ISBN 978-629-7629-29-2
SEAFDEC/MFRDMD/SP/77

SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER (SEAFDEC)
MARINE FISHERY RESOURCES DEVELOPMENT AND MANAGEMENT DEPARTMENT (MFRDMD)



Implementation and Assessment of ASEAN Regional Plan of Action for Management of Fishing Capacity:

PROJECT TERMINAL REPORT 2024-2026



Implementation and Assessment of ASEAN Regional Plan of Action for Management of Fishing Capacity:

PROJECT TERMINAL REPORT

Authors & Editors
Mazalina Ali
Rumeaida Mat Piah
Abdullah Mohamad
Khairiah Jaafar

Southeast Asian Fisheries Development Center
Marine Fishery Resources Development and Management Department
2026

Perpustakaan Negara Malaysia Cataloguing-in-Publication Data

Implementation and Assessment of ASEAN Regional Plan of Action for Management of Fishing Capacity: PROJECT TERMINAL REPORT/ Authors: Mazalina Ali, Rumeaida Mat Piah, Abdullah Mohamad, Khairiah Jaafar.

ISBN 978-629-7629-29-2

1. Fishing Capacity
2. Project Terminal Report

I. Mazalina Ali II. Rumeaida Mat Piah,

III. Abdullah Mohamad IV. Khairiah Jaafar

BIBLIOGRAPHIC CITATION

Mazalina, A., Rumeaida, M.P., Abdullah, M., and Khairiah, J. 2026. Implementation and Assessment of ASEAN Regional Plan of Action for Management of Fishing Capacity: PROJECT TERMINAL REPORT. SEAFDEC/ MFRDMD/SP/77. 266 pp

Cover page image photographed by: Mr. Muhammad Khairul Nizam Man

NOTICE OF COPYRIGHT

The publication may not be reproduced, in whole or in part, by any method or process, without written permission from the copyright holder. Application for such permission with a statement of the purpose and extent of the reproduction desired should be made through and addressed to publisher:

Southeast Asian Fisheries Development Center (SEAFDEC)/
Marine Fishery Resources Development and Management Department (MFRDMD)
Taman Perikanan Chendering,
21080 Kuala Terengganu, Terengganu, Malaysia.

All Right Reserved
© *SEAFDEC*/MFRDMD 2026

The production of this terminal report publication is supported by the **Japan-ASEAN Integration Fund (JAIF) to SEADFDEC/MFRDMD** through the Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity project. The views expressed in this publication are the author's alone and are not necessarily the views of the Government of Japan, ASEAN Member States, and the ASEAN Secretariat.

PREPARATION AND DISTRIBUTION OF THIS DOCUMENT

This Terminal Report was prepared by the Marine Fishery Resources Development and Management Department (SEAFDEC/MFRDMD) under the project "Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity", which was implemented from 2024 to 2026. The Project involved participation and contribution of SEAFDEC/MFRDMD, SEAFDEC Training Department (SEAFDEC/TD), the SEAFDEC Secretariat, and the participating ASEAN Member States (AMS), namely Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Viet Nam.

The purpose of this Project Terminal Report is to compile and share the key findings, outcomes, and lessons learned from the Fishing Capacity Project. This report can serve as a reference document for AMS, SEAFDEC Department, and other relevant stakeholders in supporting the planning and implementation of future regional projects on the management of fishing capacity. The report also incorporates, where appropriate, the inputs, experiences, and recommendations provided by the participating AMS.

Following its completion, this Terminal Report will be disseminated to AMS and SEAFDEC Departments, as well as relevant national and regional agencies and other stakeholders, as appropriate, to facilitate the sharing of knowledge, experiences, and lessons learned from the Project.

ACKNOWLEDGEMENT

The successful implementation and completion of the project entitled **"Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity"** would not have been possible without the dedicated support, cooperation and collective commitment of numerous stakeholders, agencies, experts, and individuals who contribute throughout the course of the Project.

First and foremost, our sincere appreciation and gratitude are extended to the **Government of Japan** for their generous financial support through the **Japan-ASEAN Integration Fund (JAIF)**. This support has been instrumental in facilitating the implementation of the Project and advancing regional cooperation towards sustainable fisheries management in Southeast Asia.

This project was implemented through the close collaboration between the Department of Fisheries (DOF) Malaysia, as the Proponent Agency, and the Southeast Asian Fisheries Development Center / Marine Fishery Resources Development and Management Department (SEAFDEC/MFRDMD), as the Implementing Agency. The commitment and cooperation of both institutions throughout the implementation of the Project are sincerely acknowledged and greatly appreciated.

We also wish to express our sincere appreciation to the **ASEAN Member States (AMS) namely Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Viet Nam**, for their valuable participation and contributions throughout the Project. The active participation of fisheries experts, policy makers, and technical representatives was vital to the project's success. We particularly appreciate their transparency in sharing national data, success stories, and management experiences, which have formed the technical foundation of our regional findings.

Our sincere appreciation is also extended to **Assoc. Prof. Dr. Rumeaida Mat Piah** and **Dr. Abdullah Mohamad** from Universiti Malaysia Terengganu (UMT), as well as **Prof. Dr. Che Azlan Taib** from Universiti Utara Malaysia (UUM), for their valuable expertise, technical guidance, and constructive contributions throughout the Project. Their inputs, particularly in relation to the harmonization of regional indicators and technical consultations conducted under the Project, have contributed to strengthening the scientific and practical dimensions of the Project outputs and to facilitating the linkage between scientific assessment and fisheries management and policy.

We further acknowledge with appreciation the valuable support and contributions of the **SEAFDEC Secretariat** and **SEAFDEC Training Department**, as well as the **Department of Fisheries Malaysia** and relevant national fisheries agencies that participated in the various activities of the Project. Their cooperation, technical inputs, and sharing of knowledge and experiences have contributed to the successful implementation of the Project and the achievement of its intended outcomes.

Special appreciation is extended to the **Project Secretariat at SEAFDEC/MFRDMD** for their dedicated and tireless efforts in coordinating and facilitating the implementation of the Project, organizing technical consultations and workshops, liaising with participating institutions and AMS, compiling and consolidating technical inputs, and coordinating the preparation of the Project reports. Their commitment, professionalism, and sustained support throughout the Project have been essential to the completion of its activities and outputs.

Finally, we gratefully acknowledge all experts, resource persons, fisheries officers, researchers, technical personnel, and other individuals who contributed their time, knowledge and expertise to the Project. Although their individual contributions may not all be reflected herein, their collective efforts have played an important role in strengthening regional understanding and cooperation on the management of fishing capacity.

The successful completion of this Project reflects the value of regional cooperation, knowledge sharing, and collective action in addressing common fisheries management challenges. We sincerely appreciate the contributions of all parties involved and look forward to continued collaboration in the years ahead among AMS, SEAFDEC Departments, and relevant partners towards the sustainable management of fisheries resources and the strengthening of fisheries management in the ASEAN region.

FOREWORD



The sustainable management of fishing capacity, particularly pelagic species, remains an important priority for ASEAN Member States in ensuring the long-term sustainability of fisheries resources. In this regard, the ASEAN Regional Plan of Action for the Management of Fishing Capacity (RPOA-Capacity) provides an important framework for strengthening regional cooperation and supporting more effective management of fishing capacity.

The Project on "Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity" was implemented from 2024 to 2026, with financial support from the Japan-ASEAN Integration Fund (JAIF), with Malaysia as the Lead Country and SEAFDEC/MFRDMD as the Implementing Department to assess the implementation of the RPOA-Capacity and to provide recommendations for future regional initiatives on ensuring sustainable management of fishing capacity. Throughout the implementation of the Project, ASEAN Member States had the opportunity to share their experiences and approaches through regional technical consultations, technical workshops and reporting exercises. The Project has also provided a better understanding of the status of fishing capacity management and pelagic fisheries management among AMS, while supporting the development of practical indicators and strengthening the sharing of fisheries information and knowledge across the region.

As the Project comes to an end, this Project Terminal Report presents the key activities, outputs, achievements and lessons learned from the Project. This report also highlighted recommendations for future regional initiatives including strengthening fisheries data and information sharing, monitoring capacity and enhancing regional cooperation. I hope that the findings and recommendations presented in this Report will provide useful inputs for AMS in their future work on fishing capacity and fisheries resource management. I also hope that the Project will encourage further regional initiatives and closer collaboration among the AMS and SEAFDEC Departments in sharing knowledge, experiences and expertise towards more sustainable fisheries management in the region. Finally, I would like to express my sincere appreciation to JAIF for the financial support provided towards this Project, and to the ASEAN Secretariat for its continued support and cooperation. My appreciation also goes to SEAFDEC/MFRDMD, as the Implementing Department, the participating AMS, resource persons and the Project Team for their commitment, valuable contributions and cooperation throughout the implementation of the Project.

Dato' Haji Adnan bin Hussain
Director General of Fisheries Malaysia *and* SEAFDEC Council Director for Malaysia

FOREWORD



Managing fishing capacity is a critical component in ensuring the sustainability of marine capture fisheries, particularly for small pelagic fish species. Recognizing this importance, SEAFDEC/MFRDMD, with funding support from the Japan-ASEAN Integration Fund (JAIF), was entrusted with the mandate to assess the current situation of fishing capacity management in the Southeast Asian region.

The project, Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity, was aimed aims to enhance ASEAN Member States (AMS) cooperation and facilitate the improvement of regional fisheries information systems/mechanisms through the implementation of RPOA-Capacity in the selected pelagic species fisheries management towards resource sustainability and environmental well-being. Initiated in April 2024 and originally scheduled to conclude in April 2026, the project was extended under a no-cost extension (NCE) until October 2026. With its completion, this terminal report is hereby published.

This report reflects the collective efforts of AMSs, SEAFDEC, and partner organizations, including the Fisheries Research Institutes, Department of Fisheries Malaysia. It documents the implementation and evaluation of project activities, highlighting progress in harmonizing approaches to fishing capacity management, challenges in balancing sustainability with socio-economic realities, and lessons learned that will inform future regional initiatives.

The outcomes underscore the importance of collaborative governance in addressing shared fisheries concerns. By fostering dialogue, enhancing technical capacity, and promoting evidence-based management, the project has laid the foundation for more resilient and adaptive fisheries governance frameworks across Southeast Asia.

We extend our sincere appreciation to all AMS, the Fisheries Research Institutes, and the resource persons from Universiti Malaysia Terengganu, Malaysia whose commitment and cooperation were instrumental in achieving the objectives of this project. It is our hope that the findings and recommendations presented herein will serve as a valuable reference for policymakers, practitioners, and researchers dedicated to advancing sustainable fisheries management in the region.

Mr. Abd Haris Hilmi Ahmad Arshad
Chief, Marine Fishery Resources Development and Management Department (MFRDMD)
Southeast Asian Fisheries Development Center (SEAFDEC)

ABBREVIATION

AI	Artificial Intelligence
AIS	Automatic Identification System
ALDFG	Abandoned, Lost or otherwise Discarded Fishing Gear
AMS	ASEAN Member States
AN-IUU	ASEAN Network for Combating IUU Fishing
AOIP	ASEAN Outlook on the Indo-Pacific
AR	Artificial Reef
ASCM	Agreement on Subsidies and Countervailing Measures
ASEAN	Association of Southeast Asian Nations
BFAR	Bureau of Fisheries and Aquatic Resources
BIMP-EAGA	Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area
BOBLME	Bay of Bengal Large Marine Ecosystem
BPPSDMKP	Marine and Fisheries Human Resources Development and Extension Agency
BRIN	Badan Riset dan Inovasi Nasional (the National Research and Innovation Agency) of Indonesia.
BSM	Biomass State Model
CAPFISH	Cambodia Programme for Sustainable and Inclusive Growth in the Fisheries Sector
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CCRF	Code of Conduct for Responsible Fisheries
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
CDS	Catch Documentation Scheme
CFi	Community Fisheries
CFRDD	Capture Fisheries Research and Development Division
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMSY	Catch Maximum Sustainable Yield
CPUA	Catch per Unit Area
CPUE	Catch per Unit Effort
CTI-CFF	Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security
CW	Central Waters
DOF	Department of Fisheries
DJPT	Directorate General of Capture Fisheries
DJPDSPKP	Directorate General of Strengthening the Competitiveness of Marine and Fisheries Products

EAFM	Ecosystem Approach to Fisheries Management
EEZ	Economic Exclusive Zone
ELEFAN	Electronic Length Frequency Analysis
ETI	Ecosystem Traits Index
FAD	Fish Aggregating Device
FAO	Food and Agriculture Organization of the United Nations
FCZ	Fisheries Conservation Zone
FeLiS	Fisheries Licensing Information System (Philippines)
FiA	Fisheries Administration
FiAC	Fisheries Administration Cantonment (Cambodia)
FIS	Fisheries Independent Surveys
FiSAT	FAO-ICLARM Stock Assessment Tools
FL	Fork Length
FMA	Fisheries Management Area
FMP	Fisheries Management Plan
Fmsy	Total Mortality at the Maximum Sustainable Yield
FOB	Free on Board
GN	Gill Net
GT	Gross Tonnage
GPS	Global Positioning System
GRT	Gross Registered Tonnage
HCR	Harvest Control Rule
IATTC	Inter-American Tropical Tuna Commission
IFIT	Index and Threat Assessment Tool
IMO	International Maritime Organization
IOTC	Indian Ocean Tuna Commission
ITQ	Individual Transferable Quota
IUU	Illegal, Unreported, and Unregulated
JAIF	Japan-ASEAN Integration Fund
JPLS	Sarawak Marine Fisheries Department
LBAR	Mean Length Assessment
LBB	Length-Based Bayesian Biomass
LBI	Length-Based Indicator
LBSPR	Length-Based Spawning Potential Ratio
LCCC	Length Converted Catch Curve
LGUs	Local Government Units
LMMA	Locally Managed Marine Areas
Lopt	Optimum Length of the Fish Caught
LPP WPPNRI	*Lembaga Pengelolaan Perikanan Wilayah Pengelolaan Perikanan Negara Republik Indonesia*
LRFF	Live Reef Food Fish

LWR	Length-Weight Relationship
MaFReDi	Marine Fisheries Research and Development Institute (Cambodia)
MCS	Monitoring, Control, and Surveillance
MFRDMD	Marine Fishery Resources Development and Management Department
MFVR	Malaysia Fisheries Vessel Record
MMAF	Ministry of Maritime Affairs and Fisheries (Indonesia)
MMEA	Malaysian Maritime Enforcement Agency
MMSY	Multispecies Maximum Sustainable Yield
MOU	Memorandum of Understanding
MPA	Marine Protected Area
MSP	Marine Spatial Planning
MSY	Maximum Sustainable Yield
MyFiRST	Malaysia Fisheries Resources System
NFRDI	National Fisheries Research and Development Institute (Philippines)
NSAP	National Stock Assessment Program
NPUA	Number of Fish per Unit Area
NPOA-IUU	National Plan of Action IUU to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing
NGO	Non-Government Organization
NPOA	National Plan of Action
OSS	One Stop Services
PANTAS	*Pengetahuan Nelayan Tahap Asas* (Basic Knowledge for Fishermen)
PIC	Persons in Charge
PPP	Public Private Partnership
PS	Purse Seine
PSM	Port State Measures
PSMA	Port State Measures Agreement
PTE	Project Terminal Evaluation
QGIS	Quantum Geographic Information System
R	R-package
RBM	Rights-Based Management
RES &POA-2030	Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030
RP	Reference Points
RFMO	Regional Fisheries Management Organization
RFVR	Regional Fishing Vessels Record
RPOA	Regional Plan of Action

RPOA-Capacity	ASEAN Regional Plan of Action for the Management of Fishing Capacity
RPOA-IUU	Regional Plan of Action to Promote Responsible Fishing Practices including Combating IUU Fishing
RPP Lemuru	Lemuru Fisheries Management Plan
RTC	Regional Technical Consultation
SAC	Stock Assessment Continuum
SAJI	Transport of Fish Species Licensing (Indonesia)
SDG	Sustainable Development Goal
SE	South-East Waters
SEAFDEC	Southeast Asian Fisheries Development Center
SFN	Stick-held Falling Net
SIOFA	Southern Indian Ocean Fisheries Agreement
SIPJI	Utilization of Fish Species Licensing (Indonesia)
SOP	Standard Operating Procedures
SPM	Surplus Production Model
SPR	Spawning Potential Ratio
SS	Stock Synthesis
SSDL	Stock Synthesis-Data Limited
SW	South-West Waters
SWG	Scientific Working Group
TAC	Total Allowable Catch
TD	Training Department
TG	Tonkin Gulf
TL	Total Length
TropFishR	Tropical Fisheries Analysis with R
UMT	University Malaysia Terengganu
UNFSA	United Nations Fish Stocks Agreement
UPI	Fish Processing Unit
UUM	Universiti Utara Malaysia
VBGF	von-Bertalanffy Growth Function
VHF	Very High Frequency
VMS	Vessel Monitoring System
WCPFC	Western and Central Pacific Fisheries Commission
WPPNRI	Fisheries Management Area of the Republic of Indonesia
WTO	World Trade Organization

TABLE OF CONTENT

Acknowledgement i
Foreword iii
Abbreviation v
List of Figures xii
List of Tables xiv
Executive Summary 1
5

Chapter 1 Introduction of the project
1.1 Background and Rationale of the project 6
1.2 Project Framework 9

Chapter 2: Output 1 **The status of the RPOA-Capacity Implementation in AMS is assessed through the survey conducted in AMS** 16
2.1 Activities Framework 17
2.2 List of Publication 18
2.3 Results Summary 19
2.3.1 National Pelagic Fisheries Profile 19
2.3.2 Implementation Status of RPOA-Capacity 23
2.3.3 Implementation Status of ASEAN Guidelines-IUU 33

Chapter 3: Output 2 **The relevant existing fisheries information systems and mechanisms are compiled and enhanced** 37
3.1 Activities Framework 38
3.2 List of Publication 39
3.3 Results Summary 40

Chapter 4: Output 3 **Simple and practical indicators are standardized in supporting the planning and monitoring of sustainable fisheries of pelagic fish** 45
4.1 Activities Framework 46
4.2 List of Publication 46
4.3 Results Summary 47
4.3.1 Country report for Indicator 41
Brunei Darussalam 52
Cambodia 56
Indonesia 59
Malaysia 63

Myanmar 69
Philippines 72
Thailand 85
Viet Nam 90

Chapter 5: Output 4 **Current status and establishment of the closed season, closed areas, or other management strategies of selected pelagic species in AMS are identified and documented** 99
5.1 Activities Framework 100
5.2 List of Publication 101
5.3 Results Summary 102
5.3.1 Conservation Measures and Management Strategies of AMS 102
5.3.2 Current Regulatory and Governance Framework 107
5.3.3 Success Stories from AMS in the Conservation Efforts and Management Strategies of Pelagic Fisheries 108
Brunei Darussalam 110
Cambodia 113
Indonesia 116
Malaysia 119
Myanmar 125
Philippines 129
Thailand 132
Viet Nam 136

Chapter 6: Output 5 **Terminal report is prepared and published** 141
6.1 Activities Framework 142

Chapter 7: Output 6 **Project monitoring and evaluation are conducted** 144
7.1 Activities Framework 145
7.2 List of Publication 145
7.3 Results Summary 146

Chapter 8: Project Challenges and Lesson Learned 148
8.1 The Major Inputs 149
8.2 Project Challenges 150
8.3 Lesson learned 152

Chapter 9: Conclusion and Recommendations 153
9.1 Conclusion 155
9.2 Recommendations for Future Capacity Building Programs 163
9.3 Recommendations on The Future Direction of Pelagic Fisheries 166

Bibliography 169

Annex 1: Workplan and timeline 171
Annex 2 Questionnaire template
Q1: Questionnaire on *National Fishing Capacity Profile for Pelagic Fisheries (FAO Fishing Area 57 & 71)* 175
Q2: Questionnaire on *ASEAN Regional Plan of Action for the Management of Fishing Capacity (RPOA-Capacity)* 182
Q3: Questionnaire on *ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain (ASEAN Guidelines IUU)* 189
Q4: Questionnaire on *Current Status of Existing Fisheries Information Systems/Mechanisms* 194
Q5: Questionnaire on *Compilation and Assessment on The Conservation Effort and Management Strategies of Pelagic Species* 205
Annex 3: Workshop 's list of participants and photos 213
Activity 1.1 213
Activity 1.2 215
Activity 1.3 228
Activity 1.4 220
Activity 2.1 224
Activity 2.2 226
Activity 2.3 228
Activity 3.1 232
Activity 4.1 237
Activity 4.2 239
Activity 4.3 241
Activity 5.1 246
Activity 5.2 248
Activity 5.3 250
Activity 5.4 252
Activity 6.1 254
Activity 6.2 256
Annex 4: Template for Country Reporting for Indicator Report 264
Annex 5: List of Articles, Presentations and Newsletters 266

LIST OF FIGURES

Figure 1.1	Rationale of the project.	7
Figure 1.2	The outcome, indicators, risk/assumption and verification of the project.	9
Figure 1.3	Indicators, risk/assumption and verification for Output 1.	12
Figure 1.4	Indicators, risk/assumption and verification for Output 2.	13
Figure 1.5	Indicators, risk/assumption and verification for Output 3.	13
Figure 1.6	Indicators, risk/assumption and verification for Output 4.	14
Figure 1.7	Indicators, risk/assumption and verification for Output 5.	14
Figure 1.8	Indicators, risk/assumption and verification for Output 6.	15
Figure 2.1	Implementation workflow for Output 1.	17
Figure 2.2	The dominant pelagic species in AMS (updated 2026).	22
Figure 3.1	Implementation workflow for Output 2.	38
Figure 3.2	Context of fisheries information systems/mechanisms in AMS.	40
Figure 3.3	Several gaps in reporting the fisheries information system in AMS.	43
Figure 3.4	The recommendations to improve fisheries information system or mechanisms.	44
Figure 4.1	Implementation workflow for Output 3.	46
Figure 4.2	The criteria for simple and practical indicators.	48
Figure 4.3	Biological, Economic, Social and Environment Indicators selected by AMS.	50
Figure 4.4:	Fisheries Management Area in Indonesia.	60
Figure 4.5	Landing trend (bar chart) and Standardized CPUE (line chart) of the anchovy fishery in northern West Coast of Peninsular Malaysia from year 2008-2024.	65
Figure 4.6	Philippine fisheries production data from 2013 to 2023 (PSA 2023).	74
Figure 4.7	The 12 Fisheries Management Areas in the Philippines.	75
Figure 4.8	Estimated Spawning Potential Ratio (SPR) for *D. macrosoma* caught by Ringnet and Bagnet.	79
Figure 5.1	Implementation workflow for Output 4.	100
Figure 5.2	The conservation efforts and management strategies in this category are implemented by more than 75% of AMS.	104
Figure 5.3	The conservation efforts and management strategies in this category are implemented by more than 50% of AMS.	105
Figure 5.4	The conservation efforts and management strategies that are least implemented by the AMS.	106

Figure 5.5	The current regulatory and governance framework.	107
Figure 5.6	Hilsa Fish Conservation Zone.	126
Figure 5.7	The NSAP data for Closed Season in FMA 4 of the Philippines.	130
Figure 5.8	The new approach to assessing and managing Thailand's fisheries, which integrates re-estimation of Maximum Sustainable Yield (MMSY) using a dynamic model, single-species indicator assessments, and the application of the Ecosystem Traits Index (ETI).	133
Figure 5.9	Examples of Thailand Marine Fisheries Management Plan books/reports.	134
Figure 5.10	Designation of AR and deployment arrangement.	135
Figure 5.11	Location of AR deployment in the coastal waters of Hue City, Viet Nam and sampling stations for fisheries independence surveys.	136
Figure 5.12	Comparison of species richness between the pre and post AR deployment survey.	137
Figure 5.13	Comparison on frequency of occurrence of commercially important species between pre and post AR deployment based on the bottom trawl surveys.	138
Figure 5.14	Comparison of fisheries resources density between pre and post AR deployment survey.	139
Figure 6.1	Implementation workflow for Output 5.	143
Figure 7.1	Implementation workflow for Output 6.	145
Figure 7.2	The result summary for Output 6.	147
Figure 8.1	The challenges in implementing the fishing capacity project	151
Figure 8.2	The lesson learnt after implementing the fishing capacity project.	152
Figure 9.1	Management aspects in the RPOA-Capacity.	155
Figure 9.2	Management aspects in the ASEAN Guidelines IUU.	158
Figure 9.3	Management measures and governance frameworks to support the sustainable use of pelagic fisheries.	161
Figure 9.4	The suggested plan for the future direction of management and conservation of pelagic fisheries (2027–2036).	167
Figure 9.5	The Phase 1, Phase 2 and Phase 3 of the suggested plan for the future direction of management and conservation of pelagic fisheries (2027–2036).	168

LIST OF TABLES

Table 1.1	The implementation of activities for each output.	11
Table 2.1	Publication for Output 1: Assessment of Fishing Capacity Profiles and Implementation Status of RPOA-Capacity and Asean Guidelines to Combat IUU Fishing in the Asian region.	18
Table 3.1	Publication for Output 2: Current Status of Existing Fisheries Information Systems or Mechanisms in the Asian Region.	39
Table 4.1	Publication for Output 3: Standardization of Simple and Practical Fisheries Indicators.	46
Table 4.2	Summary of landing and CPUE data for *Rastrelliger kanagurta*, 2020-2025.	53
Table 4.3	MSY, TAC, and Exploitation Rate of Pelagic in Indonesia.	61
Table 4.4	Values of growth parameters for *D. macarellus* (2014-2022).	78
Table 4.5	Values of mortality parameters of *D. macarellus* (2014-2022).	78
Table 4.6	Summary of Performance Indicators for *D. macarellus*.	79
Table 4.7	Froese indicators for *D. macrosoma* from FMA 5.	79
Table 4.8	List of Performance Indicators for *S. lemuru* computed via FISAT and LBAR.	80
Table 4.9	Estimated Fishing Selectivity Indicators for *S. lemuru*	80
Table 4.10	Biomass Indicators for *S. lemuru*.	80
Table 4.11	Sustainability Indicators for *Sardinella lemuru* and *S. gibbosa* in FMA 9.	81
Table 4.12	Parameters of the LWR equation and growth type (GT) for small fish species in the Tonkin Gulf (TG), the Central waters (CW), the South-east waters (SE) and South-west waters (SW).	93
Table 4.13	Parameters of the von Bertalanffy growth function (K, to) and growth performance indices (Φ) of small fish species in the Tonkin Gulf (TG), the Central waters (CW), the South-east waters (SE) and South-west waters (SW).	95
Table 4.14	Mortality rates (natural mortality [M], fishing mortality [F], instantaneous total mortality coefficient (Z) and exploitation rate of small pelagic fishes the Tonkin Gulf (TG), the Central waters (CW), the South-east waters (SE) and South-west waters (SW).	96
Table 5.1	Publication for Output 4: Compilation and Assessment of pelagic fisheries management strategies.	101
Table 5.2	Diversity of commercially important species observed around ARs deployed in Brunei Darussalam.	111

Table 5.3	The management of lemuru fishery in Bali Strait.	118
Table 5.4	The implementation status and management plan publication for the Sarawak EAFM.	120
Table 5.5	The multi-dimensional benefits of artificial reefs.	121
Table 5.6	The Colour of the word or line of Hull in the hull of a vessel.	127
Table 5.7	VMS Main center, Sub-station and Co-management on MCS	128
Table 5.8	Challenges encountered and measures taken to strengthen pelagic fisheries management in FMA 11.	129
Table 5.9	Trends of fisheries resources in the area surrounding the AR deployment in the coastal waters of Hue City based resource indicators.	140
Table 7.1	Publication for Output 6: Project Monitoring and Evaluation.	146
Table 9.1	Proposed capacity building program related to fish stock assessment.	164
Table 9.2	Proposed capacity building program related to data analysis and management.	165
Table 9.3	Proposed capacity building program related to governance and management of pelagic resources.	166

EXECUTIVE SUMMARY

The project entitled "**Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity (RPOA-Capacity)"** was funded by the Japan-ASEAN Integration Fund (JAIF) and implemented from 2024 to 2026. The project aimed to enhance ASEAN cooperation and facilitate the improvement of regional fisheries information systems/mechanisms through the implementation and assessment of RPOA-Capacity, with particular emphasis on selected pelagic fisheries management towards the sustainable utilisation of fisheries resources and environmental well-being. It supported efforts towards sustainable fisheries management, resource conservation, and environmental well-being. The Project contributed to regional efforts to address key regional fisheries management challenges, including fishing overcapacity, overfishing, and illegal, unreported, and unregulated (IUU) fishing, while supporting resource conservation and sustainable fisheries management.

The project was implemented in collaboration with ASEAN Member States (AMS), SEAFDEC Department, the SEAFDEC Secretariat, and relevant technical partners. Its activities focused on assessing the status national pelagic fisheries profiles, reviewing the implementation progress of the ASEAN Regional Plan of Action for the Management of Fishing Capacity (RPOA-Capacity) and ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain (ASEAN Guidelines IUU), strengthening existing fisheries information systems and mechanisms, developing practical and harmonised indicators for regional reporting, and documenting fisheries management strategies and success stories for selected pelagic fisheries.

Six key outputs were identified under the project: (1) assessment and management of fishing capacity; (2) enhancement of fisheries information systems; (3) standardization of practical indicators; (4) compilation of management strategies for selected pelagic species; (5) preparation and publication of the Project Terminal Report; and (6) project monitoring and evaluation. Between 2024–2026 implementation period, a total of 17 activities were conducted, comprising three questionnaire workshops, three analysis workshops, four Regional Technical Consultations (RTC), two evaluation meetings, and five internal workshops.

Five regional questionnaires were developed through consultative workshops and subsequently circulated to the AMS to collect information on fishing capacity trends, characteristics of pelagic fisheries, progress in implementing relevant regional frameworks, fisheries information systems, management measures, conservation initiatives, and measures to address IUU fishing controls. Responses were received from

nine participating AMS. Singapore provided only one questionnaire response, reflecting the relatively small capture of its capture fisheries sector. Lao PDR was not included as the Project focused on marine fisheries, while Timor-Leste was not yet an ASEAN Member State at the commencement of the Project.

