an analytical approach using GIS/RS technology. This activity will be continued next year.
Activity 2.2	Create technical manual on analysis methods using GIS Mapping technology.	A technical manual on analysis methods using GIS Mapping technology is produced.
Activity 2.3	Hold the workshop on catch analysis using GIS mapping /RS technology for disseminating technology to AMSs.	The number of staff who can analyze using GIS Mapping / RS technology increases in AMSs countries.

**PROJECT DOCUMENT
ACHIEVEMENT FOR YEAR 2021
AND
PROPOSED ACTIVITIES FOR THE YEAR 2022**

			Project ID: 20200669
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 – 2022
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 2022	USD 542,731.20
Lead Technical Officer	Takatsugu Kudoh, 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 systems were 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 in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



4. 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.

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

5.1 Logical Framework

GOAL	Indicators	Means of Verification
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 1	Indicators	Means of Verification
In order to estimate resources stock status of the tropical anguillid eel species,	1-1 Catch and fishing effort data by eel species and region are properly collected.	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.
1-1 Catch and fishing effort data for anguillid eel species in AMS are collected.	1-2 Biological and ecological data and information are properly collected.	1-2 Confirm that the contents of collecting data include characteristics of key habitats and length composition of all stages of eels from the selected fishing ground.
1-2 Biological and ecological data/information of the tropical anguillid eels that contribute to the estimation of eel stock abundance in AMS are collected.	1-3 Genetic data and information are properly collected.	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.
1-3 Current distributions of the tropical anguillid eels and their diversities in AMS are identified.		
ACTIVITY 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 also conducted.		
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 also conducted.		
1-3 To collect genetic data to understand distribution, the level of diversity, and stock structure of the tropical anguillid eel species.		
OUTPUT 2	Indicators	Means of Verification
2-1 Annual catch and CPUE are estimated.	2-1 Accurate annual catch and historical CPUE are estimated.	2-1 Review of monthly catch and calculated CPUE by month.
2-2 Methods for the comprehensive stock assessment of tropical anguillid eels are developed.	2-2 Methods for estimating stock biomass are developed and stock biomass (and trend) is estimated using a developed method.	2-2 Progress reports and review by experts.
2-3 Methods for calculation of allowable catch of tropical anguillid eels are developed.	2-3 Methods for estimating allowable catch limit and allowable catch are estimated using developed methods.	2-3 Progress reports and reviews by experts and managers.

ACTIVITY 2		
2-1 Analyze catch per unit fishing effort (CPUE), including accurate data collection through regular surveys and selection of an appropriate catch effort.		
2-2 Develop methods for estimating abundance trends 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		
OUTPUT 3	Indicators	Means of Verification
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.	3. Metrology on effective management of the tropical anguillid eels are enhanced and management measures are proposed, formulated in AMS.	3. Review the project report and confirm that the report includes content on resource management methods, data collection system, technology of assessment resource stock.
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.		

5.2 Project Implementation Plan for 2020–2022

Activities	2020				2021				2022			
	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												
Activity 3.1												
Activity 3.2												
Activity 3.3												

5.3 Proposed Budget for 2020–2022

(Unit: USD)

Output	Activities	Year 1 (2020)	Year 2 and Year 3 (2021 and 2022)
Output 1	Activity 1.1	60,749	121,497.80
	Activity 1.2	77,500	44,650.00
	Activity 1.3	36,000	30,550.00
Output 2	Activity 2.1		47,216.00
	Activity 2.2		11,118.00
	Activity 2.3		43,616.00
Output 3	Activity 3.1		22,200.00
	Activity 3.2		30,700.00
	Activity 3.3		59,954.00
Sub-Total		174,249	411,501.80
Other budget (management cost and contingency fee)		73,143	131,229.40
Total		247,392	542,731.20

PART II: PROJECT ACHIEVEMENTS IN 2021

1. Project Achievements in the Present Year

The achievement of the project in 2021 is as follows.

Due to the impact of the coronavirus in 2021, the planned surveys and meetings could not be carried out as originally planned.

Collect catch / fishing effort data and biological data

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

Collect genetic data

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

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	Meeting	0	0	18	10	4	5	65,347
Activity 1.2	Survey	1	30	5	4	0	0	31,340
Activity 1.3	Survey	0	5	21	12	4	5	87,225
Output 2:								
Activity 2.1	These activities were not implemented in 2021							
Activity 2.2								
Output 3:								
Activity 3.1	These activities were not implemented in 2021							
Activity 3.2								

3. Expected Outcome/Outputs and Achievements

Activities	Expected Outcome/Outputs	Results/Achievements
Output 1:		
Activity 1.1	This activity was not implemented in 2021	
Activity 1.2	Conducted the survey to collect and analyze biological data	The collection of ecological data was conducted in Indonesia.
Activity 1.3	Conducted the survey to collect and analyze DNA data	The collection of DNA data was conducted.
Output 2:		
Activity 2.1	These activities were not implemented in 2021	
Activity 2.2		
Output 3:		
Activity 3.1	These activities were not implemented in 2021	
Activity 3.2		

4. List of Publications in 2021

None

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

Activities	Evaluation
Output 1:	
Activity 1.1	This activity was not implemented in 2021
Activity 1.2	None

Activities	Evaluation
Activity 1.3	None
Output 2:	
Activity 2.1	These activities were not implemented in 2021
Activity 2.2	
Activity 2.3	
Output 3:	
Activity 3.1	These activities were not implemented in 2021
Activity 3.2	
Activity 3.3	

6. Major Impacts and Issues

In 2021, 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.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2022

1. Project Summary in 2022

In 2022, 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:		
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. Fishery / aquaculture statistical surveys will be conducted in AMS.	121,497
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.	44,650
Activity 1.3	To collect genetic data to understand distribution, the level of diversity, and stock structure of the tropical anguillid eel species. Expenses for collecting DNA samples and analyzing population genetic structure.	30,550

Proposed Activities	Descriptions	Proposed Budget
Output 2:		
Activity 2.1	Analyze catch per unit fishing effort (CPUE), including accurate data collection through regular surveys and selection of an appropriate catch effort.	47,216
Activity 2.2	Develop methods for estimating abundance trends of the eel stocks. Making manual for methods of assessment stock on tropical anguillid eel.	11,118
Activity 2.3	Develop appropriate methods for estimating total allowable catch limit that will secure sustainable use of tropical anguillid eel resources.	43,616
Output3:		
Activity 3.1	Examine validities of developed methods of stock assessment for eel resources stocks.	22,200
Activity 3.2	Disseminate developed methods of the stock assessment of tropical anguillid eel to AMS.	30,700
Activity 3.3	Develop a manual for AMS to formulate the effective resources management based on the assessment of tropical anguillid eel stocks.	59,954

3. Implementation Plan of Activities in 2022

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												
Activity 3.3												

4. Expected Activity Results in 2022

Planned activity		Expected Activity Results
Output 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 grounds. 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 surveys using specific fishing gears at selected fishing grounds.

Planned activity		Expected Activity Results
		<ul style="list-style-type: none"> 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
Output 2:		
Activity 2.1	Analyze catch per unit fishing effort (CPUE), including accurate data collection through regular surveys and selection of 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 trends 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 limits 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.
Output 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 validate the developed resource assessment methods technique.
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"> Stock assessment techniques and catch information of tropical anguillid eel will be disseminated to AMS through regional meetings.

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2021
AND
PROPOSED ACTIVITIES FOR THE YEAR 2022**

			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 2022:	USD 135,000
Lead Technical Officer:	Sayaka Ito (AQD)	Project Participating Country:	All Members Countries

PART I: PROJECT DESCRIPTION

1. Executive Summary

With the capture fishery production at a stillstand, aquaculture has been responsible for supplying fishery products in response to the large increase in demand for fishery products in recent years. In 2016, fish production by aquaculture accounted for 47% of the world's total fish production. While fish production from aquaculture has increased, the growth of the aquaculture industry has also had negative impacts, such as degradation of the culture sites, destruction of sensitive ecosystems, decrease in biodiversity, the spread of diseases, and social conflicts. Taking these aquaculture problems into account, this project consisted of the three main issues; (1) Cost-Effective Culture System, (2) Prompt and Effective Aquatic Animal Health Management, and (3) Capacity Enhancement on Sustainable Aquaculture. The first challenge is to reduce aquaculture costs to develop aquaculture technologies that are environmentally friendly and sustainable for an aquaculture operation. The second one is to develop prompt and effective aquatic disease control and management technologies to prevent the spread of emerging and unknown fish and crustacean diseases in the ASEAN region. The third one is to disseminate the technologies developed by AQD and to enhance the capacity of aquaculture stakeholders in sustainable aquaculture technologies. The project aims to develop aquaculture technologies that will ultimately maintain the stability and sustainability of aquatic food production and to disseminate these technologies to the ASEAN region. Currently, the project is running about smoothly, despite the prevalence of COVID19.

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. Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



4. 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.

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

5.1 Logical Framework

GOAL	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	<ul style="list-style-type: none"> • 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	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 (e.g. 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
Activity 1.4: Development of Aquaculture Techniques on New Aquatic Species for Promotion and Creation of Local Aquaculture Industry	To develop hatchery and grow-out techniques on the breeding, seed production and nursery rearing of kawakawa (<i>Euthynnus affinis</i>), shortfin scad (<i>round scad</i> , <i>Decapterus macrosoma</i>), flathead lobster (<i>Thenus orientalis</i>) and seahorse (<i>Hippocampus comes</i>)	Established seed production and grow-out techniques for adoption of local aquaculture industry
OUTPUT 2	Indicators	Means of Verification
Development of Procedures in Disease Control and Management against Crustacean and Fish Diseases in Southeast Asia	<ul style="list-style-type: none"> • Procedures in disease control and management against crustacean and fish diseases to improve aquaculture production 	<ul style="list-style-type: none"> • Government policies in support of management based on developed diagnostic procedures • Practical realization of developed procedures
ACTIVITY 2	Indicators	Means of Verification
Activity 2.1: Development of Diagnostic Procedures Against Emerging Crustacean and Fish Diseases	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Diagnosed unknown mortalities of crustacean and fish • Optimized diagnostic protocols for emerging fish and crustacean diseases. • Dissemination of the standardized diagnostic protocol through hands-on training; and provision of positive control(s) • Preparation of disease cards

Activity 2.2: Survey of the Epidemiology, Distribution, Occurrence and Prevalence of EHP	<ul style="list-style-type: none"> • Surveillance Survival rate, growth rate of shrimp • Procedures of isolation of viability of spores • Mode of transmission Cohabitation, horizontal and vertical transmission 	<ul style="list-style-type: none"> • Active surveillance reports/database • Guidelines to protect shrimp from EHP
Activity 2.3: In Vitro and in Hatchery Investigation of Organisms, Chemicals and Methods to Prevent or Mitigate the Effect of Important Shrimp Diseases	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	List of organisms, chemicals and methods that will lead to less incidence of shrimp disease outbreak in hatchery tank trials
Activity 2.4: Application of Integrated Approaches in the Management of Viral Infections and Other Emerging Diseases in Brackish Water Ponds	Two tank trials and three pond trials to be conducted in SEAFDEC/AQD Tigbauan Main Station and Dumangas Brackishwater Station, January 2020- December 2024	<ul style="list-style-type: none"> • Completed preliminary tank trials • Completed successful ponds trials demonstrating the efficacy of the integrated approaches • 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	Means of Verification
Activity 3.1: Training Course on Sustainable Aquaculture	<ul style="list-style-type: none"> • Promotion of marine aquaculture technologies in the region • Promotion of freshwater aquaculture technologies in rural communities in the region 	<ul style="list-style-type: none"> • 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	Annual progress meeting and international workshop

ACTIVITY 4	Indicators	Means of Verification
Activity 4.1: Annual Progress Meeting	Annual meeting organized by SEAFDEC/AQD to review the project achievement	<ul style="list-style-type: none"> • Annual progress meeting • Review and evaluation of the project achievements
Activity 4.2: International Workshop	<ul style="list-style-type: none"> • Workshop organized by SEAFDEC/AQD to review the project achievement • Exchange of brand-new information on aquaculture 	<ul style="list-style-type: none"> • International workshop • Update on the issues related to sustainable aquaculture
Activity 4.3: Coordination by the Project Leader	<ul style="list-style-type: none"> • Coordination and encouragement of the research, training and dissemination • Facilitation of information exchange on the project activities 	<ul style="list-style-type: none"> • Contribution to achievement of the project's objectives • Proper use of the budget • Review of the overall project achievements on the provided meetings.

5.2 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																				

5.3 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	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	15,000	15,000	15,000	13,000
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	18,000
	Activity 4.3	14,000	14,000	14,000	14,000	14,000
Sub-Total		130,000	135,000	135,000	135,000	135,000

PART II: PROJECT ACHIEVEMENTS IN 2021

1. Project Achievements in the Present Year

Activity 1.1 Social preparation strategies such as organizing stakeholders, leaders and internal regulations in community-based aquaculture livelihood projects were successfully implemented.

Activity 1.2 Wet season trial on growth of Nile tilapia fingerlings in tank and lake-based cages was continued. A preliminary study on the beneficial use of aquatic weeds as soybean meal replacer in diets of tilapia in biofloc-based systems is on-going and will be terminated after 20 weeks.

Activity 1.3 In the results of the first run of the mesocosm experiment imply that among the 3 organisms, sandfish was the best candidate for use in an artificial/ constructed wetland in a recirculating aquaculture system. Ammonia and phosphate were lowest; furthermore, highest weight gain was observed, no shrimp mortality was also observed. The experiment will be replicated and data will be analysed statistically.

Activity 1.4 Kawakawa and shortfin scad were sampled and data on their reproductive biology and feeding habit were collected. Handling trials for the two species were also carried out. Specific handling should be needed for the kawakawa while the shortfin scad can be easily packed and transported using either oxygenated bags or by using a customized transport tank. The slipper lobsters from wild were successfully transported in the laboratory. Spawning occurred after the transport and phyllosomas were photographed and videos were taken. It was observed that the phyllosomas are very sensitive to water movement. Newly hatched *Artemia* nauplii and *Nannochloropsis* spp. were provided as feed to the phyllosomas.

Activity 2.1 The collected samples (cultured animals: mangrove crabs and whiteleg shrimp) were analyzed and tested using the different available disease diagnostic methods. Several bacterial isolates prevalent from samples of weak mangrove crabs, were isolated and identified. These isolates will be subjected to infection experiments in the latter part of the project since substantial abnormalities were observed in histopathology of the tissues. Moreover, it was recommended to the grow-out farm operator to implement Good Aquaculture Practices (GAqP), hence, the results showed significant improvements in physico-chemical parameters of pond soil and rearing water. Based on the results of the sampling conducted at a whiteleg shrimp grow-out farm, several ponds were PCR-positive to EHP (*Enterocytozoon hepatopenaei*). Samples were stored at -80 °C biofreezer for further analyses.

Activity 2.2 A list of EHP-positive shrimp farms around Iloilo was formed while gaining pond information such as the days of culture, water parameters and also determining the overall prevalence of EHP in all sampled shrimp farms.

Activity 2.3 Disinfection experiments will be done in the 4th quarter of 2021.

Activity 2.4 Possible sources of SPF non-SPF postlarvae were identified. Potential areas where pond soil can be sourced for the tank trials were identified. Passages in live shrimp were done in order to obtain virulent inoculum of WSSV. Bacterial colonies containing Vp-AHPND from frozen stock were regrown, reisolated and stored in agar slants.

Activity 3.1 2 sessions were conducted for the Online Training Course on Marine Fish Hatchery. Session 1 was conducted on June 14-29, 2021 (16 days). There was a total of 21 participants: Brunei Darussalam (1), Japan (1), Kiribati Islands (5), Papua New Guinea (2), Peru (1), Philippines (8), Singapore (1), Thailand (1) and the USA (1). Session 2 was conducted on July 19 – August 3, 2021 (16 days). There was a total of 13 participants: Brunei Darussalam (1), Cambodia (1), Malaysia (3), Myanmar (1), and Philippines (7).

Training Course on Sustainable Aquaculture is scheduled in November 2021. To date, there are 4 nominees from SEAFDEC Member Countries to attend the online course: Brunei (2), Malaysia (1), Myanmar (1). It is expected to receive nominees from the other member-countries soon.

Activity 3.2 The training is yet to be conducted in October or November 2021. To date, there are 2 nominees from SEAFDEC Member Countries to attend the online course: Malaysia (1), and Myanmar (1). It is expected to receive nominees from the other member-countries soon.

Activity 3.3 The AquaHealth Online Training Course was conducted from January 17 to April 17, 2021 (14 weeks). There was a total of 15 participants: Brunei Darussalam (1), Philippines (11), Singapore (2), and Viet Nam (1). There were 12 GOJ-TF Fellowship grants given to Brunei, Philippines (8), Singapore (2) and Viet Nam.

The online training course on Fish Health Management is proposed to be conducted in November 2021. To date, there are 4 nominees from SEAFDEC Member Countries to attend the online course: Malaysia (2), Myanmar (1) and Singapore (1). It is expected to receive nominees from the other member-countries soon.

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	0	0	4	2	2	27	10,000
Activity 1.2	R	0	0	1	5	0	0	10,000
Activity 1.3	R	0	0	1	1	0	0	10,000
Activity 1.4	R	0	0	2	11	2	15	15,000
Output 2:								
Development of Procedures in Disease Control and Management against Crustacean and Fish Diseases in Southeast Asia								
Activity 2.1	R	0	0	4	3	0	2	10,000
Activity 2.2	R	0	0	1	1	0	0	10,000
Activity 2.3	R	0	0	1	1	0	0	10,000
Activity 2.4	R	0	0	4	3	0	2	10,000
Output 3:								
Capacity Enhancement on Sustainable Aquaculture and Aquatic Animal health Management in Southeast Asia								
Activity 3.1	T	9	16	0	0	4	5	14,000
Activity 3.2	T	NA	NA	NA	NA	NA	NA	8,000
Activity 3.3	T	6	7	1	1	0	0	8,000
Output 4:								
Progress management of project								
Activity 4.1	O	0	0	10	10	1	2	6,000
Activity 4.2	O	NA	NA	NA	NA	NA	NA	0
Activity 4.3	O	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	Establishment of collaboration between organized fisherfolks, local government, and other stakeholders in sustainable production of giant freshwater prawn (GFWP)	<ul style="list-style-type: none"> Validation of the baseline survey results with stakeholders, Formation of the Pipindan Aquaculture Producers Association (PAPA), election of its officers and formulation of its constitution and by-laws with concurrence of its local government. Designing structure of the hatchery for production of freshwater prawn
Activity 1.2	<ul style="list-style-type: none"> Performance of alternative tilapia feed using two feeding strategies Information on the potential of aquatic weeds and black mussel meal as alternative feed ingredients for tilapia in the biofloc-based systems. 	<ul style="list-style-type: none"> Wet season growth trials of Nile tilapia fingerlings in tank and lake-based cages showed that feeding strategies had significantly affected its production parameters; whereas the effect of diets on production response was only evident in stocks reared in tank-based cages The growth of Nile tilapia fingerlings in biofloc-based system after 12 weeks was not significantly

Activities	Expected Outcome/Outputs	Results/Achievements
		affected when soybean meal in the diets were replaced by non-fermented aquatic weeds up to 10.6% inclusion level
Activity 1.3	<ul style="list-style-type: none"> • Designs of artificial/constructed wetland in a recirculating aquaculture system to mitigate the effect of diseases. • Feasibility evaluation of the designed artificial/constructed wetland through mesocosm experiments 	Shrimp were cultured in the designed artificial/constructed wetland in a recirculating aquaculture system. Highest shrimp weight gain and no mortality was observed in shrimp cultured in water treated with sandfish
Activity 1.4	<ul style="list-style-type: none"> • Collection of the monthly data to determine reproductive biology, feeding habit and migration pattern of kawakawa and shortfin scad • Establishment of capture and transport techniques for acquisition of live fish stocks • Development of appropriate maintenance of broodstock and hatching protocol for slipper lobster 	<ul style="list-style-type: none"> • Based on collected samples, data shows that GSI of the kawakawa and shortfin scad is highest in April and in August, respectively. • The shortfin scad caught and transported already adapts to tank conditions. • The slipper lobsters from wild were successfully transported into the laboratory. Spawning was observed after the transportation.
Output 2:		
Activity 2.1	Establishment of monitoring and surveillance system for occurrence of mass mortalities in cultured crustacean and fish	Samplings were conducted at two different grow-out farms (mangrove crab and whiteleg shrimp farms) from the two provinces. Samples were processed using different available disease diagnostic methods (Bacteriology, Histopathology, and Molecular Biology) to identify and isolate the causative agent(s) and physico-chemical tests of pond soil and rearing water.
Activity 2.2	Making a list of penaeid species infected with EHP and other EHP carriers, a determined prevalence rate of EHP and an identified distribution of EHP-infected shrimp farms	<ul style="list-style-type: none"> • Overall, 107 ponds were examined with days of culture (DOC) ranging from 13 to 104. A total of 633 shrimp samples analyzed of which 289 are <i>P. monodon</i> and 344 are <i>P. vannamei</i>. The days of culture positive for EHP are 41, 66, 82, 92, 97, 101 and 104. For the first and second quarter of the year, the overall prevalence of EHP is 7.9%. • Soil samples from Zarraga ponds were negative for EHP.
Activity 2.3	Determine if iodine, formalin and hydrogen peroxide can be used to disinfect <i>P. monodon</i> egg, nauplii, and post larvae to prevent the horizontal and vertical transmission of pathogens	Disinfection experiments will be done in the 4 th quarter of 2021.
Activity 2.4	Completion of trial preparation	<ul style="list-style-type: none"> • Possible sources of SPF non-SPF post-larvae were identified. • Potential areas where pond soil can be sourced for the tank trials were identified. Passages in live shrimp were done in order to obtain virulent inoculum of WSSV. • Bacterial colonies containing Vp-AHPND from frozen stock were regrown.

Activities	Expected Outcome/Outputs	Results/Achievements
Output 3:		
Activity 3.1	<ul style="list-style-type: none"> Conduct of training course for the promotion of marine aquaculture technologies in the region Conduct of training course for the promotion of community-based freshwater aquaculture for remote rural areas of Southeast Asia 	<ul style="list-style-type: none"> An online platform was developed as a mode in the delivery of the course for the nominated SEAFDEC-member country participants and from the other sectors. The online platform used was Canvas and the online module consisted of recorded lecture presentations, practical video sessions, discussion boards, assignments, downloadable learning materials, suggested references, live recapitulations sessions with resource persons covering all the modules/topics, and group presentations using Zoom. The Training Course on Community-Based Freshwater Aquaculture for Remote Rural Areas of Southeast Asia is still yet to be conducted and scheduled in November 2021.
Activity 3.2	Conduct of training course on skills enhancement and dissemination of improved feed development and management practices to ASEAN Member States.	The station-based Training Course on Fish Nutrition and Feed Development is scheduled to be conducted in October or November. The face-to-face training schedule will be converted into an online module.
Activity 3.3	Conduct of training course to increase capacity to manage aquatic animal diseases among stakeholders in ASEAN Member States	For the Fish Health Management component, two online training courses will be conducted. The module will be converted into an online platform format. The online platform was also updated from e-Front to Canvas mode.
Output 4:		
Activity 4.1	Annual meeting organized by SEAFDEC/AQD to review the project achievement	<ul style="list-style-type: none"> Annual meeting Review and evaluation of the project achievements
Activity 4.2	Not Applicable	
Activity 4.3	<ul style="list-style-type: none"> Coordination and encouragement of the research, training and dissemination activities Facilitation of information exchange on the project activities 	<ul style="list-style-type: none"> Contribution to achievement of the project's objectives Proper use of the budget Review of the overall project achievements on the provided meetings

4. List of Publications in 2021

Publications	Type of Media	Attached e-file
1. de la Peña, LD, Arboleda, JI, Castellano, JLA. 2021. Establishment of threshold infection levels of WSSV in different weight ranges of <i>Penaeus vannamei</i> using quantitative PCR (qPCR). <i>SARSEA 2019 Proceeding (under review)</i>	Proceedings	No
2. Erazo-Pagador, G, Pakingking, RV Jr., Dumaran-Paciente, HR. 2020. First histopathological description of parasites and shell conditions of the donkey's ear abalone <i>Haliotis asinina</i> (Linnaeus, 1758) cultured in marine cages and land-based tanks in the Philippines. <i>Journal of Shellfish Research</i> 39:375-379	Research articles	No
3. Aya, FA, Sayco, MJP, Unida, JCL, Romana-Eguia, MRR, Salayo, ND. 2021. Potential of agricultural wastes in aquafeed production. <i>SARSEA 2019 Proceeding (under review)</i>	Proceedings	No

Publications	Type of Media	Attached e-file
4. Cabanilla-Legaspi, MI, Traifalgar RFT, de Jesus-Ayson, EGT, Andrino-Felarca, KGS, Mamauag, REP. 2021. Growth, metamorphosis and survival of orange-spotted rabbitfish (<i>Siganus guttatus</i>) larvae fed sodium iodide-supplemented brine shrimp (<i>Artemia</i> sp). <i>Aquaculture, in press</i>	Research articles	No
5. Cabanilla-Legaspi, MI, Traifalgar RFT, de Jesus-Ayson, EGT, Andrino-Felarca, KGS, Mamauag, REP. 2021. Changes in iodide and thyroid hormone levels of hatchery-reared orange-spotted rabbitfish <i>Siganus guttatus</i> (Bloch 1787) during early larval development. <i>Aquaculture Reports, in press</i>	Research articles	No
6. Tendencia, EA, Quito, GC. Ammonia, phosphate, total suspended solid and chlorophyll a removal in mangrove habitat receiving shrimp pond effluents. <i>SARSEA 2019 Proceeding (under review)</i> .	Proceedings	No
7. Tendencia EA, Quito G. Factors affecting mortality of shrimp, <i>Penaeus monodon</i> , experimentally infected with <i>Vibrio parahaemolyticus</i> causing Acute Hepatopancreatic Necrosis Disease (VP _{AHPND}). <i>SARSEA 2019 Proceeding (under review)</i> .	Proceedings	No

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

Activities	Evaluation
Output 1:	
Activity 1.1	Not Applicable
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	Practical training course with high quality detailed lecture videos and various reading materials shared by the resource speaker, being excellent
Activity 3.2	Not yet
Activity 3.3	The modules are very great, which gave knowledges on different methods or best ways of practices in preventing diseases problems in fish and crustaceans
Output 4:	
Activity 4.1	Not Applicable
Activity 4.2	Not Applicable
Activity 4.3	Not Applicable

6. Major Impacts and Issues

Activity 1.1 Social preparation such as organizing stakeholders, leaders and internal regulations was successfully implemented. The structural design of the hatchery for production of freshwater prawn was completed.

Activity 1.2 The growth of Nile tilapia fingerlings in biofloc-based system after 12 weeks was not significantly affected when soybean meal in the diets were replaced by non-fermented aquatic weeds up to 10.6% inclusion level.

Activity 2.1 Several bacterial isolates from sample of weak mangrove crab were successfully isolated and identified. PCR-positive to EHP (*Enterocytozoon hepatopenaei*) was detected from a whiteleg shrimp samples in several ponds. Samples were stored at -80 °C biofreezer for further analyses.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2022

1. Project Summary in 2022

Activity 1.1 The construction of the hatchery encourages in-situ enhancement of aquaculture skills and entrepreneurial competencies of giant freshwater prawn (GFWP) farmers in Laguna Lake and tributaries, and in ponds in lakeshore areas.

Activity 1.2 Feeding trials are conducted to test the effects of fisheries and agricultural wastes and by-products blend in diets for improved growth performance of GFWP postlarvae in biofloc and clear water conditions.

Activity 1.3 Earthen pond experiments are conducted to determine the efficiency of the designed artificial/constructed wetland in a recirculating aquaculture system identified in the mesocosm experiment in mitigating the effect of diseases.

Activity 1.4 The sample collection is continued and fish handling and transportation techniques are also developed to ensure live fish stocks. The appropriate maintenance technique of broodstock and hatching protocol for wild-sourced slipper lobster are developed by conducting trials on the feeding, water management, and hatching protocol. The appropriate larval rearing methods for flathead lobster are also examined.

Activity 2.1 Viral and bacterial diseases have been the cause for the decline of aquaculture production both in crustacean and finfish farming. Development of detection methods for these unknown and emerging diseases are the most efficient response to be able to implement immediate and appropriate interventions for the prevention and control of disease outbreak(s). In 2022, the project still focuses on monitoring and surveillance of mass mortalities in aquaculture caused by unknown and emerging crustacean and fish diseases. This enables to isolate and identify the causative agent(s) and develop disease diagnostic protocol(s). If travel restrictions are still implemented by 2022, the project only focuses on conducting farm visits and samplings within the province/region.

Activity 2.2 The transmission mechanisms of EHP in shrimps commence where challenge cohabitation experiment, and experimental horizontal transmission of EHP in postlarvae of *P. vannamei* is conducted. Prior to performing the experiment, the EHP tissue homogenate is prepared to be used as an infection inoculum. Cohabitation challenge involves testing the transmission of EHP by combining naïve and infected shrimp in the aquaria whereas horizontal transmission is to elucidate if EHP can be transmitted *via* soil or water.

Activity 2.3 Other chemicals and methods are investigated to prevent the horizontal and vertical transmission of pathogens, especially WSSV. Especially, electrolysis, benzalkonium chloride, sodium hypochlorite, sodium chloride, treflan, laundry detergent (Tide) are tested as the disinfectants and methods.

Activity 2.4 Pond trials are conducted for testing combined shrimp management approaches against WSSV.

Activity 3.1 The on-site/station-based training on marine aquaculture in the region is conducted. The on-site/station-based training course on community-based freshwater aquaculture is also implemented for the promotion of freshwater aquaculture technologies in rural communities in the region.

Activity 3.2 The on-site/station-based training course on skills enhancement and dissemination of improved feed development and management practices is conducted to ASEAN Member States.

Activity 3.3 The on-site/station-based training is conducted to increase capacity to manage aquatic animal diseases among stakeholders in ASEAN Member States.

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	Community-Based Hatchery, Nursery, Grow-out of Giant Freshwater Prawn (GFWP) in Laguna Lake and Tributaries	10,000

Proposed Activities	Descriptions	Proposed Budget
	<p>Estimated expenditures:</p> <ul style="list-style-type: none"> -Personnel services: USD 800 -Travel costs: USD 600 -Research expense: USD 1,000 -Laboratory analysis: USD 150 -Supplies and materials: USD 200 -Lab/research/hatchery equipment: USD 2,900 -Hatchery operation costs: USD 1,700 -Communications: USD 250 -DSA: USD 500 -Training expenses and supplies: USD 700 -Invited travel costs: USD 300 -Meeting costs: USD 660 -Office supplies: USD 100 -Accommodation: USD 140 <p>Sub-total: USD 10,000</p>	
Activity 1.2	<p>Promoting Alternative Feeds for Sustainable Production of Freshwater Aquaculture Species</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> -Personal services: USD 2,700 -Travel costs: USD 800 -Research expense: USD 1,500 -Laboratory analysis: USD 3,000 -Supplies and materials: USD 1,000 -Laboratory/research equipment: USD 1,000 <p>Sub-total: USD 10,000</p>	10,000
Activity 1.3	<p>Ecosystem Approach to a Responsible/Sustainable Shrimp Farming</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> -Personal services: USD 5,000 -Pond rehabilitation: USD 2,000 -Travel costs: USD 1,000 -Laboratory analysis: USD 1,000 -Research Materials: USD 800 -Office supplies: USD 200 <p>Sub-total: USD 10,000</p>	10,000
Activity 1.4	<p>Development of Aquaculture Techniques on New Aquatic Species for Promotion and Creation of Local Aquaculture Industry</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Personal services: USD 2,000 - Travel costs: USD 2,000 - Research expense: USD 3,000 - Laboratory analysis: USD 2,000 - Supplies and materials: USD 2,000 - Laboratory/research equipment: USD 2,000 - Hatchery operation costs: USD 1,000 - Communications: USD 100 - DSA: USD 100 - Training expenses and supplies: USD 100 - Invited travel costs: USD 100 - Meeting costs: USD 200 - Office supplies: USD 200 - Accommodation: USD 200 <p>Sub-total: USD 15,000</p>	15,000

Proposed Activities	Descriptions	Proposed Budget
Output 2:	Development of Procedures in Disease Control and Management against Crustacean and Fish Diseases in Southeast Asia	
Activity 2.1	Development of Diagnostic Procedures Against Emerging Crustacean and Fish Diseases Estimated expenditures: - Personnel services, technical assistant: USD 6,500 - Travel Costs: USD 200 - Communications: USD 100 - Supplies and materials: USD 1,200 - Research expenses: USD 2,000 Sub-total: USD 10,000	10,000
Activity 2.2	Survey of the Epidemiology, Distribution, Occurrence and Prevalence of EHP Estimated expenditures: - Personal services: USD 6,000 - Travel costs: 200 - Research expense:(research animal, feeds) USD 1,000 - Laboratory analysis: USD 1,500 - Supplies and materials: USD 800 - Laboratory/research equipment: USD 300 - Communications: USD 100 - Office supplies: USD 100 Sub-total: USD 10,000	10,000
Activity 2.3	In Vitro and in Hatchery Investigation of Organisms, Chemicals and Methods to Prevent or Mitigate the Effect of Important Shrimp Diseases Estimated expenditures: - Personal services: USD 5,000 - Travel costs: USD 200 - Research expense: USD 500 - Laboratory analysis: USD 3,000 - Hatchery operation costs: USD 1,000 - Communications: USD 100 - Office supplies: USD 200 Sub-total: USD 10,000	10,000
Activity 2.4	Application of Integrated Approaches in the Management of Viral Infections and Other Emerging Diseases in Brackish Water Ponds Estimated expenditures: - Personnel services, technical assistant: USD 6,500 - Travel Costs: USD 200 - Communications: USD 100 - Supplies and materials: USD 1,200 - Research expenses: USD 2,000 Sub-total: 10,000USD	10,000

Proposed Activities	Descriptions	Proposed Budget
Output 3:	Capacity Enhancement on Sustainable Aquaculture and Aquatic Animal health Management in Southeast Asia	
Activity 3.1	Training Course on Sustainable Aquaculture - Communications: USD 1,250 - Training supplies/materials: USD 900 - Travel: USD 3,350 - Accommodation: USD 3,950 - Daily Subsistence Allowance (DSA): USD 2,850 - Research expenses: USD 100 - Daily Subsistence Allowance (DSA): USD 1,600 Sub-total: USD 14,000	14,000
Activity 3.2	Training Course on Fish Nutrition and Feed Development Estimated expenditures: - Communications: USD 100 - Training supplies/materials: USD 2,200 - Travel: USD 3,500 - Accommodation: USD 500 - Daily Subsistence Allowance (DSA): USD 1,200 - Vehicle utilization/field trips: USD 500 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/trips: USD 500 - Training supplies/materials: USD 2,000 - Travel: USD 3,500 - Accommodation: USD 500 - Daily Subsistence Allowance (DSA): USD 1,400 Sub-total: USD 8,000	8,000
Output 4:	Progress management of project	
Activity 4.1	Holding annual meeting at SEAFDEC/AQD Estimated expenditures: - Travel, DSA, Accommodation, Training fee: USD 4,500 - Communications: USD 100 - Refreshments: USD 900 - Supplies and materials: USD 500 Sub-total: USD 6,000	6,000
Activity 4.2	Not Applicable	
Activity 4.3	Coordination and encouragement of the research, training and dissemination activities, and facilitation of information exchange on their activities. Estimated expenditures: - Personnel services of financial assistant: USD 5,000 - Travel costs: USD 2,000 - Communications: USD 500 - Equipment: USD 4,000 - Refreshments: USD 1,000 - Office supplies: USD 1,500 Sub-total: USD 14,000	14,000

3. Implementation Plan of Activities in 2022

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 2.4												
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 2022

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"> Produce of capacitated fisherfolk-members who benefit from supplemental income from the community-based livelihood through GFWP hatchery and nursery operations.
Activity 1.2. Promoting Alternative Feeds for Sustainable Production of Freshwater Aquaculture Species	<ul style="list-style-type: none"> Information on the feeding value of mixtures of fisheries and agricultural wastes and by-products on the production efficiency of GFWP postlarvae in biofloc and clear water conditions
Activity 1.3. Ecosystem Approach to a Responsible/Sustainable Shrimp Farming	<ul style="list-style-type: none"> Design of artificial/ constructed wetland in a recirculating aquaculture system to mitigate 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"> Understanding of reproductive biology based on monthly sampling data of kawakawa and shortfin scad. Development of appropriate capture and transport techniques to ensure live fish stocks Development of appropriate maintenance technique of broodstock and hatching protocol for wild-sourced slipper lobster Accumulation of knowledge on appropriate larval rearing
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"> Further isolation and identification of the causative agent(s) of unknown and emerging crustacean and fish diseases in selected farms.
Activity 2.2. Survey of the Epidemiology, Distribution, Occurrence and Prevalence of EHP	<ul style="list-style-type: none"> Understanding the two transmission mechanisms of EHP specifically the cohabitation challenge and horizontal transmission <i>via</i> soil and water.

Planned activity	Expected Activity Results
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	<ul style="list-style-type: none"> List of therapeutants and processes that can be used to disinfect <i>P. monodon</i> fertilized egg, nauplii, and post larvae.
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"> Determination of appropriate shrimp management approaches against WSSV
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"> Conduct of the face to face "Training Course on Marine Fish Hatchery" and "Training Course on Community-Based Freshwater Aquaculture for Remote Rural Areas of Southeast Asia" if the situation allows or the online equivalent if it is not yet favorable due to the pandemic.
Activity 3.2 Training Course on Fish Nutrition and Feed Development	<ul style="list-style-type: none"> Conduct of "the Training Course on AquaNutrition Online/Fish Nutrition & Feed Development" to 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	<ul style="list-style-type: none"> Conduct of "the AquaHealth Online Training Course/Fish Health Management" to disseminate knowledge and new approaches in fish health management to SEA participants.
Activity 4 Progress management of project	
Activity 4.1 Annual Progress Meeting	<ul style="list-style-type: none"> Holding the annual progress meeting Review and evaluation of 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"> Contribution to achievement of the project's objectives Proper use of the budget Review of the overall project achievements on the provided meetings

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2021
AND
PROPOSED ACTIVITIES FOR THE YEAR 2022**

			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 2022:	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. Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



4. 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.

5. Project Goal, Outputs, Activities, Indicators and Verification:

5.1 Logical Framework

GOAL	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	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 	<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

	<ul style="list-style-type: none"> • Two participants from each MC invited • National Project Focal Points identified in MCs • Back-to-back with Activity 2.1 	
<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	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	<ul style="list-style-type: none"> R&D and product development undertaken in collaboration with local institutes and industry cooperants/partners 	<ul style="list-style-type: none"> R&D and product development in trial
Activity 2.3: Development of Training Material for HPP of fish and fishery products	<ul style="list-style-type: none"> 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) 	<ul style="list-style-type: none"> Training Materials
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 to be drafted 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Handbook on HPP of fish and fishery products translated to other languages and published 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> One-day meeting One-day site visit to an overseas commercial High-Pressure Processing Plant for Seafood Two participants from each MC invited 	<ul style="list-style-type: none"> Meeting and site visit report Two participants from each MC

5.2 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																				

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 1.5																				
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																				

5.3 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 2021

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 2021.

Activity 1.2: GMP/GHP for Ready-to-Eat Raw Fish and Fisheries Products

Considering scope of project defined at Inception Meeting in 2020, training and course materials are being developed in accordance with the discussed scope by a local IHL consultant engaged by MFRD. The training for Member Countries is estimated to occur during October.

Activity 2.2: Guidelines on HPP Processing

One pilot trial on a different range of seafood was conducted. MFRD engaged a consultant, and R&D on the seafood is currently in progress in accordance with the agreed scope.

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 Ready-to-Eat Raw Fish and Fisheries Products								
Activity 1.2	Development of Training Material for GMP/GHP for Ready-to-Eat Raw Fish and Fisheries Products	-	-	-	-	-	-	15,000
Activity 1.3	Regional Training Course on GMP/GHP for Ready-to-Eat Raw Fish and Fisheries Products							
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. 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 Ready-to-Eat Raw Fish and Fisheries Products		
Activity 1.2	Development of Training Material for GMP/GHP for Ready-to-Eat Raw Fish and Fisheries Products	MFRD engaged a consultant to develop the training materials in accordance with the discussed scope. The training materials are in progress.
Activity 1.3	Regional Training Course on GMP/GHP for Ready-to-Eat Raw Fish and Fisheries Products	The regional training course is held virtually through an online platform in October. Following the training course, a virtual meeting is held with the MCs to facilitate the planning process of the pilot trial in each MC.
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	A pilot trial was conducted at a HPP facility in Singapore.
Activity 2.3	Development of Training Material for HPP of fish and fishery products	MFRD engaged a consultant working for R&D and product development on the agreed range of seafood.
Activity 2.4	Preparation of Handbook on HPP of fish and fishery products	MFRD engaged a consultant for the drafting of the handbook.

4. List of Publications in 2021

None

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

Activities	Evaluation
Output 1:	
Activity 1.2	Nil
Activity 1.3	Nil
Output 2:	
Activity 2.2	Nil

6. Major Impacts and Issues

Due to the COVID-19 and restrictions imposed, the activities timeline had to be pushed back. The planned meeting(s) are also conducted virtually in 2021.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2022

1. Project Summary in 2022

After the activities for development of training materials and training course for GMP & GHP for fish and fishery products, and R&D development for HPP of fish and fishery products, MCs will be conducting their own GMP & GHP pilot trials. As for HPP of fish and fishery products, it is expected to have developed the training materials, Handbook of HPP on fish and fishery products and plan the regional training course on HPP technology.

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 fish and fishery products	
Activity 1.4	GMP & GHP handling pilot trials	15,000
Output 2:	Handbook on HPP serves as methods to process fish and fishery products through HPP	
Activity 2.4	Preparation of Handbook on HPP of fish and fishery products	10,000
Activity 2.5	Regional Training Course on HPP technology	35,000

3. Implementation Plan of Activities in 2022

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Output 1:												
Activity 1.4												
Output 2:												
Activity 2.4												
Activity 2.5												

4. Expected Activity Results in 2022

Planned activity	Expected Activity Results
Activity 1 Development of regional standards and guidelines on safe handling of raw seafood products	
Activity 1.4.	<ul style="list-style-type: none"> • MCs to conduct pilot trials in individual countries
Activity 2 Building capabilities in HPP for seafood to enhance competitiveness	
Activity 2.5.	<ul style="list-style-type: none"> • To hold a regional training course on HPP technology

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2021
AND
PROPOSED ACTIVITIES FOR THE YEAR 2022**

			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 2022:	USD 113,000
Lead Technical Officer:	Pattaratjit Kaewnuratchadasorn (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 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 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 Ministers 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 and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030 (RES&POA-2030) as follows;

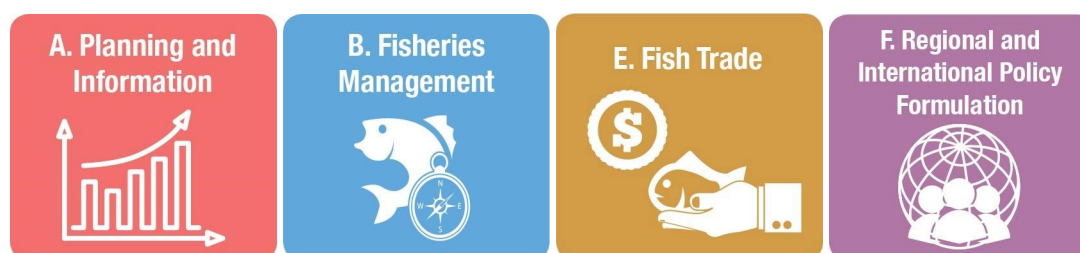
RES#18 “Promote joint ASEAN approaches and positions in international trade in fish and fishery products produced in the region, by harmonizing the standards, criteria, and guidelines, and developing mutually-recognized agreements on sustainability and food safety management systems;

POA#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.

POA#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 SDG17: 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 rising for international fisheries-related issues.

3. Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



4. Gender Sensitivity of the Project

Equal participation is provided to men and women.

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

5.1 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	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 least 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	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 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	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	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

5.2 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																				

5.3 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
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 2021

1. Project Achievements in the Present Year

In 2021, at the outset of the COVID-19 pandemic, travel restrictions were imposed throughout the world. Project staff participated in the international meetings which were taken place through online platforms that also included relevant fish-related events namely: the 34th Session of the FAO Committee on Fisheries (COFI 34) was held in February 2021, the 31st Meeting of the CITES Animals Committee (AC31) in 31 May–1, 4, and 22 June 2021, the WTO Fisheries subsidies ministerial meeting was held on 15 July 2021.

During the year, the Project organized a webinar series on international fisheries-related issues, including the Regional Workshop on the Study on Impacts of COVID-19 Pandemic on the Fisheries Sector of the ASEAN-SEAFDEC Member Countries on 24 February 2021, and the Study on Impacts of COVID-19 Pandemic on the

Fisheries Sector of the ASEAN-SEAFDEC Member Countries. The Project also organized the Webinar on WTO Fisheries Subsidies Draft Consolidated Text (Negotiating Group on Rules) on 10 and 17 June 2021. The final outputs were the consolidated views of the SEAFDEC Member Countries on the WTO Fisheries Subsidies Draft Consolidated Text (dated 11 May 2021), which was submitted to SEAFDEC Council (*ad referendum*).

With the aim to raise awareness and build capacity of the AMSs on emerging international issues, based on outputs from the webinars organized by the project as mentioned above, during the last quarter of the year, project plans to organize/conduct webinars/workshop/activity, including: US Marine Protected Act (September); Regional Workshop on Roadmap for Monitoring and Evaluation of RES&POA-2030; Webinar on Traceability System; and development of a training module on reference points for fisheries management (referred to WTO consolidated text on fisheries subsidies).

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: The status of international fish trade-related issues updated and informed AMSs								
Activity 1.1 Participation in the relevant regional/ international forum on international fish trade <i>e.g.</i> FAO COFI, CITES, etc. (events were organized through online platforms) • The 34 th Session of the FAO Committee on Fisheries (COFI 34) was held in February 2021. • The 31 st Meeting of the CITES Animal Committee (AC31) in May-June 2021	III							0
Activity 1.2 Review the status of international fish trade-related issues: • Webinar on the WTO Fisheries Subsidies Draft Consolidated Text (Negotiating Group on Rules) (10 and 17 June 2021)	IV	48	36	11	9	6	5	660
Output 2: 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								
Activity 2.1: Regional Technical Consultation on International Fisheries-related Issues • Organization of the regional Workshop on the Study on Impacts of COVID-19 Pandemic on the Fisheries Sector of the ASEAN-SEAFDEC Member Countries (24 February 2021)	I	13	12	13	15			320
• Organization of the webinar on US Marine Protected Act (28 September 2021)	IV							700 Ongoing
• Organization of the Regional Workshop on Roadmap for Monitoring and Evaluation for RES&POA-2030								700 (ongoing)
• Organization of the Webinar on Traceability System (700 USD)								700 (ongoing)

Activities	Type of activity	Number of Participants						Budget Spent (USD)
		AMSs		SEAFDEC		Others		
		F	M	F	M	F	M	
<ul style="list-style-type: none"> Development of a training module on reference points for fisheries management (as referred to the WTO consolidated text on fisheries subsidies) 								15,000 (ongoing)
<ul style="list-style-type: none"> Organization of the regional Validation Workshop on Study on Impacts of COVID-19 Pandemic on the Fisheries Sector of ASEAN-SEAFDEC Member Countries (October 2021) 								700 (ongoing)
Activity 2.2 Conduct the regional Study on Impacts of COVID-19 Pandemic on the Fisheries Sector of ASEAN-SEAFDEC Member Countries (support the MCs for data collection)	I							1,000
Output 3: Communications and cooperation with AMSs through the Regional Fisheries Policy Network (RFPN) strengthened								
Activity 3.1 Support RFPNs and enhanced RFPNs capacity through participations of ASEAN-SEAFDEC Meetings								
Activity 3.2 SEAFDEC Fisheries Country Profiles updated under the assignments of RFPN								
Output 4: Information on international fisheries-related issues disseminated in the Southeast Asian region								
Activity 4.1 Preparation, production and dissemination of the publications on international fisheries-related issues or the results of the project	V							1,575
<ul style="list-style-type: none"> Conduct activities to enhance visibility of the Project results, including dissemination of (i) posters of Sharks and Rays to relevant agencies; (ii) brochures, flyers, factsheet on risk and the stock assessment for KAW and LOT; and (iii) posting the news on social medias. 								