Four RTCs were conducted to validate and further analyse the information collected through the questionnaires, refine the proposed regional indicators, and facilitate the exchange of national experiences and practical management approaches among the AMS. The consultations highlighted a range of management measures implemented across the region, including fishing effort controls, vessel registration and licensing systems, seasonal closures, Marine Protected Areas (MPAs), fisheries information and data integration initiatives, and community-based fisheries management. These consultations provided an important platform for knowledge exchanges and contributed to strengthening regional understanding of approaches to sustainable fishing capacity management.

One of the major achievements of the Project was the development and standardization of practical indicators for monitoring fishing capacity management, which AMS piloted through national reporting exercises. This exercise demonstrated differences in data availability, data quality, and national reporting capacity among AMS, while also highlighting strong regional interest in harmonized monitoring and reporting mechanisms. Overall, the project successfully delivered its expected outputs, including workshop and RTC reports, analytical reports, a standardized indicator framework, assessments of the implementation of relevant regional frameworks, and documentation of pelagic fisheries management strategies, practices and success stories.

The assessment indicated that AMS have made significant progress in strengthening national fisheries governance through the development and implementation of national policies and management measures that are increasingly aligned with regional and international frameworks. Fisheries management approaches commonly incorporate a combination of input controls, including licensing systems, vessel capacity restrictions, gear regulations, and fishing effort controls, together with spatial and temporal measures, such as seasonal closures, zoning systems, and MPAs. Several AMS have also initiated the implementation of output-based management measures, including catch limits and Total Allowable Catch (TAC), although their application remains less widespread than input-based measures.

Monitoring, Control, and Surveillance (MCS) systems are widely established across the region, with Vessel Monitoring Systems (VMS), Automatic Identification Systems (AIS), logbooks, and port inspections commonly utilised to support monitoring, compliance,

and enforcement. Nevertheless, the adoption and application of more advanced electronic monitoring technologies remain at varying stages among AMS. Traceability systems and catch documentation schemes are also increasingly being introduced to prevent the entry of IUU fishing products into supply chains and to meet domestic and international market requirements. Regional cooperation through ASEAN and collaboration with organisations such as the Food and Agriculture Organization of the United Nations (FAO) and Regional Fisheries Management Organizations (RFMOs) continue to provide important support efforts for strengthening fisheries compliance and enforcement.

The Project further highlighted the critical role of national fisheries information systems in supporting evidence-based fisheries management. Most AMS have established systems for collecting and managing key fisheries information, including fishing effort, vessel characteristics, landings, catch composition, Catch per unit Effort (CPUE), employment, and trade data. Several AMS have also developed more advanced digital platforms to support fisheries monitoring, information management, and traceability.

Despite these developments, significant information gaps remain. These include limited information on unlicensed fishing vessels, small-scale fisheries, inland fisheries, and recreational fisheries, as well as insufficient data on environmental indicators, bycatch, discards, and broader ecosystem characteristics. Such limitations may constrain the effective application of ecosystem-based fisheries management and the development of comprehensive, evidence-based management measures.

The assessment also identified considerable variations among AMS in the areas of digitalisation, data standardisation, system interoperability, and institutional capacity. In some AMS, fisheries information remains fragmented across different agencies and institutions, while linkages between scientific information and administrative fisheries data require further strengthening. Improving data harmonisation, strengthening information-sharing mechanisms, enhancing system interoperability, and digital connectivity were therefore identified as important priorities for strengthening regional fisheries governance.

Management strategies for pelagic fisheries across AMS reflect a combination of regulatory, technical, scientific, and governance approaches. These include fishing effort controls, gear regulations, spatial and temporal management measures, ecosystem-based approaches, MCS systems, habitat restoration, artificial reefs programs, and stock enhancement initiatives. Community participation and co-management approaches are also increasingly recognised as important components of sustainable fisheries governance. However, the application of rights-based management remains relatively limited in the region, with only a small number of

examples identified, including Individual Transferable Quotas (ITQ) in Thailand and community-based quota systems in Cambodia.

Overall, the Project demonstrated that AMS have made substantial progress in strengthening fisheries governance and management through regional cooperation, improved management frameworks, enhanced information systems, and the application of diverse fisheries management measures. At the same time, several challenges remain, including the uneven adoption of output-based and rights-based management approaches, limited application of advanced monitoring technologies, fragmentation and interoperability issues within fisheries information systems, and constraints related to technical expertise, financial resources, and inter-agency coordination.

To further strengthen the long-term sustainability of pelagic fisheries, the Project recommends strengthening regional harmonisation of fisheries data and traceability systems, expanding standardised data collection across relevant fisheries sectors, improving the integration of scientific, administrative, and operational fisheries information, and accelerating the adoption of appropriate digital monitoring and information technologies. Additional priorities include enhancing MCS capacity, promoting ecosystem-based and adaptive fisheries management, enhancing technical and institutional capacity through continued regional capacity-building initiatives, and progressively introducing appropriate output-based and rights-based management approaches where conditions permit.

INTRODUCTION





Caption 1: Trawl vessel and Echosounder in Malaysia

1.1 BACKGROUND AND RATIONALE OF THE PROJECT

The Southeast Asian region is one of the world's most productive marine areas, with fisheries playing a crucial role in food security, livelihoods, and national economies. However, increasing fishing pressure, growing fishing capacity, and the persistent threat of illegal, unreported, and unregulated (IUU) fishing continue to challenge the sustainability of regional fish stocks, particularly shared and transboundary pelagic species. Recognizing these issues, ASEAN has adopted several regional frameworks to guide and enhance collaborative fisheries management.

One of the cornerstone regional frameworks is the ASEAN Regional Plan of Action for the Management of Fishing Capacity (RPOA-Capacity), which provides guidance for AMS to manage fishing effort, prevent overcapacity, implement vessel monitoring and registration systems, and harmonize regional efforts to address overfishing and resource depletion. The RPOA-Capacity complements existing ASEAN and SEAFDEC initiatives, including efforts to combat IUU fishing, strengthen Monitoring, Control and Surveillance (MCS), improve data and information systems, and promote sustainable fisheries management.

The project *"Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity"* was designed to strengthen regional cooperation and enhance AMS capacity in managing fishing effort, consolidating fisheries information, and harmonizing approaches toward sustainable pelagic fisheries resources. Pelagic species such as sardines, mackerels, and anchovies form a major component of regional fisheries production, are highly mobile across political boundaries, and require coordinated and informed management strategies at both national and regional levels.

The project, funded by the Japan-ASEAN Integration Fund (JAIF) and implemented from 2024 until 2026, supports the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030 (RES&POA-2030), as well as the ASEAN-Japan Vision Statement on Friendship and Cooperation under "Partners for Quality of Life". It contributes to Sustainable Development Goal (SDG) 14 on conserving and sustainably using marine resources, while aligning with the ASEAN Outlook on the Indo-Pacific (AOIP) principles of openness, good governance, and mutual benefits. The rationale for the project (Figure 1.1) stems from several interlinked regional needs.

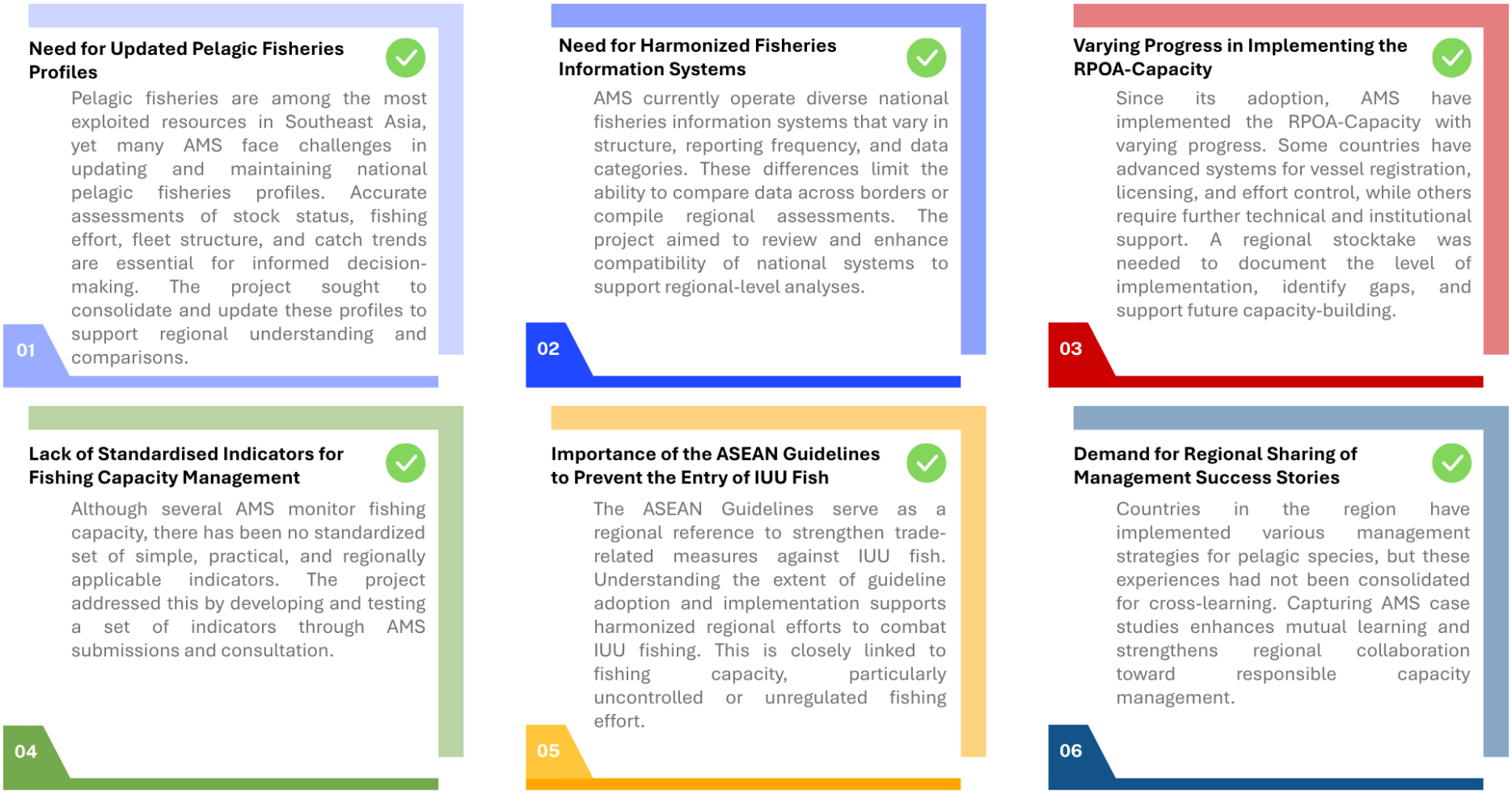


Figure 1.1: Rationale of the project.

1.2 PROJECT FRAMEWORK

1.2.1 Project Objective

The project "Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity" was designed to assess the implementation of the ASEAN Regional Plan of Action (RPOA) with regard to the management of fishing capacity.

1.2.2 Overall Objective

To enhance ASEAN cooperation and facilitate the improvement of regional fisheries information systems/mechanisms through the implementation of RPOA-Capacity in the selected pelagic species fisheries management towards resource sustainability and environmental well-being.

1.2.3 Specific Objectives

1. To assess the status of national pelagic fisheries profiles and the implementation of the ASEAN RPOA-Capacity and ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain.
2. To compile, review, and enhance existing fisheries information systems and mechanisms relevant to fishing capacity monitoring and pelagic fisheries management.
3. To develop and standardize simple and practical indicators for AMS to report on fisheries status, fishing capacity, and management progress.
4. To document and share AMS management strategies and success stories for selected pelagic species, facilitating cross-learning and replication of effective practices.

These objectives guided the design, implementation, and monitoring of project activities. These objectives also support strengthened evidence-based management, promote regional harmonization, and enhance knowledge exchange within AMS. Figure 1.2 shows the indicators, output, risk/assumption and verification of this project.

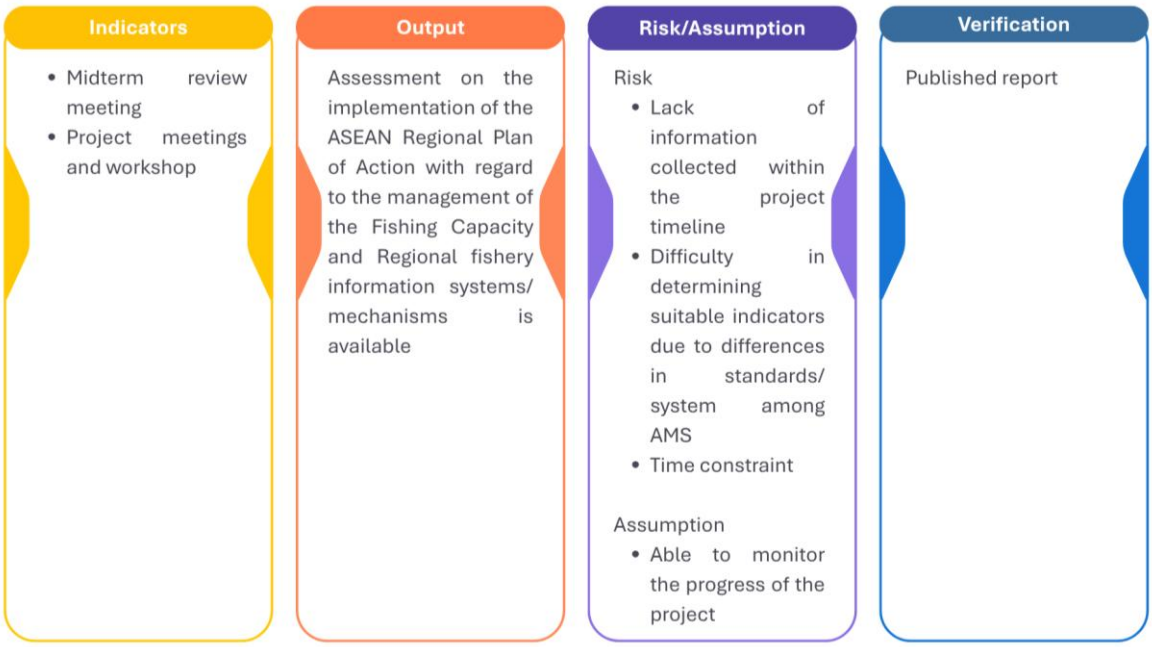


Figure 1.2: The indicators, output, risk/assumption and verification of this project.

1.2.4 Scope and Coverage

The project focused primarily on pelagic fisheries, fleet capacity, fishing effort, and management measures relevant to pelagic stocks. While broader fishing capacity issues were considered, the emphasis remained on pelagic species due to their regional importance and shared nature. Overall, the initiative covered the marine capture fisheries sectors of AMS, with nine (9) countries participating.

1. Brunei Darussalam
2. Cambodia
3. Indonesia
4. Malaysia
5. Myanmar
6. Philippines
7. Singapore
8. Thailand
9. Viet Nam

Lao PDR and Timor-Leste were not included in the scope of this initiative, as Lao PDR's landlocked geography precludes marine fisheries, while Timor-Leste was not engaged during the initial project development phase (2024).

1.2.5 Project Duration

The project was implemented over a period of two years, from April 2024 to April 2026, with a No-Cost Extension granted until October 2026 to allow for the completion and finalization of remaining activities. These activities encompassed:

- planning and inception activities
- development and distribution of questionnaires
- compilation and analysis of AMS submissions
- convening of the Regional Technical Consultation (RTC)
- validation of findings
- development of regional indicators
- documentation of AMS management practices and success stories
- preparation of project outputs and terminal report

Table 1.1: The workplan/ implementation of activities for each output.

Outputs 1	Output 2	Outputs 3	Output 4	Output 5	Output 6
The status of the implementation of RPOA-Capacity in AMS is assessed through the survey conducted in AMS	The relevant existing fisheries information systems and mechanisms are compiled and enhanced	Simple and practical indicators are standardized in supporting planning and monitoring of sustainable fisheries of pelagic fish	Current status and establishment of the closed season, closed areas, or other management strategies of selected pelagic species in AMS are identified and documented	Terminal report is prepared and published	Project monitoring and evaluation are conducted
Planned activities	**Planned activities**	**Planned activities**	**Planned activities**	**Planned activities**	**Planned activities**
Management and Assessment of Fishing Capacity	Compilation and Enhancement of Relevant Existing Fisheries Information Systems/Mechanisms	Standardization of Simple and Practical Indicators	Compilation and Assessment of Management Strategies of Selected Pelagic Species	Compilation and Publication of the Terminal Report	Project Monitoring and Evaluation
• August 2024, Kuantan • October 2024, Alor Star • February 2025, Kuala Lumpur • April 2025, Langkawi	• December 2024, Kota Bharu • May 2025, Kuala Lumpur • July 2025, Cherating	• October 2025, Subang	• September 2025, Sabak Bernam • January 2026, Port Dickson • February 2026, Kota Bharu	• April 2026, Kuala Perlis • June - July 2026, Kuching • July 2026, Kota Kinabalu • September 2026,Cameron Highlands	• April 2025, Penang • August 2026, Melaka

1.2.6 Expected Outputs

The project planned to deliver the following outputs:

a) Output 1: The status of the RPOA-Capacity Implementation in AMS is assessed through the survey conducted in AMS

Figure 1.3 illustrates the indicators, risks, and verification measure for Output 1. The activities under this output focused on the management and assessment of fishing capacity, with the survey covering three main areas:

- National Fishing Capacity Profile for Pelagic Fisheries
- ASEAN Regional Plan of Action for the Management of Fishing Capacity (RPOA-Capacity)
- ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain (ASEAN Guidelines IUU)

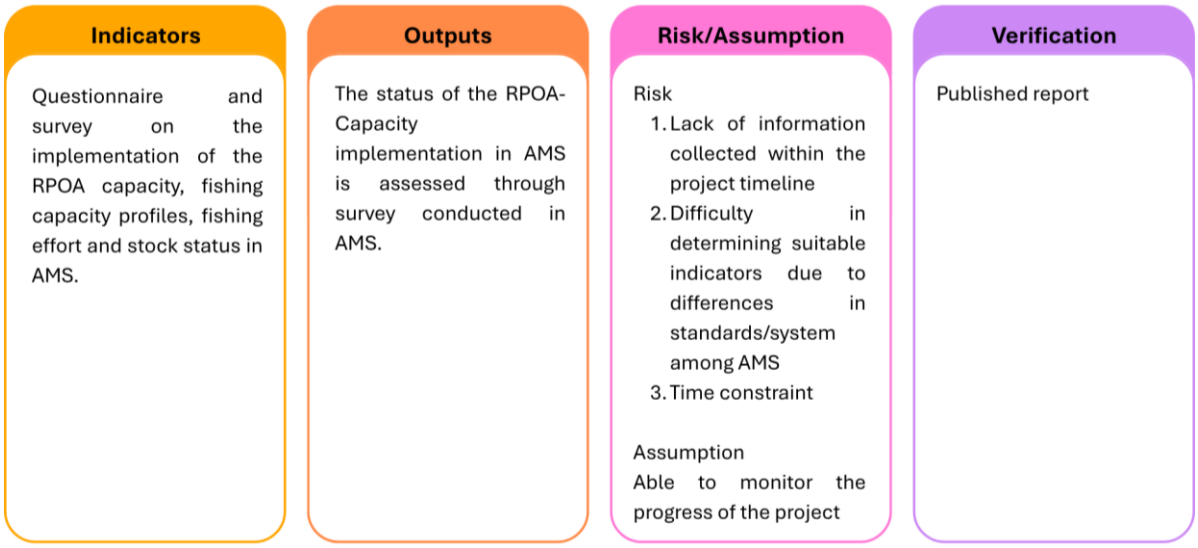


Figure 1.3: Indicators, risk or assumption and verification for Output 1.

b) Output 2: The relevant existing fisheries information systems and mechanisms are compiled and enhanced

Figure 1.4 illustrates the indicators, risks, and verification measures for Output 2. The activities under this output focused on the compilation and enhancement of fisheries information systems to support monitoring of fishing capacity, fleet data, catch statistics, and management measures.

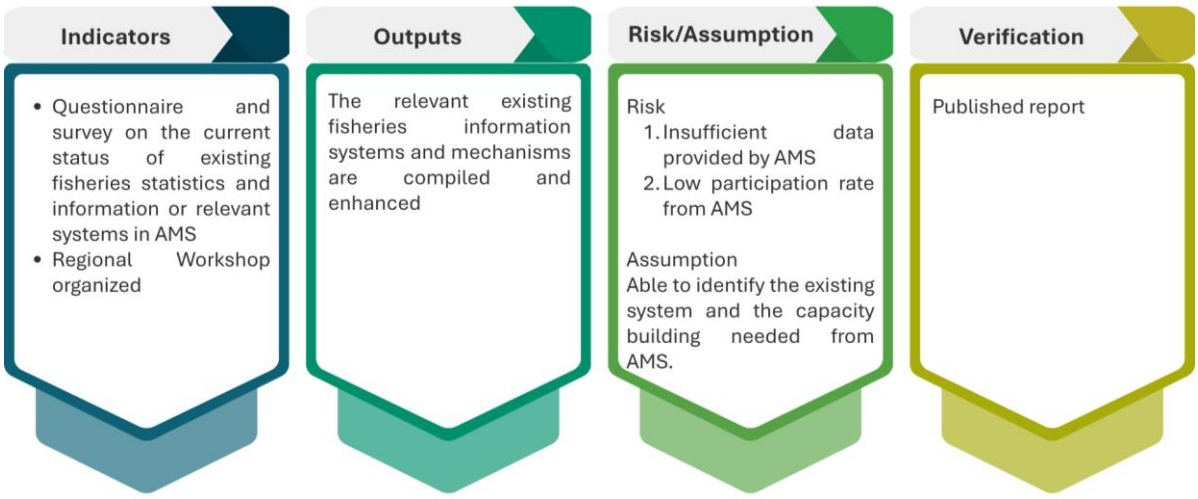


Figure 1.4: Indicators, risk or assumption and verification for Output 2.

c) Output 3: Simple and practical indicators are standardized in supporting planning and monitoring of sustainable fisheries of pelagic

Figure 1.5 illustrates the indicators, risks, and verification measures for Output 3, highlighting the role of standardized and harmonized indicators in strengthening regional reporting and management.

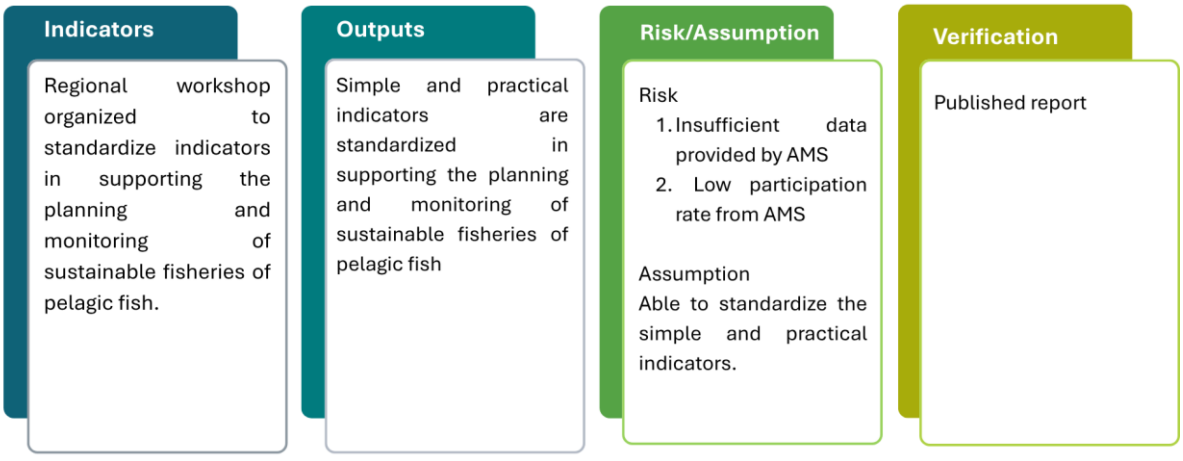


Figure 1.5: Indicators, risk or assumption and verification for Output 3.

d) Output 4: Current status and establishment of the closed season, closed areas, or other management strategies of selected pelagic species in AMS are identified and documented

Figure 1.6 illustrates the indicators, risks, and verification measures for Output 4. The activities under this output focused on documenting effective approaches for pelagic fisheries management.

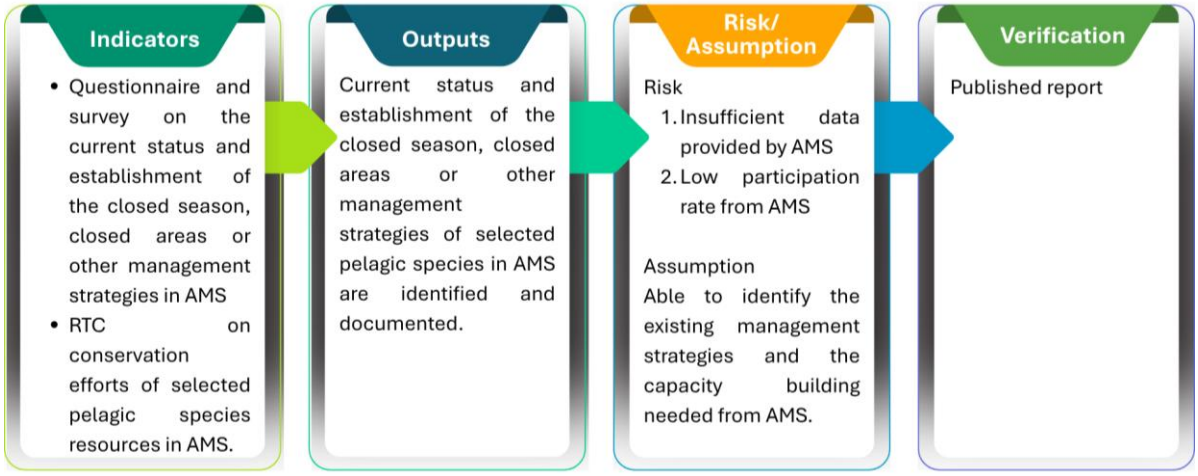


Figure 1.6: Indicators, risk or assumption and verification for Output 4.

e) Output 5: Terminal report is prepared and published

Figure 1.7 illustrates the indicators, risks, and verification measures for Output 5. The Terminal Report summarized the project's findings, achievements, gaps, lessons learned, and recommendations, serving as a comprehensive record of the initiative and its contributions to regional fisheries management.

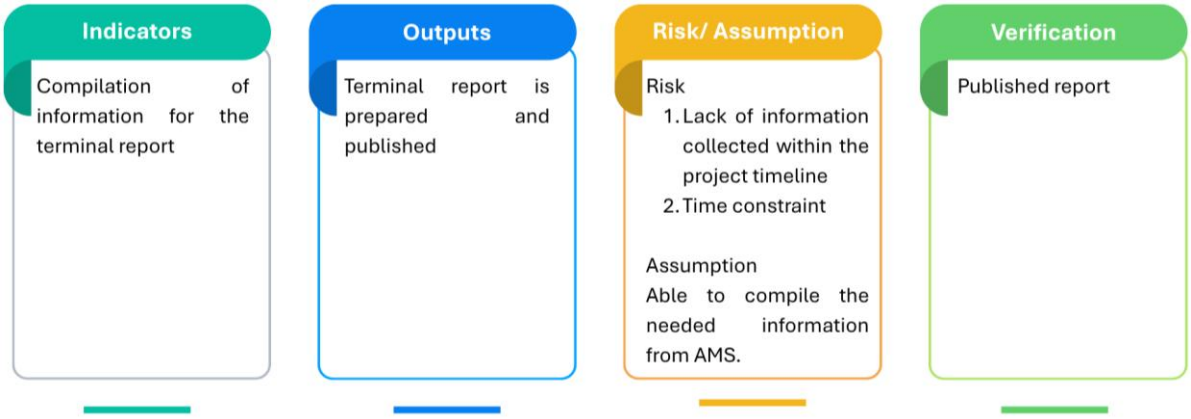


Figure 1.7: Indicators, risk or assumption and verification for Output 5.

f) Output 6: Project monitoring and evaluation are conducted

Figure 1.8 illustrates the indicators, risks, and verification measures for Output 5. Project monitoring and evaluation were conducted through a mid-term review to assess progress and make necessary adjustments, followed by an end-of-project evaluation to measure overall achievements, challenges, and lessons learned.

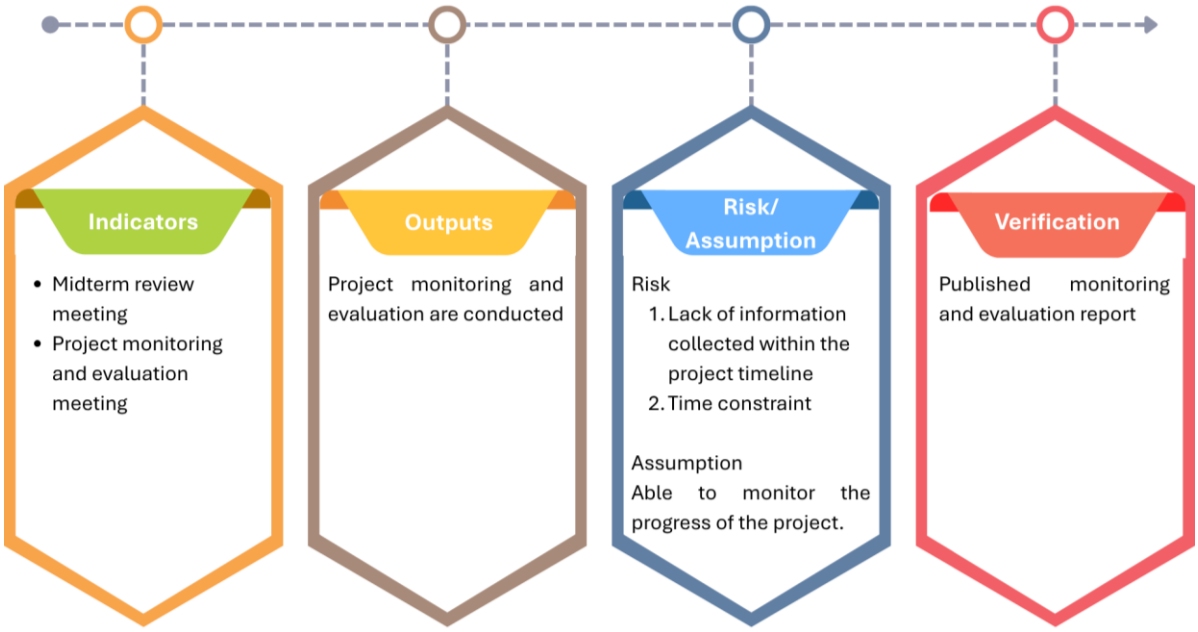


Figure 1.8: Indicators, risk or assumption and verification for Output 6.