3. Expected Outcome/Outputs and Achievements

Activities	Expected Outcome/Outputs	Results/Achievements
Outcome Actions of AMSs at the international fora reflecting a more understanding with supportive data/information		
Output 1:		
Activity 1.1 Participation in the relevant regional/ international forum on international fish trade <i>e.g.</i> FAO COFI, CITES, etc. <ul style="list-style-type: none"> The 34th Session of the FAO Committee on Fisheries (COFI 34) was held in February 2021. The 31st Meeting of the CITES Animal Committee (AC31) in May-June 2021 	<ol style="list-style-type: none"> International fish trade-related issues <i>e.g.</i> FAO COFI, CITES, etc. updated The news of international fisheries related issues and relevant events posted on social media Detailed information on international fish trade-related issues 	<ol style="list-style-type: none"> SEAFDEC staff attended international meetings through the online platforms and obtained the updated information on the relevant issues from FAO COFI, and AC31.
Activity 1.2 Review the status of international fish trade-related issues: <ul style="list-style-type: none"> Webinar on the WTO Fisheries Subsidies Draft Consolidated Text (Negotiating Group on Rules) (10 and 17 June 2021) 	<ol style="list-style-type: none"> Updated information and current situation on the WTO Fisheries Subsidies Draft Consolidated Text Drafted consolidated views of the SEAFDEC Member countries on the Draft Consolidated Text 	<ol style="list-style-type: none"> SEAFDEC organized the Webinar the WTO Fisheries Subsidies Draft Consolidated Text (Negotiating Group on Rules) (10 and 17 June 2021) Participants obtained the latest status of the WTO Fisheries Subsidies Negotiation Consolidated views of the SEAFDEC Member countries on the WTO Fisheries Subsidies Draft Consolidated Text (dated 11 May 2021) was submitted to SEAFDEC Council (<i>ad referendum</i>)
Output 2:		
Activity 2.1 Regional Technical Consultation on International Fisheries-related Issues <ul style="list-style-type: none"> Organization of the regional Workshop on the Study on Impacts of COVID-19 Pandemic on the Fisheries Sector of the ASEAN-SEAFDEC Member Countries (24 February 2021) 	<ol style="list-style-type: none"> National Focal Points (NFPs) understood this study and the questionnaires Final questionnaires of this study Agreed workplan and timeframe of this study 	<ol style="list-style-type: none"> NFPs understood the Study on Impacts of COVID-19 Pandemic on the Fisheries Sector of the ASEAN-SEAFDEC Member Countries The questionnaire was finalized The Member Countries agreed on the timeline of the Study.
<ul style="list-style-type: none"> Organization of the webinar on US Marine Protected Act (scheduling in Nov 2021) 		
<ul style="list-style-type: none"> Organization of the regional Workshop on Roadmap for Monitoring and Evaluation for RES&POA-2030 (scheduling in December 2021) 		

Activities	Expected Outcome/Outputs	Results/Achievements
<ul style="list-style-type: none"> Organization of the webinar on Traceability System (scheduling in December 2021) 		
Activity 2.2 Study on Impacts of COVID-19 Pandemic on the Fisheries Sector of ASEAN-SEAFDEC Member Countries (support the MCs for data collection)	<ol style="list-style-type: none"> The Member Countries provided the data and information as inputs for the Study on Impacts of COVID-19 Pandemic on the Fisheries Sector of ASEAN-SEAFDEC Member Countries The Report of the Study on Impacts of COVID-19 Pandemic on the Fisheries Sector of the ASEAN-SEAFDEC Member Countries 	<ol style="list-style-type: none"> The Report of the Study on Impacts of COVID-19 Pandemic on the Fisheries Sector of the ASEAN-SEAFDEC Member Countries (ongoing)
Output 3: Strengthened cooperation with ASEAN Member Countries through RFPN		
Activity 3.1 Support RFPNs and enhanced RFPNs capacity through participations of ASEAN-SEAFDEC Meetings	Note: the RFPN program was pending due to the situation of COVID-19 since 2020. RECAB program is proposed to be implemented in 2022 as mentioned elsewhere in this document.	
Activity 3.2 SEAFDEC Fisheries Country Profiles updated under the assignments of RFPN		
Output 4: Information on international fisheries-related issues disseminated in the Southeast Asian region		
Activity 4.1 Produce and disseminate the publications related to international fisheries related issues or the results of the project	Activities were conducted to enhance visibility of the project outputs, including dissemination of posters on Sharks and Rays to relevant agencies; brochures, flyers, factsheet, etc.; and posting the news on social media.	<ol style="list-style-type: none"> Disseminated the poster of Sharks and Rays to relevant agencies

4. List of Publications in 2021

Publications	Type of Media	Attached e-file
1. Report of the Webinar on the Regional Workshop on the Study on Impacts of COVID-19 Pandemic on the Fisheries Sector of the ASEAN-SEAFDEC Member Countries (24 February 2021)	e-file	pdf
2. Report of the Webinar on the WTO Fisheries Subsidies Draft Consolidated Text (Negotiating Group on Rules) (10 and 17 June 2021)	e-file	pdf
3. VDO on the Webinar on the WTO Fisheries Subsidies Draft Consolidated Text (Negotiating Group on Rules) (10 June 2021)	VDO	https://www.youtube.com/watch?v=z72uNI5Tvek&t=3s
4. Factsheet of the results of the Stock and Risk Assessments of the Kawakawa and Longtail Tuna in Southeast Asia Waters Using ASPIC		

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

Activities	Evaluation
Output 1:	Due to technical difficulty in conducting evaluation of the workshop/training organized <i>via</i> virtual mode, there was no result of such evaluation for all activities conducted in 2021.
Activity 1.1	
Activity 1.2	
Activity 1.3	
Output 2:	
Activity 2.1	
Activity 2.2	
Output 3:	
Activity 3.1	
Activity 3.2	
Output 4:	
Activity 4.1	

6. Major Impacts/Issues

Due to the ongoing COVID-19 pandemic throughout the world, travel restrictions were imposed in most of the countries. The international events relevant to fisheries-related issues such as FAO COFI, the Animal Committee of CITES were organized in 2021 through online platforms. The Project organized the Webinar Series on fisheries-related issues such as WTO Fisheries Subsidies, Study on Impacts of COVID-19 through online platforms and brought the experts, resource persons and national agencies to join the webinars. However, since the level of the internet services varied in many countries, there were major challenges when organizing the online events.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2022

1. Project Summary in 2022

In 2022, SEAFDEC will continue to support SEAFDEC staff to participate in the relevant regional/international fora *e.g.* FAO, CITES, etc. and will update the status of the international fish trade-related issues by 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.

In addition, regarding the new capacity building program for fisheries officers of AMSs, titled the Regional Capacity Building Network (RECAP Network), this program was endorsed by the SEAFDEC Council during its 53rd Meeting in 2021, to be implemented in 2022; the SEAFDEC Secretariat will communicate with AMSs for smooth arrangement and conduct of this new program.

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:	The status of international fish trade-related issues updated and informed AMSs	
Activity 1.1	<p>Participation in the relevant regional/international forum on international fish trade, <i>e.g.</i> FAO events, CITES, etc.</p> <p>SEAFDEC staff participate in the international/regional fora to update the international fish trade-related issues <i>e.g.</i> CITES COP19 to be held in June 2022 in Costa Rica), FAO events, etc.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Traveling Costs: USD 5,000 - Daily Subsistence Allowances: USD 2,000 - Accommodations: USD 3,000 Sub-total: USD 10,000 	10,000

Proposed Activities	Descriptions	Proposed Budget
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 are updated and shared with the AMSs for their reference and consideration for further appropriate action.</p> <p>Estimated expenditures: - 2 Regional Workshops (online platform): USD 1,000 Sub-total: USD 1,000</p>	1,000
Output 2:	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	
Activity 2.1	<p>Provide platform for Regional Technical Consultation (RTC) or even Senior Official Meeting (if required) to discuss and consider the international fish trade related issues which may impact the development of fisheries and aquaculture in the Southeast Asian Region.</p> <p>The Regional Technical Consultation is 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><i>Remarks: RTC is organized a face-to-face meeting in Thailand (for 2 days) or otherwise it is an online meeting based on the COVID-19 situation in 2022.</i></p> <p>Estimated expenditures: - Traveling Costs: USD 13,000 - Daily Subsistence Allowances: USD 3,300 - Accommodation: USD 5,200 - Meeting package: USD 2,500 - Others: USD 1,000 Sub-total: USD 25,000</p>	25,000
Activity 2.2	<p>RTC organized to discuss and develop a common/coordinated position and policy recommendations for AMSs</p> <p><i>Remarks: RTC is organized a face-to-face meeting in Thailand (for 2 days) or otherwise it is an online meeting based on the COVID-19 conditions in 2022.</i></p> <p>Estimated expenditures: - Traveling Costs: USD 13,000 - Daily Subsistence Allowances: USD 3,300 - Accommodation: USD 5,200 - Meeting package: USD 2,500 - Others: USD 1,000 Sub-total: USD 25,000</p>	25,000

Proposed Activities	Descriptions	Proposed Budget
Output 3:	Communications and cooperation with AMSs through the Regional Fisheries Policy Network (RFPN) strengthened RFPN	
Activity 3.1	<p>Support fisheries officers of the AMS by conducting the Regional Capacity Building Network (RECAB)”.</p> <p>SEAFDEC/TD organizes a comprehensive training program for fisheries officers of the AMS, under the “Regional Capacity Building Network (RECAB)”. With regard to the International Year of Artisanal Fisheries and Aquaculture 2022, the major content of the training program include integration of gender dimension in small-scale fisheries as a major subject. The training will be organized for 20 days. The training platform will be decided depending on COVID-19 situation in 2022. Tentatively, a total of 10 national fisheries officers nominated by SEAFDEC Member Countries will be fully sponsored by the project. It is expected that the trainees could expand/obtain more knowledge on issues and concerns of small-scale fisheries in the context of FAO SSF Guidelines with specific focus on Southeast Asian regional perspective, and to enhance the capacity of the trainees to undertake gender analysis for determination of gender issues and concerns in the small-scale fisheries communities, and identify the actions for promotion of equality between women and men.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Traveling Costs USD 6,000 - Honorarium: USD 11,000 - Accommodation: USD 10,000 - Other expenses USD 13,000 <p>(Health insurance, airport taxes, visa, etc.)</p> <p>Sub-total: USD 50,000</p>	50,000
Activity 3.2	Support activities to enhance the capacity of the Network	500
Output 4:	Information on international fisheries-related issues disseminated in the Southeast Asian region	
Activity 4.1	<p>Produce and disseminate the publications related to international fisheries related issues or the results of the project Meeting Reports, posters, brochures are produced and disseminated.</p> <p>Estimated expenditures:</p> <ul style="list-style-type: none"> - Printing meeting results and/or Meeting Report USD 1,500 <p>Sub-total: USD 1,500</p>	1,500

3. Implementation Plan of Activities in 2022

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												
Activity 3.2												
Output 4:												
Activity 4.1												

4. Expected Activity Results in 2022

Planned Activity	Expected Activity Results
Output 1: The status of international fish trade-related issues updated and informed AMSs	
Activity 1.1. Participation in the relevant regional/international forum on international fish trade, <i>e.g.</i> FAO, CITES, etc.	<ul style="list-style-type: none"> The SEAFDEC and Member Countries obtained the updated information on the international fish trade-related issues The coordination between SEAFDEC, Member Countries and organizations strengthened on international fisheries related matters.
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 updated and shared with all AMSs.
Output 2: 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	
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"> Regional issues/concerns addressed at the international fora such as the draft of regional policy recommendation This draft further submitted to the SEAFDEC Council Director and ASEAN mechanism for endorsement and also high level respectively.
Activity 2.2 RTC organized to discuss and develop a common/coordinated position and policy recommendations for AMSs	<ul style="list-style-type: none"> Regional issues/concerns addressed at the international fora such as the draft of regional policy recommendation This draft further submitted to the SEAFDEC Council Director and ASEAN mechanism for endorsement and also high level respectively.
Output 3: Communications and cooperation with AMSs through the Regional Fisheries Policy Network (RFPN) strengthened	
Activity 3 Strengthened cooperation with ASEAN Member Countries through RFPNs (RECAB)	
Activity 3.1 and 3.2 Support National Fisheries Officers through the Regional Capacity Building Network (RECAB)” (former called RFPNs). SEAFDEC organizes the training course under the capacity building program, titled “Regional Capacity Building Network (RECAB)” which was adopted by the SEAFDEC Council during its 53 rd Meeting in 2021. To jointly celebrate with FAO and international communities, on the International Year of Artisanal Fisheries and Aquaculture 2022, the training course will focus on the gender dimension in small-scale fisheries in 2022, hosting by TD.	<ul style="list-style-type: none"> Issues and knowledge and understanding on small-scale fisheries and gender integration enhanced. Regional cooperation and network among the AMSs on officers on small-scale fisheries and gender integration, strengthened, as well as capacity of fisheries officials of AMS enhanced.
Output 4: Information on international fisheries-related issues disseminated in the Southeast Asian region	
Activity 4	
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 disseminated

**PROJECT DOCUMENT
ACHIEVEMENTS IN THE YEAR 2021
AND
PROPOSED ACTIVITIES FOR THE YEAR 2022**

			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	Since 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 2022:	
Lead Technical Officer:	Sukchai Arnupapboon (TD)	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 Training Department (TD) continues its technical support to the SEAFDEC Member Countries 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. In 2004, M.V. SEAFDEC 2, a coastal training and research vessel, has been granted by the Government of Japan to support Member Countries on fisheries resources and marine environmental survey to fulfill the needs of the Member Countries. The major outputs from the survey are cruise reports, technical documents on fisheries resource stock status, marine biodiversity and other specific requirements, *e.g.*, oceanography and marine environment, etc.

In 2021, SEAFDEC/TD planned to conduct three (3) cruises by using M.V. SEAFDEC 2. However, due to the COVID-19 pandemic across the countries and the region, SEAFDEC/TD postponed the three (3) cruises to be implemented in 2022. Details of the cruises are as follow;

- Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between the research vessels of SEAFDEC/TD and the Department of Fisheries Thailand, in the Gulf of Thailand (6 service days), scheduled in March 2021;
- Marine Fisheries Resources, Environmental and Marine Debris Research Survey in the Gulf of Thailand (47 service days), scheduled from April to June 2021; and
- Marine Environmental and Fishery Resources Survey in the Gulf of Thailand (expected 47 service days), scheduled from September to October 2021

Recently, the vessel system onboard M.V. SEAFDEC was upgraded with an installation of the new system of hydroacoustic equipment of scientific echosounder (SIMRAD EK-80) to enhance her capability in fulfilling fisheries resource survey requirements of the Member Countries.

2. Background and Justification

Since the establishment of SEAFDEC in 1968, the technical support to Member Countries on marine capture and exploitation of fisheries resource focused on human resource development by using SEAFDEC's research vessels has been the significant mandates of SEAFDEC. Since the 1970s, SEAFDEC has been supporting Member Countries in fisheries resource exploration, marine fisheries resources research survey, human resource development on fishing technology and marine engineering. In line with the ASEAN-SEAFDEC Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030, SEAFDEC has its mandate to support Member Countries 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 SEAFDEC research vessels,

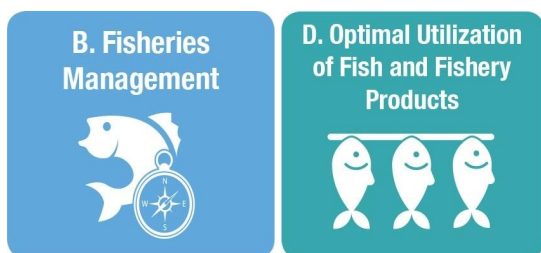
SEAFDEC can support Member Countries to strengthen knowledge, including local knowledge, and science-based development and management of fisheries by enhancing the national capacity to collect, analyze, and share fisheries data and information. The envisaged outcome of fisheries resources and marine 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 onboard practical sessions will improve the capability of fishing crew and workers in the fishing industry and conduct an educational and skill development program 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 a 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 the ASEAN countries. M.V. SEAFDEC 2 has been continuously supporting Member Countries for conducting a fisheries resources and marine environmental survey since 2004. The expected outputs 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, marine environment, etc. SEAFDEC expects that the results from the survey could facilitate the establishment and implementation of a comprehensive policy for the sustainable management and development of marine capture fisheries at national, sub-regional and regional levels. The other significant expected outputs are to support human resource development of national researchers in various fields including fisheries resources, marine environment, oceanography, fisheries biology, fishing gear technology, as well as navigators and marine engineers to support the shipboard survey. In order to achieve the expected outputs as mentioned above, SEAFDEC/TD works in close collaboration with the Member Countries and potential partners at national, sub-regional and regional levels by supporting Member Countries for conducting a 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 operations, oceanographic instruments and fishing vessel. Early 2019, M.V. SEAFDEC 2 was improved and reconditioned with installing the equipment onboard, *e.g.*, modern navigation aids equipment, parts of engines and fishing accessories as supported by the Government of Japan through the Japan International Cooperation Agency (JICA), and the overall improvement was completed early 2020. In 2021, the capacity of M.V. SEAFDEC 2 to conduct a survey using hydroacoustic methods was improved with the new installation of the scientific echo sounder (SIMRAD EK80). This equipment is fully utilized to investigate abundance of pelagic resources for Member Countries in the future.

Since the JTF 6 phase II commenced in 2020, only one cruise was conducted. In the M.V. SEAFDEC 2 No. 61-1/2020, the sea trial on main engine, generator engines, machinery, engine control system, steering gear, navigation equipment, safety device system and bottom trawl was carried out in September 2020. The number of service days by M.V. SEAFDEC 2 was only 3 days. The other four cruise plans were affected by the COVID-19 pandemic during the year 2020–2021. The following cruises were affected by the COVID-19:

- Cancellation of the National Research Survey on Demersal Resources in the Waters of Viet Nam by using M.V. SEAFDEC 2 (expected 69 service days)
- Postponement of the cruise on the Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between the research vessels of SEAFDEC/TD and the Department of Fisheries Thailand, in the Gulf of Thailand (6 service days)
- Postponement of the Marine Fisheries Resources, Environmental and Marine Debris Research Survey in the Gulf of Thailand (47 service days),
- Postponement of the Marine Environmental and Fishery Resources Survey in the Gulf of Thailand (expected 47 service days)

3. ASEAN-SEAFDEC Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



4. Gender Sensitivity of the Project

Onboard facilities of M.V. SEAFDEC 2 can be serviced for female and male researchers. However, the limited number of female researchers can participate in a research cruise due to the limited number of bathrooms and toilets available for females onboard. Generally, the quota for female researchers is four (4) persons with one bedroom equipped with four (4) bunks.

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

5.1 Logical Framework

GOAL	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	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 Member Countries	Cruise Report of fisheries resources and marine environmental survey, and shipboard training
ACTIVITY 2	Indicators	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	Cruise Report of fisheries resources and marine environmental survey, and shipboard training

5.2 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																				

5.3 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	Cost Sharing Policy				
Output 2	Activity 2	Cost Sharing Policy				
Sub-Total						

PART II: PROJECT ACHIEVEMENTS IN 2021

1. Project Achievements in the Present Year

Due to the continued COVID 19 pandemic in 2021, SEAFDEC/TD postponed three (3) cruises to 2022, *namely*: 1) The Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between the research vessels of SEAFDEC/TD and the Department of Fisheries Thailand in the Gulf of Thailand (6 service days), 2) Marine Fisheries Resources, Environmental and Marine Debris Research Survey in the Gulf of Thailand (47 service days), and 3) Marine Environmental and Fishery Resources Survey in the Gulf of Thailand (expected 47 service days).

Although M.V. SEAFDEC2 was not actively operated, there was a key achievement on the improvement and upgrade of M.V. SEAFDEC 2's survey capacity. The new scientific echosounder (SIMRAD EK-80) was installed onboard M.V. SEAFDEC 2 and the Sea trial for training and calibration of the scientific echosounder "SIMRAD EK-80 system" was also conducted. This upgrade was supported under the JTF-6 Phase II. This equipment can serve Member Countries to investigate abundance of pelagic resources in the future.

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								
Output 2:								
Activity 2.1								

3. Expected Outcome/Outputs and Achievements

Activities	Expected Outcome/Outputs	Results/Achievements
Outcome		
Output 1:		
Activity 1.1. National fisheries research survey by SEAFDEC Member Countries	<ol style="list-style-type: none"> A set of scientific data, <i>i.e.</i> fisheries resources, marine environmental and oceanography data collected from the cruise survey Cruise report of the national fisheries research survey 	<ol style="list-style-type: none"> Malaysia, Myanmar and Philippines requested to utilize M.V. SEAFDEC 2 to carry out a national fisheries resource and marine environment survey at the 53CM First draft of the cruise survey for Myanmar and Philippines was developed with the final version expected before the end of 2021 Malaysia is pending the development of a national fisheries resources cruise

Activities	Expected Outcome/Outputs	Results/Achievements
		survey in 2021 until Malaysia has successfully proposed and secured the national budget for the survey
Activity 1.2. The Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between Research Vessel of SEAFDEC Training	Report of the Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between Research Vessel of SEAFDEC/TD and the Department of Fisheries Thailand in the Gulf of Thailand	No result/achievement, three cruise surveys were postponed because of the COVID-19 pandemic in Thailand. SEAFDEC postponed all planned research cruises scheduled in 2021 to 2022.
Activity 1.3 Marine Fisheries Resources, Environment and Marine Debris Research Survey in the Gulf of Thailand	<ol style="list-style-type: none"> 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> mesoplastics and microplastics situation in the Gulf of Thailand for scientific reference during post-northeast monsoon season 	
Activity 1.4 Marine Environmental and Fishery Resources Survey, in the Gulf of Thailand	<ol style="list-style-type: none"> 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> mesoplastics and microplastics situation in the Gulf of Thailand for scientific reference during pre-northeast monsoon season 	
Output 2:		
Activity 2.1. National fisheries research survey by SEAFDEC Member Countries	<ol style="list-style-type: none"> 1. Number of skilled and experienced scientists and researchers in marine fisheries resources and marine environment at SEAFDEC Member Countries 	No result/achievement because it is in process for developing a national cruise survey (see the progress details in Activity 1.1)
Activity 2.2. The Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between Research Vessel of SEAFDEC Training	<ol style="list-style-type: none"> 2. Number of skilled and experienced scientists and researchers in marine fisheries resources and marine environment at SEAFDEC/TD 	No result/achievement, three survey cruises were postponed because of the COVID-19 pandemic in Thailand. SEAFDEC postponed all planned research cruises scheduled in 2021 to 2022.
Activity 2.3. Marine Fisheries Resources, Environment and Marine Debris Research Survey in the Gulf of Thailand	<ol style="list-style-type: none"> 1. Number of skilled and experienced scientists and researchers in marine fisheries resources and marine environment at-SEAFDEC/TD and Member Countries 2. List of scientists and researchers as network on the marine fisheries resources and marine environment in the Gulf of Thailand 	

Activities	Expected Outcome/Outputs	Results/Achievements
Activity 2.4 Marine Environmental and Fishery Resources Survey, in the Gulf of Thailand	<ol style="list-style-type: none"> 1. Number of skilled and experienced scientists and researchers on the marine fisheries resources and marine environment of SEAFDEC/TD and Member Countries 2. List of scientists and researchers as network on the marine fisheries resources and marine environment in the Gulf of Thailand 	

4. List of Publications in 2021

None

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

Activities	Evaluation
Output 1:	
Activity 1.1	Nil

6. Major Impacts/Issues

With reference to the plan on the utilization of the SEAFDEC's Research and Training Vessel, three (3) cruise surveys must be carried out in 2021, namely "The Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling Between Research Vessel of SEAFDEC/TD and Department of Fisheries Thailand", "Marine Fisheries Resources and Marine Debris Research Survey in the Gulf of Thailand" and "Marine Environmental and Fishery Resources Survey, in the Gulf of Thailand."

However, Thailand has been encountering an uncontrolled COVID-19 outbreak since April 2021. To cope with the spread of the COVID-19 in the country, the Government of Thailand announced several measures. Subsequently, the travelling inbound and outbound countries by land, water and air was heavily restricted and assembly of attendees exceeding 5 people must be avoided. Under this unpredicted condition occurring in Thailand, SEAFDEC/TD encountered some difficulties to manage to support the survey mission utilizing the M.V. SEAFDEC 2. Finally, for safety reasons M.V. SEAFDEC 2 was unable to proceed on carrying out the survey this year. It is planned that M.V. SEAFDEC 2 will be able to support the marine surveys in the following years or once the situation of the outbreak of the COVID-19 is under control.

With that SEAFDEC/TD was necessary to postpone three (3) cruises of M.V. SEAFDEC 2 from 2021 to year 2022 as follows:

- The Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between the research vessels of SEAFDEC Training Department and Department of Fisheries Thailand, in the Gulf of Thailand (6 service days)
- Marine Fisheries Resources, Environmental and Marine Debris Research Survey in the Gulf of Thailand (47 service days)
- Marine Environmental and Fishery Resources Survey in the Gulf of Thailand (expected 47 service days)

With regards to the system upgrade on the new installation of the Hydroacoustic survey equipment onboard M.V. SEAFDEC 2, SIMRAD EK-80 as granted by the Government of Japan, has been successfully done. To complete the installation process, a sea trial to investigate the proper functions as well as the training operation are further required. However, this process has been suspended due to the COVID-19 pandemic (limiting the overseas travelling of the SIMRAD EK-80 expert, social distancing onboard, prevention measures of the COVID-19, etc.).

As soon as the situation of the COVID-19 outbreak in Thailand is under control or any good signs of recovery and safety, SEAFDEC will accomplish the rest of the process and make the research and training vessel ready to support the Member Countries on the resource survey.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2022

1. Project Summary in 2022

In 2021, SEAFDEC/TD continues to closely collaborate with Member Countries and potential partners at national, sub-regional and regional levels to support Member Countries for conducting a fisheries resources and marine environmental survey. The major components of the 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 vessel. SEAFDEC/TD is now in the progress of developing fisheries resources survey plans with Myanmar and the Philippines by utilizing M.V. SEAFDEC 2. It is expected that upon agreement and finalization of the survey plans with those two (2) countries respectively, in 2022. SEAFDEC/TD would proceed with the preparation of M.V. SEAFDEC 2 cruise with the highest consideration on the COVID-19 prevention measures both domestic and international levels.

Under the COVID-19 situation, M.V. SEAFDEC 2 will follow the prevention measures as issued by the Governments, the policy of Member Countries and the protocol of the ship rules during the cruise survey. The voyage to foreign countries and provinces of Thailand along the coasts in the Gulf of Thailand and the Andaman Sea is carried out under the national policy. In general, it is agreed that a state quarantine must be undertaken upon the arrival of the vessel at a destination port for 14 days and when the vessel returns to home country for another 14 days.

SEAFDEC/TD plans to conduct THREE (3) cruises by using M.V. SEAFDEC 2 in 2022. The proposed cruise survey plan for 2022 is as follows:

- The Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between the research vessels of SEAFDEC/TD and the Department of Fisheries Thailand in the Gulf of Thailand (6 service days), scheduled in March 2022
- Marine Fisheries Resources, Environmental and Marine Debris Research Survey in the Gulf of Thailand (47 service days), scheduled from April to June 2022

Marine Environmental and Fishery Resources Survey in the Gulf of Thailand (expected 47 service days), scheduled from September to October 2022

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 resources, marine environmental and oceanography data collected from the cruise survey	
Activity 1.1	National fisheries research survey by SEAFDEC Member Countries (pending for developing-a cruise survey in Malaysia, Myanmar and Philippine and the new endorsement in the 44 PCM)	
Activity 1.2	The Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between Research Vessel of SEAFDEC/TD and the Department of Fisheries Thailand	15,208
Activity 1.3	Marine Fisheries Resources, Environment and Marine Debris Research Survey in the Gulf of Thailand	
Activity 1.4	Marine Environmental and Fishery Resources Survey in the Gulf of Thailand	
Output 2:	Competency of SEAFDEC ship staffs (navigators and engineers) and researchers	
Activity 2.1	National fisheries research survey by SEAFDEC Member Countries (pending for developing-a cruise survey in Malaysia, Myanmar and Philippine and the new endorsement in the 44 th PCM)	

Activity 2.2	The Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between Research Vessel of SEAFDEC/TD and the Department of Fisheries Thailand	(Using budget from Activity 1.3)
Activity 2.3	Marine Fisheries Resources, Environment and Marine Debris Research Survey in the Gulf of Thailand	
Activity 2.4	Marine Environmental and Fishery Resources Survey in the Gulf of Thailand	

3. Implementation Plan of Activities in 2022

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 2.4												

4. Expected Activity Results in 2022

Planned activity	Expected Activity Results
Activity 1	
Activity 1.1 National fisheries research survey by SEAFDEC Member Countries (pending for a cruise survey in Malaysia, Myanmar and Philippine and the new endorsement in the 44 th PCM)	<ol style="list-style-type: none"> 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 The Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between Research Vessel of SEAFDEC/TD and the Department of Fisheries Thailand	<ol style="list-style-type: none"> 1. Report on the Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between Research Vessel of SEAFDEC/TD and the Department of Fisheries Thailand in the Gulf of Thailand
Activity 1.3 Marine Fisheries Resources, Environment and Marine Debris Research Survey in the Gulf of Thailand	<ol style="list-style-type: none"> 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> mesoplastics and microplastics situation in the Gulf of Thailand for scientific reference during post-northeast monsoon period
Activity 1.4 Marine Environmental and Fishery Resources Survey in the Gulf of Thailand	<ol style="list-style-type: none"> 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> mesoplastics and microplastics situation in the Gulf of Thailand for scientific reference during pre-northeast monsoon period
Activity 2	
Activity 2.1 National fisheries research survey by SEAFDEC Member Countries (pending for developing a cruise survey in Malaysia, Myanmar and Philippine and the new endorsement in-the 44 th PCM)	<ol style="list-style-type: none"> 1. 30 scientists/researchers of Member Countries improved skills and gained experience in marine fisheries resources and marine environment

Planned activity	Expected Activity Results
Activity 2.2 The Comparison on the Catch Per Unit Effort of Fisheries Resources by Trawling between Research Vessel of SEAFDEC/TD and the Department of Fisheries Thailand	1. 5 scientists/researchers of SEAFDEC/TD and the Department of Fisheries Thailand improved skills and gained experience in marine fisheries resources and marine environment
Activity 2.3 Marine Fisheries Resources, Environment and Marine Debris Research Survey in the Gulf of Thailand	1. 10 scientists/researchers of SEAFDEC/TD and Member Countries improved skills and gained experience in marine fisheries resources and marine environment 2. List of scientists and researchers as a network on the marine fisheries resources and marine environment in the Gulf of Thailand.
Activity 2.4 Marine Environmental and Fishery Resources Survey in the Gulf of Thailand	1. 10 scientists/researchers of SEAFDEC/TD and Member Countries improved skills and gained experience in marine fisheries resources and marine environment 2. List of scientists and researchers as a network on the marine fisheries resources and marine environment in the Gulf of Thailand.

**PROJECT DOCUMENT
PROPOSED ACTIVITIES FOR THE YEAR 2022**

			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	2022–2025
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 2022:	USD204,000
Lead Technical Officer(s):	Kongpathai Saraphaivanich and Nopporn Manajit (TD)	Project Participating Country	All Member Countries

PART I: PROJECT DESCRIPTION

1. Executive Summary

Fisheries are an important socioeconomic activity in 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 as well as the ASEAN Roadmap on Combating IUU Fishing (2021–2025). 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 is 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

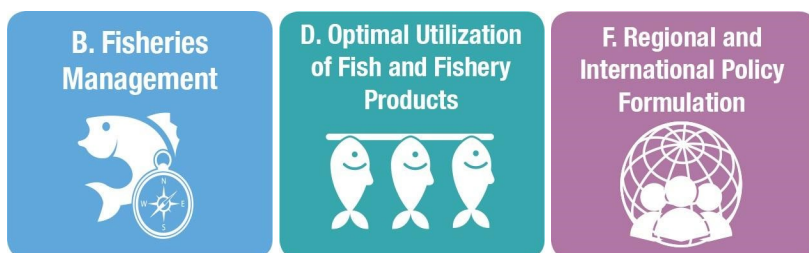
implemented, such as 1) promoting responsible fishing practices, 2) avoiding the depletion of fish stocks and the destruction of marine ecosystem, 3) improving legal frameworks, 4) upgrading systems of monitoring, control and surveillance (MCS), and 5) adopting fair labor practices. More importantly, 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 benefited from the improved management of fisheries resources.

3. Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



4. Gender Sensitivity of the Project

Under a series of the planned capacity development activities, workshops/meetings/training are open to both men and women to participate in. There is an equal opportunity for men and women.

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

5.1 Logical Framework

GOAL	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	Means of Verification
Activity 1.1: Training courses 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
OUTPUT 2	Indicators	Means of Verification
Training on ASEAN Catch Documentation Scheme (ACDS) including on-site training for eliminating IUU fishing in Southeast A	<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	Means of Verification
Activity 2.1: Training courses on electronic ASEAN Catch Documentation Scheme	<ul style="list-style-type: none"> - Training courses organized - Training programs on eACDS 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 program
Activity 2.2: 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 program - 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	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

5.2 Project Implementation Plan for 2022–2025

Activities	2022				2023				2024				2025	
	1	2	3	4	1	2	3	4	1	2	3	4	1	2
Activity 1.1														
Activity 2.1														
Activity 2.2														
Activity 3.1														
Activity 3.2														

5.3 Proposed Budget for 2022–2025

(Unit: USD)

Output	Activities	Year 1 (2022)	Year 2 (2023)	Year 3 (2024)	Year 4 (2025)
Output 1	Activity 1.1	56,000	56,000	0	0
Output 2	Activity 2.1	30,000	43,000	30,000	0
	Activity 2.2	35,000	43,000	37,000	0
Output 3	Activity 3.1	47,000	47,000	47,000	0
	Activity 3.2	36,000	43,000	0	0
Sub-Total		204,000	232,000	114,000	0

PART II: PROJECT ACHIEVEMENTS IN 2021

Note: No activity in 2021 because of the new project commencing in 2022

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2022

1. Project Summary in 2022

To enhance capacity of AMSs to combat IUU fishing activities, a regional training course on “responsible fishing technologies/practices to combat IUU fishing in Southeast Asia” and regional and on-site training courses of eACDS at pilot sites (Brunei Darussalam, Cambodia, Malaysia, Myanmar or Viet Nam) are conducted in 2022. The selected countries are considered depending on priorities and suitable situations. Regarding policy measures to enhance AMSs for combating IUU fishing, a regional capacity building workshop on enhancing policies and countermeasures against IUU fishing in Southeast Asia are conducted. Further, a training course for fisheries inspectors is conducted in the implementation of Port State Measures (PSM).

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 Expected expenditures: - Travel costs: USD 13,300 - DSA: USD 7,320 - Accommodation: USD 6,858 - Transport, etc. USD 1,300 - Honorarium: USD 700 - Meeting expenses: USD 6,400 - Operations of M.V. SEAFDEC 2 USD 7,500 - Others: USD 13,622 Sub-total: USD 56,000	56,000
Output 2:		
Activity 2.1	Training course 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

Proposed Activities	Descriptions	Proposed Budget
Activity 2.2	On-site training of eACDS at pilot sites in AMSs Expected expenditures: For five on-site trainings - Travel costs: USD 5,000 - DSA: USD 3,000 - Accommodation: USD 4,800 - Transport, etc. USD 2,500 - Meeting expenses: USD 15,500 - Others: USD 4,200 Sub-total: USD 35,000	35,000
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) Expected expenditures: - Travel costs: USD 9,300 - DSA: USD 3,100 - Accommodation: USD 3,240 - Transport, etc. USD 1,000 - Honorarium: USD 1,050 - Meeting expenses: USD 5,175 - Operations of M.V. SEAFDEC 2 & DOF Patrol Vessel USD 3,500 - Others: USD 9,635 Sub-total: USD 36,000	36,000

3. Implementation Plan of Activities in 2022

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

4. Expected Activity Results in 2022

Planned activity	Expected Activity Results
Activity 1:	
Activity 1.1 Training course on “Responsible fishing technologies/practices to combat IUU fishing in Southeast Asia”	<ul style="list-style-type: none"> • Enhanced knowledge and understanding on international fisheries issues (e.g. IUU fishing, vessel inspection, MCS, vessel registration, etc.)
Activity 2:	
Activity 2.1 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
Activity 2.2 On-site training of eACDS at pilot sites in AMSs	<ul style="list-style-type: none"> • On-site training program • 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 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 Training course for fisheries inspectors in the implementation of Port State Measures	<ul style="list-style-type: none"> • Enhanced knowledge and understanding on fisheries inspection

**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	2022–2025
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 2022:	USD198,000
Lead Technical Officer(s):	Leobert de la Pena (AQD), Yihang Ong (Chief/MFRD), Pattaratjit Kaewnuratchadosorn (SEC) and Thaweesak Thinkrap (TD)	Project Participating Country(ies)	All Member Countries

PART I: PROJECT DESCRIPTION

1. Executive Summary

Framework of the 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 GAqP (Good Aquaculture Practice) and SPS measures. The key objectives of SPS measures in the sector are to develop relevant regional guidelines, technical manuals 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 the ASEAN Secretariat (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.

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. Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



4. 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.

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

5.1 Logical Framework

GOAL	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	Means of Verification
Activity 3.1 To assess and share on hygiene management system of fishery products	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 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
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 program developed / prepared • 10 Member Countries (2 participants each country for each workshop) invited 	<ul style="list-style-type: none"> • Workshop reports • Training program • 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 strengthen the implementation of ASEAN Good Aquaculture Practices (ASEAN-GAqP) with EWG ASEAN GAqP	Capacity development in GAqP through training courses and guideline development	<ul style="list-style-type: none"> • Effective implementation of ASEAN GAqP • Strengthened national capacities in the implementation of ASEAN GAqP
Sub-activity 3.2.1 GAqP assessment training for extension/inspection focal officers (marine and inland aquaculture) a) Training courses on GAqP (marine aquaculture) b) Training courses on GAqP (inland aquaculture) c) On-site training courses on GAqP	a) 3 training courses <ul style="list-style-type: none"> • Training program developed/prepared • 10 Member Countries (one participant per country for each training) invited b) 3 training courses <ul style="list-style-type: none"> • Training program developed / prepared • 10 Member Countries (one participant per country for each training) invited c) 4 training courses <ul style="list-style-type: none"> • Training program developed/prepared • 4 Member Countries (15-20 participants for each training) invited 	a) Training course reports <ul style="list-style-type: none"> • Training program • Assessment report on hygiene management system in each member country • 10 national officers participated for each training course b) Training course reports <ul style="list-style-type: none"> • Training program • Assessment report on hygiene management system in each member country • 10 national officers participated for each training course c) Training course reports <ul style="list-style-type: none"> • Training program

		<ul style="list-style-type: none"> 20 national officers participated for each training course
Sub-activity 3.2.2 To develop guidelines / manual for ASEAN GAqP for food fish and ASEAN Shrimp GAP certification and accreditation system	Regional consultation on the development of guidelines / manual for ASEAN GAqP and ASEAN Shrimp GAP certifications and accreditation system	<ul style="list-style-type: none"> Regional consultation report Guidelines / manual for ASEAN GAqP for food fish ASEAN Shrimp GAP certification and accreditation system
Activity 3.3 To formulate ASEAN guideline for inspection for fish and fisheries products at each point on supply chain	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

5.2 Project Implementation Plan for 2022–2025

Activities	2022				2023				2024				2025	
	1	2	3	4	1	2	3	4	1	2	3	4	1	2
Sub-activity 3.1.1														
Sub-activity 3.1.2														
Sub-activity 3.1.3														
Sub-activity 3.2.1														
Sub-activity 3.2.2														
Sub-activity 3.3.1														
Sub-activity 3.3.2														

5.3 Proposed Budget for 2022–2025

(Unit: USD)

Output	Activities	Year 1 (2022)	Year 2 (2023)	Year 3 (2024)	Year (2025)
Output 3	Sub-activity 3.1.1	30,000	30,000	35,000	0
	Sub-activity 3.1.2	24,000	24,000	0	0

Output	Activities	Year 1 (2022)	Year 2 (2023)	Year 3 (2024)	Year (2025)
	Sub-activity 3.1.3	24,000	0	24,000	0
	Sub-activity 3.2.1	55,000	35,000	40,000	0
	Sub-activity 3.2.2	0	20,000	39,000	0
	Sub-activity 3.3.1	40,000	40,000	40,000	0
	Sub-activity 3.3.2	25,000	25,000	0	0
	Sub-Total	198,000	174,000	178,000	0

PART II: PROJECT ACHIEVEMENTS IN 2021

Note: No activities in 2021 because of the new project commencing in 2022

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2022

1. Project Summary in 2022

Under Sub-activity 3.1.1, a regional workshop on the effective implementation of “Regional Guidelines on Cold Chain Management of Seafood” is organized in the 3rd quarter of 2022 to enhance the capacities of national officers in the Member Countries in preparation for a train-the-trainers material kit.

Under Sub-activity 3.1.2, a regional workshop on assessment of fish handling on board and landing is organized in the 4th quarter of 2022 to enhance the capacities of national officers in the Member Countries. Training program is developed.

Under Sub-activity 3.1.3, a regional workshop on the development of eco-labeling strategy in Southeast Asia is organized in the 2nd quarter of 2022, 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 Sub-activity 3.2.1, Training courses on GAqP (Good Aquaculture Practice) in marine fish aquaculture, inland aquaculture and on-site training are 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.

Under Sub-activity 3.3.1, a survey on the food safety testing for fish and fishery products is 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 is organized to understand the current state, interest and capability of the identified scope of food safety testing across the ASEAN region. It allows the training to be further customised to fill the knowledge gap of the ASEAN region. Training materials are developed in accordance to the defined scope(s) of food safety testing for fish and fishery products.

Under Sub-activity 3.3.2, a regional workshop on strengthening inspection of transboundary diseases is organized in the 4th quarter of 2022 in preparation for a draft manual on inspection of transboundary diseases.

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 and share on hygiene management system of fish and fishery products and national capacities in each member country	
Sub-activity 3.1.1	Regional workshop on the effective implementation of “Regional Guidelines on Cold Chain Management of Seafood”	30,000

Proposed Activities	Descriptions	Proposed Budget
	<p>Expected expenditures:</p> <ul style="list-style-type: none"> - Travel costs: USD 10,800 - DSA: USD 1,620 - Accommodation: USD 7,560 - Honorarium: USD 550 - Meeting expenses: USD 5,750 - Others: USD 3,720 Sub-total: USD30,000 	
Sub-activity 3.1.2	<p>Regional workshop on assessment of fish handling on board and landing</p> <p>Expected expenditures:</p> <ul style="list-style-type: none"> - Travel costs: USD 10,300 - DSA: USD 3,400 - Accommodation: USD 1,944 - Transportation, etc.: USD 300 - Honorarium: USD 750 - Meeting expenses: USD 3,750 - Workshop materials: USD 1,900 - Others: USD 1,656 Sub-total: USD24,000 	24,000
Sub-activity 3.1.3	<p>Regional workshop on the development of eco-labeling strategy in Southeast Asia</p> <p>Expected expenditures:</p> <ul style="list-style-type: none"> - Travel costs: USD 10,300 - DSA: USD 6,560 - Accommodation: USD 1,350 - Transportation, etc.: USD 400 - Honorarium: USD 550 - Meeting expenses: USD 2,350 - Workshop materials: USD 1,400 - Others: USD 1,090 Sub-total: USD24,000 	24,000
Activity 3.2	To strengthen the implementation of ASEAN-GAqP with EWG ASEAN GAqP	
Sub-activity 3.2.1	<p>GAqP assessment training for extension/inspection focal officers</p> <ul style="list-style-type: none"> - Training course on GAqP (marine aquaculture) x 2 - Training course on GAqP (inland aquaculture) x1 - Training course on GAqP (on-site training) x1 <p>Expected expenditures:</p> <ul style="list-style-type: none"> - 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: USD15,000 x 3 - Travel costs: USD 5,800 - DSA: USD 300 - Accommodation: USD 1,200 - Transportation, etc.: USD 500 - Honorarium: USD 1,300 - Training materials: USD 400 - Others: USD 500 Sub-total: USD10,000 x 1 	55,000

Proposed Activities	Descriptions	Proposed Budget
Activity 3.3	To formulate ASEAN guideline for inspection of fish and fishery products at each point on a supply chain	
Sub-activity 3.3.1	Regional 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
Sub-activity 3.3.2	Regional workshop on strengthening inspection of transboundary diseases Expected expenditures: - Travel costs: USD 11,750 - DSA: USD 400 - Accommodation: USD 7,500 - Transportation, etc.: USD 200 - Honorarium: USD 1,550 - Meeting expenses: USD 3,250 - Training materials: USD 350 Sub-total: USD 25,000	25,000

3. Implementation Plan of Activities in 2022

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Output 3:												
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. Expected Activity Results in 2022

Planned activity	Expected Activity Results
Activity 3:	
Sub-activity 3.1.1 Regional workshop on the effective implementation of “Regional Guidelines on Cold Chain Management of Seafood”	<ul style="list-style-type: none"> Workshop report Train-the-trainers material kit Translation of training materials into local language
Sub-activity 3.1.2 Regional workshop on assessment of fish handling on board and landing	<ul style="list-style-type: none"> Workshop report Training program
Sub-activity 3.1.3 Regional workshop for the development of eco-labeling strategy in Southeast Asia	<ul style="list-style-type: none"> Workshop report Country reports Recommendations towards the development of eco-labeling strategy
Sub-activity 3.2.1 GAqP assessment trainings (marine aquaculture, inland aquaculture and on-site) for extension/inspection focal officers	<ul style="list-style-type: none"> Training course report Training program Training assessment/evaluation

Planned activity	Expected Activity Results
Sub-activity 3.3.1 Regional workshop on the development of guidelines for food safety testing of fish and fishery products	<ul style="list-style-type: none"> • Workshop report • Survey Report • Draft regional guidelines for food safety testing of fish and fishery products • Training Materials
Sub-activity 3.3.2 Regional workshop on strengthening inspection of transboundary diseases	<ul style="list-style-type: none"> • Workshop report • Draft manual on inspection of transboundary diseases

**PROJECT DOCUMENT
PROPOSED ACTIVITIES FOR THE YEAR 2022**

		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	2022–2023
Lead Department	SEAFDEC (TD)	Lead Country	None
Donor/Sponsor	Japanese ASEAN Integration Fund (JAIF)	Total Donor Budget	USD 532,999.5
Project Partner(s)	SEAFDEC (SEC) SEAFDEC (MFRDMD) SEAFDEC (IFRDMD)	Budget for 2022	USD 316,470
Lead Technical Officer	Isara Chanrachkij (TD)	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 on 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

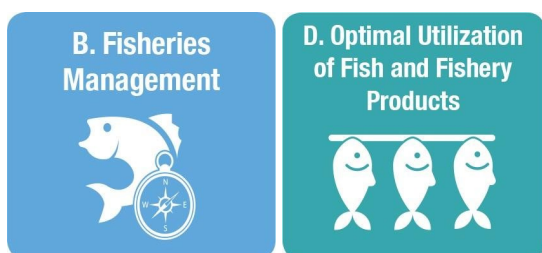
The past years saw several miserable events related to marine pollution in the Southeast Asian waters. First, in June 2018, a pilot whale died in Thailand and some 80 pieces of plastic rubbish weighing 8 kilograms were found in its stomach. Subsequently, in November, a dead sperm whale found in the waters 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 litter on 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

3. Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



4. Gender Sensitivity of the Project

Project involves men and women with neutral and equalized opportunities

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

5.1 Logical Framework

GOAL	Indicators	Means of Verification
Sustainable management of biodiversity and natural resources	Regional initiatives to collaborative research and capacity building in the fisheries sector to reduce marine debris	Report about marine debris, ALDFG and microplastic study in Southeast Asia
OUTCOME	Indicators	Means of Verification
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” for combating marine debris in Southeast Asia.	<ol style="list-style-type: none"> 1. Policy support and planning. 2. Research, Innovation and Capacity Building. 3. Public Awareness, Education and Outreach. 4. Private sector engagement. 	<ol style="list-style-type: none"> 1. Annual progress report and Project completion report 2. Publications of the ALDFG, marine debris situations by the survey 3. Publications on the contamination of microplastic in aquatic animals. 4. Technical Guidelines on the measures to prevent and remove ALDFG and promotional material of fishing gear marking 5. Project website of Marine debris in SEAFDEC home page
OUTPUT 1	Indicators	Means of Verification
A technical guideline outlining the status and ALDFG in ASEAN and measures to prevent and remove ALDFG	<ol style="list-style-type: none"> 1. Results of data collection on the ALDFG are reported. 2. Information for situations and countermeasures on ALDFG in AMSs is shared through the workshop. 3. Technical Guidelines on the status of ALDFG and measures to prevent and remove ALDFG is developed. 	<ol style="list-style-type: none"> 1. Annual progress report and Project completion report 2. Reports of the results of surveys on the ALDFG situations 3. Technical Guidelines on the status of ALDFG and measures to prevent and remove ALDFG
ACTIVITY 1	Indicators	Means of Verification
Activity 1.1: Information gathering on ALDFG Situations to support policy planning and development <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) (SEAFDEC/TD) 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 	<ol style="list-style-type: none"> 1. Questionnaire as a tool to investigate fishing gear loss. 2. Report on Information collected from the survey includes the number of loss fishing gear and income loss fishing gear in the pilot site. 3. Recommendation on the solution of fishing gear loss. 	<ol style="list-style-type: none"> 1. Annual progress report and Project completion report 2. Reports of the results of surveys on the ALDFG situations

Peninsular Malaysia) (SEAFDEC/MFRDMD)		
Activity 1.2: Information exchange on ALDFG situation and countermeasures in AMSs 1. Workshop for information exchange and the development of technical guidance on ALDFG countermeasures (at Kuala Lumpur, Malaysia; 2 days) (SEAFDEC/MFRDMD)	<ol style="list-style-type: none"> 1. Technical guidance manual on the Marking of Fishing Gear. 2. List of experts as network of fishing gear technologist in Southeast Asia 3. Recommendation on the Marking of Fishing Gear suitable in Southeast Asia Countries 	<ol style="list-style-type: none"> 1. Workshop report which includes list of experts as network of fishing gear technologist in Southeast Asia 2. Technical Guidelines on the status of ALDFG and measures to prevent and remove ALDFG.
OUTPUT 2	Indicators	Means of Verification
2-1. Risk assessments outlining the status of microplastic in aquatic environments. 2-2. Enhancement of AMS's capacity on methods to collect and analyze marine debris and microplastics	<ol style="list-style-type: none"> 1. Results on data of microplastic (<i>i.e.</i> type and quantity) and resources abundant by surveys are reported. 2. Results of data on marine debris (<i>i.e.</i> types and volume) collected by fishing activities are reported. 3. Results of contamination of microplastic (in units) in fish and other marine animals are reported. 4. Training courses with participants from AMSs are conducted. 	<ol style="list-style-type: none"> 1. Cruise report, research paper, articles, training and material of the Information Extension and Communication (IEC) produced during the project implementation. 2. List of experts as network of microplastics and marine debris in Southeast Asia
ACTIVITY 2	Indicators	Means of Verification
Activity 2.1: Environment research survey to evaluate microplastics and other marine environment situations related to fisheries resources at sea (SEAFDEC/TD)	<ol style="list-style-type: none"> 1. Results on data of microplastic (<i>i.e.</i>, type and quantity) and resources abundant 2. List of experts as network of microplastics and marine debris in Southeast Asia 	<ol style="list-style-type: none"> 1. Cruise report of the environment research survey
Activity 2.2: Research and evaluation on amount of marine debris collected by fishing activities (SEAFDEC/MFRDMD)	<ol style="list-style-type: none"> 1. Data of microplastic (<i>i.e.</i> type and quantity) and resources abundant by surveys are reported. 2. Research report on the amount of marine debris collected by fishing activities 	<ol style="list-style-type: none"> 1. Research reports/papers/articles on the amount of marine debris collected by fishing activities
Activity 2.3: Research study on the impact from contaminant of microplastics in freshwater fish and marine fish (SEAFDEC/IFRDMD and TD)	<ol style="list-style-type: none"> 1. Data as results of contamination of microplastic (in unit) in fish and other marine animals. 2. Data as results of contamination of microplastic (in unit) in fish and other freshwater animals. 	<ol style="list-style-type: none"> 1. Report on the contamination of microplastic (in unit) in marine fish and other marine animals. 2. Report on the contamination of microplastic (in unit) in inland fish and other inland animals.
Activity 2.4: Training on the liable research methods to collect and analyse the marine debris and microplastics (SEAFDEC/TD)	<ol style="list-style-type: none"> 1. Training courses 2. Number of participants from 10 AMSs. 3. List of Information Extension and Communication (IEC) used as training material or reference in the training course. 	<ol style="list-style-type: none"> 1. Training reports with list of participants 2. IEC material used as training material or reference in the training course.

OUTPUT 3	Indicators	Means of Verification
3-1 Marine debris management are strengthened and promoted in AMSs 3-2 Updated scientific-based knowledge and technical guidance are shared and enhanced among relevant sectors	1. “Regional Symposium on Marine Debris and Microplastics in Fisheries in Southeast Asia” is organized. 2. Project website and materials on marine debris are developed.	1. Annual progress report and Project completion report 2. Project website of Marine debris in SEAFDEC home page
Activity 3-1: Regional Symposium on Marine Debris and Microplastics in Fisheries in Southeast Asia (SEAFDEC/TD)	1. “Regional Symposium on Marine Debris and Microplastics in Fisheries in Southeast Asia” is organized. 2. Number of Participants from 10 AMSs	1. Report of the Regional Symposium on Marine Debris and Microplastics in Fisheries in Southeast Asia” 2. IEC Material
Activity 3-2: Information distribution and development of website on Marine Debris (SEAFDEC/TD)	1. Project website and communication materials on marine debris are developed.	1. Project website of Marine debris in SEAFDEC home page. 2. IEC material from project activities disseminates through the website.
OUTPUT 4	Indicators	Means of Verification
4-1 Marking of fishing gears is promoted.	4-1 Technical manual for marking of fishing gears is developed.	Annual progress report and Project completion report Technical manual for marking of fishing gears
Activity 4-1: Development of methods on marking of fishing gears and promotion on marking of fishing gears 1. Pilot activities/study/research on marking of fishing gears 2. Technical meeting on development of technical manual for marking of fishing gears	1. Technical manual for marking of fishing gears is developed. 2. Information of the constraints to marking of fishing gear in AMSs 3. Technical method(s) on marking of fishing gears as result from pilot activities on marking of fishing gears	1. Annual progress report and Project completion report 2. Technical manual for marking of fishing gears 3. Technical report on the method(s) on marking of fishing gears 4. Report on the technical meeting

5.2 Project Implementation Plan for 2022–2023

Activities	2022				2023			
	1	2	3	4	1	2	3	4
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								

5.3 Proposed Budget for 2022–2023

(Unit: USD)

Output	Activities	Year 1 (2022)	Year 2 (2023)
Output 1	Activity 1.1	55,000	55,000
	Activity 1.2	30,000	-
Output 2	Activity 2.1	90,000	-
	Activity 2.2	13,200	16,800
	Activity 2.3	42,000	18,000
	Activity 2.4	25,000	25,000
Output 3	Activity 3.1	-	50,000
	Activity 3.2	12,500	12,045
Output 4	Activity 4.1	20,000	20,000
Management and Contingency		28,770	196,84.50
Sub-Total		316,470	216,529.50

PART II: PROJECT ACHIEVEMENTS IN 2021

Note: No activities in 2021 because of the new project commencing in 2022

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2022**1. Project Summary in 2022**

In 2022, 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. Outcome, Outputs and Activities and Proposed Budget

(Unit: USD)

Proposed Activities	Descriptions	Proposed Budget
Outcome	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:	A technical guideline outlining the status and ALDFG in ASEAN and measures to prevent and remove ALDFG	85,000



Proposed Activities	Descriptions	Proposed Budget
Activity 1.1	<p>Information gathering on ALDFG Situations to support policy planning and development</p> <p>(1) <i>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></p> <p><i>Estimated expenditures:</i></p> <ul style="list-style-type: none"> - <i>Daily subsistence allowance /Accommodation = USD 15,000</i> - <i>Hire/Rental = USD 5,000</i> - <i>Data collection and analysis = USD 9,000</i> - <i>Consumable/others = USD 1,000</i> <i>Sub total = USD 30,000</i> <p>(2) <i>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></p> <p><i>Estimated expenditures:</i></p> <ul style="list-style-type: none"> - <i>Daily subsistence allowance/ Accommodation = USD 9,000</i> - <i>Hire/Rental = USD 15,000</i> - <i>Consumable/others = USD 1,000</i> <i>Sub Total = USD 25,000</i> <i>Total = USD 55,000</i> 	
Activity 1.2	<p>Information exchange on ALDFG situation and countermeasures in AMSs</p> <p>(1) <i>Workshop for information exchange and the development of technical guidance on ALDFG countermeasures (at Kuala Lumpur, Malaysia; 2 days)</i></p> <p><i>Estimated expenditures:</i></p> <ul style="list-style-type: none"> - <i>Traveling cost (Air fare) = USD 11,780</i> - <i>Daily subsistence allowance /Accommodation = USD 14,270</i> - <i>Hire/Rental = USD 3,450</i> - <i>Consumable/others = USD 500</i> <i>Total = USD 30,000</i> 	
Output 2:	<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>	170,200
Activity 2.1	<p>Environment research survey to evaluate microplastics and other marine environment situations related to fisheries resources at sea</p> <p>(1) <i>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)</i></p> <p><i>Estimated expenditures:</i></p> <ul style="list-style-type: none"> - <i>Traveling cost (Air fare) = USD 10,700</i> - <i>Daily subsistence allowance /Accommodation = USD 12,800</i> - <i>Consumable/others = USD 800</i> - <i>Document/Dissemination matters = USD 1,000</i> - <i>Operational cost of research /training vessel = USD 64,700</i> <i>Total = USD 90,000</i> 	
Activity 2.2	<p>Research and evaluation on amount of marine debris collected by fishing activities</p> <p>(1) <i>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)</i></p> <p><i>Estimated expenditures:</i></p> <ul style="list-style-type: none"> - <i>Daily subsistence allowance /Accommodation = USD 3,000</i> - <i>Hire/Rental = USD 10,000</i> - <i>Consumable/others = USD 200</i> <i>Total = USD 13,200</i> 	

Proposed Activities	Descriptions	Proposed Budget
Activity 2.3	<p>Research study on the impact from contaminant of microplastics in freshwater fish and marine fish</p> <p>(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)</p> <p><i>Estimated expenditures:</i></p> <ul style="list-style-type: none"> - <i>Traveling cost (Air fare) =</i> USD 3,700 - <i>Daily subsistence allowance /Accommodation=</i> USD 6,000 - <i>Hire/Rental =</i> USD 15,000 - <i>Data collection and analysis =</i> USD 16,000 - <i>Consumable/others =</i> USD 500 - <i>Document/Dissemination matters=</i> USD 800 <i>Total =</i> USD 42,000 	
Activity 2.4	Training on the liable research methods to collect and analyse the marine debris and microplastics	25,000
Output 3:	(Public Awareness, Education and Outreach) 3-1 Marine debris management are strengthened and promoted in AMSs 3-2 Updated scientific-based knowledge and technical guidance are shared and enhanced among relevant sectors.	12,045
Activity 3.2	<p>Information distribution and development of website on Marine Debris</p> <p>(1) <i>Development of Project website and communication materials.</i></p> <p><i>Estimated expenditures:</i></p> <ul style="list-style-type: none"> - <i>Data collection and analysis =</i> USD 1,500 - <i>Document/Dissemination matters=</i> USD 2,500 - <i>Personnel cost =</i> USD 8,500 <i>Total =</i> USD 12,500 	
Output 4:	Marking of fishing gears is promoted.	
Activity 4.1	<p>Development of methods on marking of fishing gears and promotion on marking of fishing gears</p> <p>(1) <i>Development of technical manual for marking of fishing gears</i></p> <ul style="list-style-type: none"> - <i>Information gathering of constrain to marking of fishing gear in AMSs</i> - <i>Research of available technical methods on marking of fishing gears</i> - <i>Investigation of pilot activities on marking of fishing gears</i> <p><i>Estimated expenditures:</i></p> <ul style="list-style-type: none"> - <i>Traveling cost (Air fare) =</i> USD 6,000 - <i>Daily subsistence allowance /Accommodation =</i> USD 5,000 - <i>Hire/Rental =</i> USD 1,200 - <i>Data collection and analysis =</i> USD 2,800 - <i>Consumable/others =</i> USD 5,000 <i>Total =</i> USD 20,000 	20,000

3. Implementation Plan of Activities in 2022

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:												

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity 3.1												
Activity 3.2												
Output 4:												
Activity 4.1												

4. Expected Activity Results in 2022

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	<ol style="list-style-type: none"> 1. Information/data will be collected to estimate the amount of ALDFG quantities at 12 Pilot sites in Gulf Bay. 2. ALDFG monitoring will be conducted and quantities assessed at 18 pilot sites in coastal 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)	<ol style="list-style-type: none"> 1. 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)	<ol style="list-style-type: none"> 1. The survey will be conducted in the Gulf of Thailand to assess the impact of microplastics on fisheries resources by research vessels 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	<ol style="list-style-type: none"> 1. 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.
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)	<ol style="list-style-type: none"> 1. 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.
Activity 2.4. On-the-job training on reliable research methods on marine debris and microplastics to officers and researchers in AMSs	<ol style="list-style-type: none"> 1. On the job training on marine debris and microplastics research methods will be provided and participants will be trained in the techniques.
Activity 3	
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.	<ol style="list-style-type: none"> 1. A website on marine debris will be set up on the SEAFDEC website, with communication materials and information on marine debris. 2. One Regional Meeting will be held.

Planned activity	Expected Activity Results
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 	<ol style="list-style-type: none"> 1. Preparatory work on the development of a technical manual for marking or fishing gears will proceed. <ul style="list-style-type: none"> • Constrained information on the marking of fishing gear in AMS will be collected • A research 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.

PROJECT DOCUMENT
PROPOSED ACTIVITIES FOR THE YEAR 2022

			Project ID:
Program Category	ASEAN-SEAFDEC ASSP and FCG Mechanism		
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		
Program Strategy No.	I	Total Period	2022–2026
Lead Department	Training Department	Lead Country	None
Donor/Sponsor	GEF–IW (FAO) and Norad	Total Donor Budget	GEF IW and CC-M allocation 9,478,899 USD SEAFDEC 2,650,205 (IW + Norad) 2,274,538 IW 375,667 Norad
Project Partner(s)	IUCN and BOBP-IGO	Budget for 2022	TBD
Lead Technical Officer	TBC	Project Participating Country	Bangladesh, India, Indonesia, Malaysia, Maldives, Sri Lanka, Thailand

PART I: PROJECT DESCRIPTION

1. Executive Summary

The Transboundary Diagnostic Analysis (TDA) and Strategic Action Programme (SAP) phase of the BOBLME identified three priority transboundary concerns: 1) overexploitation of marine living resources, 2) degradation of critical habitats, and 3) pollution and water quality. A BOBLME program framework was developed with BOBLME countries to agree priority issues to address and these were included in this 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***”. The project will address the following barriers i) Institutional, legal and administrative barriers; with incomplete regional policy cycles and weak national-regional as well as science-policy interfaces, leading to poor governance; ii) socio-economic barriers; by improving stakeholder awareness, capacity, gender equity and participation, and introducing valuation of ecosystem services, leading to improved governance; and iii) reversing the lack of integration of climate change in planning and management to enhance the resilience of its fisheries, critical habitats, and people’s livelihoods.

The project objective is to contribute to 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 SAP themes, and with an added component to strengthen the institutional arrangements for regional partnerships coordination and collaboration, ecosystem-based monitoring and assessment (substantial funding for Component 3 yet to be confirmed).

Component 1 Sustainable Management of Fisheries

Component 2 Restoration and conservation of critical marine habitats and conservation of biodiversity

Component 3 Management of coastal and marine pollution to improve ecosystem health

Component 4 Improved livelihoods and enhanced resilience of the BOBLME

Component 5 Regional mechanism for planning, coordination and monitoring of the BOBLME

2. Background and Justification

In view of the shortcomings in the baseline scenario identified during the PPG phase carrying out 2021 by the FAO Regional Office (and summarized below), the Governments of Bangladesh, India, **Indonesia, Malaysia, Maldives, Sri Lanka, Thailand** have requested assistance from the GEF to formulate and implement this BOBLME Phase 2 project, and has received additional funding from Norad as co-finance. The project will

produce key IW Global Environmental Benefits and CCM benefits through five well-defined components, as follows:

Component 1: Sustainable Management of Fisheries

The baseline activities with respect to implementation of EAFM and specifically the development and implementation of fisheries management plans at national levels in the BOBLME have institutionalised EAFM. However, without an extension of investment to include plans for sub-regional areas and transboundary species the social, economic and environmental benefits within the LME will be undermined. Similarly, the lack of coordinated efforts to combat IUU fishing in the sub regional and region also undermines efforts to manage fisheries and ensure social, economic and environmental benefits derived from the fisheries are sustained. Improving regional networks to more easily and rapidly share information on suspected IUU fishing activities will increase capacity for apprehension of IUU fishers and close loopholes that encourage transboundary transgression. At a community level access to improved technology and training will increase community-based surveillance and reporting of IUU fishing activity and remove obstacles to non-reporting of catch.

The proposed GEF project will help national, provincial and local government resource managers, private sectors partners, non-governmental organizations, and local resources users to reorient their practices by adopting participatory ecosystem approaches to fisheries management that will conserve marine and coastal ecosystem services (including climate change resilience) and support the sustainable use of resources to enable livelihoods, strengthen food security, and promote gender mainstreaming. The project will also work with partners to strengthen capacities for transboundary cooperation for the monitoring, control and surveillance of IUU fishing, building on baseline activities that currently are individual to each country.

Component 2: Restoration and conservation of critical marine habitats and conservation of biodiversity

Current baseline national actions have identified degradation of critical habitats such as mangroves, coral reefs and seagrasses as priorities to address. Over 4,500 km² of mangroves have been lost in the region over the last 30 years. The major cause of loss of mangroves has been conversion for agriculture (82 percent) and conversion for aquaculture (12 percent). Coral reefs in South Asia and Southeast Asia continue to suffer, including from rises in SST which results in bleaching. Reefs that continue to be at greatest risk from a combination of (i) coastal development, (ii) overexploitation and destructive fishing practices, (iii) the impact of inland pollution and erosion, and (iv) marine pollution, are the reefs around Aceh and the islands off Sumatra in Indonesia and Malaysia west coast. There is insufficient information to assess the status of seagrass, although it is thought that many of the BOBLME region's seagrass beds are either already degraded or threatened. Protection of critical habitats and ETP species needs to increasingly be incorporated into EAFM and more MMA are required nationally but also planning at a sub-regional and regional level to ensure necessary protection and representation is assured.

The proposed GEF project 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 through integrating marine spatial management tools, such as Marine Managed Areas (MMAs), and Vulnerable Ecosystems (VEs) into fisheries and biodiversity conservation management of critical habitats in the Andaman Sea and other areas in the BOB. The project will support national, provincial and local government resource managers, private sector partners, non-governmental organizations, and local resources users to strengthen management of existing MMA's and establish new MMA's where agreed. Sub-regional and national capacity development programmes will be established.

Component 3: Management of coastal and marine pollution to improve ecosystem health

Under the baseline scenario the problems causing poor water quality and transboundary pollution will continue unabated. The priority issues of sewage-borne pathogens, organic load from sewage and other sources, marine litter, increasing nutrient inputs, oil pollution, POPS and PTS, and mercury pollution will all intensify. The effects of pathogens and high organic loads are likely to be localized except in the Ganges-Brahmaputra-Meghna system where sewage and other organic contaminants are shared in the northern part of the Bay of Bengal due to high river discharge and ocean circulation patterns. Marine litter, including plastic and discarded fishing gear, will continue to be transported long distances in the marine environment and will continue to be a major transboundary issue. Increasing nutrient inputs from rivers will lead to inner-shelf hypoxic zones that will adversely affect transboundary fish stocks - a large (approx. 60,000 km²) hypoxic or 'dead' zone in the northwest part of the Bay has been detected. Increasing nutrients will result in Harmful Algal Blooms (HABs), also known as red tides. The widespread discharge of untreated or inadequately treated domestic, industrial and agricultural wastewater and marine origin pollution will continue.

The proposed GEF project will lead to reductions in the amount of marine litter and discarded fishing gears through the marking and recovery and recycling of gear and reduction of pollution from fishery landing areas. These changes will benefit coastal populations and other stakeholders such as tourism. The reduction in marine litter will benefit marine life. This component will also constitute a platform to support implementation of the FAO 2018 Voluntary Guidelines on Marking Fishing Gear and support countries in their participation in the newly commencing IMO-FAO-Norway GloLitter Project.

The proposed GEF project will further support increased understanding and awareness of the issues and strengthen monitoring and reporting at LME level and participation in the GPNM and GPML.

Component 4: Improved livelihoods and enhanced resilience of the BOBLME

Under the current baseline, livelihoods and resilience in the coastal communities of the BOBLME remain vulnerable. Over 50 percent of all of the world's coastal poor live in the countries of the BOBLME. Although under the current baseline investment the contribution to GDP by fisheries remains low, marine living resources remain important for the livelihoods of millions of people and communities (in particular as a source of food). Most of the region's governments have set marine and freshwater fishery production targets to meet demands, many of which are at the limits of stock sustainability and consequently require accuracy and precision on catch information to ensure biological limits are not exceeded. Most countries have relatively well-formulated legislation and policies to regulate the different sectors, however harmonization across sectors is still required. This includes harmonization within government services that are applied in multi-layered manner (national-provincial/state and local). Many countries now have "decentralization" policies that present new challenges for the coordination and implementation of policies.

The proposed GEF project will contribute to positive changes in the overall well-being of coastal people and their involvement in both fishery management and biodiversity conservation. This 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).

Component 5: Regional mechanism for planning, coordination and monitoring of the BOBLME

Under the current baseline, transboundary cooperation on management of shared coastal and marine resources across the BOBLME will remain limited. Some cooperation exists within and between organisations including Association of Southeast Asian Nations (ASEAN), the Bay of Bengal Programme (BOBP-IGO), the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), the Asia-Pacific Fishery Commission (APFIC), the Indian Ocean Global Ocean Observing System (IOGOOS), Indian Ocean Tuna Commission (IOTC), Network of Aquaculture Centres in Asia and Pacific (NACA), South Asia Association for Regional Cooperation (SAARC), South Asia Cooperative Environment Programme (SACEP), and Southeast Asian Fisheries Development Centre (SEAFDEC), and the Regional Plan of Action to Promote Responsible Fishing Practices including Combating Illegal, Unreported and Unregulated Fishing in the Region (RPOA-IUU).

The proposed GEF project will strengthen the capacity of stakeholders at all levels (in countries and regional partners) to plan and coordinate management activities at regional level. The project will strengthen regional cooperation between countries and between government agencies within countries with the engagement of civil society and the private sector. The Project will focus on strengthening the mechanisms at regional and national levels for planning, coordination, and monitoring of the BOBLME. The project will support the development of the "Consortium for the Conservation and Restoration of the BOBLME" (CCR-BOBLME) which by the end of the project will meet regularly to promote information exchange and capacity development; monitor BOBLME health and status and monitor progress of the SAP implementation activities and projects. The establishment of the CCR-BOBLME will involve the development of a cooperative agreement for monitoring ecosystems targets in the SAP and compilation, analysis, safe storage and sharing of information of historical baseline ecosystem data at national and regional levels.

The overall project objective is 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. This objective will be achieved by the following five interlinked Components along with associated Outcomes, Outputs and tentative activities.

Working with stakeholders, the project will work on addressing the priorities identified in the Programme Committees of SEAFDEC, the SEAFDEC Council and ASAEAN priority areas/targets for fisheries. In particular, the project will focus on:

- **Building regional cooperation around fishery management and combating IUU fishing** under Outcome 1.2 focused on reducing the IUU catch on the BOBLME
- **Tackling improved management and use of Ecosystem approach**, particularly under Outcome 1.1, focused on the institutionalization of the ecosystem approach to fisheries management at national level, including targeted transboundary fish stocks
- **Addressing environmental aspects of fisheries and build wider cooperation across ministries of environment**, collaborating with IUCN and the Ministries of Environment for the implementation of Component 2
- **Support small-scale fisheries** and promote the implementation of the FAO Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication throughout the project and particularly under Component 4 of the project, and supporting IUCN in the execution of that component.
- **Complementing the FAO programmes of support and FAO cooperation with SEAFDEC**, promoting FAO and SEAFDEC policy documents, such as
 - **SEAFDEC Code of Conduct for Responsible Fisheries**, which focuses attention on the cultural needs of the region, the tropical multispecies nature of fisheries and the need for management that reflects regional needs. This reflects regional requirements for full utilization of catches as a mechanism for resolving discards and bycatch whilst supplying marine protein to coastal communities and creating jobs.
 - **SEAFDEC regional initiatives on combating Illegal, Unreported and Unregulated (IUU) fishing in Southeast Asia** and optimizing energy use in fisheries in the Southeast Asian region through fishing vessels energy audits. The project on the Promotion of Sustainable Fisheries and IUU Fishing-related Countermeasures in Southeast Asia, which is being implemented by SEAFDEC with funding support from the Japanese Trust Fund (JTF), includes the Promotion of Regional Database for Fishing Vessels Records, and Port State Measures implementation in Southeast Asia. An EAFM training program is also being sustained through SEAFDEC in collaboration with other partners. BOBLME will build on the process initiated by relevant SEAFDEC JTF projects to address the issue to combat IUU fishing.
 - **BOBLME** will promote and provide support for the implementation of the **Regional Plans of Actions**, such as the **RPOA-Neritic Tuna, RPOA-Capacity**, and **RPOA-IUU**.
 - **The implementation of FAO's Strategic Objectives** and regional priority areas of work related to Climate Change and sustainable natural resource management, One-Health and Blue Growth in fisheries, the FAO's Committee on Fisheries (COFI), implements a broad range of binding and voluntary instruments such as the Code of Conduct for Responsible Fisheries (CCRF) and International Plans of Action (IPOAs). The BOBLME will facilitate the promotion of these policies and will provide guidance on how to address IUU fishing and other transboundary fisheries management issues, while providing lessons learned based on experience of putting those instruments into practice.

Contribution to the SDGs

- Expected outcomes of the proposed project are fully consistent with the **Sustainable Development Goals (SDGs)** and will contribute to a range of important socio-economic and environmental SDG targets, especially SDG 14 : Conserve and sustainably use the oceans, seas and marine resources, and its targets 1-5: by 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution; by 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans; minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels; by 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics; and by 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information

Contribution to the ASEAN-SEAFDEC Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030

- The project will directly contribute to the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030, including the support to priority actions related to A. Planning and Information; B. Fisheries Management, and F. Regional and International Policy Formulation.
- 3. Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030**



4. Gender Sensitivity of the Project

The project is fully aligned to and supports SEAFDEC, FAO and GEF policies on gender equality and mainstreaming. In particular, in relation to supporting countries to implement the FAO Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines) and their commitments to gender equality and achieving SDG Goal 5 (gender equality and empower all women and girls). The SSF Guidelines call for equal participation of women and men in organizations and in decision-making processes. Policies and legislation must support equality, and both women and men must have access to appropriate technologies and services to carry out their work. Gender equity and equality are core objectives and guiding principles of the SSF Guidelines.

In fisheries, women's involvement in, and contribution to, the sector is more significant than often assumed. These roles can include gleaning, near-shore fishing, and aquaculture to post-harvest activities. FAO (SOFIA 2018) estimated that in 2016, overall, women accounted for nearly 14 percent of all people directly engaged in the fisheries and aquaculture primary sector as compared with an average of 15.2 percent across the reporting period 2009–2016. However, when both the primary and secondary sectors of aquaculture and fisheries are considered the workforce was evenly divided between men and women.

During the SAP development phase, BOBLME participating countries recognised the importance of gender in fisheries and small-scale fisheries in the region in particular. A comprehensive gender analysis was undertaken during this phase. BOBLME Member Countries and partners considered this analysis as current and relevant. Support to BOBLME countries to implement these recommendations is still required.

This comprehensive gender analysis and audit was undertaken of the BOBLME and made a range of recommendations on mainstreaming gender in the ongoing project and the SAP implementation¹. The gender audit covered a number of international and regional instruments and national development and fisheries policies. The findings indicated uneven progress in tackling gender inequalities and accounting of gender issues overall and a cultural and institutional environment that was not conducive to gender mainstreaming initiatives.

Key entry points to mainstream gender in the SAP were identified as follows:

- Addition of a statement of political will or commitment to gender
- Consideration of gender-sensitive actions
- Addition of a section on cross-cutting issues covering gender training, communication, legislation, capacity building at field level, gender-disaggregated data collection and research on gender issues
- Consideration of incentives and accounting mechanisms
- Earmarking of a specific budget for gender-related activities at project level and strategic actions

¹ BOBLME 2012: Mainstreaming gender in the BOBLME Project, Gender audit and recommended actions for mainstreaming a gender perspective in the BOBLME project and its Strategic Action Programme (SAP) https://www.boblme.org/mainstreaming_gender.html

- Addition of a pathway to impact, and
- Use of outcome mapping as a form of monitoring and evaluation

The last two are seen as pivotal in capturing the changes that are expected as a result of both mainstreaming gender in the project, and the project's own influence in progressing towards gender equality. In addition to these, key recommendations for future action by the BOBLME partner countries include:

- Commissioning of a gender-sensitive review of legislation and regulatory frameworks in the BOBLME partner countries
- Following through the mainstreaming of gender in the NAPs, mirroring what has been proposed to mainstream gender in the SAP
- Tackling gender-disaggregated data collection as soon as possible
- Ensuring the continuous provision of gender inputs throughout the project duration
- Strengthening the participatory processes undertaken so far by the project
- Avoiding falling in the Women in Development/efficiency rhetoric and maintaining a focus on the addressing of gender issues and inequality, and
- Supporting gender training and capacity building at all levels, beyond the life of the project

A draft Gender Action Plan (GAP) for the project has been prepared along with tentative activities. This GAP will be developed fully during the inception work planning period and based on country needs and consultations with implementing partners. This updated GAP will include gender specific outcomes, outputs and activities, budgets and revised indicators for the project, including an updated project baseline.

Gender focal points and/or champions in each country will be identified and consulted throughout the GAP elaboration process.

The updating of the GAP will be undertaken at the same time as the national and regional work planning and will include capacity development for key staff.

5. Project Goal, Outcome, Outputs, Activities, Indicators and Verification:

Operational Partner’s Results Matrix (BOBLME Project Results Framework for SEAFDEC)
 Operational Partner’s Results Matrix
 BOBP-IGO
 SEAFDEC
 IUCN

Results Chain	Indicators	Baseline	Mid-term milestone	Final Target	Means of Verification (MOV)	Assumptions	Responsible for data collection
Project Objective: 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 Overall project indicators	1. Areas under sustainable management (MPA, Fisheries) GEF indicator 2. Landings [or value] of fisheries 3. Sequestration of Carbon (CO2). (refers to Outcome 2.2) 4. Gender balance in project activities	1. 6.2 million km2 under existing management in 2019 2. Landings (value) of 6 million tonnes under existing management 3. 170,000 tCO2 sequestered (refers to Outcome 2.2) 4. Gender balance at inception.	1. 3.1 million km2 x under improved management in 2023 2. Landings (value) 3 million tonnes under sustainable management 3. 1,500,000 tCO2 sequestered (refers to Outcome 2.2) 4. Gender balance at mid-term	1. 6.2 million km2 x under improved management in 2025 2. Landings (value) 6 million tonnes under sustainable management 3. 2,959,482 tCO2 sequestered (refers to Outcome 2.2) 4. Gender balance achieved	Government statistics RFB reports Project reports Project reports Gender review		Government agencies, Implementing partners RFB IUCN FAO
Component 1: Sustainable Management of Fisheries							
Outcome 1.1 The ecosystem approach to fisheries management institutionalized at national level, including targeted transboundary fish stocks	Practitioners applying EAFM in each country EAFM plans implemented in project areas (through Focus Area approach) Number of institutions applying EAFM Policies include EAFM	1. 300 x people applying EAFM 2. 0 x EAFM plans under implementation 3. 10 x institutions	1. 500 x practitioners (to be confirmed on implementation): BOBP-IGO – 250 SEAFDEC – 250 IUCN – N/A	1. 1000 practitioners 500 BOBP-IGO 500 SEAFDEC N/A IUCN 2. 8 (of 16) x project supported EAFM plans implemented	Project progress reports Project evaluations Project training reports National policies Regional strategies Project reviews	National strategies to support implementation of EAFM implementation are maintained. Practitioners and government staff are able to	Government agencies Implementation partners

Results Chain	Indicators	Baseline	Mid-term milestone	Final Target	Means of Verification (MOV)	Assumptions	Responsible for data collection
Indicating for BOBP-IGO only	Gender balance of implementation activities (involvement of men and women)	currently applying EAFM 4. 4 x policies include EAFM 5. Gender balance at inception	2. 8 x project supported EAFM plans implemented through Focus Area approach BOBP-IGO – 4 project plans SEAFDEC – 4 project plans IUCN – N/A 3. 16 Institutions applying EAFM BOBP-IGO – 8 institutions SEAFDEC – 8 institutions IUCN – N/A 4. 6 x policies include EAFM BOBP-IGO – 3 institutions SEAFDEC – 3 institutions IUCN – N/A 5. Gender balance at MTR.	through Focus Area approach. BOBP-IGO – 4 project plans SEAFDEC – 4 project plans IUCN – N/A 3. 16 Institutions applying EAFM. BOBP-IGO – 8 institutions SEAFDEC – 8 institutions IUCN – N/A 4. 8 x policies include EAFM BOBP-IGO – 4 institutions SEAFDEC – 4 institutions IUCN – N/A 5. Gender Balance at completion achieved		dedicate time to support project activities	
Output 1.1.1 At least 2 EAFM plans implemented in each country. Output 1.1.2. National and regional platforms established or strengthened to involve grassroots stakeholders in management decision-making Output 1.1.3 EAFM training embedded in national and regional training institutions.							

Results Chain	Indicators	Baseline	Mid-term milestone	Final Target	Means of Verification (MOV)	Assumptions	Responsible for data collection
Outcome 1.2 IUU catch in the BOBLME reduced:	1. IUU catch (in tonnes) in the BOBLME (2014 BOBLME Baseline ²). 2. BOBLME wide Regional plan of action to combat IUU (RPOA-IUU) endorsed. 3. NPOA-IUU endorsed. 4. Tools for promoting good practice in combatting IUU developed. 5. Regional platform for capacity development on MCS and training. 6. Gender balance in project activities. activities	1. Catch reported in BOBLME assessment tonnes 2. No RPOA-IUU 3. 5 x countries with endorsed NPOA-IUU 4. Some tools exist for promoting good practice in combating IUU developed (TBD on inception). 5. No regional platform or training 6. Gender balance at inception	1. 10% reduction in IUU catch. BOBP-IGO – 4 countries SEAFDEC – 4 countries IUCN – N/A 2. BOBLME RPOA IUU drafted BOBP-IGO – 2 countries SEAFDEC – 2 countries IUCN – N/A 3. 3 additional countries prepare NPOA-IUU BOBP-IGO – 1 countries SEAFDEC – 2 countries IUCN – N/A 4. 8 x countries develop tools for promoting good practice in combating IUU BOBP-IGO – 4 countries	1. 20 % reduction in IUU catch BOBP-IGO – 4 countries SEAFDEC – 4 countries IUCN – N/A 2. BOBLME RPOA-IUU endorsed by countries. BOBP-IGO – 2 countries SEAFDEC – 2 countries IUCN – N/A 3. 8 countries with implemented NPOA-IUU BOBP-IGO – 4 countries SEAFDEC – 4 countries IUCN – N/A 4. 8 x countries with tools for promoting good practice in combating IUU developed	RFB reports FAO PSMA reports Country reports Project evaluation Project reports RPOA-IUU BOBLME Regional platform TOR.	Capacity of the government to estimate IUU catch. Political support to combating IUU remains strong. Practitioners and government staff are able to dedicate time to support project activities Agreement between countries on regional actions can be reached.	Government agencies Implementation partners

² The baseline document is:

Results Chain	Indicators	Baseline	Mid-term milestone	Final Target	Means of Verification (MOV)	Assumptions	Responsible for data collection
			SEAFDEC – 4 countries IUCN – N/A 5. Regional platform piloted and training of 80 people BOBP-IGO – 40 people SEAFDEC – 40 people IUCN – N/A 6. Gender balance at mid-term BOBP-IGO – gender targets SEAFDEC – gender targets IUCN – N/A	BOBP-IGO – 4 countries SEAFDEC – 4 countries IUCN – N/A 5. Regional platform operating and 80 (of 160) people trained. BOBP-IGO – 80 people SEAFDEC – 80 people IUCN – N/A 6 . Gender balance at completion achieved BOBP-IGO – gender targets SEAFDEC – gender targets IUCN – N/A			
<p>Output 1.2.1 BOBLME countries join and implement a Regional Plan of Action (RPOA) on IUU fishing</p> <p>Output 1.2.2. National POAs-IUU and national IUU MCS systems and Vessel Monitoring System (VMS) strengthened</p> <p>Output 1.2.3 Tools for promoting best practice to combat IUU developed and implemented. (MCS, PSM and traceability, and policies and national actions to combat IUU fishing developed and implemented in national pilot/investment projects)</p> <p>Output 1.2.4 Regional Capacity Development Program on port inspections, MCS and traceability implemented</p>							

Results Chain	Indicators	Baseline	Mid-term milestone	Final Target	Means of Verification (MOV)	Assumptions	Responsible for data collection
Component 2: Restoration and conservation of critical marine habitats and conservation of biodiversity							
Outcome 2.1 Coastal and Marine Managed Areas (MMAs) contribute to conservation of biodiversity	1. Hectares of protected areas under management 2. Number of MMA's established or strengthened 3. Regional capacity development programme 4. Gender balance target.	1. 2,000,000 hectares under existing management 2. At least 8 MMAs in need of strengthening. 3. No regional capacity development programme for BOBLME. 4. Gender balance at inception.	1. 1,000,000 hectares under improved management (IUCN) 2. Strengthening process in at least 8 MMAs in progress and achieving measurable results. (IUCN) 3. Regional capacity development programme for BOBLME developed and 100 people trained (IUCN) 4. Gender balance at mid-term (IUCN)	1 2,000,000 hectares under improved management (IUCN) 2. At least 8 MMAs strengthened and under improved management based on advice from the Green List assessment process. (IUCN) 3. Regional capacity development programme for BOBLME developed and 200 people trained (IUCN) 4. Gender balance at project completion (IUCN)	Project progress reports Project evaluations Project training reports National policies Regional strategies Project reviews Green List assessment reports	Stakeholders can agree on protected area management measures. Political support for implementing MPA/MMA remains strong. Practitioners, stakeholders and government staff are able to dedicate time to support project activities. Agreement between countries on regional actions can be reached.	Government agencies Implementation partners

Results Chain	Indicators	Baseline	Mid-term milestone	Final Target	Means of Verification (MOV)	Assumptions	Responsible for data collection
Output 2.1.1 MMAs established or strengthened, and contribute to conservation of transboundary biodiversity. Output 2.1.2 Regional capacity development program promoting best practices in management and evaluation of MMAs							
Outcome 2.2 National MMAs established or strengthened resulting in improved MMA management effectiveness at national level: (CCM Bangladesh)	1. Area of mangroves protected/conserved and under improved management. 2. Sequestration of Carbon (CO ₂). 3. Gender balance target.	1. 0 hectares with improved management (of 303,000 Ha hectares). 2. 170,000 tCO ₂ sequestered 3. Gender balance at baseline.	1. 150,000 hectares with improved management (of 303,000 Ha hectares). 2. 1,500,000 tCO ₂ sequestered 3. Gender balance target at mid-term.	1. 303,000 hectares with improved management (of 303,000 Ha hectares). 2. 2,959,482 tCO ₂ sequestered 3. Gender balance at project completion	Project (sub component progress reports Project evaluations Project training reports National policies Regional strategies Project reviews	Stakeholders can agree on protected area management measures. Political support to CCM actions and mangrove conservations remains strong. Practitioners, stakeholders and government staff are able to dedicate time to support project activities. Interagency coordination is able to support implementation effectively. Interagency agreement can be reached.	Government agencies Implementation partners IUCN
Output 2.2.1 Enhancing the role of Sundarbans ecosystem services and conservation of forest stocks in Bangladesh Output 2.2.2 Improved management effectiveness of existing and new National MPAs							
Outcome 2.3 Regional consensus and agreements reached on reduction of threats to marine	1. Regional plan of action for ETP species. 2. National ETP species plans developed (e.g. whale sharks and sea turtles)	1. No regional plan of action for ETP exists. 2. 4 x national ETP in	1. 1 x BOBLME Regional plan of action for ETP species. (IUCN)	1. 1 x BOBLME Regional plan of action for ETP species. (IUCN)	Regional ETP plan endorsed by countries. National ETP plans developed and endorsed.	Stakeholders can agree on protected area management measures.	Government agencies Implementation partners IUCN

Results Chain	Indicators	Baseline	Mid-term milestone	Final Target	Means of Verification (MOV)	Assumptions	Responsible for data collection
biodiversity in coastal and open waters	3. Gender balance target.	BOBLME countries. 3. Gender balance at baseline.	2. 6 x ETP plans in BOBLME countries. (IUCN) 3. Gender balance target at mid-term. (IUCN)	2. 8x National ETP species plans developed (e.g. whale sharks and sea turtles) (IUCN) 3. Gender balance at project completion. (IUCN)	Project progress reports Project evaluations Project training reports National policies Regional strategies Project reviews	Political support for implementing MPA/MMA remains strong. Practitioners, stakeholders and government staff are able to dedicate time to support project activities. Agreement between countries on regional actions can be reached.	
Output 2.3.1 A regional plan of action for ETP species							
Output 2.3.2 Legislative frameworks on ETP species harmonized across countries.							
Component 3: Management of coastal and marine pollution to improve ecosystem health							
Outcome 3.1 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.	1. Good practice documents / National guidelines developed 2. Improved waste management practiced in 8 fishing ports 3. Action plans for gear marking developed and disseminated 4. Gender balance target in capacity development and waste management practice	1. Poor waste management practices 2. No gear marking scheme exists 3. Gender balance at baseline	4 Fishing ports / fish landings covered by studies with recommendations / Good Practice documents BOBP-IGO – 2 fishing ports/landing sites SEAFDEC – 2 fishing ports/landing sites IUCN – N/A	8 National Guidelines on waste management BOBP-IGO – 4 fishing ports/landing sites SEAFDEC – 4 fishing ports/landing sites IUCN – N/A	National Guidelines documents Action Plans Project progress reports Project evaluations GPNM / GPML reports	Agreement reached on fishing ports / fish landings Political support / will on combating marine pollution remains strong Resource users' and private sector participation in waste management and gear marking	Government agencies Implementation partners IUCN

Results Chain	Indicators	Baseline	Mid-term milestone	Final Target	Means of Verification (MOV)	Assumptions	Responsible for data collection
			4 National guidelines on waste management BOBP-IGO – 2 SEAFDEC – 2 IUCN – N/A 4 Action Plans on gear marking BOBP-IGO – 2 SEAFDEC – 2 IUCN – N/A	8 Action Plans on gear marking BOBP-IGO – 4 SEAFDEC – 4 IUCN – N/A 8 countries participate in GPNM / GPML BOBP-IGO – 4 SEAFDEC – 4 IUCN – N/A		schemes maintained	
Output 3.1.1 Dissemination of improved waste management practices in fishing harbours Output 3.1.2 Promotion of marking of fishing gears and the development and dissemination of corresponding regional guidelines							
Outcome 3.2 Demonstration Investments in Eco-Waste Infrastructure Solutions: Thanlyin and Ayeyarwady Watersheds	This is the ADB-led BOBLME Child Project						
Component 4: Improved livelihoods and enhanced resilience of the BOBLME (supporting 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)							
Outcome 4.1 Enhanced resilience and reduced vulnerability to natural hazards, climate variability and change of	1. Community resilience plans developed based on valuation of ecosystem services (integrated with fisheries management and MMA and delivered through	1. No resilience plans in selected communities 2. x 8 National policies exist but are not integrated	1. 8 x resilience plans developed and implemented using project Focus Area approaches implemented (1x in each country)	1. x 8 resilience plans developed. An additional x 8 communities may be considered to give x 16 if funds available at MT.	Project progress reports National Policies/strategies developed. Community plans developed and	Communities /stakeholders participate in and agree plans. Practitioners, stakeholders and government staff are able to	Government agencies Implementation partners IUCN

Results Chain	Indicators	Baseline	Mid-term milestone	Final Target	Means of Verification (MOV)	Assumptions	Responsible for data collection
selected coastal communities:	<p>the project Focus Area approach)</p> <p>2. Number of national Policies or strategies developed integrating sectors relevant to BOBLME</p> <p>3. Gender mainstreaming strategy developed</p>	3. No gender mainstreaming strategy exists,	<p>BOBP-IGO – provision of inputs and linkages with EAFM areas SEAFDEC – provision of inputs and linkages with EAFM areas IUCN – 8 resilience plans developed</p> <p>2. x 8 integrated national polies/strategies endorsed. BOBP-IGO – provision of inputs and linkages with EAFM work under component 1 SEAFDEC – provision of inputs and linkages with EAFM work under component 1 IUCN – 8 resilience plans developed</p>	<p>BOBP-IGO – provision of inputs and linkages with EAFM areas SEAFDEC – provision of inputs and linkages with EAFM areas IUCN – 8 resilience plans developed x 8 communities</p> <p>2. x 8 integrated national policies/strategies endorsed. BOBP-IGO – provision of inputs and linkages with EAFM areas SEAFDEC – provision of inputs and linkages with EAFM areas IUCN – 8 resilience plans developed</p> <p>3. Gender balance in project activities.</p>	endorsed by communities. Project evaluations Project training reports	dedicate time to support project activities.	