Chapter 2

OUTPUT 1



Caption 2: Fishing vessels and landing port in Brunei Darussalam

	Output 1: The status of the RPOA-Capacity Implementation in AMS is assessed through the survey conducted in AMS

2.1 ACTIVITIES FRAMEWORK

The activity for this output began with the Workshop for Developing Questionnaires for the Management and Assessment of Fishing Capacity, held on 27–29 August 2024 in Kuantan, Pahang. Three sets of questionnaires were developed: (i) National Fishing Capacity Profile for pelagic fisheries in FAO Areas 57 and 71 (see Annex 2 Q1), (ii) Implementation Status of RPOA-Capacity (see Annex 2 Q2), and (iii) Implementation Status of ASEAN Guidelines IUU (see Annex 2 Q3). These were developed based on the ASEAN Regional Plan of Action for the Management of Fishing Capacity (2017) and the ASEAN Guidelines for Preventing the Entry of Fish and Fish Products from IUU Fishing Activities into the Supply Chain (2015).

Drafts were distributed to AMS focal points in September 2024, reviewed during the Regional Hybrid Kick-off Meeting for the Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity on 28-29 October 2024 in Alor Setar, Kedah, and finalized in December 2024 at the workshop in Kota Bharu. The finalized questionnaires were sent in January 2025, with feedback presented during the Regional Technical Consultation on Fishing Capacity Profiles and the Implementation Status of the RPOA-Capacity in the Asian Region on 25–27 February 2025 in Kuala Lumpur. A full analysis was conducted during the Workshop on the Analysis of the Regional Fishing Capacity Questionnaire on 9–12 April 2025 in Langkawi, Kedah, after which the draft report was circulated to AMS for final review and refinement before printing.

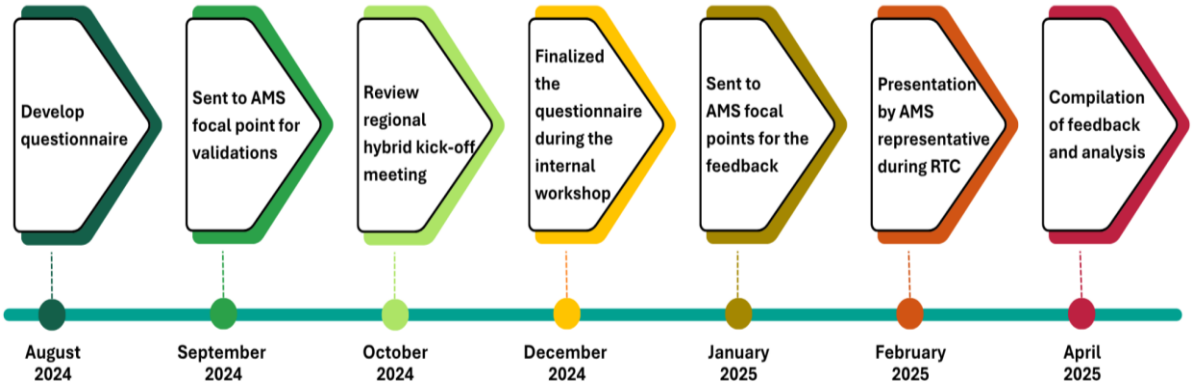
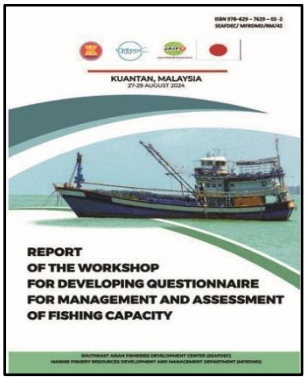
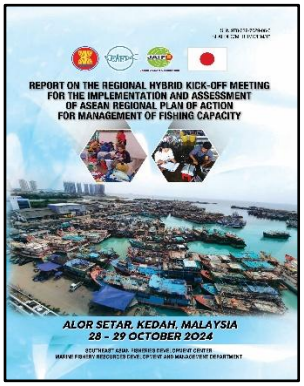
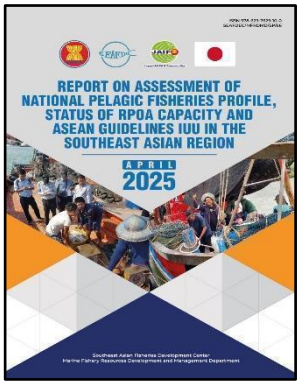


Figure 2.1: Implementation workflow for Output 1.

2.2 LIST OF PUBLICATIONS

There are four report books published under Output 1, as outlined below.

Table 2.1: Publications for Output 1.

Report of the Workshop for Developing Questionnaire for Management and Assessment of Fishing Capacity	https://repository.seafdec.org.my/handle/20.500.12561/2777	
Report of the Regional Hybrid Kick-off Meeting for the Implementation and Assessment of ASEAN Regional Plan of Action for Management of Fishing Capacity	https://repository.seafdec.org.my/handle/20.500.12561/2867	
Report on the Regional Technical Consultation on Fishing Capacity Profiles and Implementation Status of the RPOA-Capacity in the Asian Region	https://repository.seafdec.org.my/handle/20.500.12561/2889	
Report on the Assessment of National Pelagic Fisheries Profile, Status of RPOA-Capacity and ASEAN Guidelines IUU in the Southeast Asian Region	https://repository.seafdec.org.my/handle/20.500.12561/2868	

2.3 RESULTS SUMMARY

2.3.1 NATIONAL PELAGIC FISHERIES PROFILE

The pelagic fisheries profile in AMS was assessed through a structured questionnaire (see Annex 2 Q1). This survey captured information on fleet capacity, fishing effort, and dominant pelagic species in each AMS, forming the basis for evaluating national and regional progress in fisheries management.

2.3.1.1 FISH STOCK ASSESSMENT IN AMS

AMS	Summary from questionnaire feedback
Brunei Darussalam	Conducts pelagic stock assessments (e.g., acoustic, longline, mid-water trawl), most recently in 2024, on a project basis.
Cambodia	No formal stock assessments or sea surveys yet. Conducted population parameter studies (2023–2024) for key species and applied multiple stock assessment models. Fisheries statistics are analysed annually.
Indonesia	Indonesia conducts periodic stock assessment and stipulates the estimation of fish resources potential, the number of total allowable catch, and the level of utilization of fish resources in the Fisheries Management Areas.
Malaysia	Malaysia has executed a series of project-based pelagic stock assessments within FAO areas 57 and 71. These initiatives utilize acoustic and pelagic longline methods, supported by multi-model approaches to conduct comprehensive annual fisheries statistical analyses.
Myanmar	Undertakes periodic stock assessments (e.g., acoustic, trawl) based on project needs. Applies several assessment models and conducts annual fisheries statistical analysis.
Philippines	Regularly conducts project-based pelagic stock assessments (latest in 2024), including acoustic and trawl surveys. Uses several models and performs annual fisheries statistical analysis.
Thailand	Conducts periodic surveys (acoustic, longline, trawl) and annual otter board trawl surveys, with the latest in 2024. Also carries out biological studies and applies multiple assessment models. Fisheries statistics are analysed annually.
Viet Nam	Conducted major surveys in 2017 and has implemented annual biological assessments since 2015. Uses multiple stock assessment models and performs annual fisheries statistical analysis (latest in 2024).

2.3.1.2 FISHING VESSELS IN PELAGIC FISHERIES OF AMS

AMS	Summary from questionnaire feedback
Brunei Darussalam	Pelagic fisheries are dominated by purse seiners and pole-and-line vessels, some using multiple gears. Therefore, vessel numbers and horsepower have remained stable, though gear numbers have increased. Vessels are equipped with GPS, AIS, fish finders, and VHF radios but lack advanced tools such as sonar and e-logbooks. Fishing occurs from coastal waters to the EEZ.
Cambodia	Key vessels include mackerel gill netters, midwater trawlers, and king mackerel gill netters, with some using two gears. Midwater trawlers have increased, while others remain stable. All vessels have GPS and communication systems but lack advanced technologies. Fishing ranges from coastal waters to the EEZ.
Indonesia	The majority of fishing vessels are small-scale with the main fishing gear of purse seine, hook-and-line, and drift net. One fishing vessel can only use one type of fishing gear. The vessels use technology such as fish finders and VMS.
Malaysia	Purse seiners, drift netters, and trawlers are the main vessels, with only drift netters using multiple gears. Vessel numbers, gear, and horsepower have remained stable. Vessels are generally well-equipped with acoustic tools, GPS, VMS/AIS, and communication systems. Fishing zones vary by vessel type, from coastal areas to the EEZ.
Myanmar	Purse seiners, longliners, and drift netters dominate, each using one gear type. Fleet size and capacity have remained stable. Vessels have fish forecasting systems but lack most other technologies. Fishing for commercial fishing vessels occurs beyond 10 nautical miles to the EEZ.
Philippines	Purse seiners, ring netters, and drift netters are the main vessels, each using one gear. Fleet capacity has remained stable, with one large purse seiner (>200 GT) reported. Vessels are equipped with GPS, VMS, communication systems, and e-logbooks, with purse seiners having more advanced acoustic tools. Fishing occurs beyond 12 nautical miles.
Thailand	Purse seiners, drift netters, and pair trawlers dominate, each using one gear. Drift netters have increased, while others remain stable. Vessels are equipped with sonar, GPS, VMS, and communication systems but lack other advanced tools. Fishing ranges from coastal waters to the EEZ.

Viet Nam	Purse seiners, drift netters, falling netters, and trawlers are dominant vessels. Most fishing vessels are registered with a primary fishing gear type, while some vessels also use secondary fishing gear. The number of purse seiners have decreased but their horsepower has increased. Vessels have basic technologies (fish finders, GPS, tracking), but lack advanced systems. Fishing regulations restrict trawlers and Light Luring Purse in coastal waters.

2.3.1.3 DOMINANT PELAGIC SPECIES OF AMS

AMS share certain dominant pelagic species, but notable differences are observed across nations, as shown in Figure 2.2. For instance, *Rastrelliger* spp. are dominant in Cambodia, Malaysia, Myanmar, Thailand, and Viet Nam.



Figure 2.2: The dominant pelagic species in AMS (updated 2026).

2.3.2 IMPLEMENTATION STATUS OF RPOA-CAPACITY

The implementation status of RPOA-Capacity in AMS was assessed through a structured questionnaire (see Annex 2 Q2). The questions in the questionnaire were adapted from 'ASEAN Regional Plan of Action for the Management of Fishing Capacity (RPOA-Capacity)'.

2.3.2.1. ASSESSMENT OF FISHING CAPACITY

i. Assessment and Updating of Fishing Capacity

AMS generally assess and update fishing capacity at national and local levels. Brunei Darussalam conducts gear-specific surveys, while Cambodia updates vessel registration and licensing through FiA/FiAC. Indonesia performs annual reviews of vessels, gears, and catch data related to government allocations. Malaysia updates fishing capacity through the National Fish Stock Committee, and Myanmar follows NPOA-IUU guidelines. In the Philippines, the frameworks on determining the levels of fishing capacity in both municipal and commercial fishing sectors are present; however, regular monitoring and updating of the systems are the areas for improvement. Thailand assesses capacity through its Fisheries Management Plan, including annual MSY analysis and measures such as vessel buyback programs. Viet Nam is still conducting assessments, with adjustments based on stock status.

ii. Catch and Effort Data Collection

AMS are improving data collection systems. Brunei Darussalam uses digital platforms, while Cambodia collects data through MaFReDi. Indonesia has implemented e-logbooks since 2018 for fishing vessels. Malaysia applies stratified random sampling, and Myanmar collects data at landing sites and ports. The Philippines uses monitoring programs, observer systems, and vessel registration. Thailand conducts monthly port sampling with full commercial coverage and partial artisanal coverage. Viet Nam combines fisheries independent surveys (e.g. trawl, acoustics) and fisheries data collection methods (logbooks, observers and catch reports).

iii. National Stock Assessments and Reference Points

Most AMS (Brunei Darussalam, Indonesia, Malaysia, Myanmar, the Philippines, Thailand, Viet Nam) conduct national stock assessments to estimate MSY, CPUE, and biomass. Indonesia conducts periodic assessments. Malaysia uses multiple models and annual statistics, while Thailand and Viet Nam conduct regular surveys and monitoring. Myanmar collaborates with FAO and SEAFDEC, and the Philippines uses a Fisheries Management Area framework. Cambodia is conducting ongoing studies (2022–2024).

iv. Adoption of Fishing Capacity Definitions

Brunei Darussalam, Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam have adopted national definitions or measures of fishing capacity. Malaysia is advancing this through its NPOA, while Thailand formalizes definitions under fisheries law. The Philippines approved its NPOA-FC in June 2025.

Cambodia and Myanmar are still progressing. Cambodia has introduced legal frameworks, and Myanmar applies RPOA-IUU and NPOA-IUU guidelines.

2.3.2.2 DEVELOPMENT OF NATIONAL PLANS AND POLICIES

i. NPOA-Capacity Development and Monitoring

Several AMS have established mechanisms to develop and monitor NPOA-Capacity. Malaysia (since 2008), Thailand (via National Fisheries Committee and FMP), the Philippines (NPOA approved in 2025) and Viet Nam (NPOA approved in 2024) have formal systems in place. Indonesia is transitioning from input control to output control, while Myanmar applies NPOA-IUU guidelines. The Philippines has ongoing activities in implementing NPOA. Brunei Darussalam are still developing systems.

Key constraints: limited technical capacity and budget.

ii. Review and Revision of Effectiveness

Malaysia and Thailand regularly revise their systems, including zoning and quota allocation. Viet Nam has begun implementation (2024), while Myanmar follows NPOA-IUU. Brunei Darussalam reviews on an ad-hoc basis, and no revisions exist in Indonesia and Cambodia due to the absence of NPOA-Capacity.

Key constraints: limited resources.

iii. Availability of Fisheries Information

All AMS conduct stock assessments, though not always regularly. Existing data is generally sufficient to support NPOA development (e.g. Malaysia, Thailand, the Philippines, Viet Nam). Indonesia and Brunei Darussalam face data gaps and coordination issues.

Key constraints: limited expertise, budget, and inter-agency coordination.

iv. Data Gaps and Policy Delays

Insufficient data can delay policy implementation (e.g. Indonesia, Thailand). However, Malaysia notes delays may also stem from budget, priorities, and regulatory processes. The Philippines and Brunei Darussalam face institutional and coordination challenges, while Cambodia cites limited technical and financial capacity.

v. Limiting Fishing Vessels and Licenses

AMS actively restricts fishing effort to prevent overexploitation, primarily through vessel quotas, licensing caps, and fleet size limits. Brunei Darussalam regulates gear licenses via fishing vessel quotas. Cambodia, Indonesia and the Philippines use registration schemes, licensing caps, or temporary moratoria, though Indonesia notes enforcement challenges at the provincial level. Malaysia and Myanmar strictly limit fleet expansion through active moratoria or ban on new vessel construction and gear. Thailand and Viet Nam implement science-based limits using stock assessments and Maximum Sustainable Yield (MSY) to restrict high-risk gear and freeze or reduce fleet sizes.

vi. Availability of the management systems that prevent fishing capacity to expand beyond the optimum levels.

AMS regulate fishing capacity and spatial activity through distinct management mechanisms. Brunei Darussalam imposed a small-scale gear moratorium and redelineated zones to push commercial vessels further offshore. Cambodia freezes high-seas and foreign-water vessel registrations pending a standardized regulation and inspection system. Indonesia: Matches business licenses directly to vessel records to strictly control fleet allocation. Malaysia uses national committees, Fisheries Management Plans, and Ecosystem Approach to Fisheries Management (EAFM) frameworks to govern capacity. Myanmar conducts annual inspections of gear dimensions and mesh sizes to limit capacity expansion. The Philippines uses its Amended Fisheries Code to freeze capacity growth once areas are identified as overfished. Thailand authorizes its National Fisheries Committee to suspend fishing and limits high-efficiency gear using allocated fishing days. Viet Nam mandates fishing effort adjustments based on updated marine stock assessment.

vii. Eliminate Excess Capacity

Measures adopted by AMS include vessel size limits (Indonesia), gear restrictions (Malaysia), bans on new vessels (Myanmar), and quota/effort controls (Thailand, Philippines). Cambodia and Brunei Darussalam apply regulatory and assessment-based approaches, while Viet Nam requires further effort adjustments.

viii. Fishing Zoning Systems

All AMS apply zoning to manage fishing capacity. Examples include Malaysia's zoning system, Indonesia's FMAs, and Viet Nam's coastal-inshore-offshore classification. Brunei Darussalam and Thailand restrict commercial fishing in coastal areas, while Myanmar and the Philippines use zoning and seasonal closures.

ix. Use of Reference Points

AMS apply indicators such as MSY and CPUE to assess resource status. Brunei Darussalam, Malaysia, Myanmar, the Philippines, Thailand, and Viet Nam use MSY and/or CPUE, with some incorporating additional indicators (e.g. CMSY, SPR). Indonesia also applies MSY and TAC but faces challenges in regular assessments due to budget and institutional changes.

x. Encouraging Self-Restraint

AMS promotes responsible fishing through awareness and engagement. Approaches include training (Brunei Darussalam), stakeholder meetings and NGO collaboration (Indonesia), and community-based management (Myanmar, Philippines). Thailand implements multiple outreach and sustainability projects, while Malaysia conducts engagement sessions. Cambodia plans to implement such measures after NPOA approval.

Key constraints: language barriers, limited expertise, and budget.

xi. Input and Output Control Measures

AMS apply input controls widely, with some moving towards output controls. Indonesia is transitioning to quota-based systems, while Malaysia, Myanmar, the Philippines, and Thailand regulate fishing through licensing, gear, seasons, and effort controls. Output controls (e.g. quotas, size limits) are applied in selected fisheries, particularly in Indonesia and the Philippines.

Brunei Darussalam currently applies input controls only, while Cambodia plans to adopt both input and output controls after NPOA approval.

xii. Control of Vessel Construction and Importation

AMS regulates fishing capacity through vessel construction and import controls. Cambodia and Indonesia manage approvals through licensing systems, while Malaysia applies vessel design guidelines. Myanmar bans new vessel construction, and Viet Nam oversees fleet development. The Philippines applies moratoriums, while Brunei Darussalam sets vessel specifications but has limited construction controls.

xiii. Fishing Fee Schemes

Most AMS implement fishing fee systems linked to vessel registration and licensing. Indonesia integrates fees into licensing, Malaysia and Thailand apply license-based fees, and Myanmar charges annual renewal fees. The Philippines applies fees but not yet based on resource rent, while Brunei Darussalam's scheme is under review.

xiv. Vessel Registration and Licensing Systems

All AMS maintain vessel registration and licensing records. Digital systems are used in Malaysia, the Philippines, and Thailand, while Indonesia and Cambodia maintain national databases. Viet Nam applies a split system (central vs provincial), and Myanmar consolidates data nationally.

xv. Improving Registration and Licensing Procedures

AMS are modernizing systems, including online licensing (Brunei Darussalam), web-based platforms (Indonesia), and upgraded digital systems (Malaysia, Thailand). The Philippines has decentralized processes but remains largely manual, while others continue gradual improvements.

xvi. Information Sharing

All participating AMS share data through SEAFDEC, ASEAN and FAO platforms. Some AMS share vessel data regionally. Indonesia participates in multiple global and regional systems. Malaysia and Thailand publish annual national statistics.

xvii. National Vessel Databases

Most AMS have established national databases to support management and enforcement, including Indonesia, Malaysia (MFVR), the Philippines (FeLiS), Thailand and Viet Nam. Others are developing or strengthening their systems.

xviii. Assessment of Fishing Capacity Impacts

Malaysia conducts both stock and socio-economic assessments, while Brunei Darussalam compiles national statistics. The Philippines has pilot economic studies, and Indonesia focuses mainly on production trends. Cambodia and Myanmar plan or conduct limited assessments, while Viet Nam produces annual statistics and conducts stock assessments periodically.

xix. Institutional Strengthening

AMS continues to strengthen fisheries governance through laws and institutions. Examples include Malaysia's Fisheries Act, Indonesia's co-management councils, the Philippines' FMA framework, Thailand's scientific committees, and Viet Nam's Fisheries Law. Cambodia and Brunei Darussalam enhance collaboration with research partners.

xx. Resource Enhancement and Recovery

AMS implements programs such as MPAs, deployment of artificial reefs, habitat restoration, and seasonal closures. Indonesia, Malaysia, Thailand, and Viet Nam apply comprehensive measures, while Cambodia and Brunei Darussalam focus on specific initiatives (e.g. crab banks, artificial reefs). The Philippines implements management plans and NPOAs, and Myanmar applies NPOA-IUU.

Key constraints: limited technical capacity and budget.

2.3.2.3 SUBSIDIES AND ECONOMIC INCENTIVES

The NPOA–Fishing Capacity requires AMS to assess the impacts of subsidies and economic incentives to ensure they do not drive overfishing, overcapacity, or overinvestment.

Malaysia provides targeted and regularly reviewed subsidies for sustainability. Thailand manages subsidies within MSY limits and conducts biennial reviews under WTO ASCM. Myanmar offers limited support only for disaster relief, while Indonesia provides targeted subsidies for small-scale fisheries in underexploited areas. Brunei Darussalam and Cambodia do not provide fisheries subsidies.

Key constraints among AMS include limited budgets and technical capacity.

2.3.2.4 REGIONAL CONSIDERATION AND COOPERATION

AMS agrees to share fisheries data (vessels, gear, and workforce) at sub-regional levels, with SEAFDEC serving as the central platform through tools like the RFVR.

All AMS apply science-based measures, using stock assessments to guide fisheries policies and ensure sustainability. Examples include Myanmar's use of FAO and SEAFDEC data, the Philippines' ongoing harvest strategy development, Thailand's integration of scientific, economic, and social considerations, and Cambodia's catch monitoring since 2021.

While no formal sub-regional bodies exist, AMS collaborate through platforms such as SEAFDEC, CTI CFF, RPOA-IUU, and AN-IUU. Sub-regional efforts include the Gulf of Thailand Working Group (Thailand, Cambodia, Malaysia, Viet Nam), Brunei Darussalam's bilateral cooperation with Viet Nam, and Indonesia's participation in major RFMOs (IOTC, CCSBT, WCPFC, IATTC).

2.3.2.5 INTERNATIONAL CONSIDERATIONS AND FISHING IN HIGH SEAS OR RFMO COMPETENT AREAS

Most AMS (except Brunei Darussalam, Cambodia, and Myanmar) collaborate with RFMOs through information sharing, participation, and harmonized data systems.

Indonesia is a member of four RFMOs (IOTC, CCSBT, WCPFC, IATTC) and ensures compliance, proper fleet licensing, and adherence to CCRF. Thailand participates in IOTC and SIOFA, implements conservation measures, and regulates trade under CCAMLR and WCPFC, though high seas fishing rights transfer measures are not yet established.

Malaysia, the Philippines, and Viet Nam also comply with RFMO commitments, with Malaysia participating in IOTC. Although not RFMO members, Cambodia, Myanmar, and Brunei Darussalam contribute through ASEAN and SEAFDEC platforms.

2.3.2.6 REQUIRED URGENT MEASURES FOR REGIONAL FISHERIES MANAGEMENT

AMS are developing policy frameworks for managing fishing capacity at sub-regional and regional levels. Malaysia contributes through SEAFDEC and RPOA-Capacity, Indonesia applies quota-based management aligned with RFMO measures, Myanmar follows its 2015 NPOA, Brunei Darussalam collaborates with SEAFDEC, and Viet Nam implements tuna and IUU-related policies under international agreements. (No data from Thailand.)

On overcapacity, AMS assess transboundary stocks and discuss issues in RFMO platforms. Indonesia engages in RFMO discussions, while Myanmar and Malaysia conduct species and stock assessments. The Philippines is progressing under its NPOA, Brunei Darussalam is compiling data, and Viet Nam has introduced tuna quotas. (No data from Thailand.)

For unmanaged regional stocks, measures remain largely national. Indonesia, Malaysia, and the Philippines have species-specific management plans, while Thailand focuses on RFMO collaboration. Viet Nam supports implementation of UNFSA-related commitments.

Stakeholder engagement is mostly at national level, with no formal regional mechanism. Examples include Brunei Darussalam's surveys, Myanmar's forums, and the Philippines' FMAs, alongside strong regional commitment from AMS.

AMS also cooperates in MCS networks. Malaysia participates in RPOA-IUU, AN-IUU, and RFVR; Indonesia conducts joint patrols; Brunei Darussalam and Thailand share information via AN-IUU; Myanmar engages through SEAFDEC and BOBLME; and Viet Nam strengthens regional coordination and hotline mechanisms. The Philippines participates in sub-regional and regional MCS initiatives through BFAR coordination, information-sharing, joint enforcement activities, regional MCS networks, and implementation of the NPOA-IUU to deter and eliminate IUU fishing.

2.3.2.7 MECHANISM TO PROMOTE IMPLEMENTATION

i. Development of information programs to increase awareness of the need for the management of fishing capacity

AMS promotes awareness and capacity building on sustainable fishing. Malaysia conducts EAFM engagement and PANTAS training, Indonesia raises awareness on legal fishing practices, and Myanmar plans to use VMS data for capacity management. The Philippines and Thailand run training and capacity-building programs, while Brunei Darussalam uses social media and roadshows, and Viet Nam implements awareness initiatives under its NPOA. Cambodia has yet to develop an NPOA due to limited technical and financial resources.

ii. Support the sharing/exchange of scientific and technical information on issues related to the management of fishing capacity

Brunei Darussalam, Malaysia, Myanmar, Cambodia, and Viet Nam share information on fishing capacity management through seminars, symposiums, and workshops organized by SEAFDEC and other fisheries bodies. Indonesia supports information exchange among AMS provided it is mutually beneficial, as scientific data is treated as confidential.

iii. Support capacity building to address issues related to the management of fishing capacity.

AMS conducts various capacity-building programs. Malaysia, Thailand, Indonesia, the Philippines, and Viet Nam run training on stock assessment, MCS, fisheries management, and related areas, while Brunei Darussalam and Cambodia support SEAFDEC-led initiatives. Myanmar's efforts remain limited to awareness programs. A key constraint is limited funding for comprehensive training.

iv. Support institutional strengthening to address issues related to the management of fishing capacity

AMS also strengthens institutions to manage fishing capacity. Indonesia collaborates with global bodies (RFMO, FAO, WTO, IMO), Malaysia has reviewed its Fisheries Act 1985 and policies, the Philippines establishes FMAs, Thailand forms national and provincial committees, and Myanmar works with its Fisheries Federation. Cambodia and Viet Nam continue strengthening efforts, while Brunei Darussalam enforces gear controls and zoning.

v. Financial, technical, and other assistance to some developing countries to address issues related to the management of fishing capacity

Malaysia offers technical expertise and financial support upon request, subject to available funding. Thailand has provided training on Port State Measures implementation for Cambodia's Fisheries Administration through FAO-supported CAPFISH-Capture initiatives. Indonesia has provided technical assistance to developing countries, while Brunei Darussalam contributes mainly through research institutions. Viet Nam also supports regional cooperation for sustainable fisheries development. Although financial and technical assistance remains limited, AMS shows willingness to expand support in the future.

vi. Reporting progress on fishing capacity management to ASEAN and SEAFDEC

In terms of reporting progress on fishing capacity management to ASEAN and SEAFDEC, AMS generally provides updates through regional meetings and official submissions. Malaysia, Brunei Darussalam, Myanmar, Viet Nam, the Philippines, and Thailand have actively shared information on their respective progress, reflecting ongoing efforts to strengthen national and regional management of fishing capacity. By contrast, Indonesia has not submitted any report, primarily due to the absence of a National Plan of Action (NPOA) for the management of fishing capacity.

2.3.3 IMPLEMENTATION STATUS OF ASEAN GUIDELINES IUU

The implementation status of ASEAN Guidelines IUU in AMS was assessed through a structured questionnaire (see Annex 2 Q3). The questions in the questionnaire were adapted from 'ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain'.

2.3.3.1 PREVENTING THE ENTRY OF FISH AND FISHERY PRODUCTS FROM IUU FISHING ACTIVITIES INTO THE SUPPLY CHAIN

i. Managing Fishing Activities within ASEAN Member State

States regulate fishing access through vessel registration, licensing, and identification systems. Most AMS maintain vessel databases, enforce gear licensing, and apply marking requirements, though gaps remain in implementation and coordination in some countries.

AMS promotes responsible fishing through updated laws, logbook systems, and alignment with international and regional guidelines. Countries like Malaysia, Indonesia, Thailand, and Viet Nam have strengthened legal frameworks and reporting systems, while others are improving catch documentation and compliance measures.

Monitoring systems are in place across AMS, including vessel records, licensing databases, and compliance tracking. VMS is widely implemented, though coverage varies due to technical and cost constraints, with some countries using alternatives like AIS or partial deployment.

AMS also intensifies efforts to combat IUU fishing through community engagement, awareness programs, and co-management approaches, though challenges include limited funding, weak participation, and enforcement gaps.