Results Chain	Indicators	Baseline	Mid-term milestone	Final Target	Means of Verification (MOV)	Assumptions	Responsible for data collection
			3. gender mainstreaming strategy implemented, IUCN leading	IUCN leading			
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.	1. Number of Livelihood diversification strategies developed. 2. Sites piloting livelihood diversification for women (through project Focus Areas) 3. Number of innovative financial services and insurance mechanisms developed. 4. Regional capacity development programme on alternative livelihoods and promotion of decent work. 5. Gender balance in project implementation	1. No strategies present. 2. No sites piloting livelihood diversification for women. 3. No financial services developed. 4. No regional training programme. 5. No gender mainstreaming at baseline.	1. 8 x strategies developed (1 for each community). BOBP-IGO – provision of inputs and linkages with EAFM areas SEAFDEC – provision of inputs and linkages with EAFM areas IUCN – 8 strategies 2. 8x sites piloting livelihood diversification for women. BOBP-IGO – provision of inputs and linkages with component 1. SEAFDEC – provision of inputs and linkages with component 1. 3. Financial services developed,	1. 8 x strategies developed (1 for each community). 2. 8x sites piloting livelihood diversification for women. BOBP-IGO – provision of inputs and linkages with component 1. IUCN – 8 sites	Project progress reports Livelihood diversification strategies Community plans developed and endorsed by communities. Project evaluations Project training reports	Communities /stakeholders participate in and agree livelihood diversification plans. Practitioners, stakeholders and government staff are able to dedicate time to support project activities	Government agencies Implementation partners IUCN

Results Chain	Indicators	Baseline	Mid-term milestone	Final Target	Means of Verification (MOV)	Assumptions	Responsible for data collection
			IUCN – 8 sites 3. Financial services developed. BOBP-IGO – N/A SEAFDEC – N/A IUCN – financial services developed 4. No regional training programme developed and initiated. BOBP-IGO – attendance and provision of inputs when required. SEAFDEC – attendance and provision of inputs when required IUCN – leading development of regional training programme	available and utilized. BOBP-IGO – N/A SEAFDEC – N/A IUCN – financial services developed 4. Regional training programme on-going. BOBP-IGO – attendance and provision of inputs when required. SEAFDEC – attendance and provision of inputs when required IUCN – leading development of regional training programme 5. Gender mainstreaming at			

Results Chain	Indicators	Baseline	Mid-term milestone	Final Target	Means of Verification (MOV)	Assumptions	Responsible for data collection
			6. Gender mainstreaming target at mid-term. IUCN leading	project completion IUCN leading			
Output 4.2.1 Livelihood diversification for women piloted (in at least one site per country) 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.							
Component 5: Component 5: Regional mechanism for planning, coordination and monitoring of the BOBLME							
Outcome 5.1. Strengthened institutional mechanisms at regional and national levels for planning, coordination, and monitoring of the BOBLME	<p>1. A regional mechanism established to coordinate action on BOBLME.</p> <p>2. National multi stakeholder mechanisms established to coordinate action on the BOBLME.</p> <p>3. Financing partnerships agreed</p> <p>4. National inter and intra ministerial committees established (or strengthened if they exist).</p> <p>5. BOBLME monitoring system developed.</p> <p>6. Gender balance in implementation.</p>	<p>1. No regional mechanism established to coordinate action on BOBLME.</p> <p>2. No national multi stakeholder mechanisms established to coordinate action on the BOBLME.</p> <p>3. No financing partnerships.</p> <p>4. Some coordinating mechanisms exist but no national inter and intra ministerial</p>	<p>1. 1 x regional mechanism established to coordinate action on BOBLME. BOBP-IGO – facilitate participation SA countries</p> <p>SEAFDEC – Facilitate participation SEA countries</p> <p>IUCN – leading the regional mechanism</p> <p>2. 8 x National multi stakeholder mechanisms established to coordinate action on the BOBLME.</p>	<p>1. 1 x regional mechanism established to coordinate action on BOBLME. BOBP-IGO – facilitate participation SA countries</p> <p>SEAFDEC – Facilitate participation SEA countries</p> <p>IUCN – leading the regional mechanism</p> <p>2. 8 x National multi stakeholder mechanisms established to coordinate action on the BOBLME.</p>	<p>Regional agreement on coordination of the BOBLME. National and regional meeting reports Project reports. Draft sustainable financing strategy document, National coordination committees established or strengthened. Regular reports on the health of the BOBLME.</p>	<p>There is political and financing support for establishing and sustaining a regional governance mechanism for the BOBLME. Practitioners, stakeholders and government staff are able to dedicate time to support project activities Countries are able to reach agreement on BOBLME coordination.</p>	<p>Government agencies Implementation partners IUCN FAO</p>

Results Chain	Indicators	Baseline	Mid-term milestone	Final Target	Means of Verification (MOV)	Assumptions	Responsible for data collection
		committees established. 5. No BOBLME monitoring system developed. 6. Gender balance at baseline	BOBP-IGO – facilitate participation SA countries SEAFDEC – Facilitate participation SEA countries IUCN – leading the national multistakeholder mechanism 3. Financing partnerships drafted. BOBP-IGO – inputs SEAFDEC – inputs IUCN – leading 4. 8 x National inter and intra ministerial committees established. BOBP-IGO – inputs SEAFDEC – inputs IUCN – leading	BOBP-IGO – facilitate participation SA countries SEAFDEC – Facilitate participation SEA countries IUCN – leading the national mechanism 3. Financing partnerships agreed BOBP-IGO – inputs SEAFDEC – inputs IUCN – leading 4. 8 National inter and intra ministerial committees established. BOBP-IGO – inputs SEAFDEC – inputs IUCN – leading			

Results Chain	Indicators	Baseline	Mid-term milestone	Final Target	Means of Verification (MOV)	Assumptions	Responsible for data collection
			5. BOBLME monitoring system developed. BOBP-IGO – inputs SEAFDEC – inputs IUCN – leading	5. BOBLME monitoring system developed and on-going. BOBP-IGO – inputs SEAFDEC – inputs IUCN – leading			
			6. Gender balance at mid-term BOBP-IGO – inputs SEAFDEC – inputs IUCN – leading	6. Gender balance at project completion BOBP-IGO – inputs SEAFDEC – inputs IUCN – leading			
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	1. Project communication strategy 2. Number of lessons learned/policy documents 3. SAP implementation monitoring systems	1. No project communication strategy 2. No lessons learned/policy documents 3. No SAP implementation	1. x 1 Project communication strategy BOBP-IGO – inputs SEAFDEC – inputs IUCN – leading	1. x 1 Project communication strategy BOBP-IGO – inputs SEAFDEC – inputs IUCN – leading	Project communication strategy. Lessons learned documents Project reports Reports on SAP implementation		Government agencies Implementation partners IUCN FAO

Results Chain	Indicators	Baseline	Mid-term milestone	Final Target	Means of Verification (MOV)	Assumptions	Responsible for data collection
	4. Gender balance on implementation	monitoring systems 4. Gender balance at baseline	2. 20 lessons learned/policy documents BOBP-IGO – inputs SEAFDEC – inputs IUCN – leading 3. SAP implementation monitoring systems in place BOBP-IGO – inputs SEAFDEC – inputs IUCN – leading 4. Gender balance at mid-term BOBP-IGO – inputs SEAFDEC – inputs IUCN – leading	2. 40 lessons learned/policy documents BOBP-IGO – inputs SEAFDEC – inputs IUCN – leading 3. SAP implementation monitoring systems in place. BOBP-IGO – inputs SEAFDEC – inputs IUCN – leading 4. Gender balance at project completion BOBP-IGO – inputs SEAFDEC – inputs IUCN – leading			
Output 5.2.1 Communication Strategy developed and implemented Output 5.2.2. Programme findings and lessons learned identified and contribute to IW:LEARN and LME Learn/Interaction with IW:LEARN (1% of budget) 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							

PART II: PROJECT ACHIEVEMENTS IN 2021

The project has culminated in the PPG phase with the finalization of the ProDoc and final submission to the GEF Secretariat, and is awaiting final approval and endorsement by the GEF CEO. This will likely start in the last quarter of 2021, and will extend into mid 2022.

PART III: PROPOSED ACTIVITIES FOR THE YEAR 2022

As soon as the project is approved, the Operational Partners Agreement (OPA) between SEAFDEC and FAO will be signed, and the project will enter into Inception Phase.

Annex 5

SEAFDEC DEPARTMENTAL PROGRAMS OF ACTIVITIES FOR THE YEAR 2021–2022

Strategy/Project Title	Lead Department	Period	Appendix no.
1. Quality Seed for Sustainable Aquaculture	AQD	2021–2022	1
2. Healthy and Wholesome Aquaculture	AQD	2021–2022	2
3. Maintaining Environmental Integrity through Responsible Aquaculture	AQD	2021–2022	3
4. Meeting Social and Economic Challenges in Aquaculture	AQD	2021–2022	4
5. Adapting to Climate Change	AQD	2021	5
6. Collaborative Projects with the Philippine Government	AQD	2021–2022	6
7. Promotion on Strengthening of SEAFDEC Visibility and Enhancing Human Capacity Building	TD	2022	7
8. Improving of Fisheries Technology and Reduction of the Impact from Fishing Activities	TD	2021–2023	8
9. USAID Sustainable Fish Asia Local Capacity Development Activity	TD	2021–2022	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: 2021–2022
Funding Sources: AQD
Estimated Budget for 2022: USD 1,044,308

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 2021

Project/Activity Title	Duration	Remarks
Broodstock development		
<u>Broodstock management, breeding protocol development for seed production, stock management/enhancement</u>	2021	hopefully to be continued in 2022; another study leader shall take over the project
<p>Milkfish Study Title: Precocious puberty in milkfish through endocrine manipulation</p> <p>This study intends to determine if advancing the onset of puberty in milkfish through endocrine manipulation is possible given that broodstock development takes 3.5-5.5 years. Two neuroendocrine hormones namely the gonadotropin-releasing hormone (GnRH), and Kisspeptin (KISS1, a neurohormone known to stimulate GnRH) as well as a gonadal steroid, the 17α,20β- dihydroxy-4-pregnen-3-one (17α,20β-DHP) which is a potent promoter of germ cell proliferation</p>		

Project/Activity Title	Duration	Remarks
<p>and differentiation, were considered in the trials. To date, only the GnRH was tested using different dosages and on two size groups of milkfish. At least ten percent of the milkfish fingerlings (70-100g) from the treatment group injected intramuscularly with 100ug/kg of GnRH every two weeks for four months were found to have primary growth stage oocytes on the sixth month of rearing. Meanwhile, in another experiment, larger-sized milkfish juveniles (0.7-1kg) treated with 5 and 30 ug/kg body weight of GnRH every two weeks for 4 months showed that 40% (or 6 of 15) sampled milkfish had primary growth stage oocytes. These results indicate the onset of gonad differentiation and their sensitivity to hormonal manipulation. The gonad samples taken on the sixth month have comparable gonadosomatic index value regardless of treatment. The experimental trials are to continue until November where all the fish will be dissected for analysis. As for the KISS1 and 17α,20β-DHP, these have been ordered but has not been received to date.</p>		
<p>Giant freshwater prawn Study Title: Use of andrectomized males (neo females) giant freshwater prawn (<i>Macrobrachium rosenbergii</i>) for the production of all-male progenies</p> <p>This study aims to verify the efficiency and the cost analysis of a protocol to produce all-male giant freshwater prawns by applying modified bilateral androgenic gland ablation protocols modified by Aflalo et al 2006 and Rungsin et al 2006. The ultimate objective is to increased prawn yield since male prawns are noted to grow larger than female prawns. The ablation technique was tried on two PL (post larvae) batches (one for PL₄₅ or 45-day old postlarvae, and the other for PL₆₃₋₆₇). For the PL₆₃₋₆₇ the potential maximum success rate of the production of putative neo-females was noted at 1.25% upon examination of the ablated samples on the 150th day. Ablation of PL₄₅ samples was also done and when re-examined at age PL₈₅, one sample from one replicate of the ablated stock had no appendix masculina. The experiment is still on-going.</p>	2021–2022	To be continued in 2022
Refinement of Hatchery and Nursery Protocols		
<u>Improvement of rearing protocols</u>		
<p>Snubnose pompano Study Title: Nursery and grow-out culture of snubnose pompano <i>Trachinotus blochii</i> in pond-based net cages</p> <p>This study hopes to define the optimal conditions for nursery rearing of snubnose pompano in pond-based net cages by determining the best diet, optimal stocking density and the effect of illumination on the growth and survival of pompano fry for increased production. The economic viability of the proposed nursery rearing methods adopting refined protocols shall be evaluated as well.</p> <p>Hatchery-reared pompano (mean weight 0.48g) were stocked in 1x1x1.5m³ replicated cages set in ponds at a density of 150m⁻³. After 135 days of culture (DOC), the treatment fed pompano diet with taurine gave the highest specific growth rate (4.8 \pm 0.1%/day) however survival was highest in the treatment fed commercial diet (90%). Feed conversion ratio was significantly lower in the treatment fed commercial diet (1.9 \pm 0.15). The grow out experiment is on-going.</p>	2021	

Project/Activity Title	Duration	Remarks
<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> and <i>Penaeus indicus</i> juveniles reared in tanks</p> <p>This study aims to (a) determine the composition of microbial biofloc developed using either tilapia or milkfish, (b) evaluate the use and efficiency of biofloc produced with different carbon sources (wheat flour vs molasses) as compared to clear water culture, on shrimp growth and survival and (c) evaluate the effectiveness of the biofloc system in improving shrimp resistance to the white spot syndrome virus (WSSV).</p> <p>Results showed that the microbial floc produced using tilapia were harvested after one month. The specific growth rate of the shrimps -- <i>Penaeus indicus</i> (2.37%/day) and <i>P. monodon</i> (2.45%/day) in the biofloc system using different carbon sources such as wheat flour and molasses were highest when wheat flour was used. However, the differences are not significant among treatments. Meanwhile, shrimp survival was significantly higher in the biofloc tanks (regardless of the carbon source) compared to the control. The survival of <i>P. indicus</i> was higher (96.4-96.9%) in the biofloc tanks regardless of the carbon source compared to the <i>P. monodon</i> survival (72.6- 74.2%).</p>	Jan 2020–June 2021	
<p>Mangrove crab Study Title: Nursery culture of mangrove crab <i>Scylla serrata</i> megalopae in pond-based net cage</p> <p>This study aims to (a) determine the optimum stocking density and the ideal culture period of crab megalopae reared in pond-based net cages, (b) establish a protocol for the feeding management of megalopae in pond-based net cages and (c) evaluate the economic viability of the nursery culture operations using megalopae and (d) produce 3-5 cm crablets for grow-out farmers.</p> <p>Results of the first nursery rearing trial showed that a stocking density of 300/m³ gave the highest survival after three weeks in pond-based net cages. On the other hand in another trial, the stocking density of 100m³ resulted to the highest crab survival rate at 86 ± 2.6% for the same duration but this did not differ significantly from those stocked at 50/m³ (82±3.1%),, 200/m³ (81±1.8%) except for those stocked at 300/m³ (72 ±2.8%) and reared for three weeks.</p>	2021	
<p>Oyster Study Title: Verification of adequate feeding rations and use of algal paste for single seed spat production of slipper-shaped oyster <i>Crassostrea iredalei</i></p> <p>This study focused on (a) determining the algal rations for oysters that will result to maximum growth and increased survival at each of the oysters' larval stage and spat age, (b) assessing the effectiveness of algal paste as food source for the oyster larvae and spat, and (c) in evaluating the economic viability of using cultured live algae versus algal paste (SEAFDEC and commercial) as food source.</p> <p>The treatments based on varying feeding rations for the different larval stages were set at low, mid and high (starting at 15,000 cells/ml, 20,000 cells/ml and 25,000 cells/ml) with the rations adjusted in an increasing rate as the oyster larvae grew. Results showed that the number and survival rate of the larvae are higher in the treatments fed with mid and high feeding rations but these decreased through time. These results</p>	2021–2022	To be continued in 2022

Project/Activity Title	Duration	Remarks
<p>were noted at day 16 of rearing. Larval rearing started in August and continues to date.</p>		
<p>Seaweeds Study Title: Optimizing the survival of micropropagated seaweed <i>Kappaphycus alvarezii</i> through acclimation in tank-based nursery systems</p> <p>This study aims to produce tank-acclimated seaweed micropropagules and to determine if tank acclimation favors better growth and survival over non-acclimation when seaweed micropropagules are later planted in the open sea. It hopes to determine the effective stocking density and optimal acclimation time for seaweed propagules in laboratory-based tanks during the acclimation phase.</p> <p>Results from the first run showed that the highest specific growth rate was obtained at 60 days of laboratory culture (2.59% day⁻¹), followed by 75 days (2.55% day⁻¹), 90 days (2.11% day⁻¹) and 30 days (1.62% day⁻¹). SGR from 60 and 75 days have significant differences to SGR from 30 and 90 days of culture. On the other hand, for the second trial, the highest SGR was obtained from the 75 days culture (1.56% day⁻¹), followed by 30 days (1.33% day⁻¹), 60 days (0.95% day⁻¹) and 90 days (0.69% day⁻¹). For the two runs, survival was highest for the seaweeds grown for 30 days in the laboratory. When the propagules were transferred to the tanks, the highest SGRs (0.35%/day and 0.48%/day for runs 1 and 2 respectively) were observed in the 75-day old lab-cultured propagules. During this tank acclimation phase, survival was noted to be best for the seaweeds that were laboratory-reared for 60-75days. Finally, when the tank-reared propagules were planted in the grow-out, the treatments that were laboratory reared for 30 days gave the highest SGR and survival.</p>	<p>June 2020–Dec 2021</p>	
<p>Study Title: Sea-based nursery cage production of farmed eucheumatoids</p> <p>This study hopes to improve the survival of seaweed propagules/plantlets as well as expand the area for sea-based nursery cages for increased production. As it is primarily a technology verification and production study, the proponents plan to decrease the production cost of propagules reared in sea-based nursery cages at the Igang Marine Station as well as to implement biosecurity measures to improve the survival of sea-based nursery reared plantlets. Finally, once issues with the occurrence of diseases in the propagules are minimized, good quality propagules can be produced and disseminated to seaweed farmers.</p> <p>To date, additional bamboo cages have been fabricated while the procurement of nets and trays are still on-going. An estimated production cost for sea-based nursery cage production of propagules has been prepared by the AQD economist. Treatment trials for seaweeds affected by the filamentous algae and ice-ice disease are currently being done with the use of commercially available disinfectants. As for the production of good quality propagules, a trial comparing the growth performance of AQD seaweed tissue-cultured plantlets and farm-sourced seaweeds is in progress.</p>	<p>2020–2021</p>	
<p>Sandfish Study title: Optimizing hatchery production of early juveniles sandfish <i>Holothuria scabra</i></p> <p>This study aims to (a) increase the survival of early juvenile sandfish (>5mm) at the hatchery to at least 5%, (b) produce at least 20,000</p>	<p>2019–2021</p>	

Project/Activity Title	Duration	Remarks
<p>pieces of early juvenile sandfish at each spawning batch or episode, (c) assess and identify factors affecting the hatchery production of sandfish and (d) write and publish a manual on sandfish hatchery production.</p> <p>To achieve the objectives, several improvements in the hatchery facility were done and this includes the installation of heaters and a UV system to make the water quality parameters optimal for sandfish hatchery production. As of September, a total of 142 sandfish spawners are being used in the hatchery, several of them coming from new stocks or collections (San Lorenzo and Sagay) and the rest are reconditioned breeders from Igang, Guimaras. As of this writing, a hatchery manual is being prepared for possible publication.</p>		
<p><u>Production of nonconventional feed ingredients for use in broodstock diets</u></p> <p>Mudworm Study Title: Economic viability of tank-based polychaete culture technology</p> <p>This study aims to demonstrate the feasibility and profitability of indoor tank based polychaete (<i>Marphysa iloiloensis</i>) culture technology. Refinements in the culture protocol for polychaete production have been made by defining the appropriate feeding rate and sediment depth required in producing sufficient polychaete biomass. The best polychaete survival and biomass was noted when 50g/m² feeding rate and 3-5cm sediment depth was used in polychaete culture (from early juvenile to adult). However, both survival and biomass of adult <i>M iloiloensis</i> were significantly higher when 100g/m² feeding rate was used.</p>	2021–2022	To be continued in 2022
<p><u>Production of alternative natural food organisms for hatchery and nursery rearing of commercially important aquatic species</u></p> <p>Larval food Study Title: 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) verify the results of small-scale cultures, determine dilution/flow rate necessary for higher algal growth rate and to stabilize algal production in 30L culture and 250L culture volumes, (b) determine the effectivity of using Tilapia co-culture to remove ciliates and stabilize algal culture, (c) determine the productivity of the rotifer <i>Brachionus rotundiformis</i> continuously fed the algae <i>Nanochlorum</i> species from the outflow of modified continuous culture, (d) determine the biochemical composition of <i>Nanochlorum</i> sp and <i>B rotundiformis</i> at different turnover rates (e) improve the culture efficiency by reducing the cost of live food production in crab and fish hatcheries and (f) determine the cost-benefit analysis of using the modified continuous culture system.</p> <p>This year, the study focused on rotifer production using <i>Nanochlorum</i> that is continuously supplied from the outflow coming from the large scale <i>Nanochlorum</i>-Tilapia water system. The results of the rotifer production trial however is still a bit erratic hence would need further verification. Meanwhile, problems with the presence of ciliates in the <i>Nanochlorum</i> culture system were encountered and were addressed by way of a bleach assay experiment where the algal culture was subjected to three different treatments (1ul bleach, 10 ul bleach and 100 ul</p>	2019–2021	



Project/Activity Title	Duration	Remarks
bleach) to rid the culture system of ciliates. Based on the run, a 1ul bleach treatment is effective in keeping the cell density of <i>Nanochlorum</i> at a relatively high and steady level compared to the other treatments.		
<p>Rotifer Study Title: Use of microalgal paste-fed <i>Proales similis</i> in marine fish larviculture: I. Refinement of <i>P. similis</i> mass production schemes II. Assessment of <i>P. similis</i> as first food for marine fish larvae</p> <p>This study aimed to evaluate the feeding rate of centrifuged <i>Chlorella sorokiniana</i> paste for <i>Proales similis</i> production and the determined the feeding rate of <i>P. similis</i> as first food (fed centrifuged <i>C sorokiniana</i> paste) in the larval rearing of small-mouthed marine fish.</p> <p>Experiments showed that sufficient <i>Proales similis</i> were obtained from an initial 80L (containing 4.2 x 10⁶ <i>Proales</i> ind/ml) to 180L (1.37 x 10⁸ <i>Proales</i> individuals/ml) when the production protocol using centrifuged algal paste was used. One problem however was noted when ciliates were found in the <i>Proales</i> stocks which necessitated a re-isolation of the aforesaid rotifer. As of this writing the gradual scale up of <i>P. similis</i> indoor cultures is being done.</p>	2021–2022	To be continued in 2022
<p>Copepod Study Title: Development of a protocol for large-scale culture of harpacticoid copepods for marine fish larviculture</p> <p>This study aimed to mass produce harpacticoid copepods in large tanks using the culture technique developed in a previous study. It also hopes to determine the suitability of <i>Tigriopus</i> sp copepod as first food for marine fish larvae (e.g. rabbitfish, snapper, grouper and milkfish) and ensure a steady supply of the harpacticoid copepod.</p> <p>Results of the production trials showed that the highest copepod population growth was recorded at a peak of 200,000 individuals when 10ml biofloc concentration was used. The suitability of <i>Tigriopus</i> as fish larval food shall be evaluated in 2022.</p>	2021–2022	To be continued in 2022
<p>Increase awareness on available genetically selected/improved stocks and optimize their use for improved on-farm aquaculture production</p>		
No studies are being conducted		
<p>Promotion of technically and economically-viable breeding and seed production schemes</p>		
<p>Abalone Study Title: Seed production of donkey’s ear abalone <i>Haliotis asinina</i> juveniles</p> <p>This production study aimed to (a) demonstrate the successful hatchery production of 25,000 pieces abalone juveniles per cropping, (b) verify the efficacy of different types of broodstock diets on the reproductive performance of the abalone and to (c) assess the efficacy of artificial diet on the growth and survival in the early weaning of abalone juveniles.</p> <p>From January 2021 to September 2021, an estimated 128,942 abalone juveniles (3-5mm) were produced in the abalone hatchery. The average survival rate from veliger stage larvae to early juvenile stage was note at 1.99%. As regards the reproductive performance of the abalone broodstock fed formulated diet, thus far two spawning episodes have been observed with 640,000 veliger stage larvae produced compared to seaweed-fed broodstock which spawned 4 times and produced</p>	May 2021–Dec 2022	To be continued in 2022

Project/Activity Title	Duration	Remarks
<p>1,610,000 pieces of veliger larvae. When different types of artificial diets (refined flakes, unrefined flakes, refined pellets, unrefined pellets) and natural food sources (seaweeds, <i>Spirulina</i> + diatoms) were administered to abalone juveniles, those fed seaweeds had the highest average body weight followed by the juveniles fed refined pellets while the least ABW was noted in the juveniles fed <i>Spirulina</i>+ diatoms. Further trials are underway.</p>		
<p>Mangrove crab Study Title: Mass production of mangrove crab (<i>Scylla serrata</i>) seedstock</p> <p>The study is being conducted to produce crab instars to support the requirements of in-house research projects and nursery and grow-out pond operators.</p> <p>From January to September 2021, the study produced 437,340 pieces of crab instars and 15,600 pieces of crab megalopa which is equivalent to PhP 2,047,875 in sales. In spite the production output, it is noted that the survival from zoea 1 to crab instar 1 is still low at 2.7%. There is also a need to procure additional broodstock to have a steady production of mangrove crab seedstock.</p>	2021	
<p>Giant freshwater prawn Study Title: Seed production of freshwater prawn, <i>Macrobrachium rosenbergii</i></p> <p>This study which is based in the Tigbauan Main Station in Iloilo, aims to (a) demonstrate and refine further, the existing hatchery protocols developed at the SEAFDEC/AQD Binangonan Freshwater Station to improve giant freshwater prawn larval rearing, (b) produce a sustainable supply of <i>M. rosenbergii</i> postlarvae for use in in-house research in Iloilo and for fishfarmers based in Visayas and Mindanao, and (c) to determine the cost analysis of prawn hatchery operations in Iloilo.</p> <p>Although the freshwater station of SEAFDEC/AQD has long established optimal protocols and has successfully produced prawn post larvae to date, the newly operated prawn hatchery in Iloilo has yet to achieve a sustainable production of the same to cater to the needs of farmers in the Visayas and Mindanao regions. From January to September this year, 78,557 pieces of postlarvae were produced of which 44,600 pieces have been sold which have generated an equivalent total income of PhP 75,150.</p>	2021–2023	To be continued in 2022
<p>Seaweed Study Title: Production of farmed eucheumatoids by micropropagation in the land-based nursery</p> <p>This production study aimed to (a) increase the production of seaweed propagules from 4000 to 8000 pieces per month in the land-based nursery, (b) produce micropropagules to support the needs of the sea-based nursery of AQD and (c) to determine the cost and return analysis of micropropagule production in the land-based nursery.</p> <p>For this study, <i>Kappaphycus alvarezii</i> from Caluya and Pandan, Antique were procured last January and April 2021. As of August 2021, the nursery produced 38,659 propagules with an average survival of 77.3%.</p>	2020–2021	

Project/Activity Title	Duration	Remarks
One constraint that has been noted by the proponent was the difficulty in having a continuous source of explants for use in the study in view of the logistical challenges brought about by the COVID 19 pandemic.		

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2022

(The following format should be used for planning projects and activities (project/activity title and its short description) to be implemented as well as expected outcomes in the year 2022. In case there are linkages among projects, the linkages and coordination mechanism should be provided to display the linkages of concerned projects.)

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Precocious puberty in milkfish through endocrine manipulation	2022	
Use of andrectomized males (neo females) giant freshwater prawn (<i>Macrobrachium rosenbergii</i>) for the production of all-male progenies	2022	
Verification of adequate feeding rations and use of algal paste for single seed spat production of slipper-shaped oyster <i>Crassostrea iredalei</i>	2022	
Economic viability of tank-based polychaete culture technology	2022	
Use of microalgal paste-fed <i>Proales similis</i> in marine fish larviculture: I. Refinement of <i>P. similis</i> mass production schemes II. Assessment of <i>P. similis</i> as first food for marine fish larvae	2022	
Development of a protocol for large-scale culture of harpacticoid copepods for marine fish larviculture	2022	
Seed production of donkey's ear abalone <i>Haliotis asinina</i> juveniles	2022	
Seed production of freshwater prawn, <i>Macrobrachium rosenbergii</i>	2022	

4.2 Expected Outcomes/Outputs

The eight studies shall hopefully completely achieve their objectives as indicated in their original proposals. Two of the eight continuing studies are verification studies which when completed shall enable the demonstration of these working technologies for adoption by the target stakeholders. More downstream research proposals are encouraged for submission to allow more technologies to be developed. Moreover, it is hoped that more senior research staff are hired for this purpose.

4.3 Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



PROJECT DOCUMENT

Program Categories: Departmental Programs
Project Title: Healthy and Wholesome Aquaculture
Responsible Department: Aquaculture Department
Total Duration: 2021–2022
Funding Sources: AQD
Estimated Budget for 2022: USD 743,515

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. Improved aquaculture production due to less disease outbreak because of the availability of vaccines and treatment protocols against certain pathogens, early disease detection, and identification of disease risk factors.

Nutrition and feed component. Find different sources of fish meal substitutes and develop effective feed management schemes that have the least impact on the aquatic environment.

2.3 Project Description/Framework (for total duration of the project)

Fish Health Component

Activity 1: Develop TiLV detection protocol. Sampling for TiLV in different areas in the Philippines across different farming systems. 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. Monitoring of catfish production units taking note of the farming practices, water parameters, bacterial flora and harvest production.

Activity 3: Vaccination of marine fishes at the Igang Marine Station of SEAFDEC/AQD.

Activity 4. Investigate different treatment methods against Caligids in caged cultured pompano; and identify risk factors for caligid infestation in pompano by correlating water parameters with the prevalence of caligids.

Activity 5. Develop diagnostic tools to detect seaweed diseases and pest. Monitoring of a sentinel fam for disease occurrence.

Nutrition and Feed Component

Activity 1. Cost effective ingredient blend of soybean meal, corn protein concentrate, poultry by-product meal, hemoglobin meal and protein enhanced copra meal in the diets of pompano, *Trachinotus blochii*. This study aims to come up with cost effective formulation for pompano grow-out in sea cages by replacing fish meal protein in formulations

Activity 2: Culture of pompano *Trachinotus blochii* in floating net cages. This aims to optimize feeding rate, stocking density, and culture period.

Activity 3: Development and evaluation of fungi-fermented feed ingredients as alternative protein sources in milkfish diet. This aims to improve nutritional quality of selected alternative protein sources by solid state fermentation as well as to evaluate the effect of replacing fishmeal with fermented ingredients on growth performance parameters.

Activity 4: Production techniques for culture of silver therapon *Leiopotherapon plumbeus* in tanks and cages. The objectives of this study include determining the optimal stocking density and feeding level for silver therapon during the nursery phase, develop grow-out diets, and evaluate effects of stocking densities and grow-out on the feeds on the performance of the species in cages.

Activity 5: Efficiency and profitability of Nile tilapia (*Oreochromis niloticus*) - giant freshwater prawn (*Macrobrachium rosenbergii*) polyculture in pond-based biofloc system with refinements on feeding rates. Biofloc as additional feed for cultured organisms has 28-40% protein and can contain adequate balance of other essential nutrients which can support the requirement of Nile tilapia and giant freshwater prawn. This study aims to verify the efficiency and profitability of this technique.

Activity 6: Grow-out culture of abalone comparing the use of *Gracilariopsis heteroclada* and SEAFDEC-formulated diet as feeds. This study aims to determine growth and survival of abalone using seaweed, SEAFDEC-formulated diet, and combination of the two.

Activity 7: Test of refined formulated feed for the grow-out culture of mangrove crab, *Scylla serrata* (Forsskal) in land-based tanks. Mangrove crab feed formulation will be refined, assessed, and biological tested. At the end of the study, an economic analysis of the resulting refined feed formulation in mass production.

Activity 8: Nutritional Interventions to Improve Reproductive Performance of Indian White Prawn, *Penaeus indicus* (H. Milne Edwards, 1837). This study aims to assess the effect of polychaetes extracts to maturation and sperm quality of the species. The effect of rearing method in maturation and reproductive behavior of Indian white prawn will be studied.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2021

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>	34 months	
The project was able to develop a duplex semi-nested protocol for the detection of TiLV in tilapia that is TiLV specific. The study also determined that TiLV can be found in various areas in the Philippines in different types of culture such as the wild, in ponds and floating cages. TiLV can infect all developmental stages of Tilapia from fry to adult which may exhibit disease signs or may be asymptomatic.		

Project/Activity Title	Duration	Remarks
<p><i>Detection, control and treatment of persistent and emerging pathogens affecting pond cultured Asian catfish (Clarias macrocephalus)</i></p> <p>The study found that catfish eggs did not hatch due to high water hardness. A total of 195 bacteria were isolated from the water and fry in the hatchery; 313 from the water, sediment, and fingerlings from the catfish hatchery.</p>	24 months	
<p><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></p> <p>A total of 81 assorted marine fin fish species, including pompano broodstocks, were booster vaccinated with VNN in August-September 2021 out of the 93 of those that received primary vaccination in 2020. In 2021, 256 marine finfishes received primary vaccination against VNN. 2020 induced spawning Milts and eggs as well as spawned eggs from vaccinated and unvaccinated pompano broodstocks were negative for NNV detection by RT-PCR (. NNV detection in milts, eggs, and spawned eggs collected from both vaccinated and unvaccinated pompano broodfish is ongoing. No incidence of abnormality/mortality is observed among offsprings currently being reared at the TMS hatchery.</p>	24 months	
<p>Activity 4. Pilot field trials to evaluate emamectin benzoate, hydrogen peroxide and freshwater bath to reduce a natural infestation of sea lice on snub-nose pompano <i>Trachionotus blochii</i></p> <p>Prevalence of caligid in pompano treated with freshwater, 1500 and 2000ppm hydrogen peroxide decreased on the third day after treatment, 80, 65 and 45% respectively; but increased on the 7th day. Prevalence in the untreated group remained at 100%.</p>	12 months	
<p><i>Safeguarding the future of the Seaweed Industry of the Philippines: Disease and Pest Detection (WPI)</i></p> <p>The study established key diagnostic tools (detection protocols and molecular diagnostic tools) for yield-limiting seaweed diseases and pests (e.g. epiphytes and endophytes): Histology, Electron Microscopy, PCR. EFA collected in San Dionisio, Iloilo (sentinel farm) was identified as <i>Melanothamnus (=Neosiphonia) thailandica</i> (100% match) which is possibly a new EFA species affecting farmed seaweeds in the Philippines. Together with other researchers involved in the project, the team published a seaweed brochure entitled "Farm management and biosecurity measures of eucheumatoids: cultivars, pest and diseases, risks and risk managements". The brochure is available in 4 languages: English, Tagalog, Bisaya/Cebuano, Tausug. Two posters entitled "Commercially Farmed Eucheumatoids" and "Major Problems in Eucheumatoid Farms" are due for printing and distribution.</p>	48 months	
<p>Nutrition and feed component</p>		
<p><i>Cost effective ingredient blend of soybean meal, corn protein concentrate, poultry by-product meal, hemoglobin meal and protein enhanced copra meal in the diets of pompano, Trachinotus blochii</i></p> <p>For pompano reared for 3.5 months in sea cages a feeding rate of 5-6% increased initial weight of fish 6 times, while growth indices are higher when fed diet containing fish meal compared to formulations with blends of plants and animal by-products. In conclusion, fish meal is still found to be necessary in the feeding of pompano.</p>	1 year	

Project/Activity Title	Duration	Remarks
<p><i>Culture of pompano Trachinotus blochii in floating net cages</i></p> <p>An optimum feeding rate was established through the experiments of this study. The two high feed rate (A: 5-6%; B: 4-5%) shows higher FCR of 3.97 and 3.44, respectively. Low feed rate (C: 3-4%; D: 2-3%) got lower FCR of 4.42 and 2.07, respectively. Feeding rate of 5-6% for 3.5 months of culture achieved a six-fold increase in fish weight.</p>	1 year	
<p><i>Development and evaluation of fungi-fermented feed ingredients as alternative protein sources in milkfish diet</i></p> <p>T solid-state fermentation using the fungus <i>A. oryzae</i> improved the crude protein of all feed ingredients except <i>Ulva</i> sp. Rate of increase ranged from 1.85% to 25%. Partial results showed optimum spore concentration appear to differ among selected feed ingredients such as soybean meal at 1×10^8 spore per gram, rice bran at 1×10^7 spore per gram, and azolla at 1×10^6 spore per gram.</p>	1 year	
<p><i>Production techniques for culture of silver therapon (Leiopotherapon plumbeus) in tanks and cages</i></p> <p>The study uses two cage nursery set-ups (tank-based and lake-based). Results showed that diets in both set-ups did not affect the growth, survival, and FCR of the ayungin fry. For tank-based cage nursery, high FR enhanced growth but caused high FCR. Meanwhile in lake-based cage nursery, fry showed better growth when fed with MPD-2 and HFR.</p> <p>For the experiment on lake-based growth trial using wild silver therapon fingers, about 35% dietary crude protein level is optimum for fingerling grow-out.</p>	2 years	
<p><i>Efficiency and profitability of Nile tilapia (Oreochromis niloticus) - giant freshwater prawn (Machrobrachium rosenbergii) polyculture in pond-based biofloc system with refinements on feeding rates</i></p> <p>The study focuses on proper preparation of ponds to maintain biofloc formation. Preliminary results in biofloc technology conducted in pond showed better weight gain of tilapia in polyculture with the giant freshwater prawn compared with the traditional culture. Meanwhile, the growth of the giant freshwater prawn was better in the traditional culture.</p>	2 years	
<p><i>Grow-out culture of abalone comparing the use of Gracilariopsis heteroclada and SEAFDEC formulated diet as feeds</i></p> <p>After a month of stocking, abalone growth rates and survival were highest in those fed with mixed diet (seaweed and SEAFDEC formulated diet). There are no changes after the next four months, the mixed diet was still achieved the highest abalone mean shell length, body weight, and survival.</p> <p>The study compared proximate composition of seaweeds and SEAFDEC formulated diet. Samples were submitted to AQD's house laboratory for proximate analysis.</p>	2 years	
<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>Refined formulated test diet is water-stable and promoted growth and survival better than the fresh fish-by-catch. This will be tested in ponds.</p>	1 year	

Project/Activity Title	Duration	Remarks
<p><i>Nutritional Interventions to Improve Reproductive Performance of Indian White Prawn, Penaeus indicus (H. Milne Edwards, 1837)</i></p> <p>Formulation artificial diet can promote maturation similar to started fresh diet. Supplementation of polychaete extracts in basal maturation diet improved maturation rate by 20%-30%.</p>	2 years	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2022

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Fish health component		
<p><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></p> <p>Established TiLV detection protocol will be used in the diagnostic services</p>	34 months	Completed in 2021
<p><i>Detection, control and treatment of persistent and emerging pathogens affecting pond cultured Asian catfish (Clarias macrocephalus)</i></p> <p>Monitoring and surveillance of pond-cultured (grow-out) and wild catfish will be done during the cold and warm months. Diagnostic and disease prevention and control methods will be developed.</p>	24 months	Continue in 2022
<p><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></p> <p>Continue with the vaccination regimen of high value marine broodfish reared in cages (IMS) and land-based tanks (TMS)</p>	24 months	Continue in 2022
<p><i>Pilot field trials to evaluate emamectin benzoate, hydrogen peroxide and freshwater bath to reduce a natural infestation of sea lice on snub-nose pompano Trachionotus blochii</i></p> <p>EMB incorporated into feeds will be tested.</p>	12 months	Continue in 2022
<p><i>Safeguarding the future of the Seaweed Industry of the Philippines: Disease and Pest Detection (WPI)</i></p> <p>Established diagnostic tools for the detection of seaweeds diseases and pests will be used in the diagnostic services</p>	48 months	Completed in 2021
<p><i>Identification of Risk factors affecting diseases of different aquaculture species (i.e. bacterial diseases in finfish; diseases of seaweeds) and the treatment for these diseases.</i></p> <p>Regular monitoring of environmental parameters and disease occurrence in species cultured at the Igang Marine Station of SEAFDEC AQD and in other places.</p>	24 months	To be proposed
Nutrition and feed component		
<p><i>Cost effective ingredient blend of soybean meal, corn protein concentrate, poultry by-product meal, hemoglobin meal and protein enhanced copra meal in the diets of pompano, Trachinotus blochii</i></p> <p>A tank experiment will be conducted using corn protein concentrate and enzyme solution.</p>	1 year	

Project/Activity Title	Duration	Remarks
Development and evaluation of fungi-fermented feed ingredients as alternative protein sources in milkfish diet Promising ingredients will be tested for acceptability.	1 year	
Production techniques for culture of silver therapon (<i>Leiopotherapon plumbeus</i>) in tanks and cages Crude protein levels for fingerlings will be identified.	1 year	
Efficiency and profitability of Nile tilapia (<i>Oreochromis niloticus</i>), giant freshwater prawn (<i>Machrobrachium rosenbergii</i>) polyculture in pond-based biofloc system with refinements on feeding rates Study will continue in 2022 and the experiments in ponds are ongoing.	1 year	
Grow-out culture of abalone comparing the use of <i>Gracilariopsis heteroclada</i> and SEAFDEC formulated diet as feeds Diets are ready for field trials.	2 years	
Test of refined formulated feed for the grow-out culture of mangrove crab, <i>Scylla serrata</i> (Forsskal) in land-based tanks Refined diets will be ready for pond trials in 2022.	2 years	
Nutritional Interventions to Improve Reproductive Performance of Indian White Prawn, <i>Penaeus indicus</i> (H. Milne Edwards, 1837) The study will continue in 2022 and there will be supplementation of basal diet of male breeders	1 year	

4.2 Expected Outcomes/Outputs

Fish health component. Monitoring of a species production including farming systems, environmental parameters and disease occurrence will identify pathogen(s) causing their mortality and determine factors that affect disease occurrence thereby enabling the formulation of an effective disease prevention and control method and the proper timing for their implementation. Vaccination of brood fish is an efficient strategy to produce disease free eggs/ larvae.

Nutrition and feed component. Some of the above projects will be re-proposed next year while some are already terminated based on their achieved objectives. The continuing projects will be reviewed and the activities should be in line with the thrust of the program as stated in the overall objectives/goals. For 2022, expected outputs will include: suitable plant protein sources for pompano grow-out in cages will be identified; feeding rate and protein for silver therapon nursery and grow-out, respectively, evaluated; biofloc technology for polyculture of tilapia and giant freshwater prawn will be evaluated; nutrients adequate to improve maturation of male *P. indicus* breeders identified; refined grow-out formulation for the mangrove crab evaluated; and abalone feed for grow-out identified. Upon finessing the studies, results will be published and disseminated.

4.3 Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



PROJECT DOCUMENT

Program Categories: Departmental Programs

Project Title: Maintaining Environmental Integrity through Responsible Aquaculture

Responsible Department: Aquaculture Department

Total Duration: 2021–2022

Funding Sources: AQD

Estimated Budget for 2021: USD 200,029

1. INTRODUCTION

The phenomenal growth of aquaculture in past few decades has caused some adverse effects to the environment. Some of these impacts involve the modification and destruction of coastal habitats, unregulated collection of wild broodstock and seeds, translocation or introduction of exotic species, loss of biodiversity, discharge of aquaculture wastewater, salinization of soil and water, and others. This MEITRA program was developed in order for the Department to explore and address these issues on environmental impacts of aquaculture and to develop environment-friendly aquaculture technologies to mitigate such adverse effects. 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. Specifically, it aims to achieve the following objectives:

- 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

2.2 Outcomes and Expected Outputs

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 promote resource enhancement especially of economically-important but vulnerable or endangered species.

2.3 Project Description/Framework

Activity 1: Strategic feeding of milkfish (*Chanos chanos*) for efficient marine cage culture production. This study examines compensatory growth (CG) in milkfish; subsequently, it aims to find the optimum starvation period, refeeding period, and the potential best starvation and refeeding schedule.

Activity 2: Increasing technical skills supporting community-based sea cucumber production in Viet Nam and the Philippines. In the hatchery phase, the study aims to study which microalgae species is best of sandfish. This was followed by an assessment of sandfish production in ocean nursery systems which was conducted in AQD's Igang Marine Station in Guimaras, Philippines. To ensure the sustainability of the study, a predator and mitigation study will also be conducted in the grow-out phase.

Activity 3: Development of optimal fish-prawn co-culture schemes in tanks and lake-based cages for increased farm production. A genetically-improved Nile tilapia strain (i-EXCEL), red tilapia hybrids, and giant freshwater prawns was reared in tank-based and lake based in co-culture systems.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2021

Project/Activity Title	Duration	Remarks
<p><i>Strategic feeding of milkfish (Chanos chanos) for efficient marine cage culture production</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 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-refeeding cycle in a full grow out culture of milkfish in marine cages.</p> <p>In 2019 and 2020, preliminary studies were conducted to assess and determine the optimal starvation period when the starved milkfish will show significant difference as compared with un-starved milkfish in terms of some indicators that includes body weight loss, hepatosomatic index (HSI), and cortisol levels in the blood. The tests indicated that the optimal starvation period was around 2 to 3 days. Another preliminary study was to evaluate and determine the optimum refeeding period wherein the starved milkfish will regain a biomass which is comparable to those un-starved milkfish.</p> <p>Based on results from starvation and refeeding experiments (objectives 1 & 2), feeding schemes were designed and tested for application in grow-out culture of milkfish in cages. Feeding schemes include cycles of three-day starvation and refeeding period of either 9 (3:9), 12 (3:12) or 15 (3:15) days. Milkfish fingerlings (~4-5 in) were stocked in cages (2.5x5x3 m) at ~25 ind/m³. Morphometric changes were monitored at the end of each feeding cycle of each treatment group (e.g., every 12 days for 3:9 group).</p> <p>Milkfish subjected to various feeding schedules (i.e., 3:9, 3:12 and 3:15) exhibited growth curves that are comparable to that of the control group in terms of body weight and total length after 120 days of culture. However, it was notable that fish in 3:9 group show slower growth than the control group. In comparison, 3:12 and 3:15 treatments have growth curves that are much closer to that of control group.</p> <p>The final mean body weight of milkfish at the end of the culture period were similar between control, 3:12, and 3:15 while 3:9 was significantly lower when compared to the control group. Survival was highest (92%) at 3:12 although also comparable to 3:9 (89%) and 3:15 (86%), while control group had lowest survival at 83%. Harvest biomass were comparable (3:12 at 208 kg; 3:15 at 220 kg; and control at 217 kg), while 3:9 had the lowest at 182 kg.</p> <p>In summary, this study demonstrated that feeds can be strategically administered in order to utilize the natural compensatory growth mechanism in milkfish during its grow-out farming in marine cages. Specifically, this study shows the potential of 3:12 feeding scheme (i.e., repeated cycle of 3 days starvation and 12 days refeeding) to reduce that feed input by up to 20% while obtaining comparable harvest biomass.</p>	2 years	Completed in 2021
<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</p>	5 years	

Project/Activity Title	Duration	Remarks
<p>hatchery and nursery production up to resource enhancement and grow-out in sea ranch. With a duration of 5 years, the first year was focused on optimizing hatchery production by utilizing algal concentrates in order to minimize dependency on live micro-algae cultures. Experiments results in 2019 showed that live <i>Chaetoceros calcitrans</i> (Cc) is still best in promoting the fastest larval development to doliolaria stage, but <i>Isochrysis</i> sp. (<i>Isochrysis</i> 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 (<i>i.e.</i> chl-a) positively affects sandfish growth in hapa, while wind and rain were negative factors. More details on this particular study can be found at Altamirano <i>et.al.</i> (2021).</p> <p>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 (15-20 g) sandfish tended to avoid predators. Thus, >20 g sandfish are recommended for stocking in the field.</p> <p>In 2021, predation-potential was evaluated in a field experiment that compared two pen designs. One treatment was with HIGH netted wall (predator exclusion) vs LOW walls (open for predators). In general, growths of sandfish were higher in HIGH pens than in LOW (Fig. 3-C). Also, HIGH pens had much higher average (n=4) survival at 80% than in LOW pens (13%) after 14 mo. This result suggests that rearing sandfish in pens with HIGH net walls can improve growth and survival rates in areas where predation potential is high.</p>		
<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 rearing of genetically-improved Nile tilapia strains (<i>e.g.</i> 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. In the tank experiments, two trials were conducted with four culture schemes: (1) mono culture of i-EXCEL; (2) mono culture of Red Tilapia; (3) co-culture of i-EXCEL + GFP; and (4) co-culture of Red Tilapia + GFP. Results showed that regardless of scheme, the Nile tilapia (i-EXCEL) had better growth performance than the Red Tilapia. Also, tilapia survival was high and not significantly different across schemes (75%-95%), while GFP survival had a high range between the two trials (10-72%), but are not significantly different across schemes. These results suggest that both mono-culture or co-culture can be recommended to farmers. Although the decision on which scheme to use will depend on which specific species are targeted for production. In the lake, three feeding treatments were tested: (A) only tilapias were fed, (B) only prawns were fed, and (C) both tilapias and prawns were fed. Tilapias grew comparably well between the fed treatments as compared to the un-fed treatment [Treatment (A=C)>B]. Similarly, GFP grew much better when fed [Treatment (B=C)>A]. Overall, the survival of tilapias in the lake were lower than in the tanks even though the water quality were well within tolerable levels. However, water parameters were observed to be fluctuating more in the lake than in tanks. The economic analyses for this study are still being assessed and a few more experimental runs will be conducted in 2022.</p>		

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2022

4.1 Planning of the Project Activities

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 funded by the Australian Centre for International Agricultural Research will continue in 2022</p>	2017-2023	
<p><i>Development of optimal fish-prawn co-culture schemes in tanks and lake-based cages for increased farm production</i></p> <p>The study will continue conducting experiments to improve freshwater aquaculture production and increase the income of tilapia farmers through: (a) the rearing of genetically improved Nile tilapia strains and/or red tilapia hybrids together with giant freshwater prawns (GFP) in tank-based co-culture systems; (b) the adoption of optimal tilapia-prawn co-culture schemes in lake-based cages</p>	2020-2022	
<p><i>Development of intermediate aquaculture system and advanced hatchery production to secure stable seed supply</i></p> <p>Funded by Japan International Research Center for Agricultural Sciences (JIRCAS), this study aims to understand spatial/temporal conditions of habitat for mangrove crab and sandfish juveniles; determine performance using variable culture parameters; and determine optimal combinations of culture and environmental parameters using Systems Dynamics Model.</p>	2021-2026	New project
<p><i>Identification of Tropical Anguillid Eels from Selected Natural Habitats in the Philippines using Environmental DNA Assay</i></p> <p>Indicative objectives of this study aim to identify natural habitats of eels, determine the presence and identity of the Anguillid eel species using e-DNA assay, evaluate the effectiveness of the e-DNA method in accurately identifying local eel species, and develop and optimize the e-DNA protocol for identifying tropical Anguillid eels.</p>	Initial studies will be conducted in 2022	New project

4.2 Expected Outcomes/Outputs

This program will continue existing projects that would integrate environment-friendly techniques in aquaculture technologies.

4.3 Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



PROJECT DOCUMENT

Program Categories: Departmental Programs
Project Title: Meeting Social and Economic Challenges in Aquaculture
Responsible Department: Aquaculture Department
Total Duration: 2021–2022
Funding Sources: AQD
Estimated Budget for 2021: USD 127,782

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

This 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 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 2021, the assessment of development of community-based sandfish farming livelihood for fishing communities in Molocaboc Island, Sagay City, Negros Occidental in the Philippines was conducted. Under the program, it aims to develop strategies to increase and sustain the participation of fishing community members in sea cucumber farming.