Surveillance is strengthened through integrated monitoring systems, including patrols, VMS tracking, port inspections, and market checks. Several AMSs implement Port State Measures (PSM) and multi-stage monitoring, although capacity and enforcement limitations persist.

ii. Regulating Transshipment and Landing of Fish/ Catch Across Borders

AMS such as Cambodia, Thailand, Viet Nam, and Myanmar conducts bilateral or multilateral cooperation on IUU fishing, licensing, and trade arrangements, including annual meetings and regional engagements. The Philippines and Viet Nam maintain port compliance and trade negotiations.

Brunei Darussalam, Indonesia, and Malaysia have limited or no formal landings agreements, although Malaysia maintains informal coordination and information sharing upon request.

AMS participates in various regional and international data-sharing platforms (e.g., ASEAN RFVR, FAO Global Record, RFMOs, PSMA), and engages in regular discussions on licensing systems, regulations, and fisheries data exchange, though Malaysia and Brunei Darussalam report limited formal arrangements.

Port state measures are implemented across AMS to regulate foreign vessel access, transshipment, and landings. Thailand, Indonesia, Malaysia, the Philippines, and Viet Nam enforce inspections, monitoring systems, and PSMA-related controls, while Brunei Darussalam and Cambodia have limited or no foreign landing activity.

A key constraint across AMS is insufficient operational staffing, affecting inspection and enforcement capacity.

iii. Preventing Poaching in the EEZs of AMS

Coastal States enforce actions against illegal fishing through flag State, port State, and coastal State measures. Malaysia has strengthened penalties and introduced an IUU vessel listing system (2024), Indonesia applies PSMA-based inspections and detentions, and Thailand enforces strict sanctions under the Royal Ordinance on Fisheries across flag, port, and coastal responsibilities. Brunei Darussalam, Cambodia, Myanmar, and Viet Nam also implement national laws and PSMA-related measures with varying levels of enforcement capacity.

AMS compiles and shares IUU vessel lists through regional platforms such as AN-IUU, RFMO systems, and national databases. Malaysia, Thailand, Viet Nam, Indonesia, and the Philippines maintain and share lists to varying extents, while Cambodia is progressing through regional mechanisms and Brunei Darussalam reports no known illegal EEZ activity. All AMS update the Regional Fishing Vessels Record (RFVR), although the Philippines has partial updates and Viet Nam has developed a VMS database for improved monitoring.

Only Cambodia, Myanmar, and the Philippines have established bilateral or multilateral fishing access arrangements. Cambodia conducts annual meetings with neighbours, Myanmar uses FOB trade arrangements, and the Philippines maintains MOUs with Pacific partners. Other AMS, including Malaysia, Thailand, and Brunei Darussalam, have no such agreements due to policy, legal, or resource considerations.

iv. Controlling Illegal Fishing and Trading Practices of Live Reef Food Fish (LRRF), Reef-based Ornamentals and Endangered Aquatic Species.

AMS holds inter-agency meetings involving relevant authorities and exporters to coordinate harvesting practices and data reporting for live reef food fish (LRFF), reef ornaments, and endangered species. Indonesia, Malaysia, Myanmar, the Philippines, Thailand, and Viet Nam conduct regular coordination and apply regulatory controls, while Cambodia is still developing mechanisms and Brunei Darussalam has no formal arrangements.

Indonesia applies regulatory control over live reef fish species transport by the exporting carrier vessels, including licensing, VMS obligation, port in and port out inspection, as well as at sea patrol. For protected and CITES-appendix species, Indonesia applies Utilization of Fish Species Licensing (SIPJI) and Transport of Fish Species Licensing (SAJI).

For monitoring LRFF and ornamental trade, AMS apply various systems: Malaysia uses CITES-based licensing, Myanmar and Cambodia collaborate with universities and NGOs, the Philippines applies FAO frameworks, Thailand enforces traceability requirements, Indonesia uses an ornamental fish database system, and Brunei Darussalam supports reef monitoring but lacks a dedicated ornamental fish system.

All AMS restricts trade in endangered aquatic species, allowing exports only for research with proper documentation under national laws and CITES-related frameworks. Cambodia and Indonesia continue coordination efforts, while others such as Brunei Darussalam, Malaysia, Myanmar, the Philippines Thailand, and Viet Nam enforce strict legal controls.

AMS promotes participation of small-scale fishers in co-management and awareness programs on illegal fishing and trade. Initiatives include Thailand's reef restoration programs, Malaysia's community engagement, Cambodia and Myanmar's co-management models, the Philippines' fisheries management areas, Viet Nam's legal frameworks for community-based fisheries management and Brunei Darussalam's outreach activities.

Most AMS also maintain LRFF trade networks and cooperation mechanisms, including regional collaborations, MOUs, and ASEAN platforms to improve traceability and sustainable management. Thailand, Viet Nam, Malaysia, Cambodia, the Philippines, and Myanmar are actively involved.

v. Strengthening the Management of Fishing in the High Seas and Regional Fisheries Management Organizations (RFMOs) Areas

Port States strengthen port State measures by regulating port entry, services, pre-entry notification, and designated ports for fishing vessels. Thailand, Indonesia, the Philippines, Myanmar, and Viet Nam fully implement PSMA-related systems through inspections, designated ports, and national regulations. Malaysia applies its SOP for port state control despite not being a PSMA member, while Cambodia participates in PSMA processes but has no foreign landings. Brunei Darussalam has no foreign vessel requests.

Flag States implement observer programs for high seas fisheries under national and RFMO requirements. Thailand, the Philippines, Indonesia, Malaysia, and Viet Nam apply observer or monitoring systems, though Indonesia faces staffing and budget constraints. Cambodia, Myanmar, and Brunei Darussalam do not operate high seas fleets. Flag States also cooperate with RFMOs on Catch Documentation Schemes to prevent IUU products entering trade. Malaysia, Thailand, Indonesia, Myanmar, and Viet Nam apply CDS-related measures or cooperation, while the Philippines shares information with RFMOs and Brunei Darussalam has limited engagement.

Chapter 3

OUTPUT 2



Caption 3: Port inspection and fish market at landing jetty in Cambodia

Output 2: The relevant existing fisheries information systems and mechanism are compiled and enhanced

3.1 ACTIVITIES FRAMEWORK

This output also adopted a questionnaire-based approach, beginning with the Workshop for Developing Questionnaire on the Current Status of Existing Fisheries Statistics and Information or Relevant Systems in AMS, held on 24–26 December 2024 in Kelantan, Malaysia. The questionnaire (see Annex 2 Q4) was designed to collect information on existing fisheries information systems and mechanisms across AMSs, identifying practices and gaps. It was finalized during the first RTC in Kuala Lumpur in February 2025, and subsequently distributed to nine AMS focal points in March 2025.

Feedback was presented by seven AMS representatives: Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, Thailand, and Viet Nam during The Regional Technical Consultation on the Current Status of the Regional Fisheries Information or Mechanism in the Asian Region, held on 28–30 May 2025 at Tamu Hotel & Suites, Kuala Lumpur, while the Philippines and Singapore submitted feedback separately. The compiled feedback from nine AMS was analyzed during the Workshop on the Assessment of Regional Fisheries Information or Mechanism Questionnaire, held on 17–18 July 2025 in Cherating, Pahang. As with Output 1, the draft report was circulated to AMS for final review and refinement before publication.

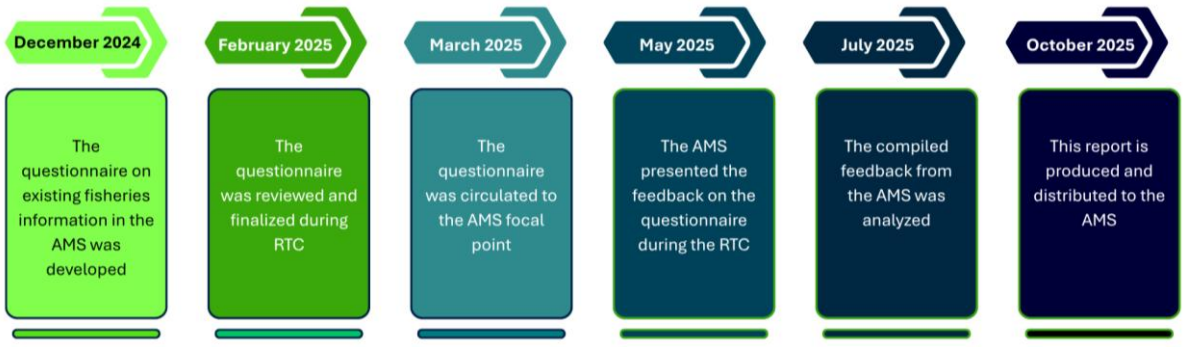
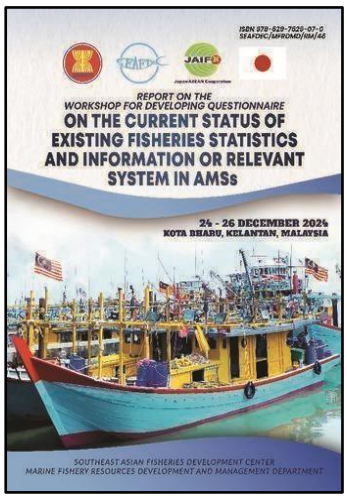
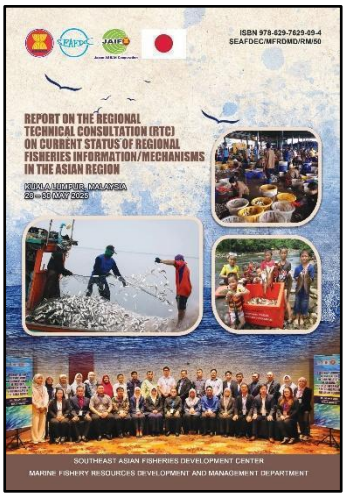


Figure 3.1: Implementation workflow for Output 2.

3.2 LIST OF PUBLICATIONS

There are three report books published under Output 2, as outlined below.

Table 3.1: Publications for Output 2.

Report on the Workshop for Developing Questionnaire on the Current Status of Existing Fisheries Statistics and Information or Relevant System in AMS	https://repository.seafdec.org.my/handle/20.500.12561/2866	
Report on the Regional Technical Consultation on Current Status of Regional Fisheries Information/Mechanisms in the Asian Region	https://repository.seafdec.org.my/handle/20.500.12561/2940	
Report on the Current Status of the Regional Fisheries Information Systems/Mechanisms in AMS	https://repository.seafdec.org.my/handle/20.500.12561/2946	

3.3 RESULTS SUMMARY

The feedback received from nine AMS, including Singapore, through the structured questionnaire (Annex 2, Q4) provides a clear picture of the current fisheries information systems and mechanisms in place. As illustrated in Figure 3.2, the questionnaires covered five main topics.

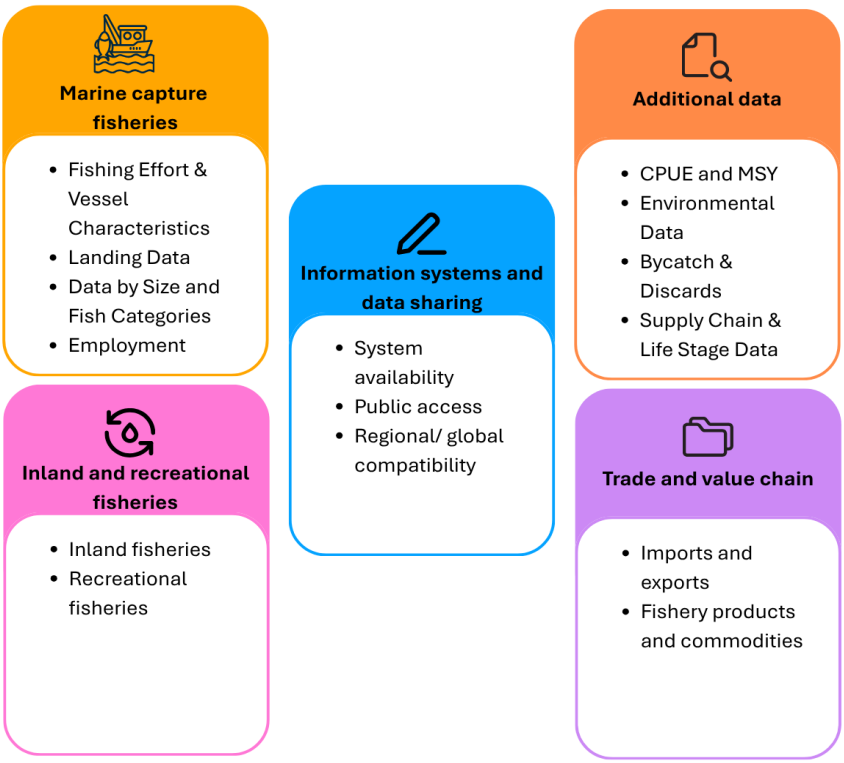


Figure 3.2: Context of fisheries information systems/mechanisms in AMS.

The outcomes of this section provide an insight into the current information systems and mechanisms currently in place and the gaps that can be filled in the future. The summary of feedback is as follows:

From all feedback, it can be concluded that most AMS have national fisheries information systems for marine capture fisheries. Landing data, vessel characteristics, and fishing effort are widely recorded for commercial fisheries. In addition, CPUE and economic data are reported in most countries. Data-sharing mechanisms with regional/international bodies (e.g., FAO, SEAFDEC) exist in all AMS. Some countries have advanced digital systems, e.g., Thailand's Fisheries Single Window and Indonesia's traceability efforts.

On the other hand, a few data are still limited, especially on unlicensed vessels, small-scale fisheries, inland and recreational fisheries. Incomplete coverage of environmental, discard, and bycatch data also need to be taken into consideration

since these parameters are important in management of resources. Limited system compatibility with regional/global databases also was observed as well as variability in data accessibility and comprehensiveness across AMS.

3.3.1 MARINE CAPTURE FISHERIES DATA

- **Fishing Effort and Vessel Characteristics**: Most AMS has comprehensive data on fishing effort for licensed vessels but lack data on unlicensed ones. Data on vessel characteristics for commercial vessels is generally well-documented, while information for small-scale vessels is limited.

- **Landing Data**: Landings are typically recorded by fishing gear, vessel size, fishing area, and species name or local names. Data collection occurs mainly at government landing ports, with some AMS also using private ports or village stalls. Subsampling is a common method.

- **Data by Size and Fish Categories**: Length, weight, and size grade data are collected inconsistently, often species dependent. Most AMS record commercial fish landings; trash fish data is more limited.

- **Employment**: Information on national fishers is widely available (categorized by gear, vessel, zone, gender, and age). Data on foreign fishers is scarce, available in only a few AMS.

3.3.2 ADDITIONAL DATA COLLECTED BY AMS

- **CPUE and MSY**: All AMS except Malaysia report Catch per Unit Effort (CPUE), with Thailand using it to estimate Maximum Sustainable Yield (MSY). Whilst Malaysia does not formally report CPUE in its annual fisheries statistics, the index is nevertheless calculated and used in the estimation of MSY for fisheries management purposes.

- **Environmental Data**: Only Thailand and Viet Nam collect detailed environmental data. Environmental data was collected mostly through research activities and by other agencies such as the Department of Environment.

- **Bycatch and Discards**: Bycatch data is collected by most AMS however discard data is more limited.

- **Supply Chain and Life Stage Data**: Supply chain information is recorded in several AMS, and data on fish life stages is available in Myanmar, Thailand, and Viet Nam which mostly from research activity.

3.3.3 INLAND AND RECREATIONAL FISHERIES DATA

- **Inland Fisheries**: Data is available in Cambodia, Indonesia, Myanmar, Malaysia, the Philippines and Thailand. Landing data is recorded by species or local name, with varying coverage of vessel and gear types.

- **Recreational Fisheries**: Data is limited; only Malaysia and Brunei Darussalam provide some level of information.

3.3.4 TRADE AND VALUE CHAIN DATA

- **Imports and Exports**: All AMS except Singapore have detailed trade information. Thailand has a robust digital traceability system, integrating customs and fisheries data.

- **Fishery Products and Commodities**: All AMS have comprehensive records of fishery products, including live, fresh, salted, and ornamental products, along with supply chain distribution.

3.3.5 INFORMATION SYSTEM AND DATA SHARING AMONG AMS

- **System Availability**: All AMS except Singapore have fisheries statistics systems. Systems are centralized, except in the Philippines and Singapore.

- **Public Access**: Data is publicly available in some AMS, like Indonesia, Malaysia and Thailand, while others like Brunei Darussalam and Cambodia require requests.

- **Regional/Global Compatibility**: Only Brunei Darussalam and Thailand report system compatibility with regional/global databases. All AMS share stock status data with organizations such as SEAFDEC and FAO.

In terms of reporting the information, the analysis identified several gaps related to the existing systems and practices, as illustrated in Figure 3.3.



Figure 3.3: Several gaps in reporting the fisheries information system in AMS.

3.3.6 RECOMMENDATIONS TO IMPROVE FISHERIES INFORMATION SYSTEMS OR MECHANISMS IN THE SOUTHEAST ASIAN REGION

While the foundation of fisheries information systems and mechanisms in AMS is in place, they are not yet fully sufficient. To improve fisheries management and regional cooperation, gaps in data coverage, integration, standardization, and accessibility must be addressed. To strengthen the effectiveness and regional harmonization of fisheries information systems and mechanisms in AMS, the following recommendations are proposed:

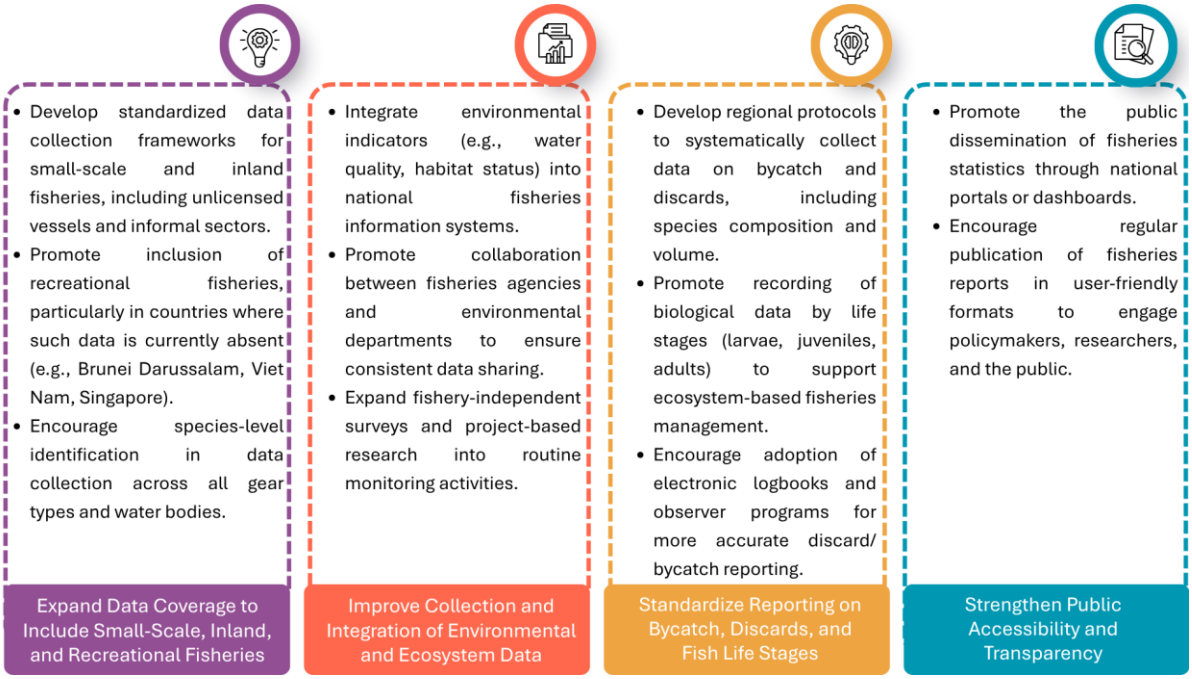
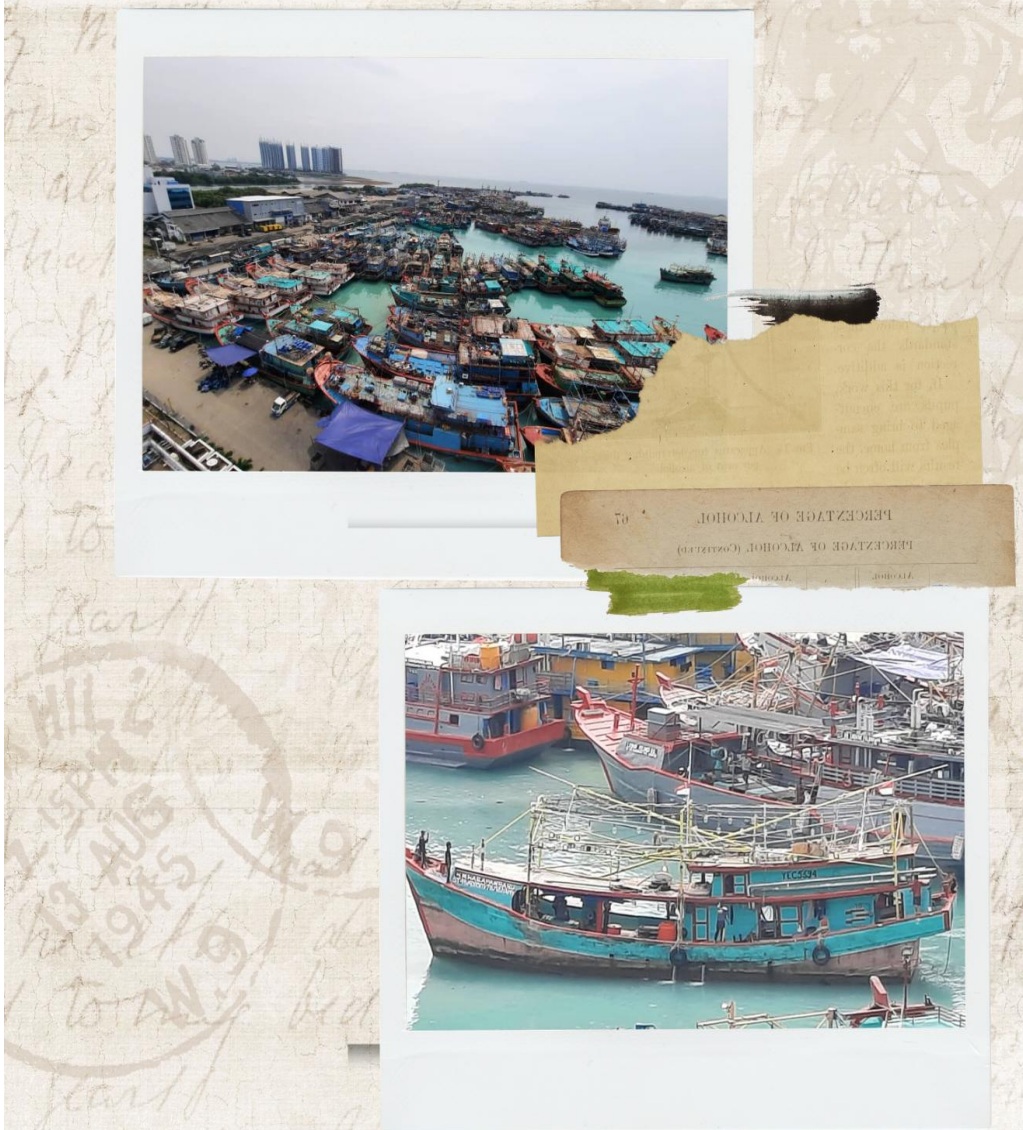


Figure 3.4: The recommendations to improve fisheries information system or mechanisms.

Chapter 4

OUTPUT 3



Caption 4: Fishing vessels at Jakarta port, Indonesia

	Output 3: Simple and practical indicators are standardized in supporting planning and monitoring of sustainable fisheries of pelagic

4.1 ACTIVITY FRAMEWORK

This output was achieved through one main activity, the third Regional Technical Consultation on Harmonization of Simple and Practical Indicators for Sustainable Pelagic Fisheries in Southeast Asia, convened in Subang, Selangor, on 22–24 October 2025.

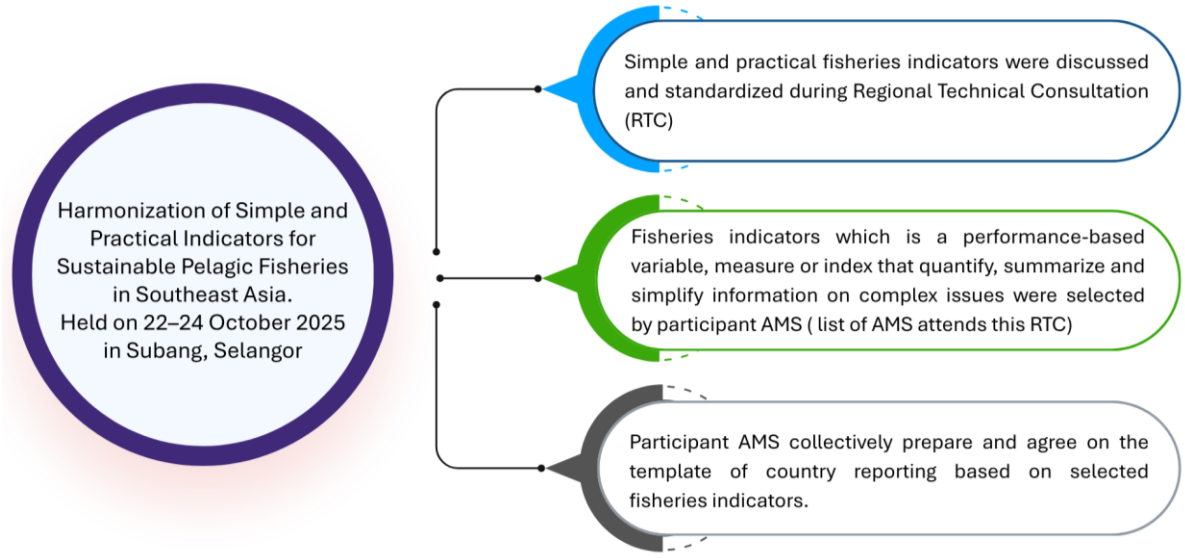


Figure 4.1: Implementation workflow for Output 3.

4.2 LIST OF PUBLICATION

There is one book published under Output 3, as outlined in Table 4.1.

Table 4.1 Publication for Output 3.

Report on the Regional Technical Consultation on The Harmonization of Simple and Practical Indicators for Sustainable Pelagic Fisheries in Southeast Asia	https://repository.seafdec.org.my/handle/20.500.12561/2957	

4.3 RESULTS SUMMARY

A. General Introduction of Indicators

Indicators can be defined as a practical tool to support management of fisheries. Indicators provide information on status and trend of fisheries and resources, which can support the decision-making process. Harmonized indicators enable various stakeholders such as governments, fishers, NGOs, and scientists to use a common "language" when evaluating sustainability, facilitating comparisons, data sharing, and informed management decisions.

Simple and practical indicators should fulfil criteria as illustrated by Figure 4.2:

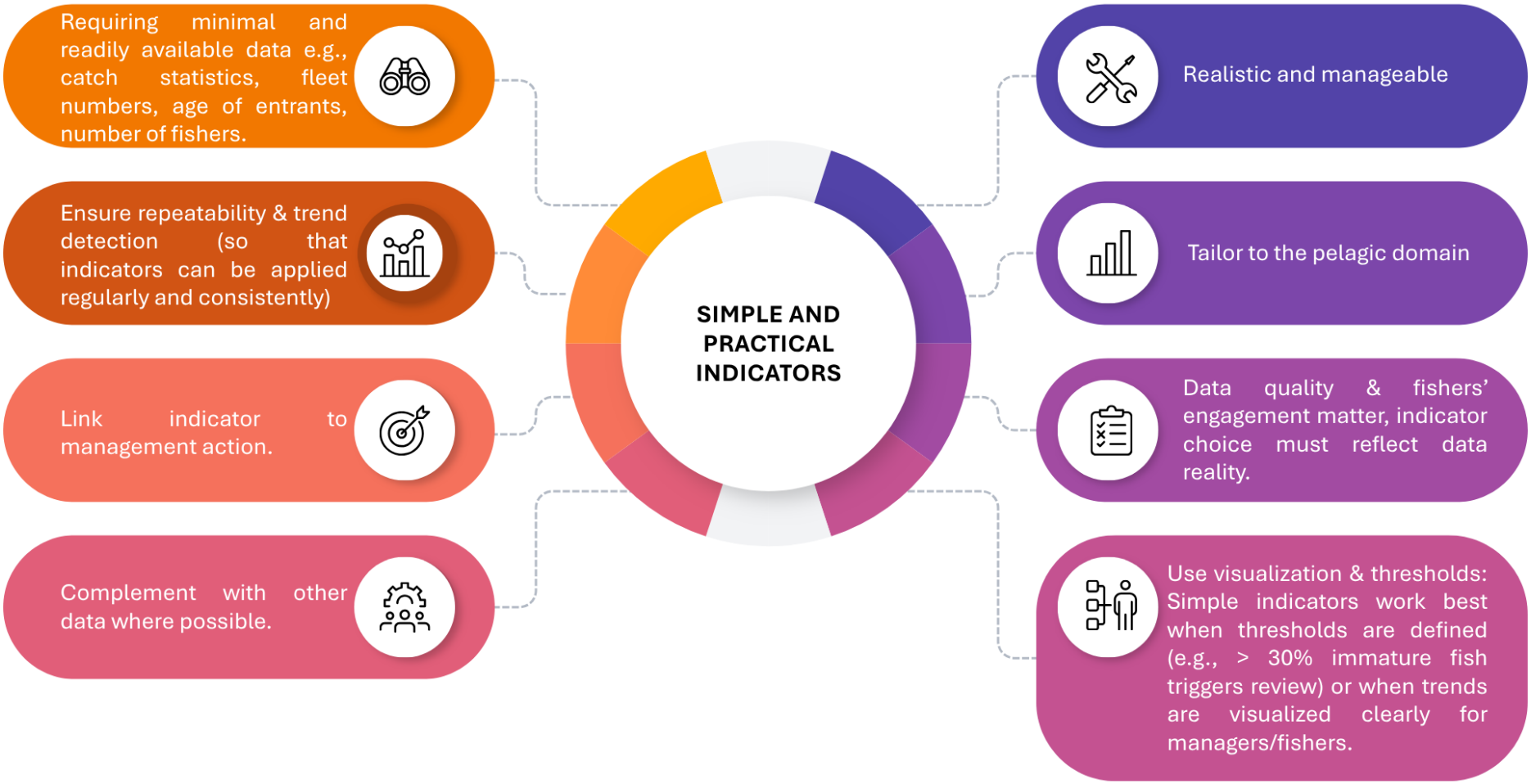


Figure 4.2: The criteria for simple and practical indicators.

During the third RTC, seven AMS shared the fisheries indicators used in their respective countries. AMS currently apply several indicators to manage pelagic resources. Therefore, the consultation focused on discussing some simple and practical indicators that could be standardized for use across AMS.

The indicators and variables selected by AMS are presented in Figure 4.3, covering biological, social, economic, and environmental aspects, while governance indicators are recommended for future consideration. These indicators are aligned with commonly available national data.

AMS also developed a reporting template (see Annex 4) to be used for documenting their fisheries status.

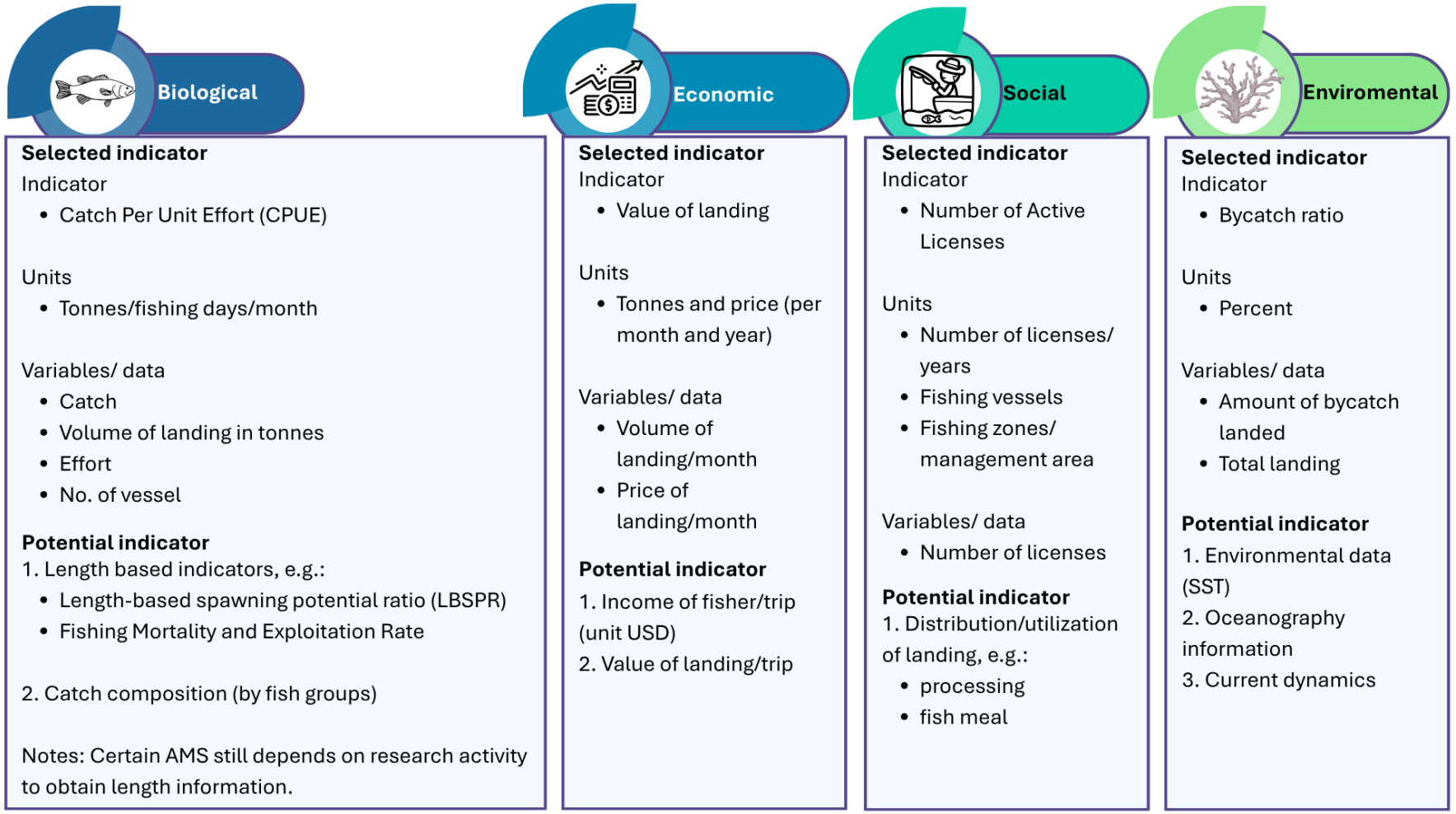


Figure 4.3: Biological, Economic, Social and Environment Indicators selected by AMS.

Notes: Biological indicator is used to assess stock status and sustainability, **economic indicator** is used to evaluate economic performance, **social indicator** is used to assess how fisheries affect people and communities, **environment indicator** is used to monitor ecosystem impact while **governance indicator** is to monitor the effectiveness of management measures.

B. COUNTRY REPORT: INDICATORS FOR SUSTAINABLE PELAGIC FISHERIES IN SOUTHEAST ASIA

This section presents the report by eight AMS using the selected indicator.

COUNTRY REPORT

BRUNEI DARUSSALAM

The Status of *Rastrelliger kanagurta* (Indian Mackerel) Assessed by Ecological Indicator Specifically Catch Per Unit Effort (CPUE)

Prepared by:

Ms. Desimawati Haji Metali
Senior Fisheries Officer, Department of Fisheries
Brunei Darussalam

Ms. Siti Nur Nisrina Matali
Assistant Fisheries Officer, Department of Fisheries
Brunei Darussalam

Mr. Muhammad Zulfadzli Haji Zulkifli
Senior Fisheries Assistant, Department of Fisheries
Brunei Darussalam

Abstract

This report presents an assessment of the status of *Rastrelliger kanagurta* (Indian Mackerel), a key small pelagic species in Brunei Darussalam, using Catch Per Unit Effort (CPUE) as an ecological indicator, The analysis is based on landing data collected from both commercial and small-scale fisheries over a six-year period (2020-2025). The assessment aims to evaluate trends in relative abundance and provide a preliminary indication of the stock status. The findings are intended to support evidence-based fisheries management and inform future conservation and monitoring efforts.

1.0 Introduction

Rastrelliger kanagurta is among the dominant small pelagic species landed in Brunei Darussalam and contributes significantly to local fish supply and food security. The species exploited by both commercial and small-scale fisheries operating in coastal and offshore waters. Despite its importance, information on the stock status of *R. kanagurta* remains limited and no specific management measures have been established to regulate its exploitation. In view of this, an assessment based on available landing data is necessary to provide an indication of stock condition.

Catch Per Unit Effort (CPUE) is widely recognised as a practical ecological indicator for assessing relative abundance, particularly in data-limited fisheries. This report applies CPUE to examine temporal trends and to provide an initial basis for fisheries management considerations.

2.0 Objectives

The objectives of this assessment are as follows:

i. To assess trends in the relative abundance of *R. kanagurta* using CPUE; and
ii. To evaluate the exploitation status *of R. kanagurta* based on observed CPUE trends over time.

3.0 Materials and Methods

CPUE was applied as the primary ecological indicator to assess changes in relative abundance of *R. kanagurta*. It was calculated as the quantity of catch (kg) per unit of fishing effort, based on available records.

The data utilised in this assessment were obtained from fish landing records by the Department of Fisheries from both commercial and small-scale fisheries between 2020and2025. The dataset was compiled and reviewed to ensure consistency prior to analysis.

Where necessary, the data were standardised to account for differences in fishing effort and operational practices. The resulting CPUE values were analysed to determine temporal trends across the assessment period.

4.0 Results

The analysis of CPUE values over the period 2020 to 2025 indicates an overall decreasing trend. An increase in CPUE was observed between 2020 and 2021; however, this was followed by a gradual decline in subsequent years, with more pronounced reductions recorded from 2023 onwards.

The observed fluctuations reflect variations in catch performance and fishing effort across different years and fishing sectors. Despite these variations, the general downward trend suggests a reduction in catch rates over time.

Table 4.2: Summary of landing and CPUE data for *Rastrelliger kanagurta*, 2020-2025.

	2020	2021	2022	2023	2024	2025
Landing Data by commercial and small-scale (kg)	21660	32126	-	1424	-	171
CPUE (kg)	210.41	251.21	-	56.65	-	38.25

5.0 Discussion

The year 2022 and 2024 where there are no data taken was because of non-operational vessels due to maintenance. The declining trend in CPUE suggests a reduction in the relative abundance of *R. kanagurta* in Brunei Darussalam waters during the assessment period. While short-term increases may occur due to environmental or operational factors, the sustained decrease in recent years may indicate increasing pressure or changes affecting stock availability.

Current Status of the Stock

Based on the observed CPUE trend, the stock of *R. kanagurta* in Brunei Darussalam is preliminarily assessed as potentially overexploited. This assessment is indicative and should be interpreted with caution due to limitations on existing data.

Implications for Stock Management

The results highlight the importance of adopting a precautionary approach to management. Continued decline in CPUE may warrant the introduction of appropriate management measures to regulate fishing effort and ensure sustainability of the resource.

Application of Indicators in Management

CPUE serves as a practical and cost-effective indicator that can support fisheries management through:

- Monitoring changes in stock abundance;
- Assessing fishing pressure; and
- Informing the need for management interventions, including effort control or seasonal measures.

Challenges and limitations

- Limited time series of landing data;
- Inconsistencies in effort reporting;
- Limited technical capacity for advanced stock assessment;
- Constraints in financial and institutional resources; and
- Gaps in data coordination and sharing among relevant agencies.

Future Plans and Recommendations

In order to strengthen future assessments and management, the following actions are recommended:

- Continue and enhance CPUE monitoring programmes;
- Improve data collection systems and standardisation of fishing effort;
- Explore additional indicators to complement CPUE;

- Integrate ecological indicators into fisheries management frameworks;
- Strengthen regional collaboration and technical support for small pelagic fisheries assessment.

6.0 Conclusion

This assessment demonstrates that CPUE can provide a useful indication of trends in relative abundance of *R. kanagurta* in Brunei Darussalam. The observed declining trend suggests potential concerns regarding stock status, although further data and analysis are required to confirm this finding.

Continued monitoring and improvement of data systems will be essential to support informed decision-making and ensure the sustainable management of small pelagic fisheries in the country.

7.0 Bibliography

Capture Fisheries Industry and Marine Ecosystem Division, Department of Fisheries.

8.0 Acknowledgement

The author gratefully acknowledges the support and contributions of officers from the Department of Fisheries, Brunei Darussalam particularly in the collection, compilation, and management of fisheries landing data. Appreciation is also extended to commercial and small-scale fishers for their cooperation in providing the necessary information for this assessment.

CAMBODIA

Status of Pelagic Fisheries in Cambodia: Assessed using Ecological and Compliance Indicators

Prepared by

Dr. Chea Tharith

Marine Fisheries Research and Development Institute (MaFReDI)

Mr. Leng Syvann

Department of Fisheries Conservation, Fisheries Administration (FiA)

Abstract

This country report presents the status of pelagic fisheries in Cambodia assessed using ecological and compliance indicators under data-limited conditions. Length-Based Indicators (LBIs) and Length-Based Spawning Potential Ratio (LBSPR) analyses were applied to key pelagic species, particularly short mackerel *(Rastrelliger* spp.), anchovy (*Encrasicholina heteroloba*), and blue swimming crab (*Portunus pelagicus*). Results from 2022–2024 indicate that small pelagic stocks were sustainably exploited, with fishing mortality close to target reference points and adequate spawning potential. Despite this progress, challenges remain in monitoring coverage, financial resources, and technical capacity. The report highlights the usefulness of simple indicators for fisheries management and outlines future directions toward adaptive and ecosystem-based pelagic fisheries governance in Cambodia.

1.0 Introduction

Pelagic fisheries are a vital component of Cambodia's marine capture fisheries, contributing significantly to food security, livelihoods, and coastal economies. Key pelagic resources include short mackerel (*Rastrelliger* spp.), anchovies (*Encrasicholina heteroloba*), and other small pelagic species, as well as associated species such as blue swimming crab (*Portunus pelagicus*). These resources are mainly harvested by small-scale and artisanal fisheries operating in coastal and nearshore waters of the Gulf of Thailand.

Cambodia has transitioned from an open-access fisheries regime toward a more structured management system. Current management measures include species-specific regulations, community-based co-management through Community Fisheries (CFi), and an expanding Monitoring, Control, and Surveillance (MCS) framework. However, pelagic fisheries management continues to face challenges related to IUU fishing, limited data, financial constraints, and capacity gaps.

2.0 Objectives

The objectives of this report are to: (1) assess the status of selected pelagic fish stocks in Cambodia using ecological and compliance indicators; (2) evaluate trends in stock condition under data-limited conditions; (3) demonstrate the application of indicators in fisheries management; and (4) identify challenges and future directions for sustainable pelagic fisheries management.

3.0 Materials and Methods

Ecological indicators used in this assessment include Length-Based Indicators (LBIs) and Length-Based Spawning Potential Ratio (LBSPR). Compliance indicators include MCS coverage, licensing, enforcement of seasonal closures, and size regulations.

Biological data, including length-frequency and maturity information, were collected from landing sites and fisheries surveys during 2022–2024. Catch and effort data were obtained from logbooks and landing records, while compliance-related data were sourced from Fisheries Administration (FiA) records.

Length-frequency data were analyzed using LBIs and LBSPR approaches to estimate fishing mortality and spawning potential relative to reference points. Compliance indicators were assessed qualitatively based on coverage and enforcement effectiveness.

4.0 Results

Results from LBIs and LBSPR analyses for short mackerel (*Rastrelliger kanagurta*) indicate that small pelagic stocks in Cambodia were sustainably exploited during 2022–2024. Fishing mortality was close to target reference points, and spawning potential remained above critical thresholds. Length-based indicators showed no strong evidence of growth or recruitment overfishing.

Compliance indicators show gradual improvement in fisheries governance, particularly through the expansion of Vessel Monitoring Systems (VMS) and implementation of Port State Measures. However, MCS coverage remains limited for small-scale and nearshore fisheries.

5.0 Discussion

The assessment results suggest that key pelagic stocks in Cambodia are currently in a relatively healthy condition. Length-based methods have proven to be practical and informative under data-limited conditions and provide a sound basis for adaptive management.

Indicators can support management decision-making by informing seasonal closures, size limits, effort controls, and licensing. Integrating ecological and compliance indicators into routine management processes will strengthen Cambodia's pelagic fisheries governance.

Challenges and Limitations

Key challenges include limited biological and catch-effort data, financial constraints for research and MCS, and insufficient technical capacity for advanced stock assessment. Coordination among agencies and compliance among fishers also remain challenges, particularly in small-scale fisheries.

Future Plans and Recommendations

Future priorities include strengthening standardized data collection, expanding the application of length-based indicators to additional species, enhancing MCS coverage for small-scale fisheries, and building national capacity in stock assessment and data management. Regional collaboration with SEAFDEC and other partners will be essential for technical support and methodological harmonization.

6.0 Conclusion

This report demonstrates that ecological and compliance indicators provide valuable insights into the status of pelagic fisheries in Cambodia. Sustainable exploitation of key pelagic stocks was observed during 2022–2024. Continued investment in data systems, capacity building, and regional cooperation will be critical to ensure long-term sustainability of pelagic fisheries.

7.0 References

Cambodia Fisheries Administration (FiA). 2025. *National Plan for Pelagic Fisheries Management*.

Chea. T. 2026. Status of pelagic fisheries in Cambodia," In Mazalina, A., Mohammad Faisal, M.S., Muhammad Amirullah Al-Amin, A., and Khairiah, "*Report on the Regional Technical Consultation on The Conservation Efforts and Management Strategies of Pelagic Fisheries Resources in Southeast Asia*" (pp50-54), Port Dickson, Malaysia.

FAO. 2018. *Length-based methods in fisheries research*. https://www.fao.org/4/T0535E/T0535E01.htm

Hordyk, A.R., et al. 2015. *An evaluation of length-based spawning potential ratio*. ICES Journal of Marine Science.

INDONESIA

Status of Pelagic Fisheries in Indonesia Assessed by Maximum Sustainable Yield, Total Allowable Catch, and Exploitation Rate

Prepared by:
Ms. Arinta Dwi Hapsari & *Mr. Mohamad Aris Setiawan Indrianto*
Directorate of Fisheries Resources Management
Directorate General of Capture Fisheries
Ministry of Marine Affairs and Fisheries
Republic of Indonesia

Abstract
Fisheries management should be defined based on the proper scientific study in accordance with biology, ecology, and management structure conditions. In Indonesia, the pelagic fisheries, both small and large pelagic, are managed by some indicators, namely maximum sustainable yield, total allowable catch, and exploitation rate. The status of pelagic fisheries is diverse, from moderate to over-exploited. The management action for fully-exploited conditions is to maintain efforts and monitor the fishing activities. While over-exploited is to reduce fishing efforts.

1.0 Introduction

Indonesian fisheries are dealing with multispecies that are characterized by high species diversity and operated by multiple fishing gears, leading to a viable management strategy to overcome such complex conditions. Managing fisheries starts with defining decision control based on the proper scientific study in accordance with biology, ecology, and management structure conditions.

Indonesia fisheries are incorporated in FAO Area 57 and 71. In the national level, Indonesia determined the fisheries management are to eleven areas, called FMA 571, 572, and 573 as part of FAO area 57, and FMA 711, 712, 713, 714, 715, 716, 717, and 718 as part of FAO area 71 (Figure 4.4).

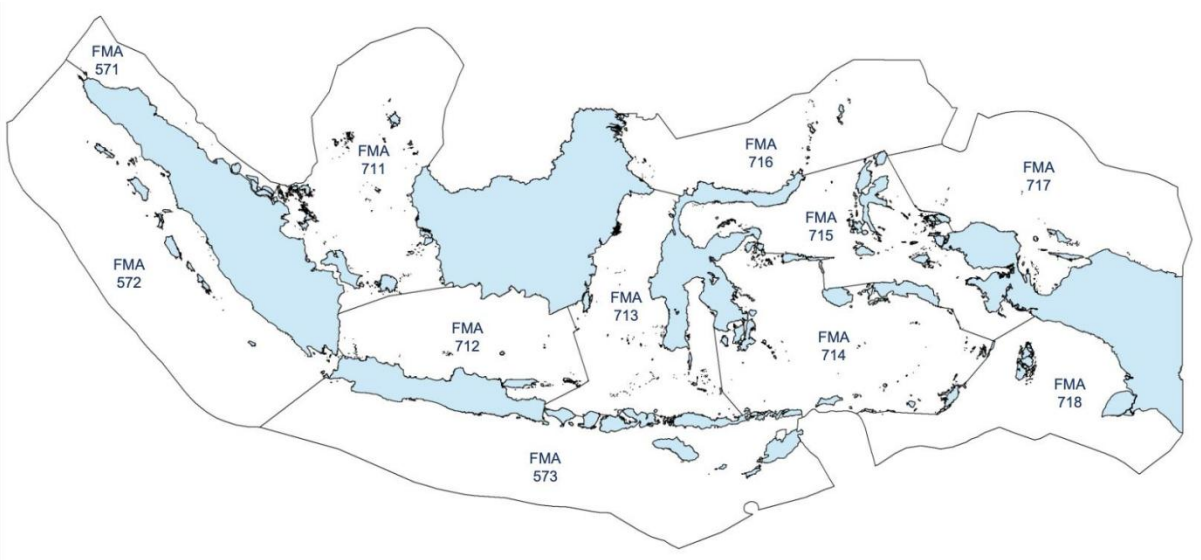


Figure 4.4: Fisheries Management Area in Indonesia.

Pelagic fisheries in Indonesia have an important role in supporting the fulfilment of national food. Pelagic fish can be found in all fisheries management areas (FMAs). Indonesia manages pelagic fisheries into 2 groups, namely small pelagic and large pelagic. Some types of small pelagic are scad, sardinella, and anchovy. For the large pelagic are neritic tunas, marlin, and mackerel. Pelagic fisheries in Indonesia are harvested using various fishing gears, including gill nets, purse seine nets, handlines, and lift nets.

2.0 Objectives

i. To assess the status of small pelagic fisheries in Indonesia using maximum sustainable yield and total allowable catch.
ii. To support evidence-based fisheries management and contribute to the regional harmonization of indicators.

3.0 Material and Methods

The indicators used in Indonesia to determine fisheries status are MSY, TAC, and exploitation rate. These indicators are used as the basis for fisheries management by the Indonesian Fisheries Management Unit (LPP WPPNRI). MSY, TAC, and exploitation rate are derived from fish stock assessments conducted by government research institutions, universities, or development partners of the Ministry of Maritime Affairs and Fisheries (MMAF). The data for the assessment were collected from MMAF's One Data Program. It contains landing data in the port and non-port landing bases. Besides, the research agency also collected biological data, such as length, weight, and gonad maturity level, to estimate fish biomass. The biological data used as comparative data to determine the exploitation rate.

The stock assessments were analyzed using a biomass dynamic model, with a nonequilibrium and an equilibrium model. The selection of the appropriate model in each FMA is determined using statistical tests to obtain the best model, whether using the equilibrium or non-equilibrium model.

4.0 Results

Based on Ministerial Decree of Marine Affairs and Fisheries No. 19/2022 concerning Maximum Sustainable Yield (MSY), Total Allowable Catch (TAC), and Exploitation Rate in Indonesia Fisheries Management Area, status of small pelagic and large pelagic fisheries in Indonesia generally has a different status in each FMA which can be seen in Table 4.3.

Table 4.3: MSY, TAC, and Exploitation Rate of Pelagic in Indonesia.

FMA	Commodity	MSY (Ton)	TAC (Ton)	Exploitation Rate (E)
571	Small Pelagic	157.151	141.553	0.3
	Large Pelagic	75.095	37.548	1.4
572	Small Pelagic	479.503	431.553	0.2
	Large Pelagic	438.877	219.439	1.1
FMA	Commodity	MSY (Ton)	TAC (Ton)	Exploitation Rate (E)
573	Small Pelagic	624.366	437.056	0.6
	Large Pelagic	354.215	247.950	0.9
711	Small Pelagic	536.917	375.842	0.9
	Large Pelagic	163.744	114.621	0.7
712	Small Pelagic	275.486	247.937	0.4
	Large Pelagic	145.863	72.932	1.3
713	Small Pelagic	284.302	142.151	1.0
	Large Pelagic	162.506	113.754	0.8
714	Small Pelagic	222.881	156.017	0.7
	Large Pelagic	370.653	259.457	0.7
715	Small Pelagic	443.944	310.761	0.7
	Large Pelagic	74.908	52.436	0.7
716	Small Pelagic	197.012	137.908	0.7
	Large Pelagic	176.382	123.468	0.5
717	Small Pelagic	135.140	121.626	0.3
	Large Pelagic	189.718	132.803	0.9
718	Small Pelagic	836.973	669.579	0.5
	Large Pelagic	818.870	655.096	0.9

Source: Ministerial Decree of Marine Affairs and Fisheries No. 19/2022
Note: Information for exploitation rate (E): E < 0.5: Moderate; 0.5 <= E < 1.0: Fully-exploited; E >= 1.0: Over-exploited

5.0 Discussion

Exploitation rate of small pelagic in FMA 571, 572, 712, and 717 in moderate. For FMA 573, 711, 714, 715, 716, and 718 in fully-exploited, only in FMA 713 is overexploited. Exploitation rate for large pelagic only in fully-exploited (FMA 573, 711, 713, 714, 715, 716, 717, and 718) and over-exploited in FMA 571, 572, and 712. The management action for exploitation rate fully-exploited is to maintain efforts and monitor the fishing activities. While over-exploited is to reduce fishing efforts.

6.0 Challenges and Limitations

Indonesia has some challenges to manage small pelagic fisheries (also another fisheries) likes: (i) fishermen still not realize the importance of reporting their fishing logbooks, (ii) the large size of Indonesia means that data collection requires high costs and considerable human resources, (iii) limited data and data collection infrastructure at non-port landing sites, and (iv) institutional changes in research in Indonesia necessitate adjustments in fisheries management.

7.0 Future Plans and Recommendations

Indonesia future plans focus on improving data reporting through (i) socialization and assistance for fishermen in reporting fishing logbooks (also make regulation for fishermen fill the fishing logbooks), (ii) determining data collection locations that can represent the fisheries conditions in each fisheries management area, through a port/non-port sampling program, (iii) provision of data collection infrastructure at the sampling port/non-port program location, (iv) implementation of the determination of fishing quota gradually, whether commodities or certain area, and (v) Integrating data collection activities from research institutions, universities, and non-government organizations as a basis for fisheries management.

8.0 Conclusion

Indonesia remains committed to managing pelagic fisheries based on science, transparency, and sustainability. Indonesia has been developing indicators for sustainable management, namely MSY, TAC, exploitation rate, and catch per unit effort (CPUE). Indonesia commits to improving data collection by redesigning port/non-port sampling, strengthening electronic fishing logbooks, observer data, and Fisheries Management Unit.

9.0 References

Directorate General of Capture Fisheries. 2025. Simple and Practical Indicators for the Sustainable Management of Pelagic Fisheries in Indonesia. Presentation at the Regional Technical Consultation, Subang, Malaysia.

Ministry of Marine Affairs and Fisheries, 2022. *Ministerial Decree of Marine Affairs and Fisheries of The Republic of Indonesia Number 19 of 2022 concerning Maximum Sustainable Yield (MSY), Total Allowable Catch (TAC), and Exploitation Rate in Indonesia Fisheries Management Area,* [in Bahasa].

MALAYSIA

Status of Anchovy Fishery in Northern West Coast of Peninsular Malaysia Assessed by Catch Per Unit Effort (CPUE)

Prepared by:
Mr. Ryon Siow
Senior Research Officer
Department of Fisheries Malaysia

Ms. Haryati binti Abd Wahab
Senior Fisheries Officer
Department of Fisheries Malaysia

Abstract
Anchovies (Family Engraulidae) are a key small pelagic resource in Peninsular Malaysia, supporting food security, industry, and ecosystem function. Recent declines in landings and rising prices have raised concerns regarding stock sustainability. This study assesses anchovy stock status using standardized Catch Per Unit Effort (CPUE) based on fishery-dependent data from 2008– 2024. Results indicate a significant long-term decline, with landings decreasing by approximately 50% and CPUE by 66%, reflecting reduced stock abundance. MSY analysis shows that current fishing effort exceeds the level corresponding to maximum sustainable yield (f_{msy}), indicating that the fishery is operating under biological overfishing. The findings establish CPUE as essential indicators within the national fisheries management framework and provide a clear scientific basis to support the implementation of adaptive, precautionary, and evidence-based management measures for anchovy resources along the northern west coast of Peninsular Malaysia.

1.0 Introduction

Anchovies belong to the Order Clupeiformes and the Family Engraulidae. In Malaysian waters, two genera are commonly recorded, namely *Stolephorus* and *Encrasicholina*. The anchovy fishery along the west coast represents a high-value and strategically important sector, supporting downstream processing industries and contributing significantly to local markets, where products are commonly marketed as premium dried or processed commodities.

In the northern west coast of Peninsular Malaysia, anchovy fishing activities are concentrated in three primary fishing grounds: the waters surrounding Langkawi Island and Tanjung Dawai (Kedah), and Pangkor Island (Perak). The fishery is largely industrial in nature, particularly in island-based operations, where large fishing companies operate

multiple vessels supported by private landing facilities. Fishing is predominantly conducted using purse seine gear and vessels typically conduct two to three fishing operations per day, depending on weather conditions, and are designed to process catches on board immediately after harvest. In order to facilitate management of the anchovy stock, indicators such as Catch Per Unit Effort (CPUE) and stock status based on the Maximum Sustainable Yield (MSY) are routinely used to evaluate the effectiveness of the management actions taken in maintaining the fish stock.

2.0 Objectives

To assess the status of the anchovy fishery in the northern West Coast of Peninsular Malaysia using Standardized Catch per Unit Effort (CPUE) values from fish landing and effort data.

3.0 Materials and Methods

In order to assess the status of the anchovy fishery in the northern West Coast of Peninsular Malaysia, the indicators used were the Standardized CPUE values from fish landing and effort data and the MSY calculation using the Schaefer Surplus Production Model.

The landing and effort data used in these analyses was derived from the routine monthly data collection conducted by the Fisheries Data Collection Branch under the Department of Fisheries (DOF) Malaysia. Fisheries personnel would collect fish landing data at jetties on a district level based on the stratified random sampling method. The type of effort used in the CPUE calculation is the number of units of vessel involved in the catching of anchovy in the study area.

As the nature of fisheries in Malaysia is often multi-species and multi-gears, the Catch per Unit Effort (CPUE) is standardized using the effort of the most dominant fishing gear. The main gear identified for this calculation is the anchovy purse seine, but other gears such as trawl net and drift net also contributed toward the overall anchovy landing. The standardized effort from each gear is then summed up for each year. Finally, the annual CPUE is calculated by dividing the total anchovy landing by the total standardized effort. For the determination of the Maximum Sustainable Yield (MSY), the Schaefer Surplus Production Model is applied following the method as described by Sparre and Venema (1998).

4.0 Results

4.1 Anchovy Landings and CPUE Trends

Annual anchovy landings and standardized Catch Per Unit Effort (CPUE) for the northern West Coast of Peninsular Malaysia from 2008 to 2024 are presented in Figure 4.1. Over the 17-year period, both indicators exhibited substantial interannual variability but demonstrated an overall declining trend.