2.3 Project Description/Framework

Activity 1: Assessment and development of community-based sea cucumber (*Holothuria scabra*) farming livelihood for fishing communities. This study examines the interplay and linkages of a fishing community in implementing a sustainable sea cucumber farming livelihood.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2021

Project/Activity Title	Duration	Remarks
<p><i>Assessment and development of community-based sea cucumber (Holothuria scabra) farming livelihood for fishing communities</i></p> <p>Generally, this study aims to examine the interplay and linkages of a fishing community in implementing a sustainable sea cucumber farming livelihood. Specifically, it will assess the capacity of island-based fishing communities towards sandfish farming livelihood. It will also develop strategies to increase and sustain the participation of fishing community members in sea cucumber farming.</p> <p>Using mixed-method of quantitative and qualitative approaches using structured and researcher-made survey instruments, focus group discussions, and key informant interviews in collaboration with the Molocaboc Sea Rancher's Association (MOSRA).</p> <p>In 2021, social surveys including household surveys, key informant interview, and trader surveys were completed virtually due to the COVID-19 situations in the Philippines. Information drive activities were also carried out last June to July of this year as information, education, and communication materials were distributed to respondents and posted in strategic locations around the island. Sandfish monitoring and regular meeting activities are still ongoing. MOSRA continuously monitor and maintain the ranch by themselves even during the pandemic and without supervision from the study leader. Regular meetings are being conducted regularly enjoined by the barangay chairman.</p> <p>Survey showed that 67% of the primary livelihood in the island is fishing through spear fishing, gleaning, and prohibited compressor dive and triple-net. Secondary source of income are government subsidies such as 4Ps and unconditional cash transfer. Seventy-nine percent of MOSRA members engage in sandfish gleaning. They considered the activity as a substantial part of income-generating activity especially during typhoon season. In early 2000, respondents said that sandfish are used to be sold in nearby areas such as Vito and Escalante, primarily because of lower transportation costs. However, local stakeholders also mentioned that drying sandfish is a laborious process. During the pandemic, a middleman occasionally collects dried sandfish but local stockers also sell it directly to buyers in Dumaguete, Cebu, and Bacolod. The prices range from Php 400 to Php 1,100 (approximately USD 8 to 22) depending on the sizes.</p>	2020–2021	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2022

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
<p><i>Assessment and development of community-based sea cucumber (Holothuria scabra) farming livelihood for fishing communities</i></p> <p>This project will continue in 2022. Social surveys in other sites are tentatively planned to be implemented before the year ends. This study covers the socioeconomic component of the ACIAR-funded study to supplement the technical aspect of a separate investigation conducted under the MEITRA program.</p>	2021–2022	

4.2 Expected Outcomes/Outputs

This program will be aiming to establish the fishing community's profile emphasizing their production, management, decision-making roles, and sea cucumber farming gaps. Subsequently, it also aims to establish indicators on the willingness to participate in a community-based sea cucumber farming supplemental livelihood opportunity.

4.3 Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



PROJECT DOCUMENT

Program Categories: Departmental Programs
Project Title: Adapting to Climate Change
Responsible Department: Aquaculture Department
Total Duration: 2021
Funding Sources: AQD
Estimated Budget for 2020: USD 18,500

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

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 2021

Project/Activity Title	Duration	Remarks
<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.</p> <p>A study on the use of biofloc system to improve the culture conditions of <i>Penaeus monodon</i> and <i>Penaeus</i> (<i>Fenneropenaeus</i>) <i>indicus</i> was conducted by AQD. Biofloc technology is an environmentally-friendly zero-water exchange system that mainly focuses on waste nutrient recycling. The intensification of shrimp culture led to the abrupt decline of production brought about by environmental degradation, such as organic matter overloading, chemical toxicity, antibiotic resistance, and the emergence of diseases.</p> <p>Refining culture protocols (<i>e.g.</i> optimizing stocking densities, temperature, salinity) to reduce environment deterioration were also present culture studies of various commodities.</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 addresses constraints of diminishing supplies of fish meal and fish oil in light of the expected impacts of climate change on global fishery resources. For this year, studies on potential alternative ingredients for fish meal which includes spray dried hemoglobin meal for pompano and poultry-by product, distiller's dried grains solubles, and protein enhanced copra meal for tilapia and milkfish.</p> <p>Continuing 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.</p> <p>AQD, in partnership with Japan International Research Center for Agricultural Sciences (JIRCAS), is currently conducting the Integrated Multi-Trophic Aquaculture (IMTA) techniques which involve a sustainable system of fish culture applying polyculture techniques appropriate for aquatic organism from various trophic levels. Through this system, it helps reduce ecological impacts on aquaculture operations. When done right, this system is viewed to help improve the societal perception of aquaculture.</p>	<p>2021</p>	



4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2022

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		

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.

4.3 Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



PROJECT DOCUMENT

Program Categories: Departmental Programs

Project Title: Collaborative Projects with the Philippine Government

Responsible Department: Aquaculture Department

Total Duration: 2021–2022

Funding Sources: Department of Agriculture-Bureau of Fisheries and Aquatic Resources (DA-BFAR)

Estimated Budget for 2021: To be determined

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

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 had 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 2021

Project/Activity Title	Duration	Remarks
<p>Fry Sufficiency Program</p> <p>AQD is contributing to the Fry Sufficiency Program of DA-BFAR by conducting feasibility studies on proposed hatcheries that are versatile enough to accommodate the culture of other economically important aquaculture species such as the black tiger shrimp (<i>Penaeus monodon</i>), mangrove crab (<i>Scylla serrata</i>), and other commodities that are quickly gaining in popularity, e.g. pompano (<i>Trachinotus blochii</i>).</p> <p>In 2021, AQD created a feasibility report and other relevant documents for the two remaining legislated hatcheries with suitable sites: Surigao City, Surigao del Norte and Hinatuan, Surigao del Sur in the Philippines. The report and documents were submitted to DA-BFAR Central Office. Out of 16 sites in the memorandum of agreement (MOA), 10 sites passed the evaluation and inspection and out of that AQD finished and completed feasibility study reports for eight sites. The remaining hatcheries with no suitable sites were delegated and handed to concerned DA-BFAR Regional Offices.</p> <p>Constructions are ongoing on the five areas including: Sultan Naga Dimaporo, Lanao del Norte (80%); Lingig, Surigao del Sur (77.40%); Perez, Quezon (40%), Jabonga, Agusan del Norte (20.02%), Del Carmen, Surigao del Norte (9.41%). Meanwhile, the following are scheduled to start construction of hatcheries this year: Bantayan, Cebu, Jose Dalman, Zamboanga del Norte, Surigao City, Surigao del Norte, Ligao, Albay, and Hinatuan, Surigao del Sur.</p> <p>The initial MOA between DA-BFAR Central Office and AQD ended in May 2021 and a new MOA was created to extend the partnership by April and this time with DA-BFAR Regional Office 6.</p> <p>Under the new MOA, AQD started the assessment of pre-identified project sites for the feasibility to be converted into a hatchery. In Iloilo Province, AQD performed ocular inspections in possible sites in Barotac Viejo, Carles, Concepcion, Batad, and San Dionisio. Two sites were inspected in Negros Occidental including Talisay City and E.B Magalona.</p> <p>By September 2021, suitable sites were successfully found in Batad, Concepcion, and Carles in Iloilo. Meanwhile, no suitable sites were found in Barotac Viejo and San Dionisio in Iloilo and E.B. Magalona in Negros Occidental. The site in Talisay City still needs further inspection</p> <p>Feasibility reports and other supporting documents were completed for the three suitable sites including Carles, Concepcion, and Batad in</p>		

Project/Activity Title	Duration	Remarks																																																
<p>Iloilo Province. All reports and documents were submitted to and received by DA-BFAR 6.</p> <p>Apart from the legislated hatcheries, AQD is also extending help to DA-BFAR 6 in profiling abandoned and/or non-operational hatcheries in the island of Panay. Since 2020 to present, AQD monitors the progress of rehabilitation of selected hatcheries including one in Batan, Aklan and another in Concepcion, Iloilo located with a Northern Iloilo Polytechnic State College (NIPSC) Main Campus. Repairs and reconstruction are currently being done including the construction of phycology laboratory for the two areas.</p>																																																		
<p>Development of Cost-efficient Feeds</p> <p><i>Initial cost-and-return analysis.</i> Following the verification and field trial studies done since 2019, economic analysis of milkfish and tilapia was done to compare the cost-efficiency of AQD formulated diet versus commercial feed. The analysis yielded promising results for both species. For milkfish, the return of investment (ROI) when using the cost-efficient feeds is 87.47% per run (265.5% annually) compared to when using commercial feeds which resulted to -18.66% per run (-54.5% annually). The same with tilapia, the cost-efficient feeds developed by AQD gained an ROI of 9.34% per run (28% annually) while commercial feeds resulted in loss as it recorded an ROI of -12.49% per run (-37.5% annually).</p> <p><i>Continuation of field trials.</i> A verification run for the cost-efficient feeds was conducted in Muñoz, Nueva Ecija with a culture period of 90 days. As a result, AQD formulated feed has a higher total final average body weight of 411.53 kg compared to commercial feeds of 409.64 kg. Survival is also higher in tilapia fed with AQD formulated feeds (75.61%) compared to commercial feeds (55.17%). Full results in the figure below:</p> <table border="1"> <thead> <tr> <th></th> <th>SEAFDEC</th> <th>Commercial</th> <th></th> </tr> </thead> <tbody> <tr> <td>DOC</td> <td>90</td> <td>90</td> <td></td> </tr> <tr> <td>Initial ABW (g)</td> <td>27.1</td> <td>28.88</td> <td></td> </tr> <tr> <td>Initial Biomass (kg)</td> <td>12.20</td> <td>12.99</td> <td></td> </tr> <tr> <td>Final ABW (g)</td> <td>411.53</td> <td>409.64</td> <td>n.s.</td> </tr> <tr> <td>% Weight gain</td> <td>3296.90</td> <td>3072.78</td> <td>n.s.</td> </tr> <tr> <td>SGR</td> <td>3.91</td> <td>3.84</td> <td>n.s.</td> </tr> <tr> <td>Final Biomass (kg)</td> <td>139.92</td> <td>101.63</td> <td>n.s.</td> </tr> <tr> <td>Biomass Gain (kg)</td> <td>127.73</td> <td>88.64</td> <td>n.s.</td> </tr> <tr> <td>Total Feed Consumed (kg)</td> <td>199.92</td> <td>176.59</td> <td>n.s.</td> </tr> <tr> <td>FCR</td> <td>1.57</td> <td>2.00</td> <td>*</td> </tr> <tr> <td>Survival (%)</td> <td>75.61</td> <td>55.17</td> <td>*</td> </tr> </tbody> </table> <p>In September 2020, a verification run was conducted in AQD’s Dumangas Brackishwater Station in Iloilo with 90 days of culture. AQD formulated feed performed well compared to the commercial feed in terms of average body weight (267.18 g using AQD formulated feed and 249.5 g using commercial), weight gain (726.45%, AQD and 676.81%, commercial), total feed consumed (1,196 kg, AQD and 1,220 kg, commercial), and survival (84.28%, AQD and 81.8%, commercial). However, the commercial feed performed well in terms of feed conversion ratio as it yielded 1.27 and AQD formulated feed only 1.14.</p> <p>In December 2020, a milkfish verification run was conducted in Sto. Tomas, La Union with 120 days of culture. Using three replications, the result shows that milkfish fed with AQD formulated diet yielded</p>		SEAFDEC	Commercial		DOC	90	90		Initial ABW (g)	27.1	28.88		Initial Biomass (kg)	12.20	12.99		Final ABW (g)	411.53	409.64	n.s.	% Weight gain	3296.90	3072.78	n.s.	SGR	3.91	3.84	n.s.	Final Biomass (kg)	139.92	101.63	n.s.	Biomass Gain (kg)	127.73	88.64	n.s.	Total Feed Consumed (kg)	199.92	176.59	n.s.	FCR	1.57	2.00	*	Survival (%)	75.61	55.17	*	<p>2021</p>	
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Project/Activity Title	Duration	Remarks
<p>294.70 g average body weight and 968.7 kg final biomass. Meanwhile, milkfish fed with commercial diets gained an average body weight of 283.58 g and 928.21 kg final biomass. In terms of feeding, milkfish fed with AQD feed consumed a total of 2,450 kg with 2.24 feed conversion ratio. Meanwhile, fish fed with commercial diets consumed 2,306 kg of feed while 2.49 feed conversion ratio. Both yield good survival rate as AQD feeds resulted to 81.19% while commercial feeds got 80.86%.</p> <p>Verification runs continue in 2021. Trials are ongoing in Agoncillo, Batangas for milkfish and tilapia.</p>		
<p><i>Oplan Balik Sugpo</i></p> <p>To support this program, the shrimp hatchery complex within AQD's Tigbauan Main Station was equipped with its own spawner/broodstock facility for pathogen detection of newly arrived spawners. The shrimp hatchery often utilizes spawners from the wild wherein they are being processed and analyzed after spawning to determine the presence of pathogens. Wild spawners are acclimatized and disinfected prior to stocking and spawning. Newly spawned eggs are washed with UV sterilized seawater and disinfected to lessen pathogens that stick to the capsules of the eggs, thereby limiting pathogen ingestion by the nauplii when their mouths begin to open. Harvesting of the nauplii is based on the polymerase chain reaction (PCR) test results of the spent spawners. Nauplii from pathogen negative spawners are first harvested and counted, and stocked at the larval rearing tanks inside the Module 2 of the Shrimp Hatchery Complex (SHC) Nauplii from pathogen positive spawners are also harvested, counted and stocked at the Module 1 of the SHC. All nauplii are reared, fed, sampled, and monitored equally until they reached the postlarvae stage. To ensure good water quality for the stocks influent water undergoes a series of filtration system. Seawater from the source will first pass through the sand filter before it will reach the reservoir. From the reservoir, it will pass through the rapid sand filter, then through the UV sterilizer before it will reach the larval rearing tank with the filter bag. The newly installed shower room and waiting area inside the shrimp hatchery is a part of the strict implementation of biosecurity inside the hatchery premises.</p> <p>Results of three PCR tests conducted on the shrimp fry showed that all stocked nauplii from pathogen positive spawners turned out to be negative of any pathogen upon reaching the post larvae stage.</p> <p>Fry harvesting is done when they reached PL 15 to PL 20 The SHC has produced 2.2 million disease free and good quality fry in 2020 and already around 2.08 million for the first six months of 2021. Some of these were stocked on the brackishwater ponds of the Dumangas Brackishwater Station (DBS) for research and verification purposes, while others were sold to buyers who wished to purchase the fry.</p> <p>Last 1 June 2021, the high-quality and disease-free fry from SHC were stocked 8,139 m², 5,401 m², and 7,763 m². The harvest was done in October 2021 and the preparation of the harvest report is still ongoing.</p>		

Project/Activity Title	Duration	Remarks
<p><i>Accelerated Techno-Transfer</i></p> <p>Despite the emergence of COVID-19 pandemic which have brought several travel restrictions in every part of the country, AQD has still managed to conduct an on-site training course for the benefit of the fish farmers and growers in the area.</p> <p>An on-site training course on aquaculture conducted in San Antonio, Roxas City, Capiz in the Philippines from 23 to 24 February 2021. This was made possible through the coordination with DA-BFAR 6 and the Office of the Provincial Agriculture of Capiz, and private sectors. Thirty-four participants, mostly pond operators and growers of mangrove crab, milkfish, shrimp, and individuals coming from the business sector of Capiz attended the training course. The training module was composed of a series of lectures on mangrove crab and other special topics such as fish health, shrimp culture, and recirculating aquaculture system. A practical session on proper milkfish deboning was also conducted. Proper health protocols were strictly followed during the training.</p> <p>Two training courses are yet to be conducted in the last quarter of 2021. A training course on aquaculture technologies will be conducted for the fishers and locals of Kabasalan, Zamboanga Sibugay with focus on oyster, mangrove crab and grouper hatcheries A training course on mangrove crab culture will also be conducted for the fisherfolks of Bangsamoro Autonomous Region in Muslim Mindanao (BARMM). Due to travel restrictions and prohibitions on mass gatherings, lecturers may present virtually or <i>via</i> online Zoom meetings.</p>		
<p><i>Manpower Development</i></p> <p>In 2018, 16 graduates from different fisheries schools in Western Visayas were trained during the Training Course on Manpower Development for Shrimp, Marine Fish, and Tilapia Aquaculture to enhance their capabilities and broaden their perspectives and experiences in terms of aquaculture. They were trained on shrimp and multi species marine fish hatchery operations, and cage and brackishwater pond culture operations. After three months of intensive training, they were employed by AQD and were assigned to different areas and hatcheries at Tigbauan Main Station such as; Marine Fish Hatchery, Shrimp Hatchery, Mangrove Crab Hatchery, Integrated Finfish Broodstock and Hatchery Complex, Freshwater Hatchery, and Training and Information Division.</p> <p>Part of their duty to provide technical assistance in hatchery operations, manpower development personnel were deployed to jumpstart the operation of a milkfish hatchery in Sagnay, Camarines Sur. Last 23 June to 4 July 2021 they also trained staff on natural food production on a rehabilitated milkfish hatchery in Songculan, Batan, Aklan. In 5 July to 5 October 2021, another batch of trainees underwent intensive training courses related to fisheries and aquaculture. The four graduates from different fisheries schools in Mindanao and Bicol area were previously screened and interviewed by AQD. They were exposed and trained rigorously on shrimp, marine fish, mangrove crab, giant freshwater prawn oyster and seaweed culture as well as on the operations on brackishwater ponds and cages. The four trainees finished the program with a culminating activity.</p>		

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2022

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
<p><i>Fry Sufficiency Program</i></p> <p>AQD will continue the legislated hatchery program in partnership with DA-BFAR Regional Office 6, particularly the identification of the most suitable site for Talisay City in Negros Occidental and submission of the pending reports and supporting documents.</p> <p>As for the revival of abandoned hatcheries, AQD is currently monitoring these progresses and are also planning to conduct training on culturing of algae and natural food for hatchery personnel.</p>	2022	
<p><i>Development of Cost-efficient Feeds</i></p> <p>Following the successful verification studies which yielded promising initial economic analysis results, the program will move on to its next objectives which is technology transfer. This includes planning and conducting an aquaculture training course of prospective cooperators. With this, six cooperators will be selected to adopt the technology in private farms.</p>	2022	
<p><i>Oplan Balik Sugpo</i></p> <p>AQD will continue the production of high-quality <i>Penaeus monodon</i> postlarvae using enhanced biosecurity measures in the hatchery. The grow-out culture of the species in ponds using enhanced biosecurity measures and expand technology to collaborators, particularly to DA-BFAR and private farms for more field testing.</p>	2022	
<p><i>Accelerated Techno-transfer</i></p> <p>AQD will continue to coordinate with DA-BFAR to conduct training courses or techno-caravan nationwide, especially in areas where aquaculture industry has a potential. The team are also talking about diverting virtual meetings and discussions if travel and mass gatherings are still not permitted by the 2022.</p>	2022	
<p><i>Manpower Development</i></p> <p>This program will continue to develop a pool of technical experts to operate various aquaculture systems nationwide. The graduates of the Manpower Development Program (Session 2) will be assigned in different hatcheries of AQD's Tigbauan Main Station to further enhance their knowledge and skills on different commodities.</p>	2022	

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 these 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.

4.3 Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



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: 2022

Funding Sources: Training Department

Estimated Budget for 2022: 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 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 proposes and implements 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 2021

Project Activity Title	Duration	Remarks
1) <i>Promotion and Enhancement of SEAFDEC Visibility and Image</i> • None, because of COVID-19 pandemic		
2) <i>Production of Information Materials</i> • Twenty-four (24) articles of fisheries knowledge including Fishery Management, Fishing Technology, Combating IUU Fishing, Fisheries Resources, and relevant fishing activities (Annex 1) was presented and promoted to publish <i>via</i> social media as SEAFDEC Training Department Facebook page at https://web.facebook.com/SEAFDECTrainingDepartment and TD website at www.seafdec.or.th	Jan–Dec 2021	
• Thirteen (13) video clips (Annex 2) related to fisheries field was produced and published on TD Youtube channel at https://www.youtube.com/channel/UC-LMmTRM-mLV3FZScO1gUQg	Jan–Dec 2021	
3) <i>Management of Information System</i> • Updating of TD website (www.seafdec.or.th)	Jan–Dec 2021	
• Development and uploaded information of TD repository (http://repository.seafdec.or.th)	Jan–Dec 2021	
4) <i>Human capacity building</i>		
4.1) Human capacity building for national level		
• Internship Student of Silpakorn University	8 Dec 2020–31 Mar 2021	
• Internship Student of Kasetsart University	28 Jun – 28 Oct 2021	
• Online Special Lecture for Burapha University	13 and 20 Aug 2021	
• The Short-term Training Course for University Students on Ecosystem Approach to Fisheries Management	Postponed	COVID-19 pandemic
4.2) Tailor made training		
• EAFM for Mekong River Fisheries Community	Postponed	COVID-19 pandemic

Project Activity Title	Duration	Remarks
• Lead EAFM for Directors of Inland Fisheries Research and Development Center	Postponed	COVID-19 pandemic
• Hand-drawing Inland Fishing Gears	Postponed	COVID-19 pandemic
4.3) SEAFDEC Staff		
• Project Management	5 Mar 2021	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2022

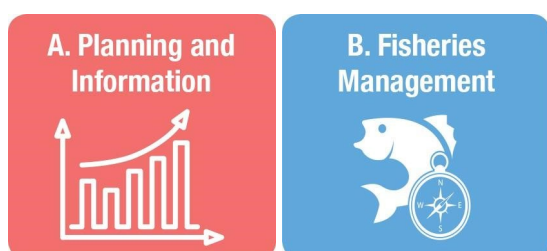
4.1 Planning of the Project Activities

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 and understanding for fishermen, stakeholders, and the public will be produced. The package will include books, brochures, video, 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 database, TD website and social media through cooperation with other Departments and partners to share information on fisheries issues and relevant issues.</p>	Jan–Dec	
<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

4.3 Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



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: 2021–2023

Funding Sources: Training Department

Estimated Budget for 2021: None

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 the 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 assistance, research and development, sea trials, and demonstrations and human resources development.

Project activities have been implemented since year 2014 with three (3) main components namely, 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 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 of 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 2021

Project/Activity Title	Progress	Remarks
Research and 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. Research and Development on the deck machineries (Power block) for better net hauling efficiency in purse seine. 1.2. Research and Development on energy utilization and improving fishing practices and reducing the negative impact from trawling	Ongoing Ongoing	
2. Research on coastal fishing activities, e.g., set net, bamboo stake trap, for specific purposes. 2.1. The Study on the Abandoned, Lost or otherwise Discarded Fishing Gear (ALDFG)	Cancelled	Activities are conducted under FAO ALDFG Project
3. Advanced technology to support fisheries research survey 3.1. Expert of SEAFDEC/TD is supporting DOF Thailand to improve the midwater trawl net for research vessel of the Department of Fisheries, Thailand 3.2. Due to the COVID-19 pandemic, the installation of Scientific Echo-sounder SIMRAD EK-80 onboard M.V. SEAFDEC 2 has been delayed. Therefore, the report of the installation is under preparation.	Ongoing Ongoing	Impacted by COVID-19 pandemic
4. Improve fishing technology reference and monitoring on fishing technology to support fisheries management of Thailand and other specific purpose 4.1. Training material production on fishing technology (Inland fishing gear drawing) for the fisheries officers of the Department of Fisheries, Thailand (in Thai) has been deferred due to COVID-19 pandemic 4.2. Five (5) video clips as training material for fishing technology for undergraduate student of Thailand have been launched to the SEAFDEC website. 4.3. Revision of the monograph of fishing gear of Thailand 4.4. Jointly research implemented by TD and DOF-Thailand and academic institutes The specific objectives are to apply innovative technology to obtain a pattern of light fishing boat setting in the sea. This activity has been cancelled due to COVID-19 pandemic.	Postponed to 2022 Finished drafting Finished drafting Ongoing	Impacted by COVID-19 pandemic
5. Monitoring on fishing technology to support fisheries management of Thailand and other specific purpose 5.1. Technical support of the national and local programs to enhance sustainable coastal management. SEAFDEC provided technical support to government agencies (Project Sustainable	Complete	

Project/Activity Title	Progress	Remarks
Development Strategy for the Seas of East Asia: SDS-SEA). Project has already completed. 5.2 Support fisheries resources management and Fisheries Improvement Programs of Thailand. SEAFDEC supported Fisheries Improvement Program (FIP) of Neritic Tuna of Thailand	Ongoing	Refer to the request by responsible agencies
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. Co-organization and facilitation on the presentation of the results of Collaborative Research Survey on Marine Fisheries Resources and Marine Environment in the Gulf of Thailand (carried out in 2018, Cambodia, Thailand, and Viet Nam) at the 7 th Marine Science Conference, Bangkok, Thailand has been cancelled due to COVID-19 pandemic 1.2. Facilitation on the production of the reference of Scombrid Fish Larvae and Juvenile in Southeast Asia. The activity is combined with the Project Sustainable utilization of fisheries resource and resources enhancement. 1.3. Study on the type and amount of debris in the surface layer of Chao Phraya River that flows into the Gulf of Thailand is ongoing. The activity is combined with the Project Sustainable utilization of fisheries resource and resources enhancement.	Ongoing Ongoing Ongoing	Impacted by COVID-19 pandemic
2. Research and study on impact from fishing activities to social well-being (e.g., social, economic, etc.) 2.1. Application of Technology to support fisheries management in Thailand is ongoing. Promotion of fish handling technique and labor-saving equipment for fisheries at Baan Nai Nang, Krabi province. TD built awareness on the importance of the hygiene of catch after being harvested and during the catch sorting to fishers and community members. 2.2. Application of Technology to improvement the market access in small-scale fisheries in Thailand has been cancelled due to COVID-19 pandemic.	Ongoing Ongoing	Impacted by COVID 19 pandemic
Database for fisheries management		
1. Database for fisheries management 1.1. Maintenance of database system for fisheries resources survey	Ongoing	
1.2. Development of a database system to support fisheries socio-economic and small-scale fisheries study is under proposal development and gathering comments from the relevant experts	Ongoing	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2022

4.1 Planning of the Project Activities

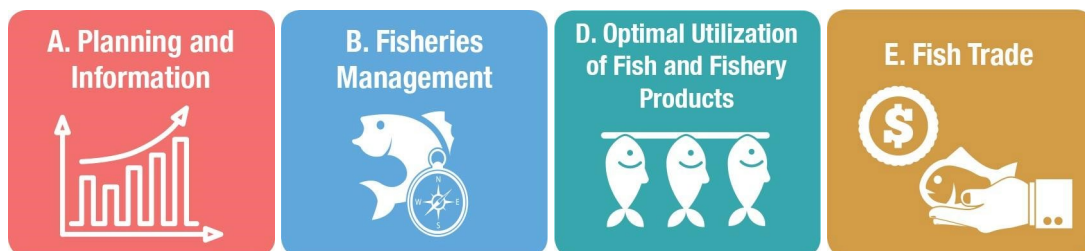
Project/Activity Title	Duration	Remarks
Promotion of appropriate technologies and practices of fishing and marine engineering		
1. Study on improvement of fishing technology to enhance sustainable marine fisheries resource utilization Activities are not proposed for year 2022	-	
2. Research on coastal fishing activities, e.g., set net, bamboo stake trap, for specific purposes. Activities are not proposed for year 2022	-	
3. Advanced technology to support fisheries research survey 3.1 IEC material on the scientific echo sounder installation on M.V. SEAFDEC 2	Jan–Jun	

Project/Activity Title	Duration	Remarks
4. Improve fishing technology reference and monitoring on fishing technology to support fisheries management of Thailand and other specific purpose <ul style="list-style-type: none"> 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: Trawl (in Thai)) 4.3. Updated monograph of fishing gear of Thailand (Producing the catalogue of the bottom trawl net designs of Thailand) 	Jan–Dec	
5. Monitoring on fishing technology to support fisheries management of Thailand and other specific purpose <ul style="list-style-type: none"> 5.1. Support fisheries resources management and Fisheries Improvement Programs (FIP) of Thailand 	Jan–Dec	Refer to the request by responsible agencies
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 <ul style="list-style-type: none"> 1.1. 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) 1.2. 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) 1.3. Comparison fish larvae density pre and post FADs installation 	Jan–Dec	1.2) Twelve (12) months of debris data expected to complete analysis in 2022 1.3) Larvae identification expected to complete in 2022
2. Research and study on impact from fishing activities to social well-being (e.g., social, economic, etc.) <ul style="list-style-type: none"> 2.1. Application of Technology to support fisheries management 2.2. Investigate the case studies to improve the market access in small-scale fisheries in Thailand 	Jan–Dec	
Database for fisheries management		
1. Database for fisheries management <ul style="list-style-type: none"> 1.1. Maintenance of database system for fisheries resources survey is ongoing 1.2. Development of a database system to support fisheries socio-economic and small-scale fisheries study is under proposal development and gathering comments from the relevant experts 	Jan–Dec	

4.2 Expected Outcomes/Outputs

1. Study report on comparison of fish larvae density pre and post FADs installation
2. Video or slide introduction of the SIMRAD EK80 for the Basic Operation on M.V. SEAFDEC 2
3. Training material for fishing technology subject for staff of the Department of Fisheries and undergraduate students of Thailand
4. Completion of revised catalogue of the bottom trawl net designs of Thailand
5. Guidebook of Scombrid Fish Larvae and Juvenile in Southeast Asia
6. Study report on 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
7. Article on the case studies to improve the market access in small-scale fisheries in Thailand
8. Updated database of the fisheries resources survey conducted by SEAFDEC research vessels
9. Database to support SEAFDEC projects of the fisheries socio-economic and small-scale fisheries

4.3 Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



PROJECT DOCUMENT

Program Categories: Departmental Programs
Project Title: USAID Sustainable Fish Asia Local Capacity Development Activity
Responsible Department: Training Department
Total Duration: 1 October 2020–24 August 2022
Funding Sources: USAID Regional Development Mission Asia
Estimated Budget for 2021: USD 32,488 (Capacity Strengthening Initiative Subaward)

1. INTRODUCTION

The Asia-Pacific region has the highest marine biodiversity on the planet and faces serious threats from climate change and unsustainable fishing practices. In response to these threats, USAID Regional Development Mission Asia (RDMA) is supporting regional organizations working to protect biodiversity from illegal, unreported, and unregulated (IUU) fishing and implement sustainable fisheries management and practices. While individual countries have made progress to preserve biodiversity and combat unsustainable fishing practices, collaboration and enforcing global and regional standards across borders remains a challenge.

The Sustainable Fish Asia (SUFIA) Local Capacity Development (LCD) Activity, a two-year USAID-funded project implemented by RTI International, is designed as a contributing part of USAID RDMA's larger SUFIA Project. The larger SUFIA Project, through multiple activities, aims to improve the management of marine biodiversity and fisheries resources in the Indo-Pacific region by reducing unsustainable and IUU fishing.

SUFIA LCD Activity is providing technical support to two regional fishery support organizations: the Southeast Asian Fisheries Development Center (SEAFDEC) and the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF) to strengthen their institutional capacity to become leaders for driving the anti-IUU fishing agenda. Strengthening these organizations, as well as understanding and effectively engaging the private sector – aims to reduce IUU fishing and build networks of government, private sector, and civil society entities working to preserve marine biodiversity in the Asia-Pacific region. The SUFIA LCD Activity geographic scope is Southeast Asia and the Pacific.

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

The USAID SUFIA Local Capacity Development Activity's main goal is to successfully provide services to ensure organizational support, institutional capacity building, co-creation, and private sector engagement activities to regional fisheries organizations, namely SEAFDEC/Training Department (TD) and CTI-CFF. The main objectives of the SUFIA LCD Activity are to: (1) conduct organizational capacity assessments and provide capacity development services for SEAFDEC/TD and CTI-CFF (Task 1), and (2) lead a private sector landscape assessment and brokering investment opportunities for fishing industry businesses to invest in our partner organizations and sustainable fishing in the Asia-Pacific region (Task 2).

2.2 Outcomes and Expected Outputs

The SUFIA LCD Activity expected outcomes are to strengthen SEAFDEC's leadership and capacity as a key regional institution for improved fisheries management, improve/strengthen regional collaboration and multi-stakeholder platforms for improved management, and increase the private sector's engagements in sustainable fishing practices, including fair labor.

2.3 Project Description/Framework for Activities with SEAFDEC

The project would include the following activities during its implementation period:

Task 1:

Activity 1: In partnership with SEAFDEC and other stakeholders, conduct an initial organizational capacity assessment of SEAFDEC/TD 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/TD

Activity 2: The development of SEAFDEC/TD’s Capacity Development Action Plan (C-DAP)

Activity 3: The evaluation of SEAFDEC/TD’s capacity to fully develop activities with milestones. The identification of support needed, and gaps identified in the Capacity Development Action Plan (C-DAP), with notes on improvements and continued gaps.

Activity 4: Re-assessment of support, and the final report of SEAFDEC/TD’s Organizational Capacity Development Plan

Activity 5: Implementation of capacity development activities inclusive of gender equality and social inclusion (GESI) considerations

Activity 6: Facilitation of the Co-Creation process for Public International Organization (PIO) Grant Proposal Development

Task 2:

Activity 1: Conduct a Private Sector Landscape Assessment (PSLA) Survey and develop a PSLA Report

Activity 2: Guide SEAFDEC to develop concept notes for private sector engagement

Cross-cutting:

Development of Communication and Outreach Products generated from the above-mentioned tasks.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2021

Project/Activity Title	Duration	Remarks
Task 1: Initiated the SEAFDEC Organizational Capacity Assessment framework and completed the design of the Participatory Local Organizational Capacity Assessment (PLOCA) electronic survey	October–December 2020	
Task 2: Completed initial consultations with SEAFDEC regarding private sector engagement activities and the PSLA Inception Report, implemented the ‘Private Sector Landscape Assessment Survey’, and visited Baan Nai Nang Fishing Village with SEAFDEC TD	October–December 2020	
Task 1: SEAFDEC Organizational Capacity Assessments <ul style="list-style-type: none"> • Completion of the PLOCA e-survey and other organizational capacity assessments (Non-US Organization Pre-Award Survey, Organizational Performance Index, Organizational Sustainability Framework, Gender Equality and Social Inclusion Analysis) • Plenary presentation to SEAFDEC and review of the PLOCA Report • Initiating Participatory Capacity Development Action Plan (C-DAP) 	January–March 2021	
Task 2: Completion of PSLA survey and On-going Consultations with Key Stakeholders regarding potential private sector engagement opportunities <ul style="list-style-type: none"> • Presentation of PSLA survey’s result and analysis • Completed In-Briefing Sessions for the Private Sector Engagement Activities • On-going research for the PSLA report 	January–March 2021	
Task 1: SEAFDEC Organizational Capacity Assessment completed <ul style="list-style-type: none"> • Developed the C-DAP plan together with SEAFDEC/TD • SEAFDEC Capacity Strengthening Initiative Subaward Process initiated and submitted to SUFIA LCDA, which will focus on strengthening of compliance systems (Administration, Finance, and Human Resources) within Secretariat and Training 	April–June 2021	

Project/Activity Title	Duration	Remarks
<p>Department for readiness to receive direct grant funding from USAID</p> <ul style="list-style-type: none"> • Preparations for the Co-Creation process for the PIO grant for SEAFDEC • Based on the organizational capacity assessment, proposed to USAID RDMA through the Department of Interior Technical Assistance the required technical expertise for SEAFDEC relevant to Program Management/Coordination and Private Sector Engagement for their PIO grant 		
<p>Task 2: Development of Private Sector Engagement Concept Notes</p> <p>Together with SEAFDEC/TD, we developed 5 different concept notes for possible collaboration with the private sector:</p> <ol style="list-style-type: none"> 1. Baan Nai Nang Ecosystem Approach to Fisheries Management Support Project 2. Mangrove Crab Bank Pilot 3. Comparative Study to Reduce Trawler Gear Negative Impacts 4. Sandfish and Sea Cucumber Stock Assessment 5. Automatic Catch-Data Software using Artificial Intelligence (AI) 	April–June 2021	
<p>Task 1: SEAFDEC Capacity Development Action Plan (C-DAP) inclusive of GESI and Co-Creation implementation</p> <ol style="list-style-type: none"> 1. Facilitate the subcontracting process and support SEAFDEC in the implementation of the Capacity Strengthening Initiative to address C-DAP priorities for compliance, performance and viability of SEAFDEC. 2. Implement and deliver capacity building activities and services under C-DAP inclusive of gender consideration (GIDAP) to SEAFDEC and other stakeholders, <i>i.e.</i>, training workshops and webinars, development of training modules, communications products and field handbooks/manuals. This will include the participation of SEAFDEC Technical Departments and Member Countries. 3. Facilitate the co-creation with SEAFDEC to develop a proposal for the PIO Grant for direct funding from USAID 	July–September 2021	
<p>Task 2:</p> <ul style="list-style-type: none"> • Disburse the private sector concept notes to various companies • Conducted meetings to collect companies' feedback and gauge their interest to potentially collaborate with SEAFDEC/TD • Conducted meetings with SEAFDEC/TD team to update regarding the companies' feedback and their interest in specific concept note • SUFIA continues to facilitate 'brokering' to develop a formal partnership with a company for the concept notes during this quarter and exploring additional opportunities <i>e.g.</i>, Esri ArcGIS training 	July–September 2021	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2022

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Task 1 Activities: Organizational Capacity Assessment and Development Services		
Administer and facilitate the implementation of the Capacity Strengthening Initiative subaward to SEAFDEC to fund their self-defined capacity development needs (as per C-DAP priorities).	September 2021– May 2022	
Support and provide services for the implementation of the SEAFDEC C-DAP inclusive of GESI (GIDAP), to meet their organizational capacity improvement targets. This will include the participation of SEAFDEC Technical Departments and Member Countries.	September 2021– June 2022	

Project/Activity Title	Duration	Remarks
Conduct endpoint Organizational Capacity Assessments for SEAFDEC using various OCA tools including NUPAS to measure progress along the three areas of capacity development: (1) compliance, (2) performance, and (3) viability.	May–June 2022	
Facilitate a co-creation process with SEAFDEC to develop a Public International Organization (PIO) grant proposal for submission to USAID RDMA.	September–December 2021	
In collaboration with SEAFDEC, organize regional events on major technical topics and/or emerging issues inclusive of GESI, and/or develop a multi-stakeholder platform for cooperative action plans to increase adoption of sustainable fisheries practices or improve regional collaboration. This will include the participation of SEAFDEC Technical Departments and Member Countries.	September 2021–June 2022	
Conduct Partner Understanding, Learning, and Satisfaction Evaluation (PULSE) surveys among SEAFDEC staff and Member Countries to determine the satisfaction level of SEAFDEC with RTI services and other needs.	December 2021–June 2022	
<i>Task 2 Activities: Development of Private Sector Engagement Activities</i>		
Develop formal private sector partnerships, including securing financial investments, for the private sector engagement activities (from the development concept notes) for SEAFDEC.	September 2021 – June 2022	
In collaboration with SEAFDEC, develop communication or learning products for the private sector (based on the partnership or activities in the first bullet).	October 2021 – June 2022	
Provide SEAFDEC with advisory and capacity-building services specifically for how to engage the private sector for the design and implementation of the PIO grant.	October 2021 – June 2022	
SUFIA LCD is divided into two main tasks; the key activities for October 2021 – August 2022 are: Support recruitment, hire, and early training and orientation of new SEAFDEC staff hired through the U.S. Department of the Interior (DOI) human resources grant (*dependent on the award and SEAFDEC's approval).	October 2021 – June 2022 <i>(*Dependent on DOI Funding and SEAFDEC's approval)</i>	
Organize discussion and coaching sessions, coupled with a PSE Resource Package and knowledge transfer session to SEAFDEC before the end of SUFIA.	June 2022	
<i>Project Management Activities</i>		
In collaboration with SEAFDEC, develop project communications and legacy products to document processes, success stories, and lessons learned which could be used by SEAFDEC and Member Countries.	October 2021–July 2022	
SUFIA LCD Activity Close Out Event	August 2022	

4.2 Expected Outcomes/Outputs

Task 1: Activities: Organizational Capacity Assessment and Development Services

- Award and administer Capacity Strengthening Initiative subaward to SEAFDEC.
- Successful implementation of the SEAFDEC C-DAP, inclusive of GESI (GIDAP) to strengthen organizational compliance, performance and viability.
- Enable SEAFDEC to satisfy the Non-U.S. Organization Pre-Award Survey (NUPAS) audits to pre-certify SEAFDEC for direct USAID funding.
- Completion of the co-creation process and enabling SEAFDEC to receive the PIO Grant directly from USAID RDMA.
- Successful communication and knowledge products development, regional events/multi-stakeholder platform events and cooperative action plans in collaboration with SEAFDEC.

Task 2: Activities: Development of Private Sector Engagement Activities

- Secure formal collaboration and financial investments from the private sector for SEAFDEC's concept notes for private sector engagement activities (e.g., can be collaboration on specific activities or provision of funds, in-kind goods, or advisory services, etc.)



- Successful development of communication or learning products for the private sector (based on the private sector partnerships from the previous bullet point).
- Completion of a session on 'private sector engagement' skills for SEAFDEC staff for the PIO grant.
- If DOI funds are provided, the recruitment and training of SEAFDEC's staff to support private sector engagement work.
- Completion of coaching/knowledge transfer session and a resource package for SEAFDEC staff.

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: 2020-2021

Funding Sources: The Australian Water Partnership (AWP)

Estimated Budget for 2022: -

1. INTRODUCTION

Massive infrastructure development is the main focus of the Indonesian government. Not only expanding road connectivity through highway development in Java and Sumatra but also some intensive developments of water infrastructures are the main priorities of the government. In total, more than three thousand dams and weirs have been built. The Indonesian government continues to construct 65 large weirs between 2019 and 2024 through the Ministry of Public Work and Housing. This development has increased economic growth, poverty alleviation, crop productivity, water availability, and electricity. However, these water infrastructures can contribute to the depletion of Indonesian inland fish because fish migration routes are interrupted by barriers.

The weir is the main structure in irrigation and impacts the performance of the irrigation system. Construction of weirs in Indonesia is also aimed at changing the amount and flow of water in rivers for agricultural irrigation, although recently weirs are also being used for flood prevention. A proper irrigation system that secures water for year round is needed. With a dam, during the rainy season, water can be retained in the catchment area and will be stored in the dry season to be utilized for irrigation of agricultural land.

Mitigation strategies are required to maintain the sustainability of inland fisheries. There are some problems associated with dams/weirs construction including blocking connectivity of fish, sedimentation in still water, water quality reduction and nutrient, habitat alteration, and diversion to the irrigation system. One of the strategies adopted to address the blocking of fish migration connectivity is the construction of fish passes, also known as fishway or fish ladder or fish passage depending on the design, in dams to reconnect the upstream and downstream waters of rivers. To overcome those problems, the fish passages can be used to reconnect upstream and downstream rivers. Fish passage facilitates fish to migrate from downstream to upstream or otherwise. Fish that swim from downstream can enter the fishway inlet that is located downstream of the dam. The knowledge of fish passage construction has been used globally to maintain river connectivity. However, the appropriate design of fish passages must be based on the local fish community.

The problem in the project is the awareness to build water connectivity in water construction to protect biodiversity and lack of knowledge on the appropriate fishway design which addressed local fishes and specific hydrology. SEAFDEC/IFRDMD commits to lead and develop a national fishway blueprint and benchmark in Indonesia because fish-friendly water construction is very important for sustainable biodiversity. SEAFDEC/IFRDMD aims at integrating all initiatives in the ground, raising awareness, increasing human resources through a series of workshops and training to establish blueprint/technical guidelines for lesson learn in hoping that fishway will be installed in weirs/dams development through Indonesia.

It is necessary for Indonesia to establish some policies that could regulate and properly manage the generation of water supply. Such regulations are important considering that there are many uses of inland waters and there are significant economic commodities that could be derived from the inland water resources. Without proper management, the country might gradually lose such resources. Moreover, the connectivity of rivers should be maintained to protect, conserve, and secure biodiversity in inland water resources.

2. PROJECT

2.1 Goal /Overall Objectives

1. Engage project staff as indicated in the project head agreement; including employing a project coordination officer
2. Organize a preliminary consultation workshop involving both MMAF and Public Works staff in both Jakarta and Palembang
3. Organize logistics for an irrigation biodiversity masterclass to be held in Palembang
4. Contribute to the development a biodiversity master plan for Komering Irrigation Upgrade project
5. Participate in a final project collaboration workshop with key Mekong and Myanmar staff

2.2 Outcomes and Expected Outputs

1. Blueprint/national technical guideline
2. Increasing human resources (capacity building)
3. Engagement from stakeholders to protect biodiversity
4. National Policy related sustainable irrigation
5. Joining forum exchange between Indonesia and Myanmar

2.3 Project Description/Framework

Activity 1: Conduct capacity development and training program targeting local leaders and decision-makers and utilizing approaches and techniques derived from the latest innovations

Activity 2: Meet stakeholder to gain high level support and commitment for future irrigation works

Activity 3: Conduct research, development and technology transfer in Komering Irrigation Upgrade project

Activity 4: Publish blueprint fishway/technical guideline as a national guideline

Activity 5: Conduct national level masterclass in Palembang

Activity 6: Conduct mid-level government meeting in Jakarta

Activity 7: Share experiences/knowledge between leaders from each Mekong country with Myanmar and Indonesia

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2021

Project/Activity Title	Duration	Remarks
1. Workshop to build awareness and work collaboration Workshop for Ministry of Marine Affairs and Fisheries & Ministry of Public Works and Housing Water Resources Management to Secure Aquatic Biodiversity for Sustainable Development	October 5 th , 2020	Chief of IFRDMD
2. Training for Research Assistant AWP Project This training aims to provide knowledge for research assistants how to conduct social research and understand the ethics of social research. Before conducting social research, research assistants got training from Charles Sturt University Australia.	February, 22-24, 2021	Chief of IFRDMD
3. Social Research in Perjaya Weir The survey was conducted in Martapura, Oku Timur, South Sumatra where Perjaya Weir is located. We conduct social research in order to get data from local communities that live around Perjaya Weir. The result from the research will be used for develop blueprint fishway.	March, 3-14 2021	Chief of IFRDMD
4. Meeting with stakeholders, agencies and NGOs Meeting with BBWS VIII Sumatera, Fishery Department of South Sumatera Province, Fishery Department of OKU Timur Regency, Water Resource Management West Java Province, Marine and Fishery Department of Sukabumi Regency, IFISH-FAO to open the opportunity to work collaboratively in developing awareness of fishway and biodiversity	Jan-Dec 2021	Chief of IFRDMD

4. PROJECT IN RELEVANCE TO THE PLAN OF ACTION ON SUSTAINABLE FISHERIES FOR FOOD SECURITY FOR THE ASEAN REGION TOWARDS 2030



**PROJECT DOCUMENT
ACHIEVEMENTS FOR THE YEAR 2021
AND
PROPOSED ACTIVITY FOR THE YEAR 2022**

				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 2022:	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 the 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 the government to government capacity building for 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 IFRoDI to conduct all site surveys and construction activities.
- 4.2 In collaboration with DOI and IFRoDI 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 IFRoDI, 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 2021

3.1 Activities Achievements in the Year 2021

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>VIET NAM The Directorate of Fisheries (D-Fish) requested and authorize the Dac Lac Department of Agriculture & Rural Development (DARD) to design and implement the fishway construction project. The vertical slot fishway was selected as a demonstration site fishway construction at Ea Tul weir, Ban Don District, Dac Lac Province, Viet Nam. The review of fishway design by DARD in consultant with USAID/DOI fishway engineers was submitted to the DACLAC Provincial Committee for approval.</p>	Jan–Dec. 2021	



Project/Activity Title	Duration	Remarks
<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 has 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>The Dac La c Provincial DARD organized 2 meetings with the local government, other related authorities, and residents to have their agreement of executing the construction at the site and starting for construction site ground clearance on 1st June 2021. Around 50% of construction work are complete in mid-September 2021.</p> <p>THAILAND The U.S. Department of Interior, International Technical Assistance Program has submitted the transfer letter of all ownership rights for the fish pass to Sangkom Subdistrict Municipality on 22 June 2021.</p>	<p>22 June 2021</p>	
<p>Activity 3: Administration and Coordination Sub-activity 3.2 Document project activities in SEAFDEC publications and other media.</p> <p>The special report on Promoting the Installation of Fish Passage in Potential Barriers in the Lower Mekong River Basin was public on the SEAFDEC Fish for the People Volume 19, Number 2:2021 pages 38-43.</p>	<p>Sep. 2021</p>	
<p>Activity 4: Design and Construct Three (3) Additional Demonstration Fish Pass in Cambodia Activity 4.1 Coordinate the field fish passage in Cambodia. The main activities implemented in 2020 and early 2021 to ensure the INITIATIVE Workplan in Cambodia is smoothly organized as required by the designing team, IFRDI organized the photographic surveying at the selected sites in January-February 2021 leading by a local survey team with technical indications from the Australian Fish Passage Service.</p> <p>The examined the bidding submission for 2 fishways construction, continue construction activities, referred to draft a letter of agreement (LoA) for each construction site.</p> <p>There are composed of 5 contractors who participated in competition consists of the contractor company are name as follow: Bakhen architects, Darith construction. Tiang & hong construction, S.A.T construction, Butra construction team. With objective and aim to:</p> <p>Results of the fish barrier examination. DARITH CONSTRUCTION was selected to construct the 2 field fishways construction with the budget amounting to 67,000.00 for the construction at Srei Snom Spillway Fishway, Siem Reap Province, and 69,000.00 USD for the construction at Sambor Fishway, Siem Reap Province, based on the given cost is lower than other applicants; with appropriate teamwork and fully required equipment listing. With the work plan of starting at 05-Jun-21 and finish on Jun-Aug 2021.</p>	<p>Jan. – Feb 2021</p> <p>May 2021</p> <p>25 May 2021</p>	

Project/Activity Title	Duration	Remarks
Activity 2: Construct (3) Demonstration fish pass in Cambodia, 1. Demonstration fishway construction at Sambor Dam of Stung Sreng, border of Siem Reap-Banteay Meanchey Province. 2. fishway construction at Srei Snom Spillway, Stung Sreng watershed, Siem Reap Province, And the report of the third fishway surveys for the photographic, Profile, and contour line of Makak dam used to support 3 rd fishway design at Makak Spillway	Jun-Aug 2021 30 July 2021	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2022

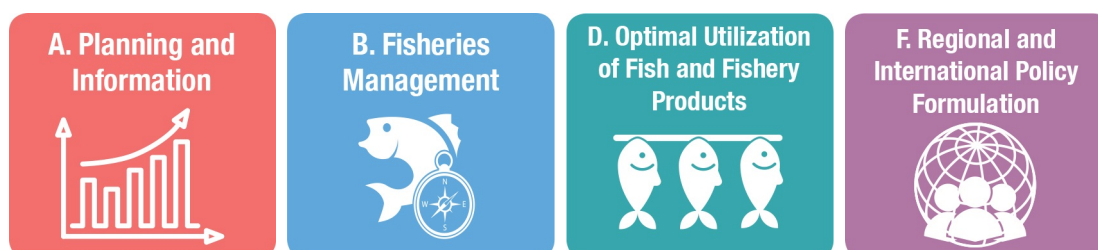
4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Request for a no-cost extension of Amendment 3 to Annex 2 of the MOU till 30 September 2022	1-Year	

4.2 Expected Outcomes/Outputs of Activity for the Year 2021

Proposed Activity	Outputs of Activity
Activity 2: Construct One (1) Demonstration fish pass in Viet Nam and One (3) Additional demonstration fish pass in Cambodia	Complete a demonstration fish passage construction in Viet Nam.
Activity 4: Design and Construct Three (3) Additional Demonstration Fish Pass in Cambodia	Complete additional three (3) demonstration fish pass around Tonlesab Great Lake, Cambodia

4.3 Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2021
AND
PROPOSED ACTIVITY FOR YEAR 2022**

			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:	2020–2022
Lead Department:	Training Department	Lead Country:	Thailand
Donor/Sponsor:	FAO/HQ	Total Donor Budget:	USD 98,000
Project Partner:	None	Budget for 2022:	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 working together. Thus, the SSF (Small-scale Fisheries) 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.