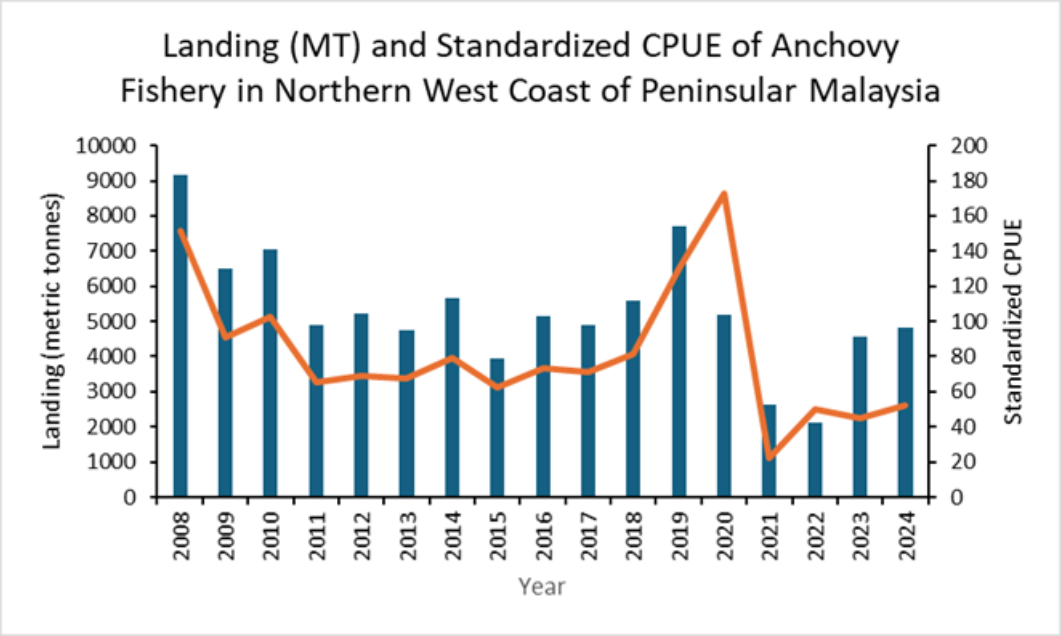


Figure 4.5: Landing trend (bar chart) and Standardized CPUE (line chart) of the anchovy fishery in northern West Coast of Peninsular Malaysia from year 2008-2024.

Mean annual anchovy landings during the period were approximately 5,290 metric tonnes, with the highest production recorded in 2008 (9,164 metric tonnes) and the lowest in 2022 (2,133 metric tonnes). Overall landings declined by nearly 50% between 2008 and 2024, indicating a long-term reduction in fishery productivity. Following a moderate decline between 2008 and 2012, landings fluctuated between 4,000 and 5,600 metric tonnes from 2013 to 2018, suggesting a period of relative stability. A short-term increase was observed in the year 2019 (7,697 metric tonnes); however, this was followed by a sharp decline in the year 2021–2022 before partial recovery in 2023–2024.

Standardized CPUE showed a similar but more pronounced downward trend. The mean CPUE for the entire time series was 81.54, with the highest value recorded in the year 2020 (172.43) and the lowest in the year 2021 (22.60). Between the period from 2008 to 2024, CPUE declined by approximately 66%, indicating a significant reduction in relative anchovy abundance in the study area. The sharper decline in CPUE relative to landings suggests that total catches have increasingly been maintained through sustained fishing effort rather than improvements in stock availability.

5.0 Discussion

5.1 Stock Status Based on the Schaefer Surplus Production Model

The status of anchovy resources along the northern west coast of Peninsular Malaysia was evaluated using the Maximum Sustainable Yield (MSY) reference point derived from the Schaefer Surplus Production Model. The position of the year 2024 fishing year, indicated that the current level of fishing effort has exceeded f_{msy}.

Although landings remain relatively high, the model indicates that these catches are being obtained under conditions of excessive fishing pressure, where biomass has already declined below the level capable of producing MSY.

The observed position of the 2024 data point suggests that the anchovy fishery is operating within an unsustainable exploitation regime. Without intervention, continued fishing beyond MSY is likely to accelerate biomass depletion and increase the risk of stock collapse, particularly given the short life span and high environmental sensitivity of anchovy populations.

5.2 Management Considerations

The findings of this study clearly demonstrate the need to strengthen science-based management of the anchovy fishery along the northern west coast of Peninsular Malaysia. The observed decline in CPUE indicates that current fishing pressure is not adequately aligned with stock productivity, particularly during periods of weak recruitment, and requires timely management intervention.

Effective management measures should include:

- ✓ continued monitoring of standardised CPUE as a key early warning indicator of stock status;
- ✓ strengthening the implementation and enforcement of seasonal fishing closures;
- ✓ regulation of vessel capacity and fishing effort to align with sustainable levels;
- ✓ incorporation of biological reference points, including length at first maturity (Lm), mortality parameters, and exploitation rate, into fisheries management plans.

The integration of fishery-dependent indicators with biological assessments should systematically enhanced to support evidence-based decision-making. Such an approach will be critical to safeguarding the long-term sustainability of anchovy resources and reducing the risk of further stock decline.

5.3 National Management Measures Implemented by DOFM

In response to the continued decline in the anchovy fishery, the Department of Fisheries (DOF) Malaysia has instituted a suite of strategic and targeted management measures to restore stock productivity, strengthen resource sustainability, and safeguard long-term national food security and socio-economic stability.

These measures encompass the following regulatory and management interventions:

- ❖ Strengthened control over the issuance of fishing licences to regulate fishing capacity and prevent further expansion of effort.
- ❖ Imposition of operational time restrictions for purse seine vessels, limited to between 6.00 am and 8.00 pm, to manage fishing intensity and reduce pressure on the resource.

- ❖ Implementation of a seasonal closure for the anchovy fishery in Langkawi since 2020, initially covering the month of September. Effective 2026, the closure period has been extended to two months (September–October) to enhance stock recovery and reinforce science-based fisheries management.
- ❖ Establishment of a closed area in Tanjung Dawai, Kedah during the peak spawning period in September, enforced as a licensing condition to protect breeding habitats.
- ❖ Enforcement of catch composition requirements under licensing conditions, whereby anchovy must constitute not less than 70% of total landings, while bycatch (non-anchovy species) is restricted to a maximum of 30%, to promote selective fishing practices.

5.4 Challenges and Limitations

Although CPUE is estimated on an annual basis, substantial seasonal variability characterizes the anchovy fishery and may influence the accuracy and reliability of the calculated values. Fluctuations in monsoon patterns, recruitment timing, and fishing intensity across seasons can introduce bias when annual CPUE is used as a proxy for stock abundance. In addition, there is typically a delay of at least one year before verified and fully validated fisheries data become available for analysis. This time lag may constrain the timely response of management authorities to sudden changes in CPUE and could limit its effectiveness as an early warning indicator of potential stock decline.

The results of the Schaefer surplus production model indicate that fishing effort in 2024 may have exceeded the estimated level corresponding to MSY. This finding should be interpreted with caution, taking into account the assumptions and uncertainty of the model, the quality and timeliness of fishery-dependent data, annual variability in recruitment and environmental conditions, and changes in fishing efficiency. The results should therefore be regarded as a precautionary signal for strengthened monitoring and appropriate management action, rather than as a definitive assessment of stock collapse.

5.5 Future Plans and Recommendations

5.5.1 Digital Transformation and Integrated Fisheries Information Systems

The ongoing transformation of the DOF Malaysia towards comprehensive digitalisation represents a strategic national initiative to strengthen fisheries governance. This transformation is aimed at enhancing the efficiency, accuracy, and transparency of core operational processes including applications, licensing, reporting, and data validation thereby enabling more timely, accountable, and evidence-based decision making. In this context, the implementation of the Malaysian Fisheries Resources Information System (MyFiRSt) serves as a robust national platform for the integration of spatial and non-spatial fisheries data. The system enables real-time visualisation of inland and marine fisheries resources, biodiversity distribution, fishing effort, and landing information through an integrated digital interface.

5.5.2 Regional Collaboration and Capacity Building

Enhanced collaboration with neighbouring countries and other regional partners, is required to ensure coordinated and science-based management approaches across shared stocks.

In this context, the following priority actions shall be considered:

- strengthening regional cooperation towards harmonised stock assessment approaches;
- enhancing the systematic exchange of fisheries data and landing statistics;
  - supporting technical training in larval fish identification, taxonomy, and biological sampling; and
- advancing collaborative research on pelagic ecosystem dynamics.

6.0 Conclusion

Analysis of anchovy landings and Catch-Per-Unit-Effort (CPUE) from 2008 to 2024 indicates a sustained decline in stock availability and fishery productivity along the northern west coast of Peninsular Malaysia. This pattern points to increasing sensitivity of the anchovy resource under current exploitation levels. Without appropriate and timely management adjustments, there is a risk that continued fishing pressure may further constrain stock recovery and affect the long-term sustainability of the fishery.

These findings underscore the need to strengthen existing fisheries management approaches. CPUE serves as a practical and reliable indicator to support routine monitoring and inform evidence-based decision-making. Moving forward, the progressive alignment of fishing effort with sustainable levels, complemented by enhanced monitoring, licensing, and compliance measures, will facilitate a more adaptive and precautionary management framework.

7.0 References

Sparre, P., & Venema, S. C. 1998. Introduction to tropical fish stock assessment. Part 1. Manual. FAO Fisheries Technical Paper, No. 306.1, Rev. 2. Rome: FAO.

8.0 Acknowledgement

The authors wish to record their appreciation to the staff of the Department of Fisheries Malaysia, members of the SEAFDEC/MFRDMD and Resource Persons, Associate Professor Dr. Rumeaida Mat Piah and Dr. Abdullah bin Mohamad for their commitment and contribution in the preparation of this report.

MYANMAR

Status of Scombridae, Short Mackerel (*Rastrelliger brachysoma*) assessed by Ecological, Socio-economic, and Compliance Indicators.

Prepared by:
Mr. Soe Win & *Mr. Zaw Khine*
Deputy Director, Department of Fisheries
Ministry of Agriculture and Irrigation of Myanmar

Abstract
This report provides the status of the Short Mackerel (*Rastrelliger brachysoma*), an important pelagic fish species in the waters of Myanmar, using a range of ecological, socio-economic, and compliance indicators. This analysis shows a trend of decline in Catch Per Unit Effort (CPUE) and mean length of the species, suggesting the danger of overfishing. This important fishery resource continues to contribute significantly to the food and livelihoods of the people of Myanmar, though it is threatened by the increasing effort of the fisheries. Although there are management actions being implemented, there remain problems in enforcement and data gathering. This report illustrates the Myanmar government's application of the indicators approach to the sustainable management of its important fisheries resources.

1.0 Brief description of the stock:
The Short Mackerel (*Rastrelliger brachysoma*), also referred to locally under the Myanmar dialect as " Palar Tu " is a basic pelagic fishery in the coastal areas of Myanmar, especially in the Rakhine State, the Ayeyarwady Region, and the Tanintharyi Region. It is a main object for small-scale fishing craft and larger fishing boats employing purse seine and drift net gears.

Current management measures:
The management measures that have been used in the case of Myanmar include:

- A seasonal ban on fishing during the periods of highest spawn (April- June) in specified areas.
- Specifications of mesh size for mackerel gill nets.
- Licensing schemes for fishing vessels operating for commercial purposes efforts to combat IUU fishing.

Issues encountered:
The resource is under numerous pressures, namely: excessive fishing effort and potential overfishing, reliance on juvenile fish in certain fisheries, climate-related fluctuations in fish stocks, and socio-economic pressures in coastal communities.

2.0 Objectives

i. To evaluate the ongoing situation for the Short Mackerel stock on the basis of selected ecological, socio-economic, and compliance criteria.
ii. To assess the effectiveness of the existing management practices.
iii. To supply recommendations for data improvement, management, and regional cooperation for sustainable pelagic fisheries.

3.0 Materials and Methods

Indicators used:

1. *Ecological*: Catch Per Unit Effort (CPUE: kg/boat/hr) Purse seine gear fisheries were 100-200 GRT and 550 HP average, Mean Length of catch, Percentage of juvenile in catches. Data on jetty samples were collected for a full year, except for the 3-month close season period in 2015-2018. Also, the Dr. Fridtjof Nansen research vessel 2018 survey was collected.
2. *Socio-Economic*: Average real income for small-scale mackerel fishermen; Role of mackerel in food security.
3. *Compliance*: Nearly 3040 fishing vessel registrations in Myanmar in 2024-2025, Number of legal fishing licenses issued versus number of active vessels; Cases of violation of the ban reportedly recorded."

Data collection: Data were synthesized from:

a. Literature
   Fishery Statistics of the Department of Fisheries (DOF), from 2015 to SEAFDEC / DOF collaborative scientific surveys and port sampling projects. Also taken from the Dr. Fridtjof Nansen research vessel 2018 survey.
b. Socio-economic surveys in some fishing communities along the coast (Tanintharyi, Sittwe and Ayeyarwady)
c. Fisheries law enforcement unit records.

Data analysis: Trend analysis on both CPUE and mean length. Descriptive analysis on socio-economic variables. Comparative analysis on variables regarding compliance.

4.0 Results

Trend/value of the indicator:

- **CPUE:** Evidenced a steady trend of reduction from around Rakhine fishing ground (2.5 kg/boat/hr), Ayeyarwady fishing ground (1.0 kg/boat/hr), Tanintharyi fishing ground (2.0, kg/boat/hr) in 2018
- **Mean Length**: Reduced from 18.5 cm in 2015 to 16.2 cm in 2018. Mature length (Lm ~ 17 cm). Tanintharyi fishing ground Length at first capture – (Lc-14.39 cm).
- **Juvenile Proportion**: High and occasionally above 30% for landings from certain coastal regions. If more than 20 percent of the eggs are immature, it is considered a risk indicator for tropical regions.
- **Economic/Source**: Fishers' Income Nominal income slightly improved, while real income was stagnant or declined despite the fuel cost increase and fishing gear expenses.
- **Compliance**: There is a gap between registered boats and estimates of operating boats in the community, indicating unchecked exploitation. Enforcement during the closed season has been difficult due to a lack of patrolling capacity. Compliance is challenging due to insufficient patrols during the close season.

5.0 Discussion

- **The status of fish stocks**: The decreasing CPUE and mean size are good biological indices that the Short Mackerel fish stocks are under pressure from overfishing. The large number of juveniles suggests growth overfishing, which impairs the ability to reproduce.
- **Implications for Management**: Such a trend has serious implications for food security, coastal sector livelihoods, and export. It emphasizes the need to address fishing mortality rates and preserve juvenile and spawning biomass.
- **The use of indicators in the management of fisheries:** The CPUE and mean length index should call for the following approaches in the management of the fishery, for example, examining and perhaps extending the scope and duration of the seasonal ban, the imposition and enforcement of more restrictive mesh sizes, and perhaps the control of fishing effort. The socio-economic indicators emphasize the need for diversification programs to minimize dependence on the resource.

Challenges and Limitations

- Data weaknesses: Use of incomplete data on landing sites, incomprehensive reporting from small-scale fishing, and low regularity of comprehensive biological sampling.

- Technical, financial, and institutional challenges: There may be a lack of enough research vessels for stock assessment, the budget may be limited for the use of

modern monitoring technology (such as VMS for smaller fishing vessels), or there may be a lack of coordination between institutions such as the Department of Fisheries, the Navy, and the Coastal Authorities.

- ❖ Gaps in capacity: Augmented training in data analysis and community-based fishery management acumen are required for fisheries officers at various levels.

Proposed Improvements:

- Create a National Pelagic Fisheries Data Collection System. It should include community data recording efforts. A systematic stock assessment program for the most important commercial pelagic fish should be carried out.
- Integrating the indicators into management: Draw up a Fisheries Management Plan for Short Mackerel on the basis of pre-defined reference points (targets and limits) using the indicators. Test community-based co-management schemes using the indicators in decision-making at a local level.
- Areas for regional cooperation: Access help from SEAFDEC for the following: 1) Joint capacity-building for indicator-based management and stock assessment, 2) Synchronization of data gathering efforts at the regional level, 3) Joint research on straddling stocks, and 4) Sharing data on the movements of IUU fishing vessels.

6.0 Conclusion

The Myanmar Short Mackerel stock is heavily exploited, as evident from the reduced ecological indicators. Its responsible management is imperative for food security as well as poverty reduction at the national level. The adoption of a formal and indicators-based management structure is a crucial aspect for the purpose of informed and science-informed decision-making for the reversal of the trends that are evident.

Myanmar reaffirms its firm commitment to responsible and sustainable management of fishing and is eager to enhance its capabilities and actively participate in regional cooperation mechanisms within SEAFDEC and ASEAN frameworks in order to ensure the sustainability of the commonly shared pelagic fishery resource.

7.0 References

FAO. 2018. Dr. Fridtjof Nansen survey publications, National report on data collection from coastal region fish loading/unloading jetties surveys, etc.

8.0 Acknowledgement

The Department of Fisheries of Myanmar expresses its sincere appreciation to the technical assistance received from SEAFDEC for the fisheries Research and Development efforts. Our appreciation is also directed to the co-operate of our field staff as well as fishing communities for complying with collection of data.

PHILIPPINES

Assessment of Important Small Pelagic Fishes in the Philippines using Selected Sustainability Indicators

Prepared by:
Mr. Francisco Torres Jr.
Senior Science Research Specialist
Capture Fisheries Research and Development Division (CFRDD)
National Fisheries Research and Development Institute (NFRDI),
Philippines

Abstract
This country report presents a quick overview of small pelagic fishes ably represented by two prominent groups; the sardines in Fisheries Management Areas (FMA) 4 and FMA 9 and scads from FMA 5 and FMA 6. In FMA 4, particular attention is given to the most abundant and economically important species, the Bali sardine (*Sardinella lemuru*) while in FMA 9, it is *S. lemuru* and *S. gibbosa* (Goldstripe sardine). For the scads, it is the *Decapterus macrosoma* (short fin scad) in Southwest Sulu Sea (FMA 5) and *D. macarellus* (mackerel scad) in FMA 6. A mixture of length-based and catch/effort data collected from several years (in between 2014 to 2024) through the National Stock Assessment Program (NSAP) of the National Fisheries Research and Development Institute (NFRDI) indicate that the stocks are being subjected to unsustainable fishing practices leading to either growth or recruitment overfishing. However, immediate adaptive management measures anchored on the Ecosystem-based Approach to Fisheries Management (EAFM) framework implemented via the FMA system established through Fisheries Administrative Order (FAO) 263, s.2019 have provided some measure of solution to the problem affecting the stocks. Initial success stories from FMA 4 and FMA 5 in consonance with the seasonal closures in their major fishing grounds have been documented, despite challenges plaguing current fisheries management authorities.

1.0 Introduction

The Philippine fisheries sector is a multi-faceted industry best described as a multi-species, multi-gear complex. Total fisheries production from 2013-2023 have shown annual variability across major species groups, especially among the pelagic (Figure 4.6). Small pelagic fishes which are composed of sardines (*Sardinella* spp., Clupeidae), roundscads (*Decapterus* spp., Carangidae), anchovies (*Stolephorus* spp., Engraulidae), and mackerels (*Rastrelliger* spp., Scombridae) forms the staple of marine capture fisheries production.

In the 2022 fisheries profile published by the Bureau of Fisheries and Aquatic Resources (BFAR), an estimated total volume of 880,000 metric tons of small pelagic species were landed, which made up 44.2% of the total capture fisheries production in the country (BFAR, 2023).

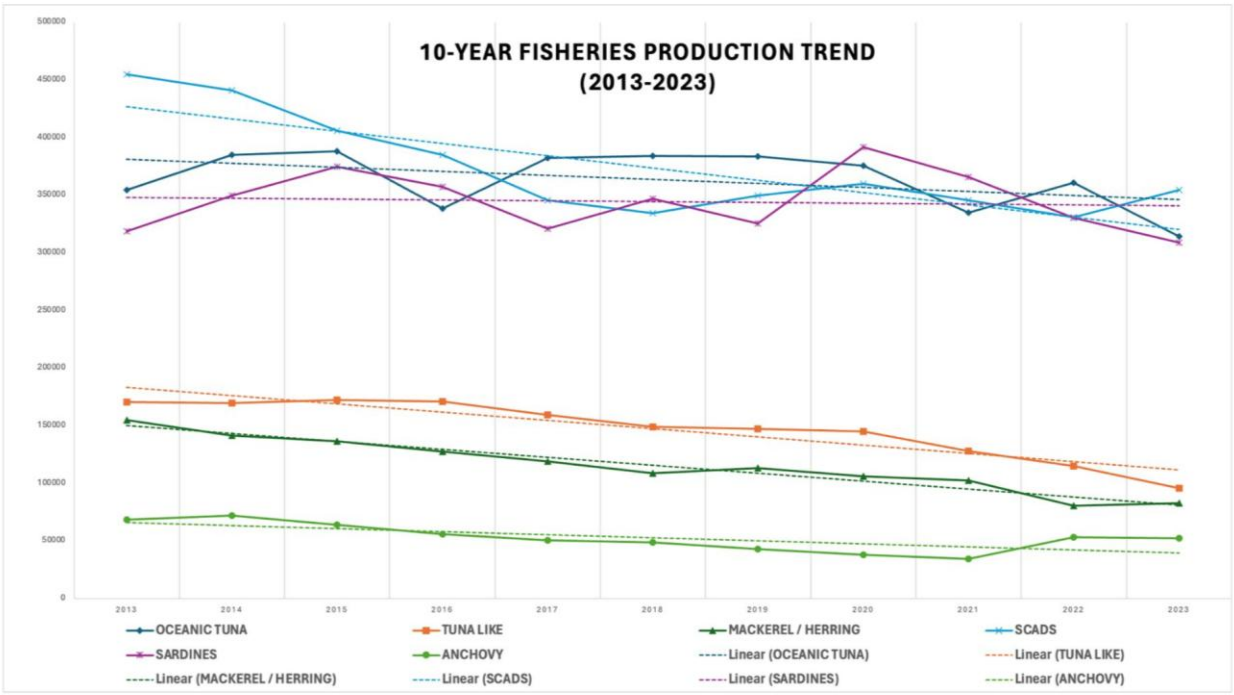


Figure 4.6: Philippine fisheries production data from 2013 to 2023 (PSA 2023).

The small pelagic fisheries of the country are managed through a multi-level governance framework involving National Agencies, Fisheries Management Areas (FMAs) and Local Government Units (LGUs). The Fisheries Management Areas (FMA) system in the Philippines was established through Fisheries Administrative Order No. 263, s. 2019. The spatial delineation into 12 FMAs (Figure 4.7) were based on fish stock distribution (mostly derived from data provided by the National Stock Assessment Program (NFRDI-NSAP), biogeographic/oceanographic characteristics, geo-political and administrative divisions and from other information acquired during the conduct of public consultations.

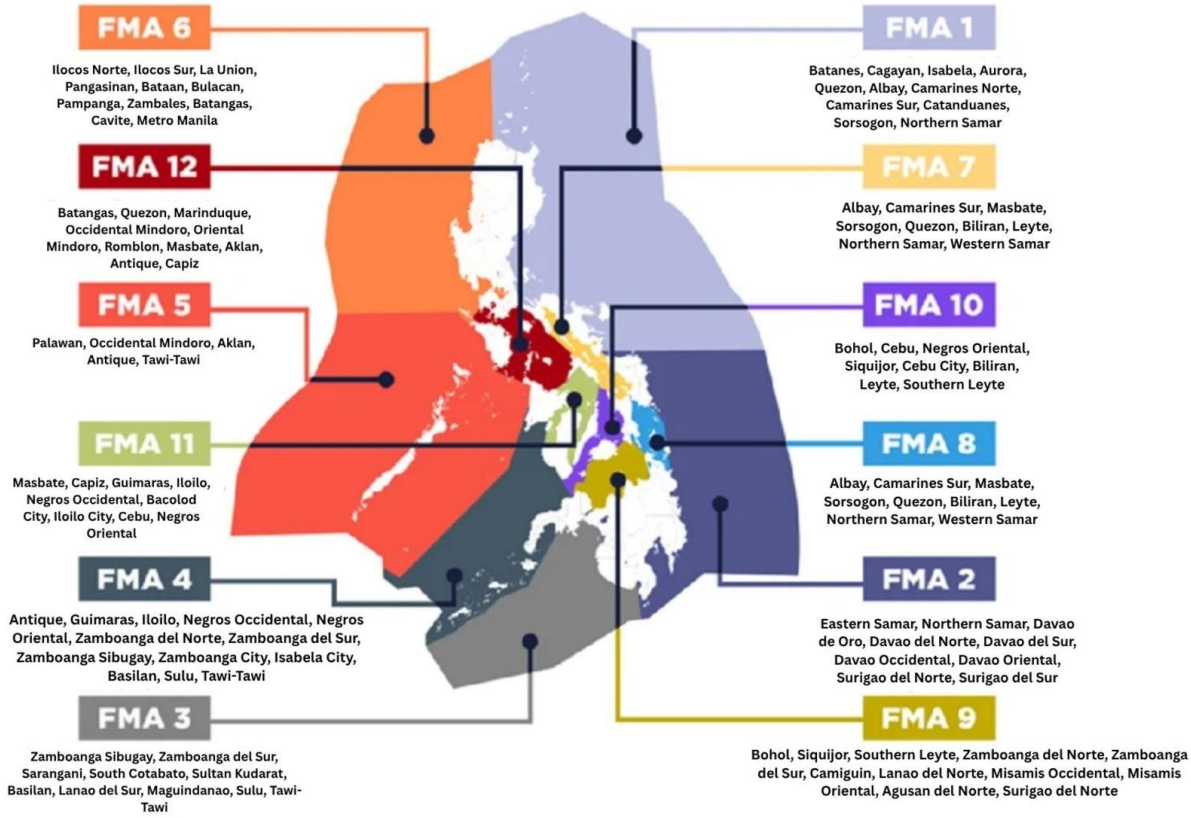


Figure 4.7: The 12 Fisheries Management Areas in the Philippines.

The FMA system follows the Ecosystem-Based Approach to Fisheries Management (EAFM) framework, which seeks a balance between ecological and human-well-being through good governance principles and policies. These policies integrate the best available science (e.g. generated by the NSAP, involving analysis of the current fish stock status), societal benefits, diverse stakeholder participation and evaluating it against a predetermined set of reference points to generate recommended harvest control rules and measures to sustainably manage fish stocks (DA-BFAR, 2019).

Existing management measures include (a) generation of harvest strategies and reference points, (b) implementation of seasonal fishing closures, (c) refinement of gear regulations, crafting/implementing IUU fishing reduction plans, and enhancing monitoring, control and surveillance (MCS), among others.

Some of the current problems/challenges affecting small pelagic fisheries management pertains to (1) IUU fishing, (2) Unsustainable fishing practices (overfishing), (3) Increasing fishing effort (unwarranted fishing capacity), (4) Inadequate budget allocation for the fisheries sector, (5) Limited capacity (e.g. science, law enforcement, etc.), and (6) Conflicting jurisdictions (e.g. National and municipal waters) (Cedo and Dicdiquin, 2026).

2.0 Objectives

The report aims to present the existing assessment status of two groups/species of small pelagic in two different localities (e.g. FMA) using an assortment of Length-Based Indicators and Productivity Indices utilized by the NSAP in providing scientific information for use by management authorities (e.g. FMA Management Board) in crafting conservation and management measures.

3.0 Materials and Methods

Data collection methods utilized the Standard NSAP Methodology of monitoring landed catch and effort in pre-determined landing sites for both commercial and municipal fisheries. In addition, random sampling of individual size measurements by species by gear type are conducted whenever possible. Further, whenever feasible/warranted, biological examinations of species are performed for reproductive analysis.

In **FMA 6**, catches of ***Decapterus macarellus*** were recorded from a total of 52 landing sites from 2014 to 2022. Monthly catch estimates and seasonal patterns were calculated using the MS Excel Pivot function. Growth and mortality parameters including recruitment pattern, were estimated using length-based routines (e.g. ELEFAN I, length-converted catch curve) in the FAO-ICLARM Stock Assessment Tool (FISAT) of Gayanilo et.al. (2005), while the exploitation ratio (E) was derived using the formula: E = F/Z, where: F and Z are the rates of fishing and total mortality, respectively (Gulland, 1971). The Life history tools in FishBase were also used to estimate the length-at-first maturity (Lm), natural mortality rate (M), approximate life span, and coefficients (a and b) of the length-weight relationships. In addition, maximum length ($L\infty$), and life history parameters were utilized to calculate the percentage of mature fish, optimum length of the fish caught (Lopt), and mega spawners via the Froese Sustainability Indicator Tool (Froese and Binohlan, 2000, Froese, 2004). Assessment of fishing pressure was undertaken using the Mean Length Assessment Tool (LBAR), while the calculations for other sustainability indicators such as Maximum Sustainable Yield (MSY), biomass at MSY, carrying capacity, current biomass, and natural recruitment variation, the Stock Assessment Continuum (SAC) Tool (previously known as the Stock Synthesis-Data Limited (SSDL) developed by Dr. Jason Cope (NWFSC - NOAA), which uses Stock Synthesis (SS3) (Methot & Wetzel, 2012) was used (Noces, et. al. In Press)

For **FMA 5**, the study utilized the reproductive biology data of ***Decapterus macrosoma*** collected from January 2018 to December 2020 by the NSAP in the municipalities of Narra and Brooke's Point, Palawan, located along the southeastern coast of Palawan facing the Sulu Sea, one of the major marine bioregions of the Philippines (Asian Development Bank, 2014). A total of 7,525 fish samples were collected from 2018 to 2020; 3,483 specimens were from ringnet and 4,042 from bagnet fishers. The fish samples were randomly selected to represent the range of size classes and minimize bias. The FMA 5 study includes biological examination to determine the sex and maturity stage thru macroscopic inspection of gonads

following the Five-Point Scaling Method used by Ismen (2002). Abbreviations were used to represent the gonadal stages (U, I, II, III, IV, V). Gonad weights were used in the computation of Gonado-Somatic Index (GSI), following the method of Borthakur (2018). Sex ratio (male: female) was evaluated using the Chi-square Test (X^2) (Pearson 1990). The length at first maturity (L_m) or (L_{50}) was estimated following Sparre and Venema (1992). The 2018–2019 dataset was pooled thereafter the FiSAT II software (version 1.2.2) were used to generate estimates of parameters of the VBGF, including recruitment patterns; mortality rates (Z, M, F, and E), and probabilities of capture. The length at first maturity (Lm) was obtained along Yield-per-Recruit (Y/R) and Biomass-per-Recruit (B/R) analyses following the Beverton and Holt-Yield-per-Recruit (Beverton and Holt, 1957). The ratio of Lc/L∞ and a range of F values were used to generate curves of Y/R and B/R. The Length-based-Spawning Potential Ratio (LBSPR) model (Hordyk et al., 2015) was utilized to estimate size selectivity (SL50, SL95) following the approach of ICES (2018) and Hordyk et.al. (2016). Likewise, the Mean Length method (LBAR) was also applied (Beverton & Holt 1957; Ault et al. 1996, FAO 2003).