This project aims to improve and strengthen gender dimension in selected small-scale fisheries and aquaculture values chain in Southeast Asia. The project is composed of four (4) main activities; 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, 3) Data validation workshops, preparation of a report on gender analysis and communication product and 4) Regional Workshop. The project sites compose of four (4) countries, namely; Lao PDR, Myanmar, Philippines, and Thailand. To initiate the data collecting, it needs to strengthen the capacities of gender concept and gender analysis to staff who work for fisheries management and development project, therefore the first activity aims to preparing for data collection training workshop for the staff to understand clearly of the gender concept and know how to collect data including the gender context in fishing communities.

This project will be conducted in small-scale fishing communities in the Southeast Asian countries where comprehensive gender studies are needed, specifically in Myanmar, Lao PDR, the Philippines, and Thailand. Therefore, this project will include the marine and inland waters where the project sites are categorized as A) marine capture fisheries in the Philippines, B) mariculture in Thailand, C) inland aquaculture in Lao PDR, and D) inland capture fisheries in Myanmar.

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) main 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 2021

3.1 Activities Achievements in the Year 2021

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>Myanmar: There were 13 fishery officers (10 females and 3 males) participated in this training. The training was separated into two sessions. The online lecture session facilitated by SEAFDEC was organized in Nay Pyi Taw. The training introduced the gender concept and gender analysis in fisheries and aquaculture through the planning for data collection on gender dimension in the value chain of inland fisheries for Kyauktan, Yangon Region, Myanmar as implementation site. Moreover, the questionnaire on gender analysis was also developed for a practical session at an implementation site in Yangon for the last day of this training. Main achievements: 1) 13 fisheries officers as interviewer and 2) questionnaire on gender analysis apply in the pilot site</p> <p>Philippines: The training was organized face to face in Infanta, Quezon, the Philippines and SEAFDEC/TD staff attended through the online platform from Thailand. There were 17 participants (12 females and 5 males). The training aimed to introduce the gender in development concept and process of gender analysis through development of the questionnaire form for data collecting. Moreover, the training provided an opportunity for participants to conduct the presurvey at the project site for testing the questionnaire form that was developed by participants. The output of questionnaire development will be proceeded to the next activities on data collection for the project on gender dimension in the value chain of small-scale marine fisheries in Infanta, Quezon, the Philippines. Main achievements: 1) 17 fisheries officers as interviewer and 2) questionnaire on gender analysis apply in the pilot site</p>	<p>18–20 May 2021</p> <p>23–25 June 2021</p>	<p>Done</p> <p>Done</p>

Project/Activity Title	Duration	Remarks
<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>Lao PDR: The enumerators of the data collection were composed of 5 Department of Livestock and Fisheries (DLF) officers (2 women and 3 men) who had been trained on gender concept and gender analysis. Pakxan District of Bolikhamxay Province was selected as a site study which comprised three (3) villages namely, Pakxan, Pak Puenk, and Sivilay. There were 26 respondents interviewed by a semi-structured questionnaire. Main achievement was twenty fours (26) questionnaires</p> <p>Myanmar: The data on gender dimension in the value chain of small-scale inland fisheries in Kyauktan, Yangon Region, Myanmar were collected by four (4) enumerators from DOF, Myanmar who have been trained on gender concept and gender analysis. There were 40 respondents (12 women and 28 men) interviewed by a semi-structured questionnaire. Main achievement is forty (40) questionnaires</p> <p>Philippines: Due to the COVID-19 outbreak in the Philippines in July to August 2021, the COVID-19 prevention measures and quarantine policies are still strictly enforced by the local community. Therefore, BFAR requested for the postponement of the activities or extension of the project duration.</p>	<p>25–29 January 2021</p> <p>24–28 May 2021</p> <p>Sept–Nov 2021</p>	<p>Done</p> <p>Done</p> <p>Ongoing</p>
<p>Activity 3: Data validation workshops to recheck and return the data to all stakeholders</p> <p>Lao PDR: The data validation workshop on gender dimension in the value chain of small-scale in land aquaculture in Bolikhamxay province, Lao PDR was conducted to recheck and return the result from data collection on roles of women and men in inland aquaculture of Lao PDR to local stakeholders. The workshop was attended by 36 participants, which was composed of 9 and 27 women and men respectively. Main achievements: Draft report of gender dimension in Lao PDR</p> <p>Myanmar: The participants of the workshop were composed of 54 people (16 women and 38 men). The comment and recommendation from the workshop will be used to complete the report on gender dimension in the value chain of small-scale fisheries and aquaculture in Southeast Asia. Main achievements: Draft report of gender dimension in Myanmar</p> <p>Philippines: Due to the COVID-19 outbreak in the Philippines in July to August 2021, the COVID-19 prevention measures and quarantine policies are still strictly enforced by the local community. Therefore, BFAR requested for the postponement of the activities or extension of the project duration.</p>	<p>22 March 2021</p> <p>29 June 2021</p> <p>Sept–Nov 2021</p>	<p>Done</p> <p>Done</p> <p>Ongoing</p>

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2022

4.1. Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Activity 1: Preparation of report on gender analysis and communication product	Jan to April 2022	Ongoing
Activity 2: Regional workshop to share the lesson learned to all SEAFDEC Member Countries	Jan to May 2022	Ongoing

4.2. Expected Outcomes/Outputs of Activity for the Year 2022

Proposed Activity	Outputs of Activity
Activity 1: Preparation of report on gender analysis and communication product	<ul style="list-style-type: none"> • Report of gender study for all study site • One communication product to disseminate information of gender in fisheries
Activity 2: Regional workshop to share the lesson learned to all SEAFDEC Member Countries	Report of regional workshop to share the lesson learned to all SEAFDEC Member Countries

4.3. Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



**PROJECT DOCUMENT
ACHIEVEMENTS FOR YEAR 2021
AND
PROPOSED ACTIVITY FOR YEAR 2022**

			Project id: 202001017
Program Category:	Other Program		
Project Title:	Implementing the Strategic Action Programme for the South China Sea and Gulf of Thailand		
Program Strategy No.	I	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 2022:	USD 4.219 million (USD 1.618 million, SEAFDEC)
Project Leader:	Virginie Hart	Project Participating Countries:	Cambodia, China, Indonesia, Philippines, Thailand and Viet Nam

1. INTRODUCTION/BACKGROUND

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 cost actions for coastal habitats, land-based pollution management, and the over-exploitation of fish stocks in the South China Sea.

2. PROJECT

2.1 Goal/Overall Objectives

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.” The Project document is available in the Project Website <https://scssap.org/project-document-01>.

The overall goals of this project are:

- to maintain an environment at the regional level, in which collaboration and partnership in addressing environmental problems of the South China Sea, between all stakeholders, and at all levels is fostered and encouraged;
- to enhance the capacity of the participating governments to integrate environmental considerations into national development planning;
- to strengthen and expand the network of scientists, government officials and civil society established under the UNEP/GEF SCS Project.

The medium term objective of the project is to assist the governments of the participating countries in meeting the targets of the approved Strategic Action Programme through the provision of technical assistance as required in implementing national activities in support of the SAP; and the provision of strong regional coordination of the process of SAP implementation.

2.2 Expected Outcomes and Outputs:

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

2.3 Project Description/Framework

Project objective and Outcomes	Indicator	Baseline level	End-of-project target
Objective To assist countries in meeting the targets of the approved Strategic Action Programme (SAP) for the marine			

Project objective and Outcomes	Indicator	Baseline level	End-of-project target
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			
Component 1. Reducing habitat degradation and loss <i>via</i> national and local reforms to achieve Strategic Action Programme targets for coastal habitat management in the South China Sea			
Outcome 1.1 Appropriate forms of sustainable management established for 860,000 ha of mangrove	Total area (ha) of mangrove designated as national park or protected area	14 percent (246,122 ha) of mangrove area in SCS presently managed as national park or protected area 13 percent (225,512 ha) of mangrove area in SCS presently managed as non-conversion, extractive resource use areas (fish, crabs etc.)	1.1.1 Declaration of 57,400 ha of mangrove as National Parks and Protected Areas
	Status of endorsement of management plans Total area (ha) of mangrove under management plan for sustainable use	Legal frameworks to enable sustainable management of 56 percent of mangrove area in the SCS.	1.1.2 Designation and plans for the management of 166,600 ha of mangrove as non-conversion, sustainable use areas
	Total area (ha) of presently unmanaged mangrove for which regulations/ordinances are adopted to enable sustainable management	Decadal rate of loss of total mangrove area from SCS is estimated at 16 percent	1.1.3 Reform of laws and regulations for the sustainable use of 602,800 ha of mangrove forest
	Total area (ha) of deforested mangrove land rehabilitated	Predominantly single-species mangrove reforestation initiatives over recent decades have compromised biodiversity and hazard risk reduction potential of rehabilitated mangrove areas	1.1.4 Replanting of 21,000 ha of deforested mangrove land
	Measures of ecological & environmental indicators at enrichment planting sites: forest cover; number and diversity of true mangrove species; and size and abundance of <i>Scylla</i> spp and <i>Sesarma</i> spp	14 percent (246,122 ha) of mangrove area in SCS presently managed as national park or protected area	1.1.5 Biodiversity increased for 11,200 ha of mangrove forest <i>via</i> enrichment planting

Project objective and Outcomes	Indicator	Baseline level	End-of-project target
	Status of mechanism established for monitoring mangrove management effectiveness and stress reduction	Management, ecological and environmental, and socio-economic indicator frameworks developed but not yet applied at priority sites	1.1.6 Established mechanism for monitoring management, ecological and socio-economic indicators [based on SAP results framework]
Outcome 1.2 110,430 ha of coral reef at 46 priority sites managed sustainably, including a reduction in the decadal rate of degradation in live coral cover from 16 to 5%	Status of management capacity, including: <ul style="list-style-type: none"> Human resource capacity; Facilities and equipment; and Sustainable financing 	Priority coral reef sites in the SCS characterised as being sustainably management due to management capacity constraints	1.2.1 Management capacity built for 46 coral reef sites
	Status of institutional reform for multi-sectorial, community-based and multiple use coral reef management	Predominantly single sector (environment) and centralised approach to coral reef management	1.2.2 Management approaches and policy, legal & institutional reforms (integrated, community-based, multiple use) improved at 46 coral reef sites
	Number of management tools developed, adopted and applied at priority coral reef sites	Coral reef management largely focused on awareness raising with limited use of management tools to address threats to coral reef sites	1.2.3 Management tools (licensing and permit systems, seasonal closures, zoning) developed and utilized to address key threats at priority sites
	Status of mechanism established for monitoring coral reef management effectiveness and stress reduction	Management, ecological and environmental, and socio-economic indicator frameworks developed but not yet applied at priority sites	1.2.4 Established mechanism for the monitoring of management, ecological and socio-economic indicators at 46 sites
Outcome 1.3 Conservation, management and sustainable use of 15,848 ha of known seagrass area in the South China Sea	Number of sites under sustainable management	Majority of seagrass areas in the SCS are unmanaged, or managed ineffectively, due to lack of enabling environment for zoning/regulation	1.3.1 Twenty-one seagrass areas totaling 15,848 ha under sustainable management with supporting laws and regulations
	Number of seagrass sites for which management regulations exist		
	Number of MPA management plans containing seagrass-related management actions	Sustainable use and management of seagrass and related resources is rarely addressed in management plans for MPAs in the SCS	1.3.2 Amended management plans for 7 existing MPAs with significant seagrass areas, to include specific seagrass-related management actions and policy, legal & institutional reforms
	Number of newly established MPAs focused on seagrass management	MPA management in SCS predominantly focuses on strict protection of coral reef areas	1.3.3 Designation of 7 new Marine Protected Areas focusing on seagrass areas
	Status of mechanism established for	Management, ecological and environmental, and socio-	1.3.4 Established mechanism for

Project objective and Outcomes	Indicator	Baseline level	End-of-project target
	monitoring seagrass management effectiveness and stress reduction	economic indicator frameworks developed but not yet applied at priority sites	monitoring management, ecological and socio-economic indicators at 20 sites
Outcome 1.4 Integrated management of 783,900 ha of coastal wetland at 19 sites, including habitat restoration and protection strengthened at priority locations	Number of integrated management plans developed	Population growth, and urbanisation of the coastal fringe, combined with rapid economic growth in the SCS region places tremendous pressure on coastal wetland ecosystems	1.4.1 Integrated management plans developed and under implementation for at least 3 lagoons (26,818 ha), 9 estuaries (614,680 ha), 5 tidal flats (96,903 ha), 1 peat swamp (45,700 ha) and 1 non-peat swamp (9,808 ha)
	Total area (ha) of wetland under management plan for sustainable use		
	Number of wetlands sites assigned protection status	The riparian states of SCS face significant pressure to convert wetlands for economic development with little focus on conservation or sustainable use	1.4.2 Declaration of at least 7 wetland areas with protection status (<i>i.e.</i> non-hunting area, nature reserves, protected areas, Ramsar Sites).
	Status of mechanism established for monitoring wetland management effectiveness and stress reduction	Management, ecological and environmental, and socio-economic indicator frameworks developed but not yet applied at priority sites	1.4.3 Adoption of a regional estuary monitoring scheme and its national implementation
Outcome 1.5 National and regional level cooperation in tracking results of SAP actions for coastal habitat management	Extent and continuity of participation in regional fora for coastal habitat management	No existing fora at national and regional level in the SCS to network coastal habitat scientists and management specialists	1.5.1 National committees and regional networks of habitat specialists established under the SCS project revitalized and functioning
	Scope and uptake of joint management and planning decisions		
	Status and extent of uptake by national Inter-Ministry committees of SAP implementation results reporting	Results frameworks for the management of mangroves, coral reefs, seagrass and wetlands of the SCS developed through national and regional consultative process but has not yet been applied	1.5.2 Mechanism to monitor and evaluate the impacts of SAP implementation and achievement of habitat targets operational [including agreement on standardized methods and guidelines for inventory and assessment]
	Level of congruence of national and regional indicator sets with the proposed targets and outcomes of the SAP		
	Extent and continuity of local leader and local government participation in community round-table meetings	Limited engagement of community-based governance mechanisms in planning coastal habitat management	1.5.3 Community leaders and local government from priority habitat sites networked <i>via</i> national and regional round-table meetings to foster cooperation and knowledge sharing on achievements and best practices
	Improved local relevance of SAP	Low level mobilization of civil society, community groups and the private sector in habitat management	

Project objective and Outcomes	Indicator	Baseline level	End-of-project target
	implementation initiatives		
	Demonstrable use of state of coastal habitat reports in national and regional planning	Baseline national habitat reports developed and require periodic uptake	1.5.4 Progress and status report of regional and national SAP implementation
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			
Outcome 2.1 Enhanced information-base for coastal habitat management, monitoring and action planning	Volume of remotely sensed information interpreted and made available for planning	Rapid advancements in aerial visual survey techniques and remote sensing of inter-tidal and shallow water biomes have potential to greatly enhance coastal habitat management planning in the SCS marine basin	2.1.1. Validation of existing or improved algorithms with on-site data
	Extent of uptake of remotely sensed coastal habitat information and data in management planning and action		
	Number and completeness of regionally comparable coastal habitat site characterizations for 134 sites	Regional GIS and meta-database of SCS coastal habitat information developed but not updated since 2008 due to lack of a regional mechanism for collation and exchange of data	2.1.2 Mechanism for collection and exchange of regional coastal habitat and pollution information and data established
	Number of datasets for 134 coastal habitat sites accessible online in centralized repository		
	Volume of CO ₂ captured and stored by SCS habitats defined	Lack of SCS specific information on carbon sequestration by coastal habitats constrains resource managers in making political case for better resourcing	2.1.3 Role of coastal habitats of the South China Sea in climate change adaptation and the sequestration and storage of carbon
	Extent of uptake of information on carbon sequestration and storage used in mgmt. planning		
Independent peer acceptance of review	Sea level rise, climate variability and change, and episodic natural disasters in SC identified as threats to sustainable management of coastal habitats	2.1.4 Review of the potential impacts of sea level rise, climate change, ocean acidification and episodic events on coastal habitats of the South China Sea	
Extent of uptake of review and its recommendations in updating national action plans and diagnostic analyses			
Countries (6) contribute to compiled meta-database on existing data	No overall comparable habitat and pollution database available in the SCS	2.1.5. Review of current status of habitat and pollution data available in the SCS, gaps and challenges and innovative technology and approaches to monitoring and assessments that can	
No of recommendations and innovative approaches			

Project objective and Outcomes	Indicator	Baseline level	End-of-project target
	to support monitoring and assessments		support SCS monitoring programme 2.1.6 A regional system for periodic monitoring of the state of coastal habitats of the South China Sea
Outcome 2.2 Effective integration of regional science in the management of land-based pollution	Extent of decision-maker awareness of localized v. transboundary impacts of land-based pollution in the SCS Extent of use of model outputs in revising the Strategic Action Programme for the SCS	Carrying capacity of the SCS open shelf system based on its natural capacity to assimilate contaminants, in particular nutrient inputs from land, has been modelled although findings not well known by decision-makers	2.2.1 Nutrient assessment for key sites of the SCS marine basin and integration into SCS GIS
	Extent of decision-maker awareness of SCS open shelf carrying capacity for heavy metal contaminants Extent of use of model outputs in revising the Strategic Action Programme for the SCS Status of initiative to quantify heavy metal contaminant impacts on: (a) water quality; (b) reproductive capacity of living resources; (c) contamination of human food sources; and (d) bio-accumulation. Number of heavy metal pollution hotspots characterized	Need for simple model of pollution impacts under different development scenarios, specifically as they relate to heavy metal contaminant loadings Framework procedures for estimating the impacts of heavy metal contamination in SCS have been developed although not yet applied Lack of regionally comparable information and data on heavy metal contaminated hotspots	2.2.2. Regional level assessment of impacts of key contaminants (nutrients, heavy metals, oil, litter) and national or local assessments based on NAP and hotspots
	Number of aquaculture sites for which effluent and contaminant loadings estimated	Effluent from aquaculture and mariculture operations identified as key threat to dominant coastal biomes	2.2.3. Quantification of effluent volumes and contaminant loadings from coastal aquaculture to the SCS marine basin
	Outcome 2.3 Strengthened and harmonized national policies and laws, and supporting financial mechanism, for the management of	Number of best practice technologies and measures tested, documented and shared	Lesson learned in community-based wastewater mgmt. in Batam, Indonesia documented and shared regionally although other examples from East Asian seas region largely

Project objective and Outcomes	Indicator	Baseline level	End-of-project target
habitats and land-based sources of pollution		focus on broad scale ICM planning	pollution and habitat management documented and shared
	Number of countries with demonstrable harmonization of sectoral governance frameworks achieved as a result of review findings	Effectiveness of existing legal and institutional frameworks limited by predominantly single sector approaches	2.3.2 Review of legislative and institutional frameworks for land-based pollution and habitat management in participating countries
	Number of countries with demonstrable adoption of harmonized, regionally comparable SOPs	Lack of Standard Operating Procedures for land-based pollution management	2.3.3 Identify gaps and develop national Standard Operating Procedures for land-based pollution control and management [including agreed sediment, biota, & water quality criteria] if appropriate to support harmonized monitoring
	Number of countries with endorsed national policies and enacted laws and regulations for land-based pollution control	Absence of clear and effective policies, laws, and regulations relating to control of land-based pollution	2.3.4. Revised national/provincial policies and supporting regulations for land-based pollution and habitats developed, enacted and implemented
Outcome 2.4 Improved national and regional values for the Total Economic Values of coastal habitats for use in development planning and decision-making	Status of initiative to develop national and regional estimates economic linkages between habitats and coastal fish production	Values determined for SCS are incomplete as not all known goods and services from individual biomes have been valued	2.4.1 Expanded datasets and estimates of economic valuation information on the goods and services of SCS coastal habitats
	Status of initiative to value economic costs of coastal shipping accidents and pollution damage	Comparatively few existing values for the services provided by habitats as nursery areas for coastal living resources	
Status of initiative to update estimates of total economic values of coastal biomes	No existing information linking shipping accidents to loss of economic benefits associated coastal biomes in the SCS		
		Economic valuation of coastal habitats used in cost benefit analysis of endorsed Strategic Action Programme actions in 2008	
	No of case studies/best practices in the SCS on blue and circular economy approaches	Blue and circular economy emerging priority since SAP adoption in 2008, and needs to be consider as an important aspect for future SAP implementation	2.4.2. Compilation of good examples, and identify recommendations to strengthen a blue economy (and circular economy) approach and innovative financing for

Project objective and Outcomes	Indicator	Baseline level	End-of-project target
			pollution and habitat management
Outcome 2.5 Regionally appropriate tools and mechanisms to guide the development of sustainable management systems for coastal habitats and land-based pollution	Status of initiative to develop and apply standards and criteria, including TWAP methodology, for determining the sustainability of coastal management systems	Sustainable management indicator matrices developed for dominant coastal habitats but not yet applied and tested in framework of SAP implementation	2.5.1 Regionally applicable standards and criteria for defining the sustainability of coastal habitat management systems, including documented models of sustainable use
	Number of best practice management measures and technologies documented, codified, and accessible <i>via</i> online catalogue	Lessons learned and best practices in coastal habitat management from 23 demonstration sites documented and published in peer reviewed article	2.5.2. Online catalogue of best practice management measures and technologies for sustainable use of SCS coastal habitats and land-based pollution management
	Extent and continuity of local leader and local government participation in study tour and exchange initiatives Level of improved local relevance of national policy and planning efforts for reducing environmental degradation in the SCS	Limited engagement of community-based governance mechanisms in national policy and planning Low level mobilization of civil society, community organization and the private sector in environmental investment planning	2.5.3 Government officials, community leaders, and habitat and pollution managers exposed to on-going practices in rehabilitation, management, and pollution control and treatment <i>via</i> programme of training, study tours and exchange
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	Status of national and regional level consensus on contemporary issues of transboundary significance with respect to coastal habitat and land-based pollution management	TDA for SCS published in 2000 Special Issue of Ocean and Coastal Management on South China Sea published in 2013	2.6.1 National and regional level consensus on contemporary issues and problems, including the quantification of environmental compromises and the prioritization of problems and updated TDA
	Demonstrable use of state of coastal habitat reports in national and regional planning	Baseline national habitat reports developed and require periodic uptake	2.6.2. SCS State of Coastal Habitats report in line with global commitments (SDGs, CBD)
	Status of adoption by appropriate Ministers of an updated Strategic Action Programme for the South China Sea	Strategic Action Programme for the South China Sea endorsed inter-governmentally in 2008	2.6.3 National and regional consultative process to develop updated Strategic Action Programme SAP for adoption at the Project Steering Committee, COBSEA IGM, and for consideration at the Ministerial level including agreed

Project objective and Outcomes	Indicator	Baseline level	End-of-project target
			monitoring and reporting mechanisms
	Level of demonstrable use of the regional review on sea level rise, climate change, and episodic events in SAP formulation	Evolving understanding of sea level rise, climate change, and episodic events in East Asia but not applied in context of transboundary planning in the South China Sea	2.6.4 Prioritization of national management actions for incorporation into national policies and plans, in particular for climate variability and change and blue economy
	Number of updated National Action Plans, including institutional reform and sustainable financing strategies, adopted Number of policies, laws and regulations adopted to enable action plan implementation	National Action Plans for mangroves, coral reefs, seagrass and wetlands developed and implemented during period 2002-2008	2.6.5 Updated and adopted National Action Plans for mangroves, coral reefs, seagrass and wetlands, and land-based pollution including enactment of supporting legislation where required
Component 3. Facilitating regional and national level integration and cooperation for implementation of the South China Sea 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	Status of the RSTC and the uptake of the scientific and technical advice it provides Continuity of participation of RSTC members in annual meetings	Lack of a formal mechanism for the sharing of science and technical knowledge relating to the South China Sea SAP implementation	3.1.1 Regional Scientific and Technical Committee of the SCS project functioning as a bridge between the scientific community and decision-makers [annual meetings]
	Number of central and provincial government agencies demonstrating use of scientific knowledge exchanged during biennial conferences	Limited application of evidence-based approaches by central and provincial government agencies	3.1.2 Knowledge exchanges between government and scientific community through biennial Regional Scientific Conferences
	Number of Mayor's Round-Table meetings convened Number, scope & reach of communications to raise local official awareness of best practices	Four Mayors Round-Table meetings convened during period 2005-2008 and documented as a key innovation for improving local relevance of action planning and M&E	3.1.3 Best practice exchanges between local government officials and coastal managers on science-based management <i>via</i> annual Mayor's Round-Table meetings
	Status of bilateral cooperation for transboundary resource management between (a) Cambodia and Viet Nam and (b) Cambodia and Thailand	Bilateral cooperation between Cambodia and Viet Nam initiated during the period 2007-2008 although this has stagnated as a result of a lack of regional coordination support	3.1.4 Memoranda of Agreement for joint management of 2 priority transboundary water areas agreed & implemented

Project objective and Outcomes	Indicator	Baseline level	End-of-project target
	Status of signature of Memoranda of Agreement		
	Extent of joint planning by both projects Number of best practices and lessons learned captured from the fisheries <i>refugia</i> project	Execution of the UNEP/GEF Fisheries <i>Refugia</i> project to commence in Q3 of 2016 through SEAFEDC and national fisheries agencies	3.1.5 Cooperation with the GEF fisheries <i>refugia</i> project and other relevant regional initiatives
	Number of best practices identified Number of community organizations, local governments and industry receiving awards	Lack of mechanism to formally recognize and award communities, local governments and industry for innovation and generation of best practices for environmental management of the South China Sea	3.1.6 Operational award program on best practices in coastal habitat and land-based pollution management for communities, local governments and industry [annual]
Outcome 3.2 Capacity for civil society and community organization participation in SAP implementation strengthened <i>via</i> operational partnership with GEF SGP	Number of GEF Small Grants Programme projects commissioned and implemented in support of SAP implementation	Need for strengthened mobilization of civil society and community organizations in SAP implementation	3.2.1 Cooperation with GEF SGP in the commissioning and implementation of an additional 12 community-based projects for SAP implementation
	Extent and scope of inputs from CSOs and Cos Number of NGO forums convened	Need for CSO and CO inputs to planning of an SCS-SGP partnership	3.2.2 CSO & CO inputs elicited for planning and M&E of the SCS-SGP partnership <i>via</i> annual NGO forums
	Number of SGP proponents trained to implement local actions in support of the achievement of SAP targets	Limited civil society and community organization experience and capacity for coastal habitat and land-based pollution management	3.2.3 Training program on science and management of SCS coastal habitats and resources for SGP proponents
Outcome 3.3 Relationships between central and local governments and the private sector strengthened and formalized	Number of public-private partnerships identified and documented	Many private sector organizations operate corporate social and environmental responsibility programmes but they are not aligned with SAP implementation	3.3.1 Review of past and ongoing public-private partnerships for coastal management in SCS region and case studies for effective private sector engagement
	Number of opportunities for private sector investment in SAP implementation identified	Significant commercial enterprise is conducted in waters of the South China Sea, particularly in the areas of oil and gas, fisheries and tourism	3.3.2 Identification of opportunities for private sector investment (<i>e.g.</i> oil and gas, fisheries, tourism) in implementation of the updated SAP
	Status of agreement on financial arrangements for private sector and donor investment in the implementation of	Low-level mobilization of the private sector in environmental investment planning in the South China Sea	3.3.3 Two partnership forums to facilitate cooperation with private sector on implementation of the updated SAP

Project objective and Outcomes	Indicator	Baseline level	End-of-project target
	the revised Strategic Action Programme		
	Number of countries with endorsed National Action Plans, including institutional reform and sustainable financing strategies	Guidelines for assessing the economic impacts of land-based pollution developed but not yet applied as part of benefit-cost analysis of pollution mgmt. in the SCS	3.3.4. Updated and adopted National Investment Plans for land-based pollution and habitat management in the SCS [Yr 5]
	Status of agreement among participating countries on a sustainable financing approach for regional actions	Lack of sustainable mechanism to finance regional support actions including M&E	3.3.5. Regional financial mechanism for land-based pollution and habitat management [Yr 5]
Outcome 3.4 Revitalization of regional mechanisms for communications, knowledge exchange, and information and data management and sharing	Number of multi-media and knowledge products produced	The SCS project produced an extensive range of knowledge products, technical guides, and training and awareness materials	3.4.1 A variety of multi-media information and knowledge products based on SCS SAP implementation communications strategy
	Status of knowledge tool development to support evidence-based coastal and marine management and spatial planning	Transboundary coastal and marine mgmt. spatial planning constrained by lack of a regionally coordinated approach to harnessing sectorial expertise and knowledge	3.4.2 Regionally appropriate knowledge tools developed to support decision-making and planning
	Number of users, volume of content accessed, and online visibility of the SCS website and associated databases	Need for media platforms and targeted communications in support of efforts to harness support for inter-ministerial coordination and policy and planning elements of SAP implementation and revision	3.4.3 The SCS project web portal and clearing house mechanism and associated regional databases online, updated and linked to IW-Learn and other GEF Knowledge management systems
	Number of IW:LEARN experience notes published	Limited regional and global sharing of information on best practices and lessons learned from investments in the SCS despite for example publication of a complete Special Issue of an academic journal on the progress to date	3.4.4 Active engagement with GEF IW:LEARN [1% of project resources] including participation in IW conferences and 3 experience notes
Outcome 3.5 Agreed arrangements for strengthened regional cooperation in the management of the marine and coastal environment of the South China Sea	Number of Regional Task Force meetings	Regional Task Force on Legal Matters established through SCS project but presently not functioning	3.5.1 Biannual meetings of the Regional Task Force on Legal Matters
	Continuity of participation of nationally nominated members		
	Number of National Working Group meetings	National Working Groups established through SCS project but presently not functioning	3.5.2 National Working Groups on established and functional

Project objective and Outcomes	Indicator	Baseline level	End-of-project target
	Continuity of participation of nationally nominated members		
	Status of agreement on identified process	Framework process developed but requires national and regional consultation	3.5.3 Process for development of a proposed arrangement for regional cooperation defined and planned
	Extent of national stakeholder input to drafting phase of instrument for cooperation	SAP formulation benefited from an emphasis on consensual planning and decision making	3.5.4 National stakeholder inputs to drafting of instrument for strengthened regional cooperation facilitated <i>via</i> national consultations
	Status of adoption of the instrument	Participating countries agreed in the SAP, and in endorsing the PIF for this project, to explore the development of an instrument for strengthened regional cooperation	3.5.5 Adopted instrument for strengthened regional cooperation

Source: SCS SAP PIR FY 2021

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2021

3.1 Activities Achievements in the Year 2021

Outputs/Activities ¹	Expected completion date ²	Implementation status as of end of reporting period expressed in %	Progress/Achievements
Component 1. Reducing habitat degradation and loss <i>via</i> national and local reforms to achieve Strategic Action Programme targets for coastal habitat management in the South China Sea			
Outcome 1.1 Appropriate forms of sustainable management established for 860,000 ha of mangrove			
1.1.1 Declaration of 57,400 ha of mangrove as National Parks and Protected Areas	31 December 2023	10%	Six National Profiles presented at 1 st Steering Committee Meeting (29-30 June 2021) Six National Implementation reports almost finalized; Mangrove specialized executing agencies designated; Mangrove national Committees and lead focal point agreed; Mangrove sites and characteristics defined; Current update on existing laws and reforms and gaps underway;
1.1.2 Designation and plans for the management of 166,600 ha of mangrove as non-conversion, sustainable use areas	31 December 2023	10%	
1.1.3 Reform of laws and regulations for the sustainable use of 602,800 ha of mangrove forest	31 December 2023	10%	
1.1.4 Replanting of 21,000 ha of deforested mangrove land	31 December 2023	10%	
1.1.5 Biodiversity increased for 11,200 ha of mangrove forest <i>via</i> enrichment planting	31 December 2023	10%	

¹ Outputs and activities (or deliverables) as described in the project logframe (and workplan) or in any updated project revision.

² The completion dates should be as per latest workplan (latest project revision).

Outputs/Activities ¹	Expected completion date ²	Implementation status as of end of reporting period expressed in %	Progress/Achievements
1.1.6 Established mechanism for monitoring management, ecological and socio-economic indicators at 26 sites [based on SAP results framework]	31 December 2023	10%	
Outcome 1.2 110,430 ha of coral reef at 46 priority sites managed sustainably			
1.2.1 Management capacity (number/levels human resources, facilities and equipment, and sustainable financing mechanisms) built for 46 coral reef sites	31 December 2023	10%	Six National Profiles presented at 1 st Steering Committee Meeting (29-30 June 2021) Six National Implementation reports almost finalized; Coral reef specialized executing agencies designated; Coral reef national Committees and lead focal point agreed; Coral reef sites and characteristics defined; Current update on existing laws and reforms and gaps underway; Coral reef detailed activities and budget in progress in consultation with national/local stakeholders; Status of SAP implementation at the national level since 2008 being conducted to report on achievement of SAP targets (in next PIR)
1.2.2 Management approaches and policy, legal & institutional reforms (integrated, community-based, multiple use) improved at 46 coral reef sites	31 December 2023	10%	
1.2.3 Management tools (licensing and permit systems, seasonal closures, zoning) developed and utilized to address key threats at priority sites	31 December 2023	10%	
1.2.4 Established mechanism for monitoring management, ecological and socio-economic indicators at 46 sites [based on SAP results framework]	31 December 2023	10%	
Outcome 1.3 Conservation, management and sustainable use of 15,848 ha of known seagrass area in the South China Sea			
1.3.1 Twenty-one seagrass areas totaling 15,848 ha under sustainable management with supporting laws and regulations	31 December 2023	10%	Six National Profiles presented at 1 st Steering Committee Meeting (29-30 June 2021) Six National Implementation reports almost finalized; Seagrass specialized executing agencies designated; Seagrass national Committees and lead focal point agreed; Seagrass sites and characteristics defined; Current update on existing laws and reforms and gaps underway; Seagrass detailed activities and budget in progress in consultation with national/local stakeholders; Status of SAP implementation at the national level since 2008 being conducted to report on achievement of SAP targets (in next PIR)
1.3.2 Amended management plans for 7 existing MPAs with significant seagrass areas, to include specific seagrass-related management actions and policy, legal & institutional reforms	31 December 2023	10%	
1.3.3 Designation of 7 new Marine Protected Areas focusing on seagrass areas identified in the prioritized listings of the SCS Project	31 December 2023	10%	
1.3.4 Established mechanism for monitoring management, ecological and socio-economic indicators at 20 sites [based on SAP results framework]	31 December 2023	10%	

Outputs/Activities ¹	Expected completion date ²	Implementation status as of end of reporting period expressed in %	Progress/Achievements
Outcome 1.4 Integrated management of 783,900 ha of coastal wetland at 19 sites, including habitat restoration and protection strengthened at priority locations			
1.4.1 Integrated management plans developed and under implementation for at least 3 lagoons 9 estuaries, 5 tidal flats, 1 peat swamp and 1 non-peat swamp and associated policy, legal & institutional reforms	31 December 2023	10%	Six National Profiles presented at 1 st Steering Committee Meeting (29-30 June 2021) Six National Implementation reports almost finalized; Wetland specialized executing agencies designated; Wetland national Committees and lead focal point agreed; Wetland sites and characteristics defined; Current update on existing laws and reforms and gaps underway; Wetland detailed activities and budget in progress in consultation with national/local stakeholders; Status of SAP implementation at the national level since 2008 being conducted to report on achievement of SAP targets (in next PIR)
1.4.2 Declaration of at least 7 wetland areas with protection status (<i>i.e.</i> non-hunting area, nature reserves, protected areas, Ramsar Sites).	31 December 2023	10%	
1.4.3 Adoption of a regional estuary monitoring scheme and its national implementation [based on SAP results framework]	31 December 2023	10%	
Outcome 1.5 National and regional level cooperation in tracking results of SAP actions for coastal habitat management			
1.5.1 National committees and regional networks of habitat specialists established under the SCS project revitalized and functioning	31 December 2023	20%	Progressing with some challenges due to COVID
1.5.2 Mechanism to monitor and evaluate the impacts of SAP implementation and achievement of habitat targets operational [including agreement on standardized methods and guidelines for inventory and assessment]	31 December 2023	10%	Initiated and countries assessing SAP progress
1.5.3 Community leaders and local government from priority habitat sites networked <i>via</i> national and regional round-table meetings to foster cooperation and knowledge sharing on achievements and best practices	30 June 2023	10%	Initiated
1.5.4 Progress and status report of regional and national SAP implementation	31 December 2021	10%	Initiated and countries assessing SAP progress
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			
Outcome 2.1 Enhanced information-base for coastal habitat management, monitoring and action planning			
2.1.1. Validation of existing or improved algorithms with on-site data	31 December 2022	5%	Regional working groups and Regional Scientific and Technical Committee to agree on detailed implementation in 2 nd half of 2021. To be executed from end of 2021

Outputs/Activities ¹	Expected completion date ²	Implementation status as of end of reporting period expressed in %	Progress/Achievements
2.1.2 Mechanism for collection and exchange of regional coastal habitat and pollution information and data established	31 December 2023	5%	Regional working groups (mangrove, coral reefs, seagrasses, wetlands and LBS) and Regional Scientific and Technical Committee to agree on detailed implementation in 2 nd half of 2021. To be executed from end of 2021
2.1.3 Role of coastal habitats of the South China Sea in climate change adaptation and the sequestration and storage of carbon	31 January 2023	5%	Regional working groups and Regional Scientific and Technical Committee to agree on detailed implementation in 2 nd half of 2021. To be executed from end of 2021
2.1.4 Review of the potential impacts of sea level rise, climate change, ocean acidification and episodic events on coastal habitats of the South China Sea	30 June 2022	5%	Regional working groups and Regional Scientific and Technical Committee to agree on detailed implementation in 2 nd half of 2021. To be executed from end of 2021
2.1.5. Review of current status of habitat and pollution data available in the SCS, gaps and challenges and innovative technology and approaches to monitoring and assessments that can support SCS monitoring programme	31 December 2023	10%	Regional working groups (mangrove, coral reefs, seagrasses, wetlands and LBS) and Regional Scientific and Technical Committee to agree on detailed implementation in 2 nd half of 2021. To be executed from end of 2021
2.1.6 A regional system for periodic monitoring of the state of coastal habitats of the South China Sea	31 December 2023	5%	
Outcome 2.2 Effective integration of regional science in the management of land-based pollution			
2.2.1 Nutrient assessment for key sites of the SCS marine basin and integration into SCS GIS	30 June 2022	5%	Regional working groups (LBS) and Regional Scientific and Technical Committee to agree on detailed implementation in 2 nd half of 2021. To be executed from end of 2021
2.2.2. Regional level assessment of impacts of key contaminants (nutrients, heavy metals, oil, litter) and national or local assessments based on NAP and hotspots	30 June 2022	10%	Regional working groups (LBS) and Regional Scientific and Technical Committee to agree on detailed implementation in 2 nd half of 2021. To be executed from end of 2021

Outputs/Activities ¹	Expected completion date ²	Implementation status as of end of reporting period expressed in %	Progress/Achievements
2.1.3. Quantification of effluent volumes and contaminant loadings from coastal aquaculture to the SCS marine basin	30 June 2022	5%	Regional working groups (LBS) and Regional Scientific and Technical Committee to agree on detailed implementation in 2 nd half of 2021. To be executed from end of 2021
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			
2.3.1. National best practices in waste water management, law enforcement, and community and industry participation in managing land-based sources of pollution and habitat management documented and shared	31 December 2023	5%	Compilation of existing information and further elaborating methods. Planned for 2022-2023
2.3.2 Review of legislative and institutional frameworks for land-based pollution and habitat management in participating countries	31 September 2023	20%	Compilation of existing information and further elaborating methods. Planned for 2022-2023
2.3.3 Identify gaps and develop national Standard Operating Procedures for land-based pollution control and management [including agreed sediment, biota, & water quality criteria] if appropriate to support harmonized monitoring	31 September 2023	5%	Regional working groups (LBS) and Regional Scientific and Technical Committee to agree on detailed implementation in 2 nd half of 2021. <i>To be executed from end of 2021</i>
2.3.4. Revised national/provincial policies and supporting regulations for land-based pollution and habitats developed, enacted and implemented	31 December 2023	5%	<i>Planned for Oct 2021</i>
Outcome 2.4 Updated Total Economic Values of coastal habitats for use in development planning and decision-making and blue economy			
2.4.1 Expanded datasets and estimates of economic valuation information on the goods and services of SCS coastal habitats	31 December 2023	5%	Regional working groups (economic evaluations) and Regional Scientific and Technical Committee to agree on detailed implementation in 2 nd half of 2021. To be executed from end of 2021
2.4.2. Compilation of good examples, and identify recommendations to strengthen a blue economy (and circular economy) approach and innovative financing for pollution and habitat management	31 December 2023	5%	Planned for Oct 2021
Outcome 2.5 Regionally appropriate tools and mechanisms to guide the development of sustainable management systems for coastal habitats and land-based pollution			
2.5.1. Online catalogue of best practice management measures and technologies for sustainable use of SCS coastal habitats and land-based pollution management	30 June 2024	20%	Current and recent past best-practices compiled in report SCS SAP best practices planned for 2022-2023

Outputs/Activities ¹	Expected completion date ²	Implementation status as of end of reporting period expressed in %	Progress/Achievements
2.5.2 Government officials, community leaders, and habitat and pollution managers exposed to on-going practices in rehabilitation, management, and pollution control and treatment <i>via</i> programme of training, study tours and exchange	31 December 2023	5%	Planned for Oct 2021
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			
2.6.1 National and regional level consensus on contemporary issues and problems and updated TDA	31 December 2023	5%	Methodology to be developed and discussed by Regional Scientific and Technical Committee in 2 nd half of 2021
2.6.2. SCS State of Coastal Habitats report in line with global commitments (SDGs, CBD)	31 December 2023	5%	Planned for 2022-2023
2.6.3 National and regional consultative process to develop updated Strategic Action Programme SAP for adoption at the Project Steering Committee, COBSEA IGM, and for consideration at the Ministerial level including agreed monitoring and reporting mechanisms	31 December 2023	5%	Methodology to be developed and discussed by Regional Scientific and Technical Committee in 2 nd half of 2021
2.6.4 Prioritization of national management actions for incorporation into national policies and plans, in particular for climate variability and change and blue economy	31 September 2023	5%	Planned for 2022-2023
2.6.5 Updated and adopted National Action Plans for mangroves, coral reefs, seagrass and wetlands, and land-based pollution including enactment of supporting legislation where required	31 December 2023	5%	Planned for 2022-2023
Component 3. Facilitating regional and national level integration and cooperation for implementation of the South China Sea 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			
3.1.1 Regional Scientific and Technical Committee of the SCS project functioning as a bridge between the scientific community and decision-makers [annual meetings]	31 September 2023	20%	Preparations for 1 st RSCT in 2 nd half of 2021.
3.1.2 Knowledge exchanges between government and scientific community through Regional Scientific Conferences	31 September 2023	5%	To be initiated 2 nd half of 2021
3.1.3 Best practice exchanges between local government officials and coastal managers on science-based management <i>via</i> annual Mayor's Round-Table meetings	31 December 2023	5%	To be initiated 2 nd half of 2021

Outputs/Activities ¹	Expected completion date ²	Implementation status as of end of reporting period expressed in %	Progress/Achievements
3.1.4 Memoranda of Agreement for joint management of 2 priority transboundary water areas agreed & implemented	31 December 2023	5%	To be initiated 2 nd half of 2021
3.1.5 Cooperation with the GEF fisheries <i>refugia</i> project and other relevant regional initiatives established	30 June 2024	30%	Ongoing coordination. Common site's identified for joint planning Participation in each other's key meetings. FR Focal points members of SCS Committee's
3.1.6 Operational award program on best practices in coastal habitat and land-based pollution management for communities, local governments and industry [annual]	31 December 2023	5%	To be initiated 2022
Outcome 3.2 Capacity for civil society and community organization participation in SAP implementation strengthened <i>via</i> operational partnership with GEF SGP			
3.2.1 Cooperation with GEF SGP in the commissioning and implementation of an additional [#] of community-based projects for SAP implementation	31 December 2023	10%	Meetings conducted to plan SGP grants and budget. To be initiated 2 nd half of 2021
3.2.2 CSO & CO inputs elicited for planning and M&E of the SCS-SGP partnership <i>via</i> annual NGO forums	31 December 2023	5%	To be initiated 2 nd half of 2021
3.2.3 Training program on science and management of SCS coastal habitats and resources for SGP proponents	31 December 2023	5%	To be initiated 2 nd half of 2021
3.2.4 SGP project concept notes developed and financial arrangements agreed for 20 community-based projects in support of implementing a revised SAP	31 December 2023	5%	To be initiated 2 nd half of 2021
Outcome 3.3 Relationships between central and local governments and the private sector strengthened and formalized			
3.3.1 Review of past and ongoing public-private partnerships for coastal management in SCS region and case studies for effective private sector engagement	30 June 2022	10%	Initial discussions with partners on other related initiatives ongoing. To be initiated 2 nd half of 2021
3.3.2 Identification of opportunities for private sector investment (<i>e.g.</i> oil and gas, fisheries, tourism) in implementation of the updated SAP	31 December 2023	5%	To be initiated 2 nd half of 2021
3.3.3 Public-private partnerships and investment plan for the implementation of the updated SAP solidified through two partnership forums to facilitate	31 December 2023	5%	To be initiated 2 nd half of 2021
3.3.4. Updated and adopted National Investment Plans for land-based pollution and habitat management in the SCS [Yr 5]	31 December 2023	5%	To be initiated 2 nd half of 2021

Outputs/Activities ¹	Expected completion date ²	Implementation status as of end of reporting period expressed in %	Progress/Achievements
3.3.5. Regional financial mechanism for land-based pollution and habitat management	31 December 2023	5%	To be initiated 2 nd half of 2021
Outcome 3.4 Revitalization of regional mechanisms for communications, knowledge exchange, and information and data management and sharing			
3.4.1 A variety of multi-media information and knowledge products based on SCS SAP implementation communications strategy	30 June 2024	10%	Initial publications as part of Inception Phase include Inception Phase publication and national profiles News items Plan of future knowledge products
3.4.2 Regionally appropriate knowledge tools developed to support decision-making and planning.	30 June 2024	10%	To be initiated 2 nd half of 2021
3.4.3 The SCS project web portal and clearing house mechanism and associated regional databases online, updated and linked to IW-Learn and other GEF Knowledge management systems	30 June 2024	20%	Regularly update web-site https://scssap.org/ Regional database to be developed from 2 nd half 2021
3.4.4 Active engagement with GEF IW:LEARN [1% of project resources] including participation in IW conferences and 3 experience notes	30 June 2024	15%	Coordination with IWLEARN <i>via</i> email and bilaterals, and participation and presentation of the new IWLEARN program at the Inception Workshop on 1 July 2021
Outcome 3.5 Agreed arrangements for strengthened regional cooperation in the management of the marine and coastal environment of the South China Sea			
3.5.1 Biannual meetings of the Regional Task Force on Legal Matters.	31 December 2023	5%	To be initiated 2 nd half of 2021
3.5.2 National Working Groups established and functional.	31 December 2023	5%	Membership identifies in majority of countries. Official meetings planned for 2 nd half of 2021
3.5.3 Process for development of a proposed arrangement for regional cooperation defined and planned	31 December 2023	0%	To be initiated 2022
3.5.4 National stakeholder inputs to drafting of instrument for strengthened regional cooperation facilitated <i>via</i> national consultations	31 December 2023	0%	To be initiated 2022
3.5.5 Adopted instrument for strengthened regional cooperation	31 December 2023	0%	To be initiated 2022

Source: SCS Q2 2021 Progress Report

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2022

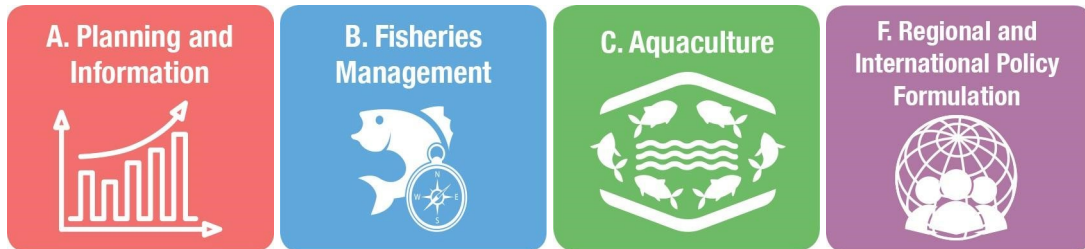
4.1 Planning of the Project Activities

Please see Section 3.1 above for the activities covered for the Year 2022 (To be initiated 2022)

4.2 Expected Outcomes/Outputs

Please see Section 2.3 above for the expected outcomes and outputs of the activities covered for Year 2022

4.3 Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



**PROJECT DOCUMENT
ACHIEVEMENT FOR YEAR 2021
AND
PROPOSED ACTIVITIES FOR YEAR 2022**

			Project id: 202001016
Program Categories:	Other program		
Project Title:	Seminar-Workshop on Aquaculture Development in Southeast Asia (ADSEA)		
Strategy No.:	II	Total Duration:	2022 (6 months)
Lead Department:	Aquaculture Department	Lead Country:	Philippines
Donor/Sponsor:	AQD; JTF	Total Donor Budget:	USD 35,000 (estimated)
Project Partner:	JTF	Budget for 2022:	To be determined
Project leader:	Mr. Dan Baliao and Dr. Sayaka Ito	Project Participating Countries	ASEAN Member Countries

1. INTRODUCTION/BACKGROUND

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 Expected Outcomes and 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

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 2021

3.1 Activities Achievements in the Year 2021

Project/Activity Title	Duration	Remarks
<p>AQD started with the creation of a committee to organize the seminar-workshop. Subsequently, planning the scientific and administrative areas of the project also commenced. However, due to the COVID-19 surge in the Philippines, conducting a face-to-face meeting will not possible due to government-mandated travel and public gathering restrictions.</p> <p>Due to this, the organizing committee discussed that the seminar-workshop won't achieve its goals and objectives if conducted <i>via</i> teleconference. With this, it was decided to postpone the project until we are safe to gather and travel again.</p>	2021	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2022

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
In 2022, the organizing committee will revisit the planning and eventually conduct the seminar-workshop	2022	

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.