To further assess the status of *D. macrosoma*, the Froese sustainability indicators (Froese, 2004) were likewise utilized (Gonzales, et al. In Press).

The study of the sardine fishery in **FMA 4** covers the waters of the Southeast and Northeast Sulu Sea, focused on ***Sardinella lemuru***, the most dominant species that comprises approximately 77% of the total sardine landings in the region. Data collected by the National Stock Assessment Program (NFRDI-NSAP) of Region 9, 6 and 7 from 2015 to 2024 were utilized following the standardized protocols, where the bulk of monitored catches and biological samples were mostly taken from commercial purse seine operations, which forms the bulk of sardine landings in the area. Adapting the standardized protocols of the NSAP, just like the previous studies mentioned above, several methods/tools were utilized for data analysis. These are the (1) the FISAT II; (2) the LBAR; (3) the Froese Indicators; and the LBSPR, utilized to calculate the spawning potential ratio (SPR), an indicator of reproductive capacity relative to fishing pressure (Ignacio, et al. In press).

For **FMA 9,** data collected by the NSAP from January 2014 to December 2023 in sixty-seven (67) landing sites were used for the study of two sardine species (***S. lemuru*** and ***S. gibbosa***). The NSAP collected data were examined using Microsoft Excel (Pivot tables). In addition, catch and effort data were processed using RStudio (version 2025.05.1) to measure Catch Per Unit Effort (CPUE) and to evaluate the status of sardine stocks, several productivity indicators were used alongside several length-based biological indicators such as FISAT (Gayanilo et al., 2005). Further, three Froese indicators (Froese, 2004) were examined to check for overfishing (Yasay, et al. In press).

4.0 RESULTS

4.1 *Decapterus macarellus* in FMA 6

Table 4.4: Values of growth parameters for *D. macarellus* (2014-2022).

Growth Parameters	Length (cm)									Assessment Method
	2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	
L_c	24.5	23.5	25.5	23.5	25.5	26.5	25.5	24.5	25.5	LBAR/LF Data
L_{ave} (Lbar)	26.84	26.16	27.51	26.31	27.39	28.13	27.54	27.1	27.83	
L_∞	42.64									FiSAT
L_m	24.3									FishBase Life History Tool
L_{opt}	29.5									Froese
K	1.71									FiSAT
Phi-prime (Φ')	3.49									FiSAT

Table 4.5: Values of mortality parameters of *D. macarellus* (2014-2022).

Mortality Parameters	Years									Assessment Method
	2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	
F	9.26	8.3	10.54	7.64	11.47	12.89	10.37	7.91	8.58	LBAR/LF Data
Z	11.56	10.6	12.84	9.94	13.77	15.19	12.67	10.21	10.88	
F/M	4.03	3.61	4.58	3.32	4.99	5.6	4.51	3.44	3.73	
M	2.3									FishBase Life History Tool

Table 4.6: Summary of Performance Indicators for *D. macarellus*.

Performance Indicators	Target Reference Point	Limit Reference Point	Results									Interpretation	Assessment Method
			2014	2015	2016	2017	2018	2019	2020	2021	2022		
Average Length (cm), ***where Lm=24.30 cm TL***	Above Lm and Increasing	Below Lm and Decreasing	24.50	23.50	25.50	23.50	25.50	26.50	25.50	24.50	25.50	x	LBAR/LF Data
Fishing Mortality	F=M or F/M ≤ 1	F=2M or F/M ≥ 1 or 2	4.03	3.61	4.58	3.32	4.99	5.60	4.51	3.44	3.73	x	
Percent Mature	90-100% mature;	50% mature and less;	11.83	9.33	14.30	15.13	14.92	13.99	19.79	18.49	23.28	x	FROESE
±10% of Length Optimum, ***where Lopt=29.50 cm TL***	100%	80% and less	16.59	13.14	18.72	20.39	20.44	20.72	27.96	25.43	32.12	x	
Percent Megaspawner	0-10% for (groupers, snappers, etc.) or 30-40% for fast growing species	20% megaspawner	1.14	0.15	0.20	1.20	1.09	1.06	1.19	1.18	2.18	x	
Exploitation Value	E = 0.5	E = 0.6	0.80	0.78	0.82	0.77	0.83	0.85	0.82	0.77	0.79	x	LBAR/LF Data
$B_{current}/B_0$	0.5	≤0.32 (MSY)	0.18										SSDL

4.2 *Decapterus macrosoma* in FMA 5

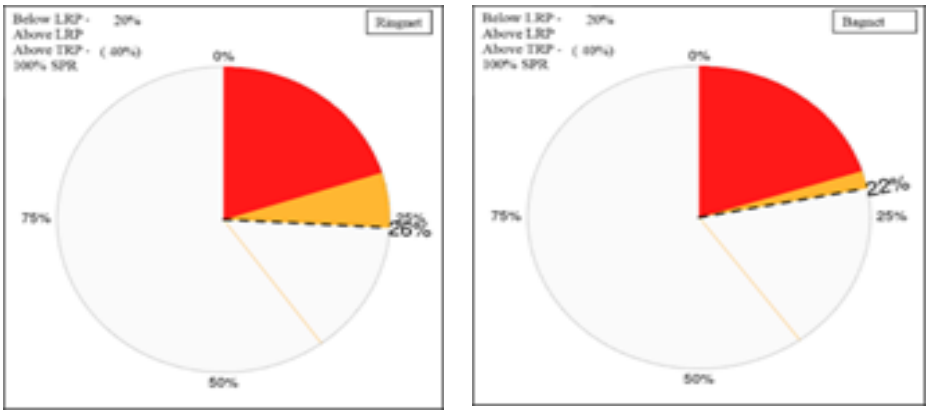


Figure 4.8: Estimated Spawning Potential Ratio (SPR) for *D. macrosoma* caught by Ringnet and Bagnet.

Table 4.7: Froese indicators for *D. macrosoma* from FMA 5.

Year	2018	2019	2020
Percent Mature	10.4	22.1	28.9
Percent within ±10% of Lopt	14.8	26.1	55.1
Percent Mega-spawners	3.6	9.4	4.1

4.3. *Sardinella lemuru* in FMA 4

Table 4.8 List of Performance Indicators for *S. lemuru* computed via FISAT and LBAR.

Performance Indicators	Model/ Method used	Results									
		2015	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Exploitation ratio (E)	FiSAT	0.59	0.57	0.52	0.59	0.60	0.63	0.69	0.63	0.65	0.56
	LBAR	0.52	0.50	0.42	0.46	0.62	0.66	0.77	0.79	0.70	0.51
F/M	FiSAT	1.46	1.32	1.1	1.47	1.48	1.73	2.19	1.69	1.88	1.26
	LBAR	1.07	1.00	0.72	0.87	1.60	1.93	3.29	3.74	2.29	1.02

Table 4.9 Estimated Fishing Selectivity Indicators for *S. lemuru*.

Performance Indicators	Model/ Method used	Results (Lm =15.1, BFAR 9 NSAP 2021)									
		2015	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
L50/Lc	FiSAT	15.7	15.7	15.5	14.5	14.8	14.1	14.3	14.0	14.7	15.0
Length at first Capture	LBAR	15.3	16.3	14.8	13.8	15.3	15.3	15.3	15.3	15.3	15.3
Average Length	LBAR	16.3	16.7	16.1	15.2	16.1	16.1	15.9	15.8	16.0	16.4

Table 4.10 Biomass Indicators for *S. lemuru*.

Performance Indicators	Model/ Method used	Results									
		2015	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
SPR	LBSPR	0.36	0.45	0.42	0.38	0.38	0.32	0.23	0.20	0.25	0.33
CPUE	Catch/boat/day (PS)	40.6	38.9	40.9	28.4	23.7	28.7	19.5	20.5	15.4	18.9

4.4 *Sardinella lemuru* and ***S. gibbosa*** in FMA 9

Table 4.11: Sustainability Indicators for *Sardinella lemuru* and *S. gibbosa* in FMA 9.

Species	Method	Performance Indicator	Reference Points			Status/Result
			Limit	Trigger	Target	
S. lemuru	**LBAR**	Fishing Mortality (F/M)	2	1	0.5	2.37
	FROESE	% Mature	<50	51-89	90-100	4.82
		+-% Lopt	<80	81-99	100	48.2
		% Mega spawner	30-40	20-30	10-20	7.81
S. gibbosa	**LBAR**	Fishing Mortality (F/M)	2	1	0.5	3.95
	FROESE	% Mature	<50	51-89	90-100	18.6
		+-% Lopt	<80	81-99	100	53.3
		% Mega spawner	30-40	20-30	10-20	37.2

5.0 Discussion

5.1 Conclusion and Recommendations for Decapterus macarellus in FMA 6

The *Decapterus macarellus* stock in FMA 6 is heavily overexploited, unsustainably harvested and immediate implementation of policies and management measures are required to prevent stock collapse. To reverse the overexploitation of *D. macarellus*, a three-pronged approach is recommended: strict regulation of dominant fishing gears, targeted biological research, and the institutionalization of harvest control rules (Noces, et.al. In press).

5.2 Conclusion and Recommendations for Decapterus macrosoma in FMA 5

Results from the three-year study of the *D. macrosoma* stock in Southwest Sulu Sea confirms it is subjected to both growth and recruitment overfishing. The following are the proposed management actions; 1) Implement Gear & Mesh Size Regulations: 2) Effort Reduction; 3) Enact Spatial & Temporal Closures; 4) Integration of Oceanographic indicators; and 5) Sustain monitoring activities thru the NSAP (Gonzales, et al. In press).

5.3 Conclusion and Recommendations for Sardinella lemuru in FMA 4

Current assessment of *S. lemuru* stock in FAM 4 consistently indicates unsustainably high extraction activities, as evidenced by high fishing mortality, decreasing CPUE, predominance of immature fish in landings, and low spawning biomass which signify both growth and recruitment overfishing, while decreasing CPUE reflects declining stock abundance and/or overcapacity in the fishery. Benchmarked against the established Reference Points (RPs), the stock remains at the trigger reference level, signifying that precautionary management actions need to be undertaken immediately. While 2024 results exhibited notable improvements in sustainability indicators, this positive outcome remains fragile and may not be sustainable if prevailing exploitation activities persist. With persistently high extraction activities of *S. lemuru* in FMA 4, complementary measures must augment the existing seasonal fishing closure to ensure the sustainability of the stock.

Thus, the following are recommended: 1) Strengthen Gear Regulations; 2) Create Input Controls 3) Institutionalize Adaptive Fishing Closure; 4)–Enhance Monitoring, Control, and Surveillance (MCS); 5) Enhance Monitoring Activities; 6) Develop a Harvest Strategy; and 7) Increase Community Engagement and Livelihood Support (Ignacio, et. al. In press)

5.4 Conclusion and Recommendations for Sardinella lemuru and Sardinella gibbosa in FMA 9

Performance indicators suggest both *S. lemuru* and *S. gibbosa* are under intense fishing pressure above sustainable thresholds exacerbated by high catches of juveniles and immature individuals. Despite their inherent resilience, the long-term viability of the fishery and the sustainability of these sardine stocks are at risk unless several management interventions are implemented. Thus, the following recommendations are proposed: 1) Conduct of reproductive biology studies; 2) Initiate gear selectivity improvements; 3) Establish seasonal fishing closure; and 4) Implement Harvest Control Rules (Yasay, et al. In press)

6. Conclusion

The application of several length-based stock assessment models and surplus production methods improves the robustness and reliability of research studies, as done in the four FMAs. The assessments done in Luzon, Palawan, Zamboanga and Mindanao (representing FMA 6, FMA 5, FMA 4 and FMA 9), using combinations of FISAT, LBAR, FROESE and LBSPR methods consistently indicated unsustainable exploitation, all their results exhibited most if not all of the following; elevated fishing pressure, declining CPUE, domination of small/immature fish in landings, and low spawning biomass which signals both growth and recruitment overfishing. These signals are consistent with length-based mortality indicator (elevated F or F/M) values indicating that removals exceed natural mortality and productivity, while CPUE trends reflect declining stock abundance or overcapacity in the fishery.

The outcomes of the four (4) studies will be direct inputs for fisheries management policies and further provide a scientific basis for refining existing conservation measures (e.g. closed fishing season in FMA 4 and FMA 5). Likewise, the findings will benefit policymakers, industry stakeholders, and local fishing communities by ensuring that the exploitation of these species is aligned with the long-term ecological sustainability and economic viability. Continuous monitoring and research are essential to adaptively manage the fishery and ensure the long-term sustainability of small pelagic populations.

7.0 References

Asian Development Bank (ADB). 2014. State of the Coral Triangle: Philippines. Manila (PH): https://www.adb.org/sites/default/files/publication/42414/state-coral-triangle-philippines.pdf

Ault, J. S., J. A. Bohnsack, and G. A. Meester. 1996. LBAR: A Computer Program for Estimating Total Instantaneous Mortality Rate from Length-Frequency Data. Miami: University of Miami.

Beverton RJH and Holt SJ. 1957. On the dynamics of exploited fish populations. London (UK): Ministry of Agriculture, Fisheries and Food.

BFAR. 2023. Philippine Fisheries Profile 2022. Bureau of Fisheries and Aquatic Resources. Department of Agriculture Bureau of Fisheries and Aquatic Resources; Fisheries Building Complex, BPI Compound, Visayas Ave., Quezon City, Philippines https://www.bfar.da.gov.ph/wp-content/uploads/2024/02/2022-Philippine-Fisheries-Profile.pdf

Borthakur MK. 2018. Study of gonadosomatic index and fecundity of fresh water fish *Xenontedon cancila*. J Entomol Zool Stud. 6(3):42–46.

Cedo, KKH and NRB Dicdiquin. 2026. PHILIPPINES: Country Presentation on the Conservation Efforts and Management Strategies of Pelagic Fisheries, Regional Technical Consultation, January 6-8, 2026. Port Dickson, Malaysia

DA-BFAR, 2019. (FAO 263) Establishment of Fisheries Management Areas (FMA) for the Conservation and Management of Fisheries in Philippine Waters. DA-BFAR, Quezon City, Philippines.

Food and Agriculture Organization (FAO). 2003. Stock assessment tools and length-based assessment resources. Rome (IT): FAO.

Froese, R. (2004). Keep it simple: three indicators to deal with overfishing. Fish and Fisheries, 5(1), 86–91. https://doi.org/10.1111/j.1467-2979.2004.00144.x

Froese, R., and Binohlan, C. 2000. Empirical relationships to estimate asymptotic length, length at first maturity and length at maximum yield per recruit in fishes, with a simple method to evaluate length frequency data. Journal of Fish Biology 56:758-773.

Gayanilo, F. Jr.; Sparre, P; Pauly, D. 2005. FAO-ICLARM Stock Assessment Tools II (FiSAT II). Revised version. User's guide. FAO Computerized Information Series (Fisheries). No. 8, Rome, FAO. 168 p.

Gonzales, LM., MB. Candelario and EM. Villaflor (in Press). Reproductive Biology and Stock Status of Shortfin Scad, *Decapterus macrosoma* (Bleeker, 1851) in the Southwest Sulu Sea, Palawan.

Gulland, J.A. 1971. The Fish Resources of the Ocean West Byfleet, Survey Fishing News (Books) Ltd. FAO Technical Paper No. 97, 428 p.

Hordyk AR, Ono K, Valencia SR, Loneragan NR, Prince JD. 2015. A novel length-based empirical estimation method of spawning potential ratio (SPR), and tests of its performance, for small-scale, data-poor fisheries. ICES J Mar Sci. 72(1):102–113.

Hordyk, A., Ono, K., Prince, J.D., and Walters, C.J. 2016. A simple length-structured model based on life history ratios and incorporating size-dependent selectivity: application to spawning potential ratios for data-poor stocks. Can. J. Fish. Aquat. Sci. 13: 1-13. doi: 10.1139/cjfas-2015-0422

ICES. 2018. Workshop and methods references used for selectivity fitting in length-based models. Copenhagen (DK): International Council for the Exploration of the Sea.

Ignacio, DB., VM. Lague, CB. Revillas, SV. Mesa, JH. Garcia, and NAL. Flores (In Press). Assessment on the Implementation of the Adjustment of the Sardines Closed Fishing Season in East Sulu Sea, Basilan Strait and Sibuguey Bay (BAC 255 s. 2014).

Ismen A. 2002. Maturity and fecundity of lizardfish *Saurida undosquamis* in Iskenderun Bay (Eastern Mediterranean). Turk J Zool. 26:231–237.

Methot, R. D. and Wetzel, C. R. 2012. Stock synthesis: A biological and statistical framework for fish stock assessment and fishery management. Fisheries Research, 142, 86–99. https://doi.org/10.1016/j.fishres.2012.10.012

Noces, ML., RSP. Gaerlan, WM. Cruz, RV. Yutuc, RA. Mendoza, LD. Parido, and AJS. Gualberto. (In Press). Stock Assessment of the Mackerel Scad, *Decapterus macarellus* (Cuvier, 1833) in Fisheries Management Area 6, Philippines.

Pearson K. 1990. On the criterion that a given system of deviations from the probable in the case of a correlated system of variables is such that it can be reasonably supposed to have arisen from random sampling. Philos Mag. 50:157–175.

Sparre, P. and Venema, S.C. 1992. Introduction to tropical fish stock assessment. Part 1: manual. Rome (IT): FAO; FAO Fish Tech Pap. 306/1.

Yasay, E.B., Cena, PMT., Pagalan, JGP., Fajardo, MJL., Pangan, JMV., Villariza, ZA., Salvador, RC Jr. (*In Press*) Stock Assessment of *Sardinella lemuru* (Bleeker, 1853) and *Sardinella gibbosa* (Bleeker, 1853) in Fisheries Management Area 9 (Bohol Sea), Philippines.

THAILAND

Status of Pelagic Fisheries in Thailand Assessed by Simple and Practical Indicators

Prepared by:
Ms. Nuengruetai Yoknoi & *Mr. Sakol Pheaphabrattana*
Marine Fisheries Research and Development Division
Department of Fisheries
Thailand

Abstract
This country report presents the status of pelagic fisheries in Thailand assessed using simple and practical indicators, as agreed during the Regional Technical Consultation (RTC) on Harmonizing Indicators for Sustainable Pelagic Fisheries in Southeast Asia. The assessment primarily applies biological indicators, particularly Catch per Unit Effort (CPUE), to evaluate stock trends and to estimate Maximum Sustainable Yield (MSY) for major pelagic species and anchovy in the Gulf of Thailand and the Andaman Sea. Data are derived from fisheries logbooks, port landing records, and monthly scientific sampling programs. Results indicate variable stock conditions among species and fishing areas, with CPUE-based indicators providing practical and reliable information for fisheries management under data-limited conditions. The report highlights current management measures, applications of indicators, challenges, and future directions toward strengthening indicator-based management and regional cooperation.

1.0 Introduction

Pelagic fisheries constitute a major component of marine capture fisheries in Thailand and play an important role in national fish production, food security, and livelihoods. Pelagic fish in Thailand are harvested using various fishing gears, including purse seines, anchovy purse seines, gillnets, and pair trawls, with purse seines contributing the largest share of total catch. Fishing operations commonly use supporting technologies such as fish aggregating devices (FADs), light luring, and sonar. Important pelagic species in Thai waters include Goldstrip sardine (*Sardinella gibbosa*), Short mackerel (*Rastrelliger brachysoma*), Indian mackerel (*R. kanagurta*), Yellowstripe scad (*Selaroides leptolepis*), Bigeye scad (*Selar crumenophthalmus*), Shorthead anchovy (*Encrasicholina heteroloba*). Fisheries operate in both the Gulf of Thailand (FAO Area 71) and the Andaman Sea (FAO Area 57).

Thailand applies a combination of fisheries management measures, including vessel and gear licensing, limits on fishing days per year, seasonal and area closures, and scientific

stock assessments. CPUE has been used as a key indicator for estimating MSY and fishing effort levels for pelagic fish and anchovy stocks. These measures aim to regulate fishing effort, protect spawning periods, and ensure sustainable exploitation of pelagic resources. Pelagic fisheries in Thailand face challenges such as fluctuating stock abundance, high fishing pressure in some areas, and limitations in long-term and comprehensive datasets. The multispecies nature of pelagic fisheries and environmental variability further complicate stock assessment and management.

2.0 Objectives

1. To assess the status of pelagic fisheries in Thailand using simple and practical indicators.
2. To apply CPUE-based indicators for evaluating stock trends and estimating MSY.
3. To support evidence-based fisheries management and contribute to the regional harmonization of indicators.

3.0 Materials and Methods

Indicators Used

Thailand primarily applies biological indicators, with Catch per Unit Effort (CPUE) serving as the core indicator. CPUE is used to assess relative stock abundance, estimate MSY, and evaluate fishing effort levels for major pelagic species and anchovy in both the Gulf of Thailand and the Andaman Sea.

Data Collection

Pelagic fisheries data are collected from multiple sources and fishing gears. Commercial fisheries are required to submit fishing logbooks, while landing catches are weighed at ports to record actual catch. Scientific port sampling is conducted on a monthly basis to collect data on fishing effort, catch composition, and biological characteristics. Length measurements are taken for key pelagic species. These data form the basis for stock assessment and fisheries indicators, including CPUE and fishing mortality estimates.

Data Analysis

Collected data are analyzed to generate CPUE indices and to estimate MSY using stock assessment models, including length-based approaches such as the Thompson and Bell model. Analyses are conducted separately for the Gulf of Thailand and the Andaman Sea to account for spatial differences in stock dynamics and fishing effort.

4.0 Results

Trends in vessel numbers, catches, and CPUE from 2016 to 2024 show temporal variability in pelagic fisheries. CPUE of pelagic fish from purse seines and CPUE of anchovy from anchovy purse seines exhibit fluctuations that reflect changes in fishing effort, stock abundance, and management measures. In 2024, MSY assessment results indicate that fishing effort levels for pelagic fish were approximately 68.9% of Fmsy in the Gulf of Thailand and 93.1% of Fmsy in the Andaman Sea. For anchovy, fishing effort levels were substantially lower, at 22.6% of Fmsy in the Gulf of Thailand and 14.7% of Fmsy in the Andaman Sea. Species-specific MSY assessments conducted in 2023 using length-based models suggest varying stock conditions among pelagic species and anchovy, with some stocks showing biomass levels above B/Bmsy and others below reference points.

5.0 Discussion

5.1 Current Status of the Stock

The application of CPUE and MSY-based indicators indicates that the status of pelagic fish stocks in Thailand differs by species and fishing area. While some stocks remain productive, others show signs of increased fishing pressure, emphasizing the need for continuous monitoring and adaptive management.

5.2 Implications for the Management of the Stock

Indicator results provide essential guidance for fisheries management, particularly in setting limits on fishing days, adjusting effort controls, and implementing seasonal or area closures. The simplicity of CPUE allows for regular assessment even under data -limited conditions.

5.3 Application of Indicators in Management

Indicators are actively applied in fisheries management to:

- Support MSY estimation and evaluation of fishing effort relative to reference points.
- Inform management decisions such as fishing day limits and closed seasons.
- Communicate scientific advice to managers and stakeholders in a clear and practical manner.

5.4 Challenges and Limitations

✓ Limitations in Data Collection or Indicator Reliability
- Current data collection programs do not fully cover artisanal fisheries, particularly gillnet fisheries.
- Limited availability of long-term datasets for some fisheries.
- Multispecies catches may affect CPUE interpretation.

✓ Technical, Financial, and Institutional Challenges
- A limited number of personnel working in stock assessment.
- Time constraints and resource limitations for extensive field data collection.

✓ Gaps in Capacity and Coordination
- Need for further training of field staff in species identification.
- Low cooperation from some fishers in data reporting.

5.5 Future Plans and Recommendations

Proposed Improvements in Indicators and Data Systems

- ❖ Expand data collection coverage to better include artisanal fisheries.
- ❖ Strengthen capacity building in stock assessment and data analysis.
- ❖ Integration of Indicators into Management
- ❖ Institutionalize the routine use of CPUE and MSY-based indicators in fisheries management plans.
- ❖ Establish clearer links between indicator thresholds and management actions.
- ❖ Regional Collaboration and Technical Support
- ❖ Continue collaboration with SEAFDEC/MFRDMD on harmonized indicators.
- ❖ Share experiences and best practices with other ASEAN Member States.

6. Conclusion

This report demonstrates that simple and practical indicators, particularly CPUE, are effective tools for assessing the status of pelagic fisheries in Thailand. The application of these indicators supports MSY-based management and informed decision-making under data-limited conditions. Thailand remains committed to improving indicator-based assessments and contributing to regional cooperation for the sustainable management of pelagic fisheries in Southeast Asia.

7. Bibliography

Department of Fisheries Thailand. 2025. Simple and Practical Indicators for the Sustainable Management of Pelagic Fisheries in Thailand. Presentation at the Regional Technical Consultation, Subang, Malaysia, 22 October 2025.

SEAFDEC/MFRDMD. 2025. Report on the Regional Technical Consultation for Harmonizing Simple and Practical Indicators of Sustainable Pelagic Fisheries in Southeast Asia. Subang, Malaysia.

8. Acknowledgement

The author sincerely acknowledges SEAFDEC/MFRDMD, the Japan-ASEAN Integration Fund (JAIF), and all participants of the Regional Technical Consultation for their valuable contributions and support toward advancing sustainable pelagic fisheries management in Southeast Asia.

VIET NAM

Status of selected pelagic fish species in Viet Namese waters assessed by the Length Converted Catch Curve Method

Prepared by:
Dr. Vu Viet Ha
Northern Research Center for Marine Fisheries,
Viet Nam Academy of Fisheries Sciences
Ministry of Agriculture and Environment, Viet Nam

Ms. Nguyen Hong Nhung
Department of Fisheries and Surveillance,
Ministry of Agriculture and Environment, Viet Nam

Abstract

Small pelagic fisheries are an important component of marine fisheries in Viet Nam, contributing to food security, employment, fishmeal production, and marine ecosystem functioning. Increasing fishing pressure, however, has raised concerns about the sustainability of several small pelagic fish stocks. This study provides an overview of stock indicators and reference points used to assess the status of selected small pelagic fish species in Viet Namese waters and to support evidence-based fisheries management. Biological data were collected through monthly port sampling during 2016–2025 from representative fishing grounds in the Tonkin Gulf, Central, South-east, and South-west waters. Length–weight relationships, von Bertalanffy growth parameters, mortality rates, and exploitation rates were estimated using standard stock assessment methods, including the Length-Converted Catch Curve method implemented in FiSAT II. The results showed strong length–weight relationships, with coefficients of determination (r^2) ranging from 0.87 to 0.99, and predominantly positive allometric growth among the assessed stocks. Growth parameters varied among species and regions, reflecting differences in life-history characteristics. Exploitation rates generally increased between 2016–2020 and 2020–2025, indicating increasing fishing pressure. During 2020–2025, exploitation rates ranged from 0.42 to 0.79, with several stocks falling within the risk-of-overfishing range (E = 0.6–0.8). No assessed stock exceeded the overfishing threshold of E > 0.8. Overall, the assessed stocks remain biologically productive but are subject to moderate to high fishing pressure. The exploitation rate indicator provides a practical tool for adaptive fisheries management under data-limited conditions. Strengthening biological monitoring, controlling fishing effort and fleet capacity, standardizing indicators, and periodically adjusting management measures are recommended to support the sustainable utilization of small pelagic resources in Viet Nam.

1.0 Introduction

Pelagic fishery resources refer to fish species inhabiting the pelagic zones of the ocean, from the surface to mid-water layers. These species are typically characterized by schooling behaviors and seasonal migration patterns. In Viet Namese waters, although some large pelagic species such as oceanic tuna, marlin and swordfish are important, the majority of pelagic fishes are small-sized species with short life cycles, rapid growth, high fecundity, and a strong capacity for stock renewal. Dominant small pelagic fishes in Viet Namese waters consist of anchovies, scads, carangids, sardines and others.

Marine capture fisheries in Viet Nam characterized small-scale with large numbers of small-sized fishing vessels and a diverse range of fishing gears. Fisheries targeting pelagic fishes mainly use Purse Seines (PS), Stick-held falling nets (SFN) and gillnet (GN). At present fishery resources are under high exploitation pressure, particularly due to the rapid increase in the number of fishing vessels. Intensive fishing effort has led to the overexploitation of certain resource groups, resulting in marked declines in abundance.

Fisheries management in Viet Nam follows an adaptive management approach, with the application of fishery resource indicators and reference points. Data collection supporting for stock assessment have been collected periodically for economically important species and used as indicator species

2.0 Objectives

The objective of this report is to provide a brief overview of the indicators and reference points currently applied in Viet Nam for pelagic fisheries management. It also aims to describe the methodologies used to assess stock status, evaluate exploitation levels, and support evidence-based management measures for the sustainable utilization of pelagic fishery resources. Furthermore, the report highlights current challenges and opportunities for strengthening adaptive fisheries management in line with national priorities and international best practices.