4.3 Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



**PROJECT DOCUMENT
ACHIEVEMENT FOR YEAR 2021
AND
PROPOSED ACTIVITIES FOR YEAR 2022**

			Project id: 2021001015
Program Categories:	Other program		
Project Title:	Survey to Estimate Levels of Abandoned, Lost or Otherwise Discarded Fishing Gear in Thailand Gillnet and Trap Fisheries		
Strategy No.:	I	Total Duration:	2021- January 2022
Lead Department:	TD	Lead Country:	None
Donor/Sponsor:	FAO	Total Donor Budget:	USD 18,249
Project Partner:	DOF Thailand	Budget for 2022:	None
Project leader:	Isara Chanrachkij (TD)	Project Participating Countries	Thailand

1. INTRODUCTION/BACKGROUND

Abandoned, Lost or otherwise Discarded Fishing Gear (ALDFG) has been recognized as a significant component of marine litter and has serious impacts on habitats, fish stocks and other marine species. ALDFG may result in reduced profits when it continues to fish that is called ghost fishing or ghost gear. Ghost fishing is one problem resulting from ALDFG that has received increasing international attention over the past decade. Ghost fishing mortality is infrequently accounted for in fisheries management, potentially compromising the accuracy of population and stock assessment models and efficacy of harvest strategies. Ghost fishing by ALDFG removes both target and non-target species. These include species of seabirds, sea turtles, marine mammals and elasmobranchs, some of which are endangered, threatened and protected. Mortalities from ghost fishing by ALDFG are also a source of wastage and reduce the sustainable production of fishery resources and economic opportunities for the marine capture sector. Social welfare issues are also raised over ghost fishing mortality of flagship megafauna, as well as the extensive duration for some organisms caught in ALDFG to succumb relative to captures in in-use gear. It may result in reduced profits when it continues to fish and is linked to Illegal, Unreported and Unregulated (IUU) fishing as those engaging in such activities are more prone to discard their fishing gear at sea.

Since 1989, Food and Agriculture Organization of the United Nation (FAO) and partners have recognized the issues on the ALDFG and developed the instruments to reduce ALDFG globally. In 2018, FAO Committee on Fisheries (COFI) endorsed the Voluntary Guideline on the Marking of Fishing Gear, and the publication has been issued in 2019.

The Southeast Asian regional concern on the marking of fishing gear has been referred to the Report of the 40th Meeting of the Program Committee of the Southeast Asian Fisheries Development Center (SEAFDEC) held in November 2017, in Bangkok, Thailand. The Program Committee Member for Malaysia requested TD for conducting the Fishing Gear Specialist Training Program in Malaysia in 2018. In addition, under the project “Improvement of Fisheries Technology and Reduction of the Impact from Fishing,” the Malaysia delegate suggested SEAFDEC Training Department (TD) to consider including a new area of work on “the marking of fishing gear” as this was raised during the Second Sub-regional Technical Consultation between Malaysia and Thailand. Furthermore, under SEAFDEC Mechanism, the Regional Technical Consultation (RTC) on International Fisheries-related Issues organized by the SEAFDEC, organized on 20–22 June 2018, in Bangkok, Thailand, recommended SEAFDEC to promote the “anti-ghost fishing” campaigns in order to mitigate the impacts of the abandoned or lost gear in the environment.

Therefore, SEAFDEC/TD initiated a research study on the fishing gear lost in the sea. This research emphasizes on the fishing gear that possibly generates a ghost fishing (e.g. gillnets, traps or pots) and developed the management action to combatting ALDFG. It was reported at the Fifty-first Meeting of the Council of the SEAFDEC, organized in March 2019, in Surabaya, East Java, Indonesia that marine debris and environmental-friendly fishing gears should be taken into consideration of SEAFDEC’s future direction of regional fisheries development. The research study on the fishing gear lost in the sea is harmonized with the “Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030” which were prepared by the ASEAN Member States. RES#11 recommends ASEAN Member States and SEAFDEC to increase



awareness and support the reduction of impacts of aquatic pollution and marine debris, including abandoned, lost or otherwise discarded fishing gear (ALDFG), and microplastics/microbeads on fisheries and aquaculture. POA#26 recommends ASEAN Member States and SEAFDEC to assess and manage the impacts of aquatic pollution and marine debris, including abandoned, lost, or otherwise discarded fishing gear (ALDFG) and microplastics/microbeads.

To develop a research study in harmonizing with the international concern, SEAFDEC technically collaborated with FAO. Under the contract agreement between both agencies to conduct the project “Survey to Estimate levels of Abandoned, Lost or otherwise Discarded Fishing Gear in Thailand Gillnet and Trap Fisheries”, the project is carried out from 1 April to 30 November 2021. FAO provided technical and financial support to SEAFDEC to undertake the FAO Fishing Gear Loss Questionnaires which were designed to enquire information from the fishers about spatial and temporal distributions of gear loss, causes, good practices to avoid fishing gear loss, end of life fishing gear management and their perceptions on ALDFG. The questionnaires were complemented with a User’s Manual. The Manual was produced to ensure that the interviewer understands each question and is able to get the desired answer from the interviewee. It will be a significant tool for obtaining ALDFG global information in the future. To obtain the appropriate questionnaires for ALDFG survey in Southeast Asia, SEAFDEC/TD in collaboration with the Department of Fisheries Thailand under the technical and funding support by FAO conducted the survey trial by using questionnaires and supported the database development. The collaboration is carried out from 1 April to 30 November 2021 in the coastal provinces of Thailand. The Project will extend to 31 January 2022 with no cost extension.

2. PROJECT

2.1 Goal/Overall Objectives

The project aims at developing regional actions on combating marine debris from ALDFG in the ASEAN region through the information collection on the ALDFG. In addition, the estimation on the abundance of fishing gear loss by survey to obtain baseline information of the ALDFG from the gillnets, traps (or pots) provides the direction of management action to combat marine debris from ALDFG in the future.

2.2 Expected Outcomes and Outputs:

The expected outcome of the project is the baseline information, *e.g.* spatial and temporal distribution of gear loss, causes, good practices to avoid fishing gear loss, end of life fishing gear management and their perceptions on ALDFG from the gillnets, traps (or pots) which will be used for developing the management action to combat marine debris from ALDFG the future. Therefore, main project outputs are as follows.

1. Recommendation for FAO to improve the FAO Fishing Gear Loss Questionnaires and associated with the User’s Manuals designed for gillnet and trap fisheries;
2. Data from the gillnets and traps in survey site(s) of Thailand by using FAO Fishing Gear Loss Questionnaires and data entered in the FAO ALDFG Survey Database;
3. Report of gillnet and trap loss to comprise a spatial and temporal distribution of gillnets and traps lost, causes, costs, good practices to avoid fishing gear loss, end of life fishing gear management measures and fishers’ perceptions on ALDFG in Thailand’s gillnet and trap fisheries.

2.3 Project Description/Framework

The project comprises the improvement of the FAO Fishing Gear Loss Questionnaires and associated with the User’s Manuals designed for gillnet and trap fisheries. SEAFDEC collaborated with FAO to verify ALDFG Questionnaires and User’s Manuals. To obtain practical questionnaires, SEAFDEC researchers conduct ALDFG data collections by using the FAO Fishing Gear Loss Questionnaires in the pilot sites of Thailand. The ALDFG data collected from the pilot sites are entered into the online FAO Fishing Gear Loss Questionnaires by SEAFDEC researchers. SEAFDEC researchers participate in the online meeting organized and led by FAO to assess the results of the questionnaire survey. List of activities is as follows.

- Activity 1.** Provide recommendations for improving the FAO Fishing Gear Loss Questionnaires and associated User’s Manuals designed for gillnet and trap fisheries
- Activity 2.** Conduct the survey(s) on ALDFG focused on gillnets and traps at three different sites in Thailand by using the FAO Fishing Gear Loss Questionnaires for gillnet and trap fisheries
- Activity 3.** Enter the data into the online FAO Fishing Gear Loss Questionnaires

- Activity 4.** Participate in an online meeting organized and led by FAO to assess the survey results
Activity 5. Prepare a national report on gillnet and trap loss in Thailand.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2021

3.1 Activities Achievements in the Year 2021

Project/Activity Title	Duration	Remarks
Activity 1. To provide recommendations for improving FAO Fishing Gear Loss Questionnaires and associated User’s Manuals designed for gillnet and trap fisheries <i>The Achievements are questionnaires and associated with the User’s Manuals designed for gillnet and trap fisheries</i>	April to June 2021	
Activity 2. To conduct survey(s) on ALDFG on gillnets and traps at three different sites in Thailand by using the FAO Fishing Gear Loss Questionnaires for gillnet and trap fisheries. <i>The expected achievements are data of gillnets and traps obtained from three coastal provinces in Thailand</i>	April to June 2021	Postponed to September 2021 due to COVID19 pandemic
Activity 3. To input data into the online system of FAO Fishing Gear Loss database. <i>The expected achievements is established online system of FAO Fishing Gear Loss database</i>	April to July 2021	Postponed to September 2021 due to COVID19 pandemic
Activity 4. To analyze the survey results on gillnet and trap loss for developing a national report for Thailand <i>The expected achievement is concept to analyze gillnet and trap loss</i>	August 2021	Postponed to September 2021 due to COVID19 pandemic
Activity 5. To prepare a national report on gillnet and trap loss in Thailand <i>The expected achievement is a national report on gillnet and trap loss in Thailand</i>	August to October 2021	Postponed to November 2021

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2022

4.1 Planning of the Project Activities

None

4.2 Expected Outcomes/Outputs

None

4.3 Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



**PROJECT DOCUMENT
ACHIEVEMENT FOR YEAR 2021
AND
PROPOSED ACTIVITIES FOR YEAR 2022**

			Project id: 2021001015
Program Categories:	Other program		
Project Title:	Fishing Technologies and Operations in Thailand and Options for Innovation and Improvements		
Program Strategy No:	I	Total Duration:	2021
Lead Department:	Training Department (TD)	Lead Country:	Thailand
Donor/Sponsor:	FAO	Total Donor Budget:	USD 13,500
Project Partner:	DoF Thailand	Budget for 2022:	None
Project leader:	Sukchai Arnupapboon (TD)	Project Participating Countries	Thailand

1. INTRODUCTION

The fisheries resources play significant roles in the social and economic aspects of the world. They provide not only a primary source of protein to people but also significant contributions to their livelihoods especially in coastal and rural areas. However, worldwide many fisheries resources are either maximally sustainably fished or overfished. To reduce overfishing and unsustainable practices, it is essential to have effective fisheries management. Entrepreneurs in fisheries, particularly small-scale fishers, often do not have access to adequate financial services to innovate and make the necessary transition to sustainable fishing activities.

The FAO Multi-Disciplinary Fund (MDF) has developed a project on “Financing innovation for sustainable fisheries with the private sector” aiming to support fishing businesses for accessing formal micro-finance and credit sources, enabling them to innovate. This strategy was initiated in a pilot activity country, Thailand. The first step ensuring the success of the project implementation is to assess the sustainability of currently used fishing technologies and operations in Thailand for further looking into options for innovation and improvements.

Under this project, SEAFDEC plays a role as a service provider who is responsible to prepare the assessment report of the sustainability of currently used fishing technologies and operations in Thailand and options for innovation and improvements. Upon completion of this project, the valuable lesson learned could be transferred to the other SEAFDEC Member Countries as a pilot study in fishing technologies and operations in Thailand and options for innovation and improvements in Southeast Asia. In addition, the expected project outputs are in line with the Resolution on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030; No.12 - 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 and the Plan of Action for Food Security for the ASEAN Region Towards 2030, and No.24 - Promote fair distribution of benefits gained from both intra-regional and international trade of fish and fishery products among small-scale actors along the whole value-chain.

In the situation of the COVID-19 in 2021, the implementation of the planned activities has been delayed. In consultation with FAO, the project termination has been extended to 15 December 2021 from 15 September 2021.

2. PROJECT

2.1 Goal/Overall Objective

The project Goal/Overall Objective is “Reduce Rural Poverty”. The project supports the achievement of the strategies, policies, guidelines and programs to improve the rural poor’s access to, and control over, a set of services, finance, knowledge, technologies, markets and natural resources, including in the context of climate change.

2.2 Expected Outcomes and Outputs

The main outcome foreseen from this project is to increase access of small-scale and semi-industrial fishers in Thailand to credit and microfinance services for making the necessary transition to sustainable fishing operations. SEAFDEC carries out “An assessment of the sustainability of currently used fishing technologies and operations in Thailand and options for innovation and improvements”. The expected outputs were set as follows:

1. Stakeholder meeting organized to discuss (and agree on) the fisheries innovation options in Thailand, costs and benefits and expected social, economic and environmental returns.
2. Assessment report on the sustainability of fishing technologies and operations in Thailand and options for innovation and improvements.

2.3 Project Description/Framework

Activity	Description
Activity 1: Desk review of currently-used fishing technologies and operations in Thailand (one month)	<ul style="list-style-type: none"> - Project activities commenced in April 2021 with the formation of the Working Group and the development of the implementation plan. - Review on published reference materials, expert knowledge and experiences of particular members of the working group and interview persons in the Thai fishing industry were carried out. - Draft an assessment report on the sustainability of currently used fishing technologies and operations in Thailand and options for innovation and improvements
Activity 2: Questionnaire survey and analysis (four month)	<ul style="list-style-type: none"> - Develop questions to collect information on fishing technology and earning and cost of fishing operations - Interview five fishers for each fishing gear including otter board trawl, pair trawl, purse seine, gillnetter, squid cast net and anchovy falling net - Validate and analyze questionnaires
Activity 3: Stakeholder meeting on the fisheries innovation options in Thailand, costs and benefits and expected social, economic and environmental returns (one months)	<ul style="list-style-type: none"> - Prepare and organize a one-day stakeholder meeting in Rayong Province, Thailand, to present and discuss the draft assessment report. - Discuss costs and benefits and expected social, economic and environmental returns of fisheries innovation options. - Prepare a summary report of the stakeholder meeting.
Activity 4: Assessment report on the sustainability of fishing technologies and operations in Thailand and options for innovation and improvements (one and half month)	<ul style="list-style-type: none"> - Prepare a final assessment report on the sustainability of fishing technologies and operations in Thailand and options for innovation and improvements, addressing the comments and observations received from the stakeholder meeting.

3. PROGRESS/ACHIEVEMENTS OF ACTIVITIES IN THE YEAR 2021

3.1 Activities Achievements in the Year 2021

Project/Activity Title	Duration	Remarks
Desk review of currently used fishing technologies and operations in Thailand The major and core data and information were gathered by the working group. As data and information were examined and accepted, they were passed on for incorporating into the draft report. The assessment report was drafted progressively by sections. When all sections were drafted, the draft assessment report was submitted to FAO.	31 May 2021	Completed

Project/Activity Title	Duration	Remarks
<p>Questionnaire survey and analysis Questionnaires for the survey of the fishing technology, earning and cost of fishing operation were developed and used to interview fishermen at Rayong province.</p> <p>Information of the otter board trawl, pair trawl, purse seine, gillnetter, squid cast net and anchovy falling net on fishing technology, earning and cost of fishing operation are analyzed. The obtained information will be placed in the report.</p>	30 September 2021	On going
<p>Stakeholder meeting on the fisheries innovation options in Thailand, costs and benefits and expected social, economic and environmental returns Draft assessment report is validated by stakeholders, <i>e.g.</i>, fisher, governor, professor from academic agency and financial services providers. A set of comments, suggestions, and observations from stakeholders will be utilized for finalizing the draft assessment report.</p>	4 October 2021	On going
<p>Assessment report on the sustainability of fishing technologies and operations in Thailand and options for innovation and improvements Final assessment report on the sustainability of fishing technologies and operations in Thailand and options for innovation and improvements describes general information of Thai fisheries situations as well as assessment of fishing innovation and its benefits. The assessment report will support local financial service providers for better understanding of the status of fishing technology and operations and for further providing effective financial services to the fishers in the future.</p>	15 December 2021	On going

3.2 Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



PIPELINE PROJECT

Project Title: Promoting the Blue Economy and Strengthening Fisheries Governance of the Gulf of Thailand through the Ecosystem Approach to Fisheries (GoTFish Project)

Prospect Funding Agency: GEF/IW (FAO Implementing Agency)

Lead Department: Training Department

Proposed Budget: USD 7,326,823 (Total Project Cost)/USD 3,730,132 (Estimated total for SEAFDEC)

Duration: 2023 to 2027

1. BACKGROUND/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.

FAO, therefore, developed the Project Identification Form (PIF), title “Promoting the blue economy and strengthening fisheries governance of the Gulf of Thailand through the Ecosystem Approach to Fisheries (GoTFish Project)”, in consultation with various stakeholder and submitted to Global Environment Facilities (GEF) in 2020. The GoTFish Project was also proposed as SEAFDEC Pipeline Project in the 43rd Meeting of the SEAFDEC Project Committee in 2020. The proposed GoTFish 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 for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication.

During the Project Identification Form (PIF) development, it was agreed by key stakeholders that to reverse the environmental degradation of the Gulf of Thailand and its loss of resilience and sustainability, particularly related to fisheries resources, the project should address key barriers related to:

- **Institutional, legal and administrative issues**, such as the lack of an appropriate “platform” or “forum” for region-wide multi-stakeholder dialogue to serve as decision-making bodies for the development, implementation and monitoring of regional fisheries management plans and/or action plans based on key issues. Discussions for the agreement on the type of regional mechanism will be addressed within **Project Outcome 1.1**;
- **Socio-economic and capacity barriers**, through the use of an Ecosystem Approach to Fisheries that takes into consideration the human, ecological and governance dimension of fisheries, focusing on enhancing resilience and the capacity to implement measures and changes by different actors (community, private sector, government, etc.) at different levels (local, national, regional, global), which will be addressed as part of **Project Outcome 1.2**;
- **Market and traceability barriers**: through a better engagement with the private sector and the role that social and community-based incentives can play to shift that behaviour towards a sustainable use of the fisheries resources, which will be addressed as part of **Project Outcome 2.1**. The project has also mobilized Biodiversity Funds in Malaysia from their own STAR allocation and **under Component 3**, the project will work on addressing barriers related to MPA and ecosystem connectivity (not only fisheries, but also other important, vulnerable and threatened migratory species).

- **Stakeholder Engagement (including Gender), Communications and M&E:** The Component 4 of the project will focus on Stakeholder engagement (including gender analysis to ensure the full participation of women in the project), as well as effective communication and monitoring and evaluation.

In the PIF, there is a detailed description of the baseline scenario and associated baseline projects. The project will focus on promoting regional cooperation (through the existing mechanisms such as APFIC, SEAFDEC, COBSEA, PEMSEA), as well as within the initiatives ongoing in these four (4) Gulf of Thailand countries (*e.g.* CAPFISH program in Cambodia, Malaysia's work on MPAs, Thailand's NPOA-IUU, Viet Nam's Master Plan on Fisheries Development, etc.) and other regional and international efforts (FAO-IPOA, VGSSF, SEAFDEC regional projects (*e.g.* Fisheries *Refugia*, etc.) and regional instruments (SEAFDEC Code of Conduct for Responsible Fisheries, etc.), as well as the Regional Plans of Actions (RPOA-Neritic Tuna, RPOA- Capacity, RPOA-IUU), and other relevant works, from NGOs and CSOs, academia, and the private sector (specially under Component 2), and other biodiversity and MPA related work (specially under Component 3).

Working with stakeholders, the project will work on addressing the priorities identified in the Programme Committees of SEAFDEC, the SEAFDEC Council and ASAEAN priority areas/targets for fisheries. In particular, the project will focus on:

- **Building regional cooperation around fishery management and combating IUU fishing**, throughout the project, and particularly under Outcome 1.1, with work directed for the restoration of fisheries resources and marine biodiversity ecosystem services and strengthening regional transboundary governance and cooperation of GoT fisheries
- **Tackling improved management and use of Ecosystem approach**, throughout the project and particularly under Outcome 1.2, with the development and implementation of the Ecosystem Approach to Fisheries (EAF) management plans in the Gulf of Thailand enhances the resilience against climate change and manages fishing effort of fisheries stakeholders (women and men) (related to SAP Fisheries Objective 1). This Outcome 1.2 will also focus on Strengthening capacity for management as well as assessment of fisheries
- **Addressing environmental aspects of fisheries and build wider cooperation across ministries of environment**, throughout the project and through Outcome 3.1, focused on the integration of habitat and biodiversity conservation considerations in the management of fisheries in the Gulf of Thailand through deeper understanding of the ecological transboundary corridors existing in the Gulf of Thailand, leading to enhanced resilience of vulnerable aquatic species and those important for regional food security and sovereignty, (related to SAP-Fisheries Objective 1)
- **Support small scale fisheries** and promote the implementation of the FAO Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication throughout the project and particularly in the development of knowledge tools under Component 4 of the project
- **Complementing the FAO programmes of support and FAO cooperation with SEAFDEC**, promoting FAO and SEAFDEC policy documents, such as
 - SEAFDEC Code of Conduct for Responsible Fisheries, which focuses attention on the cultural needs of the region, the tropical multispecies nature of fisheries and the need for management that reflects regional needs. This reflects regional requirements for full utilization of catches as a mechanism for resolving discards and bycatch whilst supplying marine protein to coastal communities and creating jobs.
 - SEAFDEC regional initiatives on combating Illegal, Unreported and Unregulated (IUU) fishing in Southeast Asia and optimizing energy use in fisheries in the Southeast Asian region through fishing vessels energy audits. The project on the Promotion of Sustainable Fisheries and IUU Fishing-related Countermeasures in Southeast Asia, which is being implemented by SEAFDEC with funding support from the Japanese Trust Fund (JTF), includes the Promotion of Regional Database for Fishing Vessels Records, and Port State Measures implementation in Southeast Asia. An EAFM training program is also being sustained through SEAFDEC in collaboration with other partners. GoTFish will build on the process initiated by relevant SEAFDEC JTF projects to address the issue to combat IUU fishing.
 - SEAFDEC's Gulf of Thailand Sub-regional platform, which has been facilitated by the SEAFDEC-Sweden project, initiated the first attempts to regional fisheries collaboration in key species in the Gulf of Thailand, documenting information related to the fisheries and migratory patterns of key species with the aim of facilitating development of joint management plans in the GoT, and specific plan of actions for the selected species. The GoTFish project will build on these processes, particularly the working groups/task forces initiated by the SEAFDEC-Sweden project.
 - GoTFish will promote and provide support for the implementation of the Regional Plans of Actions, such as the RPOA-Neritic Tuna, RPOA-Capacity, and RPOA-IUU.

- The implementation of FAO's Strategic Objectives and regional priority areas of work related to Climate Change and sustainable natural resource management, One-Health and Blue Growth in fisheries, the FAO's Committee on Fisheries (COFI), of which all GoT participating countries are members, implements a broad range of binding and voluntary instruments such as the Code of Conduct for Responsible Fisheries (CCRF) and International Plans of Action (IPOAs). GoTFish will facilitate the promotion of these policies, and will provide guidance on how to address IUU fishing and other transboundary fisheries management issues, while GoTFish will provide lessons learned based on experience of putting those instruments into practice.

Contributions to the SDGs

- Expected outcomes of the proposed project are fully consistent with the Sustainable Development Goals (SDGs) and will contribute to a range of important socio-economic and environmental SDG targets, especially SDG 14: Conserve and sustainably use the oceans, seas and marine resources, and its targets 1-5: by 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution; by 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans; minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels; by 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics; and by 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.

Contribution to the ASEAN-SEAFDEC Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030

The project will directly contribute to the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030, including the support to priority actions related to A. Planning and Information; B. Fisheries Management, and F. Regional and International Policy Formulation.

2. GOAL/OVERALL OBJECTIVES

Improved natural resource governance in the Gulf of Thailand through the implementation of the Ecosystem Approach to Fisheries (EAF) contributing to the fisheries objectives of the South China Sea Strategic Action Programme (SCS-SAP)

COMPONENT 1: Regional transboundary fisheries governance and management strengthened executing by SEAFDEC)

OUTCOME 1.1

Fisheries resources and marine biodiversity ecosystem services are restored through strengthened regional transboundary governance and cooperation of GoT fisheries, building their resilience through improved habitat and fisheries management (SAP Fisheries Objective 1)

Indicator 1.1.1. Number of shared water ecosystems (fresh or marine) under new or improved cooperative management (GEF Core Indicator 7).

Indicator 1.1.2. At least 1 regional stakeholder task-force and a key regional issue identified.

Indicator 1.1.3. 1 revised regional/ national fisheries policy/ guidelines/ RPOA/ NPOA for management of shared stocks (e.g. possible bilateral arrangement between Implementation State), that takes into account gender considerations and the different needs of women and men in the fisheries sector.

Indicator 1.1.4. At least 2 Decisions and/or Recommendation related to shared stock management endorsed through the active participation of Inter-Ministry Committees/ National Level Committees

Indicator 1.1.5. 1 regional mechanism for transboundary GoT, based on existing platforms ((e.g. SEAFDEC-GoT Countries Technical Working Group, ASWGF, RPOA-IUU).

Indicator 1.1.6. At least 1 GoT sub-regional fisheries management plans/action plans that is developed/ revised for shared species/fisheries and other shared fisheries issues, with evidence that implementation has been initiated (e.g. national budget committed to implement the plans), following the EAF

OUTPUTS 1.1

Output 1.1.1: Updated and regionally coherent fisheries policies across the GoT countries and strengthened national legal frameworks

Output 1.1.2: Established regional stakeholder task forces for improved trans-boundary fisheries management and addressing key regional issues

Output 1.1.3: Development and implementation of regional 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, blue sector livelihoods, poverty, gender, labour and other social issues, as well as market inefficiencies including harmful subsidies, post-harvest losses.

Output 1.1.4: Prioritization of regional, sub-regional and national transboundary related issues for fisheries management and related biodiversity and environmental issues.

Output 1.1.5: Agreed mechanism for a regional approach to transboundary fisheries management in the Gulf of Thailand and accompanying regional EAFm plan

OUTCOME 1.2

Development and implementation of Ecosystem Approach to Fisheries (EAF) management plans in the Gulf of Thailand enhances the resilience against climate change and manages fishing effort of fisheries stakeholders (women and men) (related to SAP Fisheries Objective 1)

Indicator 1.2.1. About half a million tonnes (or 75% of overexploited fisheries) return to sustainable levels. (Links to GEF Core Indicator 8).

Indicator 1.2.2. 4 million ha of marine fisheries habitat under improved management practices (links to GEF Core Indicator 5).

Indicator 1.2.3. 30 % of raw fish supply that is converted to fishmeal comes from fisheries with an EAF plan and is part of a transparent catch documentation scheme.

Indicator 1.2.4. About 120.000 fish-workers (estimated at about 50% male and 50 % female - to be confirmed during the PPG phase) benefit from GEF investment.

Indicator 1.2.5. 4 national fisheries management plans/actions that are developed/ revised for shared species/fisheries and other shared fisheries issues, with relevant participation of stakeholders.

Indicator 1.2.6. 4 national plans that initiate implementation, with evidence of national commitment (*e.g.* national budget committed to implement the plans) following the EAF and addressing gender considerations.

OUTPUTS 1.2

Output 1.2.1 Stakeholder capacity to develop EAFM plans is strengthened, taking into consideration the different needs of women and men

Output 1.2.2: Strengthened national fisheries management plans are implemented through the EAF approach

Output 1.2.3: EAFm plans developed, addressing priority risks and opportunities to human well-being, ecosystem integrity and governance (including the components 2 and 3) including the implications of climate change on GoT countries' fisheries

COMPONENT 2: Alignment of incentive mechanisms (executing by the Sustainable Fisheries Partnership)

OUTCOME 2.1

Establishment of a market and behaviour incentive mechanism which reduces ecosystem stress from fishing, enhances the uptake of good practices supporting fisheries management and supports the transition to climate-resilient fisheries (integrating gender considerations and the different needs of women and men along the fishery value chain) (related to SAP Fisheries Objective 3)

Indicator 2.1.1. 1 fishmeal transparency catch documentation scheme covering estimated 20 % of fishmeal production (or 2 commercial stocks) is in place and is being implemented.

Indicator 2.1.2. 2 market and/or behaviour change incentive mechanisms initiated (with women's participation of at least 30%)

Indicator 2.1.3. 10% of fisheries related establishments/operations that meet national or international certification and incorporates biodiversity/ sustainable resources/ resource protection considerations (direct and indirect)

Indicator 2.1.4. At least 1 of private/public partnerships created at the regional level

Indicator 2.1.5. At least 1 fisheries improvement projects (FIPs) taking place in the GoT (with clear fisher livelihood improvements and gender considerations)

Indicator 2.1.6. 1 regional plan to enhance the level of participation of women along the fisheries value chain implemented

OUTPUTS 2.1

Output 2.1.1: Identification of mechanisms and stakeholder platforms to support incentives for sustainable and well managed GoT fisheries value chains, including those linked to fishmeal for feeds

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

COMPONENT 3: Ecological Corridor of Critical and Important Habitat for Aquatic Resources in the Gulf of Thailand (with a focus on Malaysia) established (**executing by the University of Queensland**)

OUTCOME 3.1

Improved integration of habitat and biodiversity conservation considerations in the management of fisheries in the Gulf of Thailand through deeper understanding of the ecological transboundary corridors existing in the Gulf of Thailand, leading to enhanced resilience of vulnerable aquatic species and those important for regional food security and sovereignty, (related to SAP-Fisheries Objective 1)

Indicator 3.1.1. At least 2 biodiversity targets and outcomes, incorporated into EAFM plans (regional and national levels).

Indicator 3.1.2. 1 Regional GIS dataset on species and habitat distribution and status (with different levels of information being shared) established.

Indicator 3.1.3. 1 National Guidelines for biodiversity integration developed and implementation initiated.

Indicator 3.1.4. 4 Countries participate in the GoT technical platform on fisheries and aquatic biodiversity.

OUTPUTS 3.1

Output 3.1.1: Mapping of aquatic ecological corridors in the GoT

Output 3.1.2: Development of recommendations/ guidelines for the alignment of key biodiversity considerations into national, transboundary and/or regional fisheries management plans and action plans

Output 3.1.3 Creation of an interim GoT sub-regional technical discussion platform to address integration of fisheries and aquatic biodiversity

OUTCOME 3.2: Reduced threats to vulnerable species and critical/ important habitats for food security and sovereignty with strengthened national and transboundary protection and management of aquatic resources in East Coast Peninsular Malaysia

Indicator 3.2.1. 261,723 ha of conservation area under improved conservation management and sustainable use in the East Coast of Peninsular Malaysia based on global Protected Area (PA) performance standards.

Indicator 3.2.2. 1 New guideline in evaluating fisheries benefits of conservation areas developed and tested in at least 1 project site.

Indicator 3.2.3. 1 improved related National or Sub-National Policy on Integrated Coastal and Fisheries Resources Management, and Marine Spatial Planning (MSP) for the east coast of Peninsular Malaysia adopted (subject to the decision by the Cabinet).

OUTPUTS 3.2

Output 3.2.1: Identification of ecological corridors of critical and important habitat for aquatic resources in the East Coast of peninsular Malaysia with spatial maps and information available for EAF planning .and identification of management and protection measures (the type of measures to be decided during PPG phase in consultation with stakeholders)

Output 3.2.2: Identification and establishment of management measures in four conservation areas to ensure they provide the highest potential return for achieving biodiversity conservation (following the METT) and fisheries management targets

OUTCOME 3.3: Enhanced resilience of ecosystems and associated biodiversity in East Coast of Peninsular Malaysia

Indicator 3.3.1. Marine managed areas have been assessed and management improvements increased BD biodiversity benefits and improved linkages with fisheries (targets to be defined during PPG phase).

Indicator 3.3.2. At least 1 participatory ecosystem resilience plan with a monitoring system initiated in marine conservation areas.

OUTPUTS 3.3

Output 3.3.1: Participatory monitoring system established to reduce fishing and other pressures on marine biodiversity in conservation areas.

Output 3.3.2: Map priority areas to improve resilience of ecosystem components including identification of existing threats and vulnerabilities (including climate change and other natural and human hazards)

Output 3.3.3: Development of participatory ecosystem resilience plans, following the findings of the priority ecosystem resilience maps (for biodiversity), within and beyond the MPAs, and addressing the needs of the ecological corridors, with evidence of implementation initiated.

COMPONENT 4: Stakeholder engagement, communication, monitoring and evaluation (executing by SEAFDEC)

OUTCOME 4.1

Efficient knowledge management and targeted communication, improves the understanding amongst stakeholders of ecosystem and fishery linkages in the Gulf of Thailand (related to SAP Fisheries Objective 2)

Indicator 4.1.1. 1 regional and 4 M&E systems in place and monitoring performance against gender sensitive indicators.

Indicator 4.1.2. 10 knowledge sharing events on topics related to transboundary EAFM plans, FIPS, gender issues in fisheries value chains, social and market incentives, etc. carried out and related materials developed, shared and used to affect change

Indicator 4.1.3. Participation in 5 IW Learn meetings and adoption of GoT relevant IWLearn tools.

Indicator 4.1.4. 1 GOTFISH knowledge platform established and easily accessible for stakeholders.

Indicator 4.1.5. At least 10 GoTFish lessons learned collated and accessible., communicated through IW-Learn fora.

Indicator 4.1.6. GoTFish lessons learned collated and accessible., communicated through IW-Learn fora.

OUTPUTS 4.1

Output 4.1.1: GoT project monitoring system established and implemented. (including mid-term and final evaluations)

Output 4.1.2: GoT knowledge management strategy and communication strategy established and implemented.

Output 4.1.3: Participation in the activities of the IW Learn Project.

OUTCOME 4.2: Enhanced stakeholder involvement and gender equity

Indicator 4.2.1. 1 regional and 4 national project gender and stakeholder engagement strategy implemented.

Indicator 4.2.2. 1 regional and 4 GoTFish gender and stakeholder strategy developed and approved by stakeholders.

OUTPUTS 4.2

Output 4.2.1: GoTFish gender and stakeholder engagement strategy implemented

Proposed Budget for GoTFish Project (Execution from 2023 to 2027)

The full budget of the project is **7,326,823 USD**, divided as follows:

- **Component 1 (SEAFDEC)**
 - 1.1 800,000 USD – IW funding
 - 1.2 2,330,000 USD – IW funding
- **Component 2 (SFP)**
 - 2.1 1,710,000 USD – IW funding
- **Component 3 (UQ)**
 - 3.1 500,000 USD – IW funding

- 3.2 600,000 – BD funding (only Malaysia)
- 3.2 437,795 – BD funding (only Malaysia)
- **Component 4 (SEAFDEC)**
 - 4.1 370,000 USD – IW funding
 - 4.2 230,132 USD – IW funding

Project Management costs (among the 3 EA) – 348, 896 USD

3. PROGRESS AND STATUS

The main achievements of the GoTFish during the year 2021 have been:

- The approval of the PIF¹ in June 2021
- A successful regional Inception Workshop in September 2021
- Initiation of the Project Formulation stage (PPG Phase) in September 2021

On 8 September 2021, FAO/RAP in collaboration with SEAFDEC co-organized the regional virtual inception workshop to initiate the Project Preparation Grant Phase (known as the PPG Phase) of the Global Environment Facility (GEF) supported project “Promoting the Blue Economy and Strengthening Fisheries Governance of the Gulf of Thailand through the Ecosystem Approach to Fisheries” (GoTFish). More than 80 participants representing the departments of fisheries in the 4 project countries (Cambodia, Malaysia, Thailand and Viet Nam), other FAO/SEAFDEC Member Countries, project executing agencies (SEAFDEC, SFP, University of Queensland, IUCN), NGOs, the private sector and other organizations participated in the one-day virtual workshop. The overall goal of the Inception Workshop was to initiate the PPG Phase, introduce the project to stakeholders, and present the project preparation objectives and implementation process. The Inception Workshop also initiated the consultation and participatory process that initiated the contribution to the development of a detailed project document for submission to the GEF Secretariat in June 2022. The Inception Workshop of the PPG Phase provided an opportunity for the key stakeholders of the project to meet, discuss and agree on the project preparation objectives and implementation process, including activities and timeline.

3.1 Project Formulation Workplan for 2021 and 2022

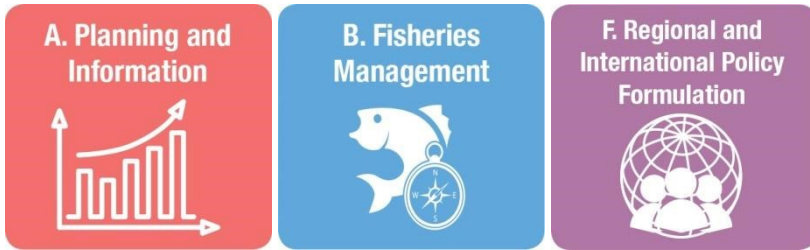
The project is currently in the project formulation phase, the tentative timelines as show below:

By October 2021	National consultants onboard EAs provide regional level guidance for country level design
By December 2021	<ul style="list-style-type: none"> • NC to facilitate national consultations, with summary reports • International consultant starts drafting main sections of the ProDoc
By January/February 2022	<ul style="list-style-type: none"> • EA partners start to build full components based on information coming in from NCs/national consultations (Jan 22) • EA convene regional thematic meetings/consultations to finalize component design (Jan/Feb 2022), submit component draft by end Feb 2022
By March 2022	<ul style="list-style-type: none"> • First draft ProDoc available (Early March 2022) • FAO budget review/preliminary screening (March 2022) • Regional validation meeting (mid-March 2022) • Revisions to ProDoc completed (end March)
By April 2022	<ul style="list-style-type: none"> • Submission to FAO for review and GEFSEC for informal comments beginning of April 2022 • Full project document in FAO-GEF template along with all annexes • Co-finance Commitment letters
By May 2022	<ul style="list-style-type: none"> • FAO GEF Coordination Unit to ensure clearances by May 2022 • Submit the project document to the GEF Secretariat by first week of June 2022
Early 2023	<ul style="list-style-type: none"> • Project to be initiated in early 2023

¹ PIF can be downloaded from the GEF website - <https://www.thegef.org/project/promoting-blue-economy-and-strengthening-fisheries-governance-gulf-thailand-through>



3.2 Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



PIPELINE PROJECT CONCEPT NOTE

Project Title: Blue Horizon: Ocean Relief through Seaweed Aquaculture

Prospect Funding Agency: GEF (through WWF GEF Agency)

Lead Department: SEAFDEC

Proposed Budget: USD 6 million

Duration: 4 years (2022-2025)

1. BACKGROUND/INTRODUCTION

The project ‘Blue Horizon: Ocean Relief through Seaweed Aquaculture’ will work at the global, regional, and national levels to strengthen and develop seaweed value chains. More specifically, the project will work in the coastal and marine ecosystems of Viet Nam and Philippines, where potential for the expansion of seaweed aquaculture and seaweed aquaculture value chains exists. Seaweed farming is growing as a lucrative business in coastal provinces - farmed as a foodstuff, used in food processing, as well as cosmetics and medical industries. The livelihoods of the people who live in these coastal areas depend on the quality of water and habitat in these rich marine ecosystems.

Seaweeds address numerous environmental threats which impact coastal waters: they remove eutrophying nutrients (such as nitrogen and phosphorus) from the water, reducing hypoxia, and instead turning these nutrients into valuable protein, oils, green chemical feedstock and a range of industrial products. This provides ecosystem services and biodiversity enhancement. In addition, seaweed captures and stores carbon.

On the socio-economic side, seaweed farming provides livelihood resilience for communities. Seaweed can be integrated into multi trophic systems which can strengthen economic resilience of coastal communities; all while providing benefits that will stabilize and strengthen the health of the surrounding environment.

While the seaweed industry has a significant untapped potential towards supplying high quality, cost competitive biomass for new international value chains, including the potential processing and delivery of sustainably produced fishmeal and oil replacement products to green the growing aquaculture sector, there are significant problems that impair the industry from reaching its potential. The structure of the current industry is characterized by high disease outbreaks (*e.g.* ice-ice disease) due to climate change and low genetic variability of seedstocks; use (and loss) of plastics; and lack of standards and protocols that adhere to an eco-system approach to optimize the environmental footprint of production.

2. GOAL/OVERALL OBJECTIVES

The project objective is “to create new sustainable seaweed value chains that will deliver ecosystem services and provide socioeconomic benefits.” The proposed 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; and 3) establish norms of operation to ensure that production systems remain among the most environmentally positive economic activities.

3. PROJECT DESCRIPTION

The project objective will be achieved through the following four components:

- **Component 1: Regional capacity building for seaweed aquaculture.** This Component includes building regional capacity and plans for seaweed aquaculture, and participation in global seaweed coalitions.
- **Component 2: Enabling Environment for Seaweed Aquaculture in Philippines and Viet Nam.** This involves creating an enabling environment for seaweed aquaculture at the national level – the project will support processes to identify appropriate areas for seaweed expansion, and operationalize management plans specific to such areas, with accompanying plans and coordination mechanisms (national/global) to support this (Component 2).
- **Component 3: Seaweed Value Chains (production + processing).** This Component requires working with producers and cooperatives to pilot off-shore farms that will serve as proof of concept for off-shore



seaweed production. It will also support a proof of concept for a scalable seaweed carbon credit model, and finally, expanded collaboration with the finance sector and private sector.

- **Component 4: Knowledge Management, M&E, and IW Learn (regional).** This Component involves knowledge sharing and monitoring and evaluation. The activities will be monitored and communicated *via* multiple channels. In this way the project will utilize and expand on current baseline activities in the seaweed industry in Philippines and Viet Nam to promote the interests of seaweed farmers and their communities, and grow the global market for seaweed in a sustainable and responsible fashion.

4. EXPECTED OUTPUTS/OUTCOMES

The project will deliver a number of outputs and outcomes, as described below:

Regional level (through SEAFDEC)

- **Outcome: Strengthened capacity and uptake of best practices throughout seaweed value chains, and increased participation in global seaweed coalitions**
 - Output: Codes of Good Aquaculture Practice (for seaweed)
 - Output: Guide for Regional Outscaling of Project Results
 - Output: Training modules to support implementation of regional seaweed development strategy
- **Outcome: Knowledge Management and communication products allow best practices and lessons to be shared, scaled up**
 - Output: Communication products, including a website to share project outcomes

National level (Viet Nam through D-fish; Philippines through BFAR):

- **Outcome: Improved enabling environment (planning, governance, institutional and legal frameworks) for seaweed aquaculture**
 - Output: Marine spatial plans / area management plans for seaweed farms in target sites
 - Output: Updated national seaweed development plans/strategies
 - Output: Policy and Regulatory gap analysis and associated Framework for seaweed aquaculture (as needed)
- **Outcome: Improved technologies and testing for seaweed value chains in PH and VN**
 - Output: Demonstration farms for offshore seaweed
 - Output: Value-add seaweed value chain initiatives
- **Outcome: Generating benefits from seaweed aquaculture for target communities**
 - Output: Sustainable Seaweed Toolkit and trainings for improved production
 - Output: Scalable seaweed carbon credit model (TBD)
 - Output: Seaweed farmer/cooperative support systems
- **Outcome: Expanded collaboration with the finance sector and private sector to support seaweed value chains in Philippines and Viet Nam**
 - Output: bankable business propositions to incentivize development of processing capability and/or bio-refinery solutions to deliver new seaweed products
 - Output: Investment seminars and industry and investment forums to support financing to seaweed value chains in PH and VN

The full list of outputs and outcomes can be found in **Appendix 1**.

Overall, the project is expected to yield environmental and socio-economic benefits. **Environmental benefits** come from the enhanced ecosystems services provided by the seaweed farms, specifically: mitigation of acidification of the sea, oxygenation of coastal waters, mitigation of eutrophication of marine waters, mitigation of harmful algal blooms and improvement in the conditions for aquatic biodiversity. **Socioeconomic benefits** include livelihood opportunities from increased production and quality of seaweed biomass, which yields more profit to seaweed farmers; increased income from production and trade of higher value processed seaweed products, and; increased capacities.

These benefits are expected to be measured as follows¹:

- 66,000 metric tons of CO₂ emissions mitigated (based on seaweed biomass that falls off during production and ends up sequestering carbon at the ocean bottom)
- 15,000 beneficiaries benefiting from the project
- 4,400 tons of Nitrogen and phosphorus captured

¹ Targets to be confirmed

5. PROGRESS AND STATUS

The project is currently being developed according to the agreed workplan and timeline (see **Appendix 2**). The project documents are due to the GEF by December 11, 2021. The following depicts the key milestone dates for the project:

Milestone	Date
Internal submission date for upstream WWF GEF review and sign-off	November 19, 2021
First GEF Submission deadline for CEO Endorsement	December 11, 2021
CEO Endorsement Deadline	June 11, 2022

Regional

A lead consultant has been recruited to support overall project development and draft the relevant project documents. A first draft of the Project document has been delivered, with key sections included. The next version of the project document is currently being developed, and a mid-point review meeting is being scheduled to review the strategy with key partners. SEAFDEC has been identifying project activities and budget, governance management structure, and is completing a due diligence process led by WWF US.

Philippines

A team of consultants have been recruited to, along with BFAR, support project development in Philippines. The team has selected Green Island, Roxas as the main project site; the project is also under discussion to undertake some activities in Zamboanga. To date, a national stakeholder consultation workshop, as well as two local stakeholder consultation workshops for Roxas, have taken place. A draft gender analysis has also been delivered. The next step for the team is to identify activities and partners, develop the budget, undertake safeguards, propose a Gender Action Plan, and a due-diligence process of BFAR.

Viet Nam

A team of consultants and WWF Viet Nam are undertaking key activities in the project workplan, in close coordination with Department of Fisheries. The team has held a national stakeholder consultation workshop and is planning a local stakeholder consultation workshop. The next step for the team is to undertake the local stakeholder workshops, identify activities and partners, develop the budget, undertake safeguards, draft the Gender Analysis and Gender Action Plan, and a due-diligence process of D-fish.

5.1 Project in relevance to the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030



Project descriptive summary (approved at PIF stage)

Project Objective: To create new sustainable seaweed value chains that will deliver ecosystem services and provide socioeconomic benefits

Project Componentss	Component Type	Project Outcomes	Project Outputs	Trust Fund	(in \$)	
					GEF Project Financing	Co-financing
Component 1: Regional ¹ capacity building for seaweed aquaculture	TA	Outcome 1: Strengthened capacity and uptake of best practices throughout seaweed value chains, and increased participation in global seaweed coalitions.	<p>1.1.1 Support towards the International Seaweed Coalition Platform (e.g. institutional strategy, global market strategy)</p> <p>1.1.2 Regional seaweed sector key metric targets (environmental, livelihoods) identified and guide for implementing better practices to reach targets</p> <p>1.1.3 Regional workshops and trainings on improved seaweed value chains (as identified in 1.1.2, including biosecurity measures to optimize production and prevent losses)</p>	GEF TF	1,203,571	7,353,820
Component 2: Enabling Environment for Seaweed Aquaculture in Philippines and Viet Nam	TA	<p>Outcome 2.1: Improved planning for seaweed aquaculture and capture of nutrients from the ocean</p> <p>Outcome 2.2: Strengthened</p>	<p>2.1.1 National support for marine spatial planning that integrates more sustainable seaweed farming, which could include:</p> <ul style="list-style-type: none"> • Assessments of ecosystem 	GEF TF	1,803,571	12,019,821

¹ For this project, regional refers to Southeast Asian countries that farm seaweed.

		governance, institutional and legal frameworks for planning and accounting for seaweed aquaculture impacts – positive and negative	<p>carrying capacity</p> <ul style="list-style-type: none"> • Site-specific development plans • Input to coastal and marine spatial maps for aquaculture expansion • User conflict analyses (at site level) <p>2.1.2 National Seaweed Plans presented for adoption at relevant levels:</p> <ul style="list-style-type: none"> • Revised Seaweed Development Plan (Viet Nam) • Updated Seaweed Carrageenan Industry Roadmap (Philippines) <p>2.2.1 Policy and Regulatory gap analysis and associated Framework for seaweed aquaculture (as needed for Viet Nam and Philippines)</p>			
Component 3: Seaweed Value Chains (production + processing)	INV	<p>Outcome 3.1: Improved technologies and testing for seaweed value chains in PH and VN</p> <p>Outcome 3.2: Generating benefits from seaweed aquaculture for target</p>	3.1.1 Four demonstration farms to provide proof of concept of off-shore ² scalable seaweed businesses (based on zones identified in Component 2.1.2), with 4,400 tons of nitrogen and	GEF TF	2,103,571	12,852,821

² For the purposes of this project, ‘off-shore’ refers to exposed ocean or high energy environments. The definition and/or locations in PH and VN will be determined during the project development stage.



		<p>communities (PH and VN)</p> <p>Outcome 3.3: Expanded collaboration with the finance sector and private sector to support seaweed value chains in Philippines and Viet Nam</p>	<p>phosphorus captured</p> <p>3.1.2 Implementation of at least 2 seaweed value chain initiatives (adding value to raw seaweed in seaweed farming communities; improved propagules; transparency)</p> <p>3.2.1 Proof of concept of a scalable seaweed carbon credit model</p> <p>3.2.2 Sustainable Seaweed Toolkit and trainings for improved production (incorporating best practices identified in 1.1.2)</p> <p>3.2.3 Seaweed farmer/cooperative support systems (marketing, business, access to financing)</p> <p>3.3.1 Development of 3 bankable business propositions to support 3.1 (scaling up 3.1.1 demonstration farms, implementation of bankable initiatives under 3.1.2), and building off PROBLUE Markets study and BFAR</p>			
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			<p>study to incentivize development of processing capability and/or bio-refinery solutions to deliver new seaweed products (e.g. fishmeal/oil replacement products, blue sugars for bio-plastics)</p> <p>3.3.2 Investment seminars and industry and investment forums conducted in collaboration with Global Seaweed Coalition, World Bank country offices, IFC, government representatives and private sector, including key value chain actors</p>			
Component 4: Knowledge Management, M&E, and IW Learn (regional)	TA	<p>Outcome 4.1: Full participation in IW:LEARN and knowledge management/communication</p> <p>Outcome 4.2. Monitoring and evaluation system in place</p>	<p>4.1.1 Participation in two IW:LEARN regional meetings and one GEF International Waters Conference delivering IW:LEARN experience notes</p> <p>4.1.2 Knowledge management and communications products, such as,</p> <ul style="list-style-type: none"> • Lessons on improved zoning, private sector 	GEF TF	603,572	3,687,825



			engagement, feasibility of carbon markets, supply demand models for different seaweed products, <ul style="list-style-type: none">• Annual global seaweed coalition communication briefs 4.2.1: Monitoring and Evaluation reports (including project progress reports, midterm evaluation, terminal evaluation)			
Subtotal				GEF TF	5,714,286	34,914,287
Project Management Cost (PMC)				GEF TF	285,714	1,745,713
Total Project Cost					6,000,000	37,660,000

PPG Phase Workplan

		Task	Who	Month													
				1	2	3	4	5	6	7	8	9	10	11	12		
Detailed Design	1	Project Development Workplan and PPG Budget finalized <ul style="list-style-type: none"> Develop TORs for national and lead consultants Recruitment of consultants Establish the Project Development Team (identify focal points from SEAFDEC, D-fish, BFAR, WWF) Kickoff workshop and training on WWF GEF polices and processes– WWF GEF Agency to host 	Project Development Team, WWF GEF														
	2	Technical Design <ul style="list-style-type: none"> Site selection, including site selection criteria and process Elaborate the threats, baseline, and barriers Draft project activities, including rough budget and governance structure Elaborate Theory of Change Climate change screening Indicators to track progress / results framework 	National Consultants, Lead Coordinator, SEAFDEC														
	3	Stakeholder Analysis and Consultation <ul style="list-style-type: none"> Brief plan for engaging stakeholders during project development Project development stakeholder consultations, including at local, national and regional level Ensure such feedback included in project design Draft the Stakeholder Engagement Plan (summarizes consultations in development phase and outlines plan for execution) 	National Consultants, SEAFDEC														
	4	Gender analysis and action plan , to inform gender inclusion into proposed strategies and activities	National Consultants, SEAFDEC														
	5	Financial Due Diligence Process – complete necessary documentation, discuss way forward	SEAFDEC, WWF GEF														

	Task	Who	Month													
			1	2	3	4	5	6	7	8	9	10	11	12		
	6	First Draft of Project Document (key sections)	National Consultants, Lead Coordinator, inputs from all													
	7	MID-POINT REVIEW MEETING based on early draft of Project Document	All													
	8	<ul style="list-style-type: none"> Draft remaining sections of Project Document Undertake additional stakeholder consultations Incorporate feedback from Mid-point Review and stakeholder consultations into the ProDoc First draft of detailed budget 	National Consultants, Lead Coordinator, inputs from SEAFDEC, D-fish, BFAR													
	9	First full draft of ProDoc and Budget														
	10	Review of first full draft project document	All													
	11	Safeguards – to be undertaken once sites and activities are known <ul style="list-style-type: none"> Categorization by WWF GEF Agency Safeguards consultant recruited and mobilized to field sites to do assessments and mitigation plans Local & national disclosure of final safeguards documents (30 days, 45 if IP) 	Safeguards Consultant, WWF GEF Safeguards Specialist													
	12	Stakeholder Engagement Plan for Execution - Disclose alongside safeguards documents	All													
Final Review and Submission	13	Semi-final draft of Project Document and other documents for submission, including Project Document, GEF CEO Endorsement Request, Co-finance letters	National Consultants, Lead Coordinator													
	13	Validation Workshop of submission package with project partners and key stakeholders	SEAFDEC, D-fish, BFAR													
	14	WWF GEF internal review and approval for submission	WWF GEF													
	15	Project Submitted to GEF – DUE DATE: DECEMBER 7, 2021 <ul style="list-style-type: none"> Revisions based on GEF Sec feedback (up to 6 mths) Technical clearance and CEO Endorsement 	WWF GEF													

		Task	Who	Month												
				1	2	3	4	5	6	7	8	9	10	11	12	
Agency Approval	16	Draft any additional documentation for WWF GEF Agency Approval . Grant agreement between WWF-GEF and Executing Agency. Safeguards Compliance memo.	SEAFDEC WWF GEF													
START	17	Project Start (likely mid-late 2022)														

PIPELINE PROJECT CONCEPT NOTE

Project Title: Implementation and Assessment of The ASEAN Regional Plan of Action for The Management of Fishing Capacity

Prospect Funding Agency: Japan-ASEAN Integration Fund (JAIF): AJCEP

Lead Department: SEAFDEC/MFRDMD

Proposed Budget: USD 588,338.61

Duration: January 2023–December 2024 (2 years)

1. BACKGROUND/INTRODUCTION

Global marine capture fisheries production increased from 81.2 million tons in 2017 to 84.4 million tons in 2018. While, the marine capture fisheries production in Southeast Asia shows an increasing trend from 11.9 million metric tons in 2000 to 18.3 million metric tons in 2018, which contributed approximately 18.9% to the global marine capture fisheries production, with an average increase of 0.37 million metric tons or 2.6% annually. The top seven producing countries of global capture fisheries accounted for almost 50 percent of total captures, with two countries are from the Southeast Asian region *i.e.*, Indonesia (2nd) and Viet Nam (7th). 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. The rapidly growing fisheries industry in Southeast Asia has led to increasing fishing capacity and fishing areas to cover international waters particularly the South China Sea and towards the offshore areas of the AMSs. The rising number of fishing fleets in the region coupled with a fast increase in harvesting capacity has not been matched with the development of national capacities and regional or sub-regional cooperation to manage fishing efforts with due consideration given to the sustainability of fishery resources.

Finfish represented 85 percent of total production, with small pelagic fish as the main group, followed by gadiformes and tuna and tuna-like species. Pelagic species have a high possibility of shared transboundary stocks in the Southeast Asian region, which requires strategic and collective efforts between AMSs to manage their resources to ensure sustainability. The studies on longtail tuna (*Thunnus tonggol*) in the Southeast Asian region covering South Andaman Sea and South China Seas indicate that longtail tuna belong to one single stock, while the studies on Indian Mackerel (*Rastrelliger kanagurta*) in the South Andaman Sea and Strait of Malacca confirm that they shared the same genetic makeup. It has therefore become necessary to improve and implement the capacity management measures in the region that would effectively limit entry into the fisheries and sustain stocks of the pelagic species. The development of a Fisheries Management Plan is one of the important measures to prevent overfishing and help overfished stocks rebound in the region. In this project, an assessment of the implementation of the ASEAN Regional Plan of Action to Manage Fishing Capacity will be conducted. The result could be used to further develop the Fisheries Management Plan or other measures in AMSs and/or the region.

2. PROGRESS AND STATUS

MFRDMD has sent the proposal of fishing capacity to the Sec before the Sec sends it to the JMT at the end of 2020. MFRDMD has received the reviewed proposal from the Food, Agriculture and Forestry Division (FAFD) of the ASEAN Secretariat and JAIF Management Team (JMT) on 29 June 2021. The proposal which has been edited by MFRDMD and DOFM has been sent to JMT on 27 August 2021. Later, on 6 September 2021, the ASEC's Programme Cooperation and Project Management Division (PCPMD) informed that there is a new ASEAN project proposal template and requested MFRDMD to edit the proposal according to the new ASEAN proposal template. After that, on 8 September 2021, JMT send their comments first without FAFD's comments so that MFRDMD could edit the proposal together with modifying the proposal format according to the new template.

3. GOAL/OVERALL OBJECTIVES

In line with the Strategic Plan of Action of ASEAN Cooperation on Fisheries 2021–2025, this project aims to assess the implementation of the ASEAN Regional Plan of Action to Manage Fishing Capacity and regional fishery information systems/mechanisms to facilitate sharing, exchange, and compilation of fishery data and information that are required at the sub-regional and regional level towards the improvement of trans-boundary fisheries management.

4. PROJECT ACTIVITY

The proposed project will study the implementation and assessment of the RPOA-Capacity and relevant existing fisheries systems/mechanisms in AMSs particularly for the transboundary species. The main activities proposed for this project are:

- a. Activity 1: Management and assessment of fishing capacity
- b. Activity 2: Compilation and enhancement of relevant existing fisheries information systems/mechanisms
- c. Activity 3: Standardization of simple and practical fisheries indicators
- d. Activity 4: Compilation and assessment of management strategies of transboundary species
- e. Activity 5: Compilation and publication of the terminal report

The description for each activity are shown in the table below:

Activity	Description
Activity 1: Management and assessment of fishing capacity	MFRDMD will conduct an assessment on the implementation of the RPOA-Capacity, fishing capacity profiles, fishing effort, and stock status in AMSs through questionnaires. MFRDMD will hold Regional Hybrid Kick-Off Meeting to introduce the project to AMSs. Regional Technical Consultation (RTC) will be held to discuss the result of the assessment of the implementation of the RPOA-Capacity, fishing capacity profiles, fishing effort, and stock status in AMSs.
Activity 2: Compilation and enhancement of relevant existing fisheries information systems/mechanisms	MFRDMD will conduct an assessment on the current status of relevant existing fisheries information systems, proposed mechanisms to facilitate sharing, exchange, and compilation of information through questionnaires. Regional Workshop will be held to discuss the result of the assessment on the current status of relevant existing fisheries information systems, proposed mechanisms to facilitate sharing, exchange, and compilation of information.
Activity 3: Standardization of simple and practical fisheries indicators	MFRDMD will organize Regional Workshop to standardize simple and practical fisheries indicators in supporting planning and monitoring of sustainable fisheries of pelagic fish.
Activity 4: Compilation and assessment of management strategies of transboundary species	MFRDMD will conduct the assessment on the current status and proposed management strategies of transboundary species in AMSs through questionnaires. RTC will be held to discuss the result of the conservation efforts and management strategies of transboundary species resources in AMSs.
Activity 5: Compilation and publication of the terminal report	MFRDMD will compile success stories in AMSs and information for the terminal report. Then, MFRDMD will publish the terminal report.

5. EXPECTED OUTPUTS/OUTCOMES

The outcome for this proposed project: To enhance ASEAN cooperation and facilitate improvement of regional fisheries information systems/mechanisms through the implementation of RPOA-Capacity in the transboundary fisheries management towards resource sustainability and environmental well-being.

There are five (5) main outputs for this proposed project:

- Output 1: The status of the RPOA-Capacity implementation in AMSs is assessed through the survey conducted in AMSs.
- Output 2: The relevant existing fisheries information systems and mechanisms are compiled and enhanced to facilitate information sharing and exchange among AMSs.
- Output 3: Simple and practical indicators are standardized in supporting the planning and monitoring of sustainable fisheries of pelagic fish.
- Output 4: Current status and establishment of the closed season, closed areas, or other management strategies of transboundary species in AMSs are identified and documented.
- Output 5: Terminal report is prepared and published.

6. PROJECT IN RELEVANCE TO THE PLAN OF ACTION ON SUSTAINABLE FISHERIES FOR FOOD SECURITY FOR THE ASEAN REGION TOWARDS 2030



PIPELINE PROJECT CONCEPT NOTE

Project Title: Regional Technical Consultation on Aquatic Animal Health Emergencies in Southeast Asia

Prospect Funding Agency: Japan-ASEAN Integration Fund

Lead Department: SEAFDEC/AQD

Proposed Budget: USD 100,000

Duration: 6 months

1. BACKGROUND/INTRODUCTION

The most serious problems faced by the aquaculture sector are diseases spread and introduced through movements of hatchery-produced stocks, new species for aquaculture, and the development and enhancement of the ornamental fish trade. During the 2012 and 2013 meetings of the SEAFDEC Program Committee, member country representatives conveyed concern regarding the outbreaks of EMS/AHPND and other transboundary diseases in the region and recognized the need for a concerted regional effort to address this. In response, the SEAFDEC Council, during its meeting on April 2014, suggested that aquatic animal health management, particularly the control and prevention of transboundary aquatic animal diseases, be included in the formulation of future programs of SEAFDEC and its partners in the region. Acknowledging the pressing need for sustained regional efforts to address disease problems in farmed aquatic animals, particularly on shrimps, SEAFDEC/ AQD and the Department of Agriculture's Bureau of Fisheries and Aquatic Resources of the Philippines, with financial support from the Japan-ASEAN Integration Fund, convened the Regional Technical Consultation on EMS/APHND and other Transboundary Diseases for Improved Aquatic Animal Health in Southeast Asia from 22 to 24 February 2016 in Makati City, Philippines. The Consultation assessed the status of EMS/AHPND and other emerging diseases in farmed shrimps in ASEAN Member States; identified gaps, priority areas for research and development and potential collaborative arrangements; and formulated regional policy recommendations that centered on emergency preparedness and response systems (early warning, detection and response) for an effective management of aquatic animal disease outbreaks in the region.

An ASEAN Regional Technical Consultation on Aquatic Emergency Preparedness and Response Systems for Effective Management of Transboundary Disease Outbreaks in Southeast Asia was conducted by SEAFDEC/AQD and the Government of Thailand (AAHRDD, Department of Fisheries) to address the recommendations of the RTC on AHPND and other transboundary diseases. The Consultation tackled the pressing concern of the ASEAN Member States on how to systematically approach devastating outbreaks of transboundary diseases of aquatic animals in the region following a well-defined Aquatic Emergency Preparedness and Response Systems (EPRS). SEAFDEC/AQD and DOF-AAHRDD coordinated with the ASEAN Network of Aquatic Animal Health Centres (ANAAHC), the existing ASEAN body on aquatic animal health which is mainly responsible for the coordination of aquatic animal health projects and activities in the region.

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 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 well-defined contingency plans during aquatic animal disease outbreaks; and
2. To enhance cooperation among ASEAN Member States, regional/international organizations, and other relevant stakeholders on initiatives that support the contingency plans for the effective management of aquatic animal disease outbreaks.

3. PROJECT DESCRIPTION

Output 1

Activity 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.

Activity 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.

Activity 3: Conduct Technical Session 3. Workshop (Day 1 and 2), which will identify the gaps in each AMS's contingency plans and prepare well-defined contingency plans for high profile diseases that each AMS could use or adapt.

Activity 4: Conduct a Fieldtrip (Day 3), which will enhance the participants' awareness/understanding of AEPRS contingency plans being adapted at the farm level.

Output 2

Activity 5: Related to Technical Session 2 under Output 1, identify joint R&D undertakings on initiatives that support contingency plans for the effective management of aquatic animal disease outbreaks between and among institutions.

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 AMSs 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

In the beginning of 2021, project and project proposal were submitted to Japan-ASEAN Integration Fund (JAIF) Management Team. AQD received a positive feedback from the funding agency, JMT mentioned that the project is timely and aligned with the implementation of the Strategic Plan of Action from ASEAN Cooperation on Fisheries (2021-2025).

Due to the travel restrictions and the ongoing pandemic, it was discussed by the technical working group from AQD that the Regional Technical Consultation on Aquatic Animal Health Emergencies in Southeast Asia won't achieve its goals and objectives if conducted *via* teleconference. With this, it was decided to postpone the project until we are safe to gather and travel again.

6. PROJECT IN RELEVANCE TO THE PLAN OF ACTION ON SUSTAINABLE FISHERIES FOR FOOD SECURITY FOR THE ASEAN REGION TOWARDS 2030

F. Regional and
International Policy
Formulation



PIPELINE PROJECT CONCEPT NOTE

Title: USAID Public International Organization (PIO) Grant Contribution to Southeast Asian Fisheries Development Center (SEAFDEC)

Prospect Funding Agency: U.S. Agency for International Development (USAID), Regional Mission for Asia (RDMA)

Lead Department: Training Department (TBC)

Estimated Budget: PIO grant of USD 2,900,000

Duration: 5 years (TBC)

1. INTRODUCTION

The Asia-Pacific region has the highest marine biodiversity on Earth. The fisheries supported by these rich ecosystems are the most productive globally, both in terms of biomass and diversity of catch. However, without the proper safeguards and protection, fish production will decline. These ecosystems are already under threat from land and marine pollution, destructive development, climate change, and fishing-related threats, such as, unsustainable fishing practices and illegal, unreported, and unregulated (IUU) fishing. IUU fishing constitutes an estimated 35% of landings, with sectoral losses exceeding \$25 billion per annum and threatens food security, livelihoods, gender equity, and labor rights.

SEAFDEC is mandated to improve the management of marine biodiversity and fisheries resources through regional strategic frameworks approved by their Member Countries. These frameworks include the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030. SEAFDEC helps their members implements the approved frameworks through regional and transboundary cooperation. USAID's Natural Resources Safeguards and Security focus area under the Indo-Pacific Vision aligns with the above frameworks supported by SEAFDEC. SEAFDEC serves as a critical platform for dialogues and cooperation for transnational and regional action to curb and eliminate IUU fishing, institute fair labor-based fisheries, and promote sustainable fishing practices in the region.

SEAFDEC is a unique regional organization and a regional leader in biodiversity conservation and fisheries management. By partnering with SEAFDEC through a direct grant, USAID can help accelerate and strengthen implementation of relevant laws, policies, and frameworks to combat IUU fishing, conserve biodiversity, and encourage the adoption of fair labor and sustainable fisheries practices by businesses.

USAID/RDMA developed the USAID Sustainable Fish Asia (SuFiA) Project in 2021 to improve the management of marine biodiversity and fisheries resources in the Indo-Pacific region by reducing unsustainable and IUU fishing (Annex 1). To achieve this goal, the USAID SuFiA Project identified the following key results: 1) Regional sustainable fisheries policies, standards, and regulatory frameworks adopted and enforced; and 2) Adoption of fair-labor and sustainable fishing practices by fishery businesses increased.

The proposed grant to SEAFDEC will be developed through a co-creation process with SEAFDEC that may include stakeholders from other donors (the European Union, German and Swiss governments) and multilateral organizations (the Food and Agriculture Organization (FAO), Asian Development Bank (ADB) and United Nations Environment Programme (UNEP)), NGOs, and CSOs as well as the private sectors, which will include fishing industry members both as individuals and as associations/groups. This PIO grant will provide USAID the opportunity to support transparent, inclusive, and sustainable fisheries in Asia.

2. GOALS

Through a potential PIO grant, USAID/RDMA will work with SEAFDEC to help build the capacity and commitment of its Member Countries and public, private and civil society stakeholders to manage critical marine and fisheries resources (including inland fisheries in the Lower Mekong) through strengthened regional cooperation.



3. CHRONOLOGY OF EVENTS

Step 1. Co-creation Process with SEAFDEC, key stakeholders including member states and its partners (October 2021 – January 2022): The output of the co-creation process will be the Activity Description for the PIO grant, detailing specific interventions under the grant. SEAFDEC and its member states will concur to finalize the Activity Description document. The co-creation process will be facilitated by RTI International (as a part of the USAID SuFiA Local Capacity Development (LCD) Activity) to discuss SEAFDEC mandates and priorities that align with the USAID SuFiA Project goal, including the ASEAN SEAFDEC Resolution and Plan of Actions for Sustainable Fisheries and Food Security for the ASEAN Region Towards 2030.

The **co-creation process** will include multiple phases such as (a) reading and research; (b) survey and key informant interviews; (c) employee and member focus group discussions; (d) activity design workshops; and (e) activity description development sessions. Through these co-creation activities, an **Activity Description** document will be developed with concurrence from SEAFDEC and its Member Countries prior to submitting to USAID/RDMA. This document will include the suggestions and agreements made during the co-creation process defining the goals and objectives of the PIO grant, theory of change, results framework, illustrative activities, and specific areas that align with the USAID SuFiA Project goal.

Step 2. Development of an application (January–February 2022): USAID/RDMA will send the Request for Application (RFA) to SEAFDEC. In response, SEAFDEC will develop both Technical and Budget applications to be submitted to USAID/RDMA. The Technical application will include the Activity Description developed in Step 1.

Step 3. Awarding Process (March – June 2022): After SEAFDEC submits the Technical and Budget Applications, USAID/RDMA will review and approve. Upon final negotiation, USAID/RDMA will send the PIO grant to SEAFDEC and its member states for review and signature. The estimated target award date is June 2022.

4. EXPECTED OUTCOMES

- A program that advances SEAFDEC’s mission to promote and facilitate concerted actions among the Member Countries to ensure the sustainability of fisheries and aquaculture in Southeast Asia.
- A program that contributes to the USAID SuFiA Project and overarching goal of improving the management of marine biodiversity and fisheries resources in the Indo-Pacific region by reducing unsustainable fishing and IUU fishing.
- The capacity of SEAFDEC, its Member Countries, and other regional organizations and platforms is enhanced to promote sustainable fisheries policies, standards, and regulatory frameworks.
- SEAFDEC and Member Countries increase their knowledge and skills on theory of change, logic models, indicator selection and target setting, gender integration and social inclusion, and budget building, among others.
- Regional institutions’ ability to promote sustainable and equitable regional growth increased.
- Measurable progress towards the adoption and implementation of regional sustainable fisheries policies, standards, and regulatory frameworks.
- Measurable progress towards the increase in the adoption of fair labor and sustainable fishing practices by fishery businesses.

5. PROGRESS AND STATUS

The co-creation process has commenced, and RTI International will facilitate this process. Prior to the Co-Creation Workshop, RTI International completed the electronic survey to 150 respondents from September 27 to October 8, 2021. The responses will be analyzed and presented during the co-creation session which is tentatively planned on November 11–12, 2021.

1. USAID SUSTAINABLE FISH ASIA (SuFiA) PROJECT

[USAID/RDMA Project Appraisal Document \(PAD\) for USAID Sustainable Fish Asia \(SuFiA\) Project](#)

2. TENTATIVE TIMELINE

The table below provides a detailed summary of the USAID procurement timeline for PIO grant. This estimated timeline is subjected to change, depending on the finalization of each step as outlined.

No.	Activity	Date	Status
STEP 1: Co-creation Process with SEAFDEC key stakeholders			
1	Pre-Survey	27 Sept - 8 Oct 2021	Completed, 150 respondents
2	SEAFDEC Co-Creation Workshop	11-12 Nov 2021	
3	Final Draft Activity Description	10 Jan 2022	
STEP 2: Development of an application			
4	USAID sends the Request for Application (RFA) to SEAFDEC	31 Jan 2022	
5	SEAFDEC Submits Applications (Technical & Budget)	28 Feb 2022	
STEP 3: Awarding Process			
6	Negotiation between USAID and SEAFDEC	Mar 2022	
8	USAID sends the PIO Grant to SEAFDEC	9 May 2022	
9	SEAFDEC reviews and signs the PIO Grant	9 Jun 2022	
10	Award PIO Grant	15 Jun 2022	

STATEMENT

*By Dr. Steven G. Olive
The Mission Director of the United States Agency
for International Development/Regional Development Mission for Asia (USAID/RDMA)*

Distinguished Members of the SEAFDEC Program Committee,
SEAFDEC Secretary-General Ms. Malinee,
SEAFDEC Senior Officials,
Representatives from Collaborating Partners,
Ladies and Gentlemen,

Good morning. The U.S. Government would like to extend its gratitude to SEAFDEC for the opportunity to participate in this 44th Program Committee Meeting. As demonstrated at the recent UN Climate Change Conference, COP26, the Biden administration is committed to supporting our international partners on decisive actions to tackle the climate crisis.

The U.S. Government, through the U.S. Agency for International Development, has many reasons to be thankful to SEAFDEC, its Member Countries, and the many esteemed international partners represented here today. We are grateful to be a part of this supportive, effective partnership on sustainable fisheries in Southeast Asia. We congratulate SEAFDEC on a successful meeting with impressive results described throughout the activity reviews. We appreciate this opportunity to come together each year to review progress, discuss regional concerns, ask questions and, in doing so, promote continuous improvement.

USAID is deeply committed to this continued progress and engagement. USAID and SEAFDEC have been working together throughout the region since 2015, starting with the USAID Oceans and Fisheries Partnership project, which successfully completed its efforts last year, and currently with the USAID Sustainable Fish Asia (SuFiA) Project. Since our partnership with SEAFDEC began, we have seen a significant shift in regional interests for electronic traceability, sustainable fisheries management, and human welfare. SEAFDEC has played an essential role in increasing discourse across each of these topics.

Our partnership with SEAFDEC has built the resiliency of Southeast Asia’s fisheries by strengthening human and institutional capacity to conserve marine biodiversity through sustainable fisheries management plans and enhancing public-private partnerships to combat IUU fishing and seafood fraud. The U.S. Government wholeheartedly supports the “ASEAN Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030,” and we look forward to continuing to support SEAFDEC and its Member Countries through ongoing programs and new initiatives on the horizon, including the upcoming Public International Organization grant to SEAFDEC.

As you heard earlier from Brad Arsenault, USAID/RDMA’s Ecosystems Management and Trade Team Lead, USAID’s commitment to promoting local leadership with effective homegrown solutions will grow stronger with this proposed new USAID and SEAFDEC partnership. Indeed, we are eager to continue supporting SEAFDEC’s invaluable work.

USAID believes that the partnerships SEAFDEC has formed throughout the region are a critical driving factor behind the progress that has been made across the region to combat IUU and enhance the sustainability of Southeast Asia’s fisheries. USAID is grateful to be part of this partnership, and we will continue to facilitate engagement of the U.S. Department of State, NOAA, the Department of Interior, and other USG counterparts towards this goal. We will continue to work with our bilateral missions to leverage efforts and resources to maximize impacts, and we will continue to engage with regional partners like the CTI-CFF, Regional Fisheries Management Organisations, FAO and others to synergize efforts. USAID will also continue to strengthen our relationship with SEAFDEC to promote its leadership and advance the priorities of its Member Countries towards national and regional priorities.

Thank you again for the opportunity to participate in another successful PCM—we look forward to the discussions to follow and our continued collaboration in the coming year.

STATEMENT

*By Dr. Michael Phillips
WorldFish*

WorldFish thanks SEAFDEC for the invitation to participate in the above meeting.

WorldFish is an international organization with a presence across Africa, Asia and the Pacific. The organization has three offices in SEAsia, the headquarters in Penang, Malaysia and in Cambodia and Myanmar. Through these country offices, the organization interacts in various ways with public, civil society and private partners. WorldFish is a research and innovation organization at its core, with a strong mission to put research into use for development and impact, in ways that reduce poverty, enhance food and nutrition and improve management of the ecosystems and the environment. WorldFish is a member of the [OneCGIAR](#)

WorldFish has been working for many years on various aspects of small-scale fisheries and aquaculture production and management within SEAsia, but the new strategy of the CGIAR and WorldFish emphasises the “*transformation of food, land and water systems in a climate crisis*”. A new research and innovation initiative is being designed for WorldFish on [Resilient aquatic food systems](#) which will guide research for the next 3 years. There are five components to the initiative: better use of data; enhanced partnerships, integration of aquaculture and fisheries into water, food and landscape planning; aquaculture genetics and innovation hubs to accelerate innovation.

As part of the OneCGIAR reform, there is an ongoing dialogue with ASEAN for future cooperation, that could provide a useful framework for strengthening regional cooperation with SEAFDEC. We welcome the recent dialogue with SEAFDEC and look forward to developing future cooperation with SEAFDEC and its member governments aligned with the recommendations and priorities from SEAFDEC members.

Thank you.

Key publications for reference are as follows – [CGIAR strategy](#) and [WorldFish strategy](#).

Contact person: Mike Akester, Regional Director, SEAsia and the Pacific, WorldFish (M.Akester@cgiar.org)

PROGRESS IN PREPARATION OF SOUTHEAST ASIAN STATE OF FISHERIES AND AQUACULTURE (SEASOFIA) 2022

1. BACKGROUND

Information on the status and trends of fisheries is widely recognized as crucial in serving as basis for sustainable development and management of fisheries. SEAFDEC throughout the past decades had undertaken several activities to compile various forms of fishery-related data and information, *e.g.* regional fishery statistics based on the national statistics data provided by the Southeast Asian countries, as well as other data and information from different SEAFDEC programs/projects. In order to ensure that the outputs from these initiatives could be integrated or digested into information that support the development and management for sustainable fisheries of the region, SEAFDEC in 2010 undertook a pilot exercise in developing the publication on “The Southeast Asian State of Fisheries and Aquaculture” or “SEASOFIA,” and the first volume of the publication was published in 2012. Such endeavor provided 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.

Taking into consideration the usefulness of the first SEASOFIA publication, the SEAFDEC Council during its 44th Meeting in 2012 agreed that the publication could be published on a regular basis, *i.e.* every 5 years. The second SEASOFIA publication was therefore prepared and published in 2017. To further sustain this initiative, the SEAFDEC Council at its 52nd Meeting in 2020 supported the preparation of the next SEASOFIA to be published in 2022.

2. PROGRESS

In line with the directives given by the 52nd Meeting of the SEAFDEC Council, the Secretariat undertook steps to prepare the next SEASOFIA to be published in 2022, the progress of which could be summarized as follows:

- 1st Inter-Departmental Consultation on Preparation for SEASOFIA 2022 (6–7 August 2020)
 - The Consultation came up with the first draft outline of the publication with identification of responsible Department and workplan. The Consultation suggested for development of questionnaires to gather additional inputs from AMSs.
- 2nd Inter-Departmental Consultation on Preparation for SEASOFIA 2022 (1 October 2020)
 - The Consultation came up with the revised draft outline with description of inputs, as well as set of questionnaires for gathering of additional inputs from AMSs
- 43rd PCM (10–12 November 2020)
 - The National Coordinators were requested to facilitate providing the necessary information through a set of questionnaires to ensure that the inputs into the SEASOFIA reflect the real picture of fisheries and aquaculture in the region.
- 53rd CM (27–28 April 2021)
 - The Council encouraged the countries that have yet to submit their inputs to the questionnaire issues by SEAFDEC to provide their respective inputs to facilitate the timely preparation of the publication.
- May- October 2021
 - The Secretariat and concerned Departments developed the draft content of inputs for SEASOFIA publication based on the agreed outline. SEAFDEC received the inputs through questionnaires from six (6) countries namely: Indonesia, Malaysia, Myanmar, Philippines, Singapore, and Thailand. These inputs are incorporated in the development of draft content of the publication which was subsequently consolidated by the Secretariat.
- 3rd Inter-Departmental Consultation on Preparation for SEASOFIA 2022 (18 and 20 October 2021)
 - The Consultation discussed on the consolidated draft SEASOFIA 2022, and provided comment/suggestions for finalization of the publication.

Based on the inputs prepared by the SEAFDEC Secretariat and concerned Departments, the draft SEASOFIA 2022 (**Annex 1**) was compiled/harmonized for consideration and comment by the 44th Meeting of the Program Committee.

The structure of the publication, and status of preparation of inputs appears as follows (*underlined or crossed-out texts are topics that were modified from the original proposal*):

Topics	Contributor	Status
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)	✓
2. Fishery Production of Southeast Asia		Remove 3.1.6 Seaweed because it is a few production come from marine capture fisheries and only two countries reported
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		
4. Inland Capture Fisheries Production of Southeast Asia		
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	MFRDMD	
1.1 Status, Issues and Concerns	(and SEC (PPC Office))	✓
1.1.1 Tuna and Tuna-like Species		✓
1.1.2 Round Scads	MFRDMD (and TD)	✓
1.1.3 Mackerels		✓
1.1.4 Anchovies		✓
1.1.5 Sardines		✓
1.1.6 Marine shrimps		✓
1.1.7 Seaweeds	AQD	✓
1.2 Challenges and Future Direction	MFRDMD (AQD and Sec)	✓
2. Inland Fishery Resources		
2.1 Status, Issues and Concerns	IFRDMD	✓
2.1.1 Contribution of Inland Fisheries to Food Security and Poverty Alleviation		
2.1.2 Data Collection on Inland Capture Fisheries	IFRDMD	✓
2.1.3 Impacts and Mitigation of Impacts of Water Barrier Construction on Inland Fisheries	IFRDMD (and TD)	✓
2.1.4 Increased Production through Culture-based Fisheries	IFRDMD (and AQD)	✓
2.1.5 <u>Conflicts on Used of Inland Water Resoutces among Various Sector</u> Inland Water Use Conflicts on Use of Water Resources with Other Sectors	IFRDMD	✓

Topics	Contributor	Status
2.2 Challenges and Future Direction	IFRDMD (AQD and TD)	✓
3. Aquatic Species Under International Concern		
3.1 Status, Issues and Concerns	MFRDMD, (TD, Sec (PPC Office))	✓
3.1.1 Sharks and Rays		
3.1.2 Anguillid Eels	IFRDMD (and Sec (JAIF))	✓
3.1.3 Sea Cucumbers	AQD (and MFRDMD)	✓
3.1.4 Seahorses	AQD	✓
3.1.5 Corals (hard and soft corals) and Coral Reef Ornamental Species	MFRDMD, (and TD)	To be added
3.1.6 Inland Species		
• Irrawaddy Dolphin	IFRDMD	✓
• Asian Arowana		✓
3.2 Challenges and Future Direction	MFRDMD (TD, IFRDMD, SEC, and AQD)	✓
4. Responsible Fishing Practices		
4.1 Status, Issues and Concerns	TD	
4.1.1 Reduction of Fishing Impact to Environment		✓
4.1.2 Optimizing Energy Use in Fisheries and Reducing Carbon Emission <u>Innovation for Responsible Fishing Operation</u>	TD	(combine the original 4.1.2 and 4.1.4
• <u>Energy Efficiency and Fuel-saving Option for Fishing Vessels</u>		✓
• <u>Fishing Site Identification System (FSI)</u>		To be added
• <u>Technology on Preservation Onboard Fishing Vessels</u>		✓
• <u>Reduction of Impacts of Fishing Operations on the Environment/Reduction of Carbon Emission)</u>		✓
• <u>Reduction of Manpower in Purse Seine Fishing Operations</u>		✓
4.1.3 Gear Marking (ALDFG)	TD	✓
4.1.4 Innovations in Responsible Fishing (fishing vessel design, deck machinery, gear innovation, fish handling facilities)	TD	X
4.1 Challenges and Future Direction	TD	
5. Utilization of Fishery Resources		
5.1 Status, Issues and Concerns		
5.1.1 <u>Utilization of Fishery Resources</u> Fish Utilization	MFRD (and AQD for non- food as aquaculture feed)	✓ ✓
5.1.2 Management of Food Losses and Wastes (Preservation and Processing, cold chain management)		✓
5.1.3 Food Safety from <u>Marine Biotoxins</u> • Marine Biotoxins, and Scombrotxin		
5.2 Challenges and Future Direction	MFRD	✓
6. Fishery Management		
6.1 Status, Issues and Concerns		
6.1.1 Management of Fishing Capacity and Combating IUU Fishing	MFRDMD	
• Management of Fishing Capacity and <u>Combating IUU Fishing</u>		✓

Topics	Contributor	Status
<ul style="list-style-type: none"> Fishing Vessels Registration and Fishing Licensing Development of a Database for Regional Fishing Vessels Record Catch Documentation and Traceability Systems for Capture Fisheries Schemes The Status, Action and Need of PSM for Implementation in Southeast Asia Port State Measures 	TD	✓
<ul style="list-style-type: none"> MCS Systems and Regional Cooperation for Combating IUU Fishing MCS Systems and Networking Strengthening Regional Cooperation for Combating IUU Fishing 	Sec (PPC office) (and MFRDMD)	✓ Combine sub-topic on MCS System and Strengthening Regional Cooperation
<ul style="list-style-type: none"> Combating IUU Fishing in Inland Fisheries Application of Innovative Technologies for Combating IUU Fishing 	IFRDMD Sec	✓ ✓
6.1.2 Management Concepts and Approaches <ul style="list-style-type: none"> Ecosystem Approach to Fisheries Management (EAFm) and Ecosystem Approach to Aquaculture (EAA) Community-based and Co-management 	TD (IFRDMD, and AQD)	✓ ✓
6.1.3 Habitats Protection and Fishery Resources Enhancement	TD, (MFRDMD, and AQD, IFRDMD)	✓
6.1.4 <u>Application of Geographic Information System (GIS) and Remote Sensing (RS) for Fisheries Management</u> Application of Fishery Information Systems for Fisheries Management (including remote sensing technology, GIS)	TD (MFRDMD, and AQD)	✓
6.2 Challenges and Future Direction	Sec (PPC Office)	✓
7. Aquaculture Development		
7.1 Status, Issues and Concerns	AQD	
7.1.1 Socio-economic Importance of Aquaculture for Food Security and Poverty Alleviation		✓
7.1.2 Fish Health Management (including Aquatic Emergency Preparedness and Response Systems)	AQD	✓
7.1.3 <u>Overcoming</u> Fish Meal Dependence in Aquaculture	AQD	✓
7.1.4 Production and Dissemination of Good Quality Seedstocks	AQD	✓
7.1.5 Production of Safe and Quality Aquaculture Products	AQD	✓
7.1.6 Impacts of Intensification of Aquaculture on the Environment	AQD	✓
7.1.7 Genetics in Aquaculture	AQD	✓
7.1.8 Traceability of Aquaculture Products	MFRD	✓
7.2 Challenges and Future Direction	AQD	✓
8. Fisheries-related Issues		✓
8.1 Climate Change and Natural Disasters	Sec (and AQD)	
8.2 Aquatic Pollution	TD	✓
8.3 Impacts of COVID-19 Pandemics to Fisheries and Aquaculture	Sec	✓

Topics	Contributor	Status
8.4 Fisheries Subsidies	Sec	✓
9. Socio-economic Well-being in the Fisheries Sector		
9.1 Labor in Fisheries and Fish Workers: working condition, safety at sea, migrant workers	TD	✓
9.2 Micro-finance, Credit, Insurance in Support of Small-scale Fisheries	TD	✓
9.3 Gender Equity in Fisheries	TD	✓
Part III. Outlook of Fisheries and Aquaculture for the Southeast Asia		
1. Growing Demand for Fish and Fishery Products	Sec (IPC Office)	✓
2. Issues and Challenges Towards Sustainable Utilization of Fishery Resources	Sec (PPC Office)	✓

STUDY ON THE IMPACTS OF COVID-19 PANDEMIC ON FISHERIES SECTOR OF THE ASEAN-SEAFDEC MEMBER COUNTRIES

1. BACKGROUND

The coronavirus diseases 2019 (COVID-19) was declared a global pandemic by the World Health Organization (WHO) on 11 March 2020, to prevent the spread of COVID-19, countries all over the world including those in the Southeast Asian region have taken several measures to control the infection and spread of the disease (*e.g.* social distancing, curfew, lockdown, mandatory shop closure, etc.). The COVID-19 vaccines have started to be provided to the people since late of 2020, it would greatly reduce the risk of COVID-19 infections, with the hope that the COVID-19 pandemic would end soon. The ongoing COVID-19 pandemic has affected people's livelihood, food security, social activities, and economies at various levels and scales. Also, for the fisheries and aquaculture sector, various measures were implemented by the countries in response to the COVID-19 pandemic which made devastating effects on fisheries activities ranging from capture fisheries, aquaculture, post-harvest processing, and the trade of fish and fishery products.

During the 52nd Meeting of SEAFDEC Council in 2020, the Council raised their concerns on the impacts of COVID-19 in the fisheries sector in Southeast Asia. SEAFDEC then conducted the “Webinar on Impact of COVID-19 on Fisheries and Aquaculture in Southeast Asia” in July 2020. The Webinar brought together international, regional and national fisheries agencies, and industry representatives to share their views and key impacts of the pandemic on the region's food supply chain of the local, national, regional, and international trade. Although initial information could be gathered through the past rapid data collection, there are views that dedicated studies should also be conducted to gather more concrete information on the impacts to the fisheries sector of the respective ASEAN–SEAFDEC Member Countries, as well as the actions and mitigation measures.

SEAFDEC proposed to conduct the study on the impacts of the COVID-19 pandemic on the fisheries sector of the ASEAN–SEAFDEC Member Countries during the 43rd Meeting of SEAFDEC Program Committee held on 17–18 November 2020 and subsequently the 53rd Meeting of SEAFDEC Council in 2021. The Study is aimed to share information among the ASEAN–SEAFDEC Member Countries on the impacts and mitigation of the impacts of COVID-19 pandemic on the fisheries sector. The expected deliverables would be a synthesis report on the impacts of the COVID-19 pandemic on the fisheries sector of the ASEAN–SEAFDEC Member Countries, an analysis for long-term implications towards sustainable food security and livelihood, and a policy brief on the impacts of the COVID-19 pandemic on the fisheries sector of the ASEAN–SEAFDEC Member Countries.

2. PROGRESS OF THE STUDY ON THE IMPACTS OF THE COVID-19 PANDEMIC ON THE FISHERIES SECTOR OF THE ASEAN–SEAFDEC MEMBER COUNTRIES

SEAFDEC in consultation with Technical Departments developed the Questionnaire which was designed to gather information on the impacts of COVID-19 pandemic to the fisheries sectors such as capture fisheries, inland fisheries, aquaculture, fish processing, fish trade, and the mitigation measures of the ASEAN–SEAFDEC Member Countries.

In February 2021, SEAFDEC organized the virtual Regional Workshop on the Study on Impacts of COVID-19 Pandemic on the Fisheries Sector of the ASEAN–SEAFDEC Member Countries to explain and discuss on the questionnaire and the instruction to obtain data and information by the national focal points (NFPs). The questionnaire was sent to NFPs at the end of February 2021 and requested for submission on 30 May 2021.

However, due to the worsening COVID-19 situation in the Southeast Asian region, it was a challenge for the respective countries to compile the data and information as inputs to the questionnaire. Nevertheless, SEAFDEC is currently collecting inputs from the countries and preparing the first draft of the study report. The remaining activity of the study is to organize the Second Regional Workshop on the Study on Impacts of COVID-19 Pandemic on the Fisheries Sector of ASEAN–SEAFDEC Member Countries to report the result of the study in order to finalize the study report. It is planned that the draft of the study report will be finalized by the end of 2021. Subsequently, the results of the study will be disseminated to the Member Countries and other relevant stakeholders. In reference to the result of this report, policy briefs will be presented for consideration by the Council Meeting in early 2022.

Work plan of activities in 2021 and onwards

June-September 2021	Preparation of the draft Study Report
October 2021	Review and comments on the draft Study Report
November 2021	Second Regional Workshop on the Study on Impacts of COVID-19 Pandemic on the Fisheries Sector of the ASEAN–SEAFDEC Member Countries
December 2021	Finalization (editing) and publishing of the study report
March 2022	Special Meeting on Policy Briefs: COVID-19 Impact Mitigation in Fisheries and Aquaculture of Southeast Asia
April 2022	Submission of the Policy Briefs

3. REQUIRED CONSIDERATION BY THE PROGRAM COMMITTEE

The Program Committee is requested to take note of the progress of the Study on Impacts of COVID-19 Pandemic on Fisheries Sector of the ASEAN–SEAFDEC Member Countries, and to comment on the work plan of activities in 2021 and onwards.

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 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-fourth Meeting of SEAFDEC Program Committee run smoothly.

Please be noted that the recommendations particularly on the programs of SEAFDEC, would be presented to the Twenty-fourth Meeting of the FCG/ASSP. The output of such meeting would be further discussed during the forthcoming SEAFDEC Council Meeting for final endorsement and approval, and possible inclusion in the overall activities of SEAFDEC. Once again, we are appreciated for your significant advice and proper guidance which made us achieve the objective of this meeting.

To conclude, please allow me to extend our wishes for the safety of all of you and your families in your respective countries. For most of us, we will virtually meet again during the Twenty-fourth Meeting of the FCG/ASSP. I wish you all the best in fulfilling our duties and responsibilities towards the sustainability fisheries in our region.

With that, ladies and gentlemen, I now declare the Forty-fourth Meeting of SEAFDEC Program Committee closed.

Thank you very much and keep safe.