3.0 Materials and Methods

3.1. Data collection

Fish specimens have been collected under the project of comprehensive survey for marine fisheries resources in Viet Nam. Port sampling was conducted monthly at the landing sites along the coast of selected provinces representative for four managements areas of Viet Nam, including the Tonkin Gulf (Hai Phong, Thanh Hoa and Nghe An province), Central waters (Gia Lai and Khanh Hoa province), the South-east waters (Lam Dong province, Ho Chi Minh City and Can Tho province) and the South-west waters (An Giang province).

Samples of fish species were randomly taken from the catches of gillnets and purse seines when the fishing boat disembarked for catches unloading.

Individual length measurements of fish were conducted using calipers, and measured to the nearest millimetre. We measured the total length (TL) for species with no forked tail, fork length (FL) for species with a forked tail. The body weight (g) of individual fish was measured on land using a digital balance with an accuracy of 0.01 g.

3.2. Data analysis

3.2.1. Single species Stock assessment

Length-Weigh Relationship (LWRs) of fishes were estimated by transformation of the power equation $W = aL^b$ to the linear regression log(W)=log(a)+b*log(L) where W is weight in grams and L is the length in cm, a is the intercept and b is the slope (Le Cren, 1951). Based on the estimated b, the growth of a fish species is considered negative allometric (b<3), isometric (b=3), or positive allometric (b>3) (Bayer, 1987). The standard error (se) of LWR coefficients was also estimated to determine if the hypothetical value of isometry is within these estimated limits.

The growth patterns of fishes are described by the von Bertalanffy Growth Function (VBGF) and be estimated using the ELEFAN I routine (Pauly and Morgan, 1987) on FAO-ICLARM Stock Assessment Tools (FiSAT II) (Gayanilo Jr and Pauly, 1997). Growth was modeled by fitting $L_t = L_\infty [1 - e^{-K(t - t_o)}]$, in which L_∞ is the asymptotic *L, K* is the growth curvature parameter ($year^{-1}$), L_t is the length at age *t*, and t_0 is the theoretical size when L_t is equal to zero, estimated by the formula: $\log(-t_o) = -0.3922 - 0.2752 \log(L_\infty) - 1.038 \log(K)$. The growth performance index (Φ') was estimated by the equation $\Phi' = \log K + 2 \log L_\infty$ (Pauly and Munro, 1984).

The length-converted catch curve (LCCC) method on FiSAT II (Gayanilo Jr and Pauly, 1997; Gayanilo and Sparre, 2005) was used to estimate the total instantaneous mortality (*Z*) using the length data collected monthly, VBGF parameters, and a mean annual bottom temperature of 29.6 °C. Fishing mortality *(F)* was derived from the difference between *Z* and *M* (F=Z - M). Mortality estimates (*F* and *Z*) were used to determine the exploitation rate *E* = *F/Z*.

3.2.2. Referent points

The E value derived from the LCCC method is used as an indicator to describe stock status. By comparing the estimated E value with established reference points, fish stocks can be classified as under-exploited or over-exploited. The thresholds for E are as follows:

E < 0.4: Underfishing
E = 0.4–0.6: Sustainable fishing
E = 0.6–0.8: At risk of overfishing
E > 0.8: Overfishing

4.0 Results

4.1. Length–weight relationship

Length–weight relationship (LWR) parameters estimated for selected small pelagic species in Viet Namese waters during 2016–2025 showed strong statistical fits, with coefficients of determination (r^2) ranging from 0.87 to 0.99. These results indicate a high degree of consistency between fish length and body weight across all assessed species and regions.

The estimated slope parameter (b) varied from 2.98 to 3.58, reflecting different growth patterns among species and fishing grounds. Positive allometric growth was the dominant pattern observed in most assessed stocks. The highest b values were recorded for *Atule mate* in the SE waters (3.58), *Rastrelliger brachysoma* in the SW waters (3.52), *R. kanagurta* in TG (3.43), and *R. kanagurta* in the CW (3.40). These results suggest relatively robust body growth under prevailing environmental and feeding conditions.

Isometric growth was observed in several stocks, including *Decapterus maruadsi* in CW waters (3.05) and SE waters (3.01), as well as *E. punctifer* in the SE waters (3.03). These populations displayed proportional increases in length and weight. Negative allometric growth was limited to a small number of cases, notably *A. mate* in CW (2.98) and *Sardinella gibbosa* in CW (2.99), indicating slightly faster linear growth relative to weight gain.

Table 4.12: Parameters of the LWR equation and growth type (GT) for small fish species in Tonkin Gulf (TG), Central waters (CW), South-east waters (SE) and South-west waters (SW).

Species	Region	a	b	r^2	SE (b)	N	GT
Atule mate	CW	0.0162	2.98	0.98	0.00707	2711	A-
Atule mate	SE	0.0033	3.58	0.95	0.05196	256	A+
Atule mate	SW	0.0105	3.14	0.98	0.0059	4613	A+
Decapterus maruadsi	TG	0.0078	3.18	0.98	0.0031	17868	A+
Decapterus maruadsi	CW	0.0109	3.05	0.97	0.0062	7833	I
Decapterus maruadsi	SE	0.0139	3.01	0.96	0.00799	5323	I

Encrasicholina heteroloba	TG	0.0062	3.18	0.87	0.01651	5650	A+
Encrasicholina heteroloba	CW	0.0035	3.35	0.92	0.04886	413	A+
Encrasicholina heteroloba	SW	0.0064	3.10	0.87	0.01545	5867	A+
Encrasicholina punctifer	CW	0.0051	3.33	0.94	0.01068	5658	A+
Encrasicholina punctifer	SE	0.0098	3.03	0.94	0.01098	4478	I
Rastrelliger brachysoma	SW	0.0036	3.52	0.97	0.0083	5289	A+
Rastrelliger kanagurta	TG	0.0042	3.43	0.99	0.00367	9921	A+
Rastrelliger kanagurta	CW	0.0046	3.40	0.99	0.00435	5122	A+
Rastrelliger kanagurta	SE	0.0056	3.35	0.97	0.00809	5356	A+
Sardinella gibbosa	TG	0.0124	3.02	0.97	0.0317	256	A+
Sardinella gibbosa	CW	0.0129	2.99	0.98	0.00618	5253	A-
Sardinella gibbosa	SE	0.0092	3.12	0.99	0.00499	4749	A+
Sardinella gibbosa	SW	0.0110	3.07	0.94	0.01068	5009	A+

N: sample size; a: intercept; b: slope; r^2: coefficient of determination, SE (b) standard error of b value; CI (b): 95% confident interval of the b value, A^+: positive allometric growth; A^-: negative allometric growth; I: Isometric growth. Data collected in period 2016-2025

4.2. von Bertalanffy Growth Function (VBGF) parameters

Estimated VBGF parameters of selected small pelagic species in Viet Namese waters showed clear differences among species and regions, reflecting variations in life-history strategies and environmental conditions.

The largest asymptotic sizes were estimated for *R. kanagurta* in TG (28.88 cm), followed by *A. mate* in the Central and SW waters (28.35 cm), and *D. maruadsi* in the TG (28.35 cm). In contrast, the smallest $L\infty$ values were recorded for anchovy species, including *E. heteroloba* in SW waters (8.93 cm) and *E. punctifer* in SE waters (9.45 cm). Growth coefficients indicated relatively rapid growth for anchovy species, with the highest K values estimated at 1.10 $year^{-1}$ for *E. heteroloba* in the CW and *E. punctifer* in both the Central and SE waters. Other fast-growing stocks included *E. heteroloba* in TG (0.98 $year^{-1}$) and *S. gibbosa* in the SW waters (0.87 $year^{-1}$). Lower K values were observed for larger-bodied species such as *A. mate* (0.47 $year^{-1}$) and *D. maruadsi* in CW (0.48 $year^{-1}$).

Growth performance indices (Φ') ranged from 3.87 to 4.76. The highest growth performance was estimated for *D. maruadsi* in TG (4.76), followed by *S. gibbosa* in CW (4.71) and *D. maruadsi* in SE waters (4.69). The lowest Φ' values were found for *E. heteroloba* in SW waters (3.87) and *E. punctifer* in SE waters (3.99).

Table 4.13: Parameters of the von Bertalanffy growth function (K, to) and growth performance indices (Φ) of small fish species in Tonkin Gulf (TG), Central waters (CW), South-east waters (SE) and South-west waters (SW).

Species	Region	L_∞	K	t_o	Φ'
Atule mate	CW	28.35	0.47	-0.188	4.58
Atule mate	SW	28.35	0.47	-0.188	4.57
Decapterus maruadsi	TG	28.35	0.72	-0.120	4.76
Decapterus maruadsi	CW	27.30	0.48	-0.185	4.55
Decapterus maruadsi	SE	26.78	0.68	-0.130	4.69
Encrasicholina heteroloba	TG	11.03	0.98	-0.113	4.08
Encrasicholina heteroloba	CW	10.50	1.10	-0.102	4.08
Encrasicholina heteroloba	SW	8.93	0.94	-0.126	3.87
Encrasicholina punctifer	CW	11.03	1.10	-0.101	4.13
Encrasicholina punctifer	SE	9.45	1.10	-0.105	3.99
Rastrelliger brachysoma	SW	23.10	0.57	-0.162	4.48
Rastrelliger kanagurta	TG	28.88	0.56	-0.156	4.67
Rastrelliger kanagurta	CW	27.83	0.57	-0.154	4.65
Rastrelliger kanagurta	SE	25.20	0.62	-0.145	4.60
Sardinella gibbosa	CW	25.20	0.81	-0.110	4.71
Sardinella gibbosa	SE	18.38	0.84	-0.116	4.46
Sardinella gibbosa	SW	17.33	0.87	-0.113	4.42

4.3. Mortality and Exploitation rates

Estimated mortality and exploitation parameters for selected small pelagic species in Viet Namese waters indicate an overall increase in fishing pressure during the period 2020–2025 compared with 2016–2020. In most assessed stocks, fishing mortality (F) exceeded natural mortality (M), suggesting that removals from fishing are the dominant source of total mortality.

Exploitation rates (E) during 2016–2020 ranged from 0.42 to 0.74. Several stocks were assessed within the sustainable range (E = 0.4–0.6), including *E. heteroloba* in TG (0.42), *D. maruadsi* in CW (0.43), and *S. gibbosa* in the Central, SE and SW waters (0.52–0.55). However, a number of stocks were already at risk of overfishing, particularly *D. maruadsi* in SE waters (0.74), *A. mate* in the SW waters (0.67), and *R. kanagurta* in TG (0.66).

During 2020–2025, exploitation rates increased in nearly all assessed stocks, ranging from 0.42 to 0.79. No stock exceeded the overfishing threshold of E > 0.8; however, many stocks were within the risk zone (E = 0.6–0.8). The highest exploitation rates were observed for *D. maruadsi* in TG (0.79), *R. kanagurta* in the SE waters (0.79), *S. gibbosa* in the SW waters (0.78), *S. gibbosa* in SE waters (0.75), and *R. brachysoma* in the SW waters (0.74). Some stocks remained within sustainable levels, including *S. gibbosa* in TG (0.42), *E. punctifer* in SE waters (0.60), and *A. mate* in the CW. The general upward trend in exploitation rates indicates increasing fishing pressure across major fishing grounds.

Table 4.14: Mortality rates (natural mortality [M], fishing mortality [F], instantaneous total mortality coefficient (Z) and exploitation rate of small pelagic fishes the Tonkin Gulf (TG), the Central waters (CW), the South-east waters (SE) and South-west waters (SW). Data grouped by periods 2016-2020 and 2020-2025.

Species	Region	Period 2016-2020				Period 2020-2025			
		M	F	Z	E	M	F	Z	E
Atule mate	CW	1.00	0.96	1.96	0.49	0.59	1.04	1.63	0.64
Atule mate	SW	0.95	1.91	2.86	0.67	0.59	1.20	1.79	0.67
Decapterus maruadsi	TG	1.61	2.69	4.30	0.63	0.78	2.86	3.64	0.79
Decapterus maruadsi	CW	1.11	0.83	1.93	0.43	0.61	1.48	2.09	0.71
Decapterus maruadsi	SE	1.63	4.57	6.20	0.74	0.77	2.07	2.84	0.73
Encrasicholina heteroloba	TG	2.91	2.13	5.04	0.42	1.25	2.92	4.17	0.70
Encrasicholina heteroloba	CW					1.36	3.28	4.64	0.71
Encrasicholina heteroloba	SW	2.25	3.22	5.47	0.59	1.30	2.74	4.04	0.68
Encrasicholina punctifer	CW					1.34	2.21	3.55	0.62
Encrasicholina punctifer	SE					1.41	2.13	3.54	0.60
Rastrelliger brachysoma	SW	1.70	2.01	3.71	0.54	0.72	2.08	2.80	0.74
Rastrelliger kanagurta	TG	1.20	2.33	3.33	0.66	0.66	1.54	2.20	0.70
Rastrelliger kanagurta	CW					0.68	1.32	1.99	0.66
Rastrelliger kanagurta	SE	1.65	1.35	2.99	0.63	0.74	2.73	3.47	0.79
Sardinella gibbosa	TG					0.95	0.68	1.63	0.42
Sardinella gibbosa	CW	1.81	2.20	4.01	0.55	0.87	2.49	3.36	0.74
Sardinella gibbosa	SE	2.57	3.15	5.72	0.55	0.98	3.01	3.99	0.75
Sardinella gibbosa	SW	1.96	2.14	4.10	0.52	1.02	3.73	4.75	0.78

5.0 Discussion

5.1. Current status of the stock

The present assessment indicates that most small pelagic fish stocks in Viet Namese waters remain biologically productive; however, many are currently under moderate to high fishing pressure. Growth parameters confirmed the typical life-history traits of tropical small pelagic species, including rapid growth, short life span and relatively high turnover rates. These characteristics provide a degree of resilience to exploitation, but only when fishing mortality remains within sustainable limits.

The estimated E values showed that several assessed stocks were within the sustainable range (E = 0.4–0.6), particularly some anchovy and sardine stocks. Nevertheless, many other stocks were classified within the risk zone (E = 0.6 - 0.8),

especially *D. maruadsi*, *R. kanagurta* and *S. gibbosa* in several management areas. The consistent increase in exploitation rates between 2016–2020 and 2020–2025 suggests a continuing rise in fishing pressure.

Although no assessed stock exceeded the overfishing threshold (E > 0.8), several stocks were close to that level. This indicates that a number of small pelagic resources in Viet Nam are approaching full exploitation and may become overfished if current fishing effort continues to increase.

5.2. Implications for the management of the stock

Small pelagic species play an important ecological and economic role in Viet Nam. They contribute substantially to food security, employment, fishmeal supply and raw materials for domestic processing industries. In ecological terms, they occupy an intermediate trophic level and serve as prey for larger predatory fish, marine mammals and seabirds. Therefore, depletion of these resources could generate broader ecosystem impacts.

The assessment results indicate the need for precautionary management, particularly for stocks with E values above 0.70. Priority measures may include controlling fishing effort, limiting entry of new vessels, improving licensing systems and reducing excess capacity in purse seine and gillnet fleets. Seasonal closures during peak spawning periods may also help protect recruitment.

For species where exploitation remains moderate, management should focus on maintaining current effort levels and strengthening monitoring systems to avoid future overcapacity. Adaptive management responses should be applied periodically as new stock indicators become available.

5.3. Application of indicators in management-how indicators can be applied in decision making process

The indicators applied in this assessment provide practical tools for fisheries management under data-limited conditions. Length–weight relationships and growth parameters support biomass estimation, productivity analysis and biological understanding of selected species. Mortality coefficients and exploitation rates provide direct signals of fishing pressure and stock status.

These indicators can be integrated into annual management review processes. The threshold of the E value demonstrates that:

E < 0.4 may indicate under-utilized resources and potential for cautious development;
E = 0.4–0.6 may justify maintaining current management measures;
E = 0.6–0.8 may trigger precautionary effort reduction or seasonal controls;
E > 0.8 may require urgent rebuilding measures.

The use of such indicators is particularly relevant for Viet Nam, where multispecies and multi-gear fisheries make full analytical stock assessments difficult for all species.

5.4. Challenges and Limitations

Several constraints remain in applying indicators for pelagic fisheries management.

- ✓ Biological samplings are not yet fully standardized across all coastal provinces. Some species and regions still have limited sample sizes or incomplete time series.
- ✓ Fishing effort data may not fully capture technological improvements, fishing power changes or unreported catches. This can reduce the precision of exploitation indicators.
- ✓ Many small pelagic fisheries are highly dynamic and influenced by environmental variability, including monsoon cycles, oceanographic conditions and climate anomalies. Such factors may affect recruitment and distribution independently of fishing pressure.
- ✓ Institutional coordination among research agencies, provincial authorities and enforcement bodies can be further strengthened to ensure timely data sharing and management responses.

5.5. Future Plans and Recommendations

- ❖ To strengthen sustainable management of pelagic fisheries in Viet Nam, the following actions are recommended.
- ❖ Expand routine biological data sampling and continue long-term data collection to support stock assessment.
- ❖ Develop a standardized indicator framework for biological, socio-economic, and governance aspects.
- ❖ Enhance capacity building in data analysis and stock assessment
- ❖ Use indicator trends to periodically review and adjust management measures.
- ❖ Enhance collaboration with neighbouring countries for monitoring migratory and transboundary fish stocks.
- ❖ Develop joint research and training programs to build technical capacity in stock assessment and sustainable management.
- ❖ Establish a regional information platform for fisheries statistics, fisheries biology and stock indicators.

Chapter 5

OUTPUT 4



Caption 5: Fishing vessel and research activities on stock assessments in Malaysia

Output 4: Current status and establishment of the closed season, closed areas, or other management strategies of selected pelagic species in AMS are identified and documented

5.1 ACTIVITIES FRAMEWORK

This output also adopted a questionnaire-based approach, beginning with the Workshop for Developing Questionnaire on Pelagic Fisheries Management Strategies in the ASEAN Region, held on 10–12 September 2025 in Sabak Bernam, Selangor. The questionnaire (see Annex 2 Q5) was designed to collect information on conservation efforts and management strategies implemented by AMS. It was finalized during the third RTC in October 2025 at Subang, Selangor, and subsequently distributed to AMS.

Feedback was presented during the Regional Technical Consultation on the Conservation Efforts and Management Strategies of Pelagic Fisheries Resources in Southeast Asia, held on 6–8 January 2026 in Port Dickson, Negeri Sembilan, where eight AMS also shared success stories. The compiled feedback was analyzed during the Workshop on the Assessment of the Conservation Efforts and Management Strategies of Pelagic Fisheries Resources in Southeast Asia Questionnaire, held on 3–4 February 2026 in Kota Bharu, Kelantan. The draft report was then circulated to AMS for review and amendment before final publication.

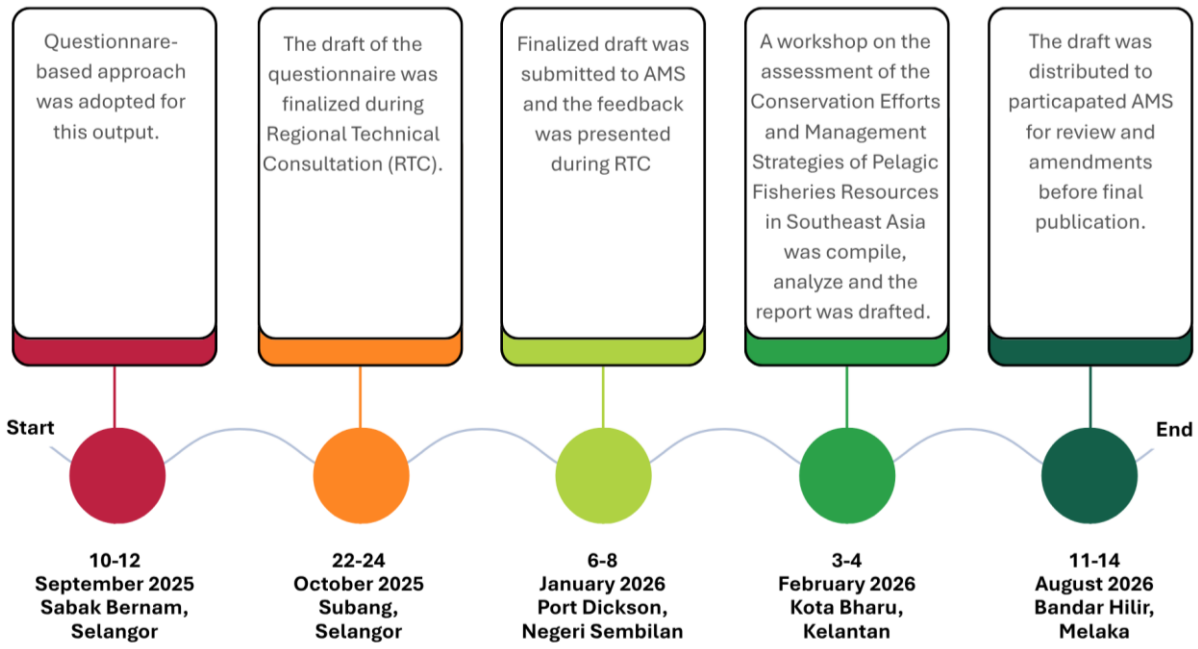
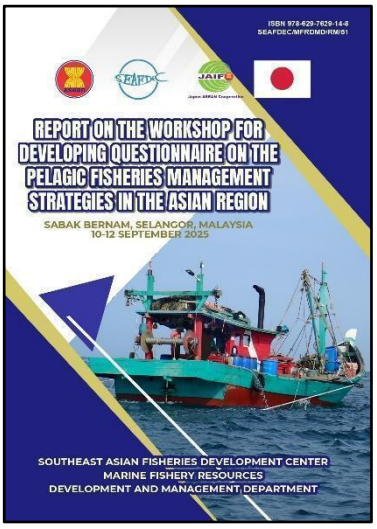
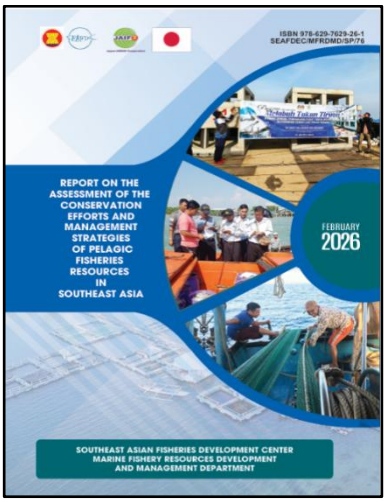


Figure 5.1: Implementation workflow for Output 4.

5.2 LIST OF PUBLICATIONS

There are three report books published under Output 4, as outlined below

Table 5.1 Publications for Output 4.

Report on the Workshop for Developing Questionnaire on the Conservation Efforts and Management Strategies in AMS	https://repository.seafdec.org.my/handle/20.500.12561/2945	
Report on the Regional Technical Consultation on The Conservation Efforts and Management Strategies of Pelagic Fisheries Resources in Southeast Asia	https://repository.seafdec.org.my/handle/20.500.12561/2971	
Report on the Assessment of the Conservation Efforts and Management Strategies of Pelagic Fisheries Resources in Southeast Asia	https://repository.seafdec.org.my/handle/20.500.12561/2974	

5.3 RESULTS SUMMARY

5.3.1. CONSERVATION MEASURES AND MANAGEMENT STRATEGIES OF AMS

i. Output Controls: Catch Limits and Quotas

Many AMS manage pelagic fisheries through output controls, mainly via catch limits and, in some cases, Total Allowable Catches (TACs) based on stock assessments. However, quota allocation systems and size-based limits (e.g., minimum, maximum, or slot limits) are less commonly applied. Cambodia is currently piloting slot limit approaches, while catch prohibitions for vulnerable species are generally limited to sharks, sawfish, and rays across the region.

ii. Gear Regulations and Selectivity Improvements

Gear regulations are widely implemented across AMS, including controls on gear specifications, restrictions on modifications, regulation of fishing aids (such as light use), and the adoption of bycatch reduction devices. Some countries promote selective gears like circle hooks, although adoption varies. Cambodia, Indonesia, the Philippines, and Thailand regulate factors such as mesh size, cod-end mesh size, net depth, and net length.

Malaysia is developing a Fishing Gear Marking Program to improve gear traceability and address Abandoned, Lost, or otherwise Discarded Fishing Gear (ALDFG), as well as IUU fishing. The program is currently piloted in Kedah, Perak, Terengganu, and Sarawak, focusing on key gear types including drift nets, fish traps, trawl nets, purse seines, and anchovy purse seines.

iii. Fishing Effort and Input Controls

Fishing effort is commonly regulated through vessel licensing and registration, limits on vessel numbers, restrictions on gear quantity, and controls on engine power. In some cases, regulations also cover carrier vessels, mother boats, and light boats. Thailand restricts fleet expansion and light usage in certain areas, while Myanmar controls vessel numbers but not the size of carrier and mother boats.

iv. Spatial and Temporal Closures

Spatial and temporal measures are widely applied, including Marine Protected Areas (MPAs), seasonal closures, and designated closed areas to protect spawning grounds, juvenile habitats, and key ecosystems.

Additional approaches include habitat restoration and community-led temporary closures in Cambodia, tuna-related closures in Indonesia, and Locally Managed Marine Areas (LMMAs) in Myanmar.

In Malaysia, Fisheries Conservation Zones (FCZs), covering coastal waters up to one nautical mile, have been implemented since 2014 in Kedah, Perak, and Selangor. These zones aim to conserve fish stocks and habitats through regulated fishing, ecosystem-based management, science-driven decisions, and community involvement.

v. Ecosystem-Based Approaches

Several AMS are moving towards ecosystem-based management, focusing on ecosystem services rather than single-species approaches. However, comprehensive monitoring of predator–prey dynamics, forage fish exploitation, and climate-related impacts remain limited. For instance, Brunei Darussalam focuses on forage fish within coral reef systems, while Thailand's monitoring is largely limited to anchovies.

vi. Monitoring, Control, and Surveillance (MCS)

MCS systems are central to fisheries management in AMS, with common tools including Vessel Monitoring Systems (VMS), Automatic Identification Systems (AIS), logbooks, port state measures, and efforts to combat IUU fishing. Advanced tools such as electronic logbooks, e-navigation, and onboard observers are less widely used.

To enhance monitoring and data collection, electronic logbooks are currently being piloted in Malaysia, Thailand, and Viet Nam. Concurrently, Cambodia has established community-based MCS systems and is phasing in electronic logbooks for its larger fleet segments.

vii. Resource Enhancement Measures

Most AMS actively implement resource enhancement initiatives, including artificial reefs, sea ranching, stock enhancement and restocking, habitat rehabilitation, and fisheries refugia to protect critical life stages of pelagic species.

Thailand has also introduced additional measures such as blue swimming crab banks and crab and fish shelters to support stock recovery.

In general, the implementation on the conservation efforts and management strategies can be divided into three categories; Category 1, Category 2, and Category 3 as follows:

Category 1: The conservation efforts and management strategies in this category are implemented by more than 75% of AMS. Among the efforts and strategies in this category are control on gear specification, habitat restoration and rehabilitation and Marine Protected Area. Catch prohibition of certain pelagic species also in this category, even though currently listed for some sharks, rays, and sawfish species.

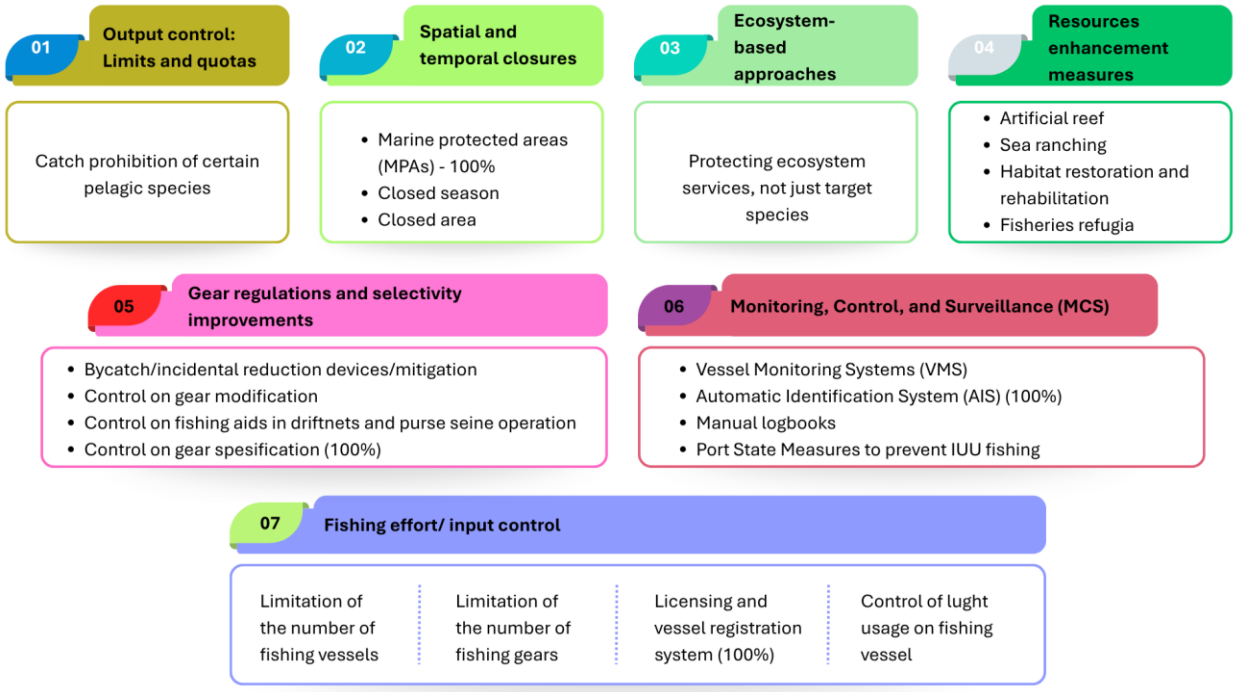


Figure 5.2: The conservation efforts and management strategies in this category are implemented by more than 75% of AMS.

Category 2: This category represents the conservation efforts and management strategies that are moderately implemented (by 50-75% of AMS). Among the list of conservation efforts and management strategies in this category are the implementation of catch limits and quotas and e-navigation and e-logbook.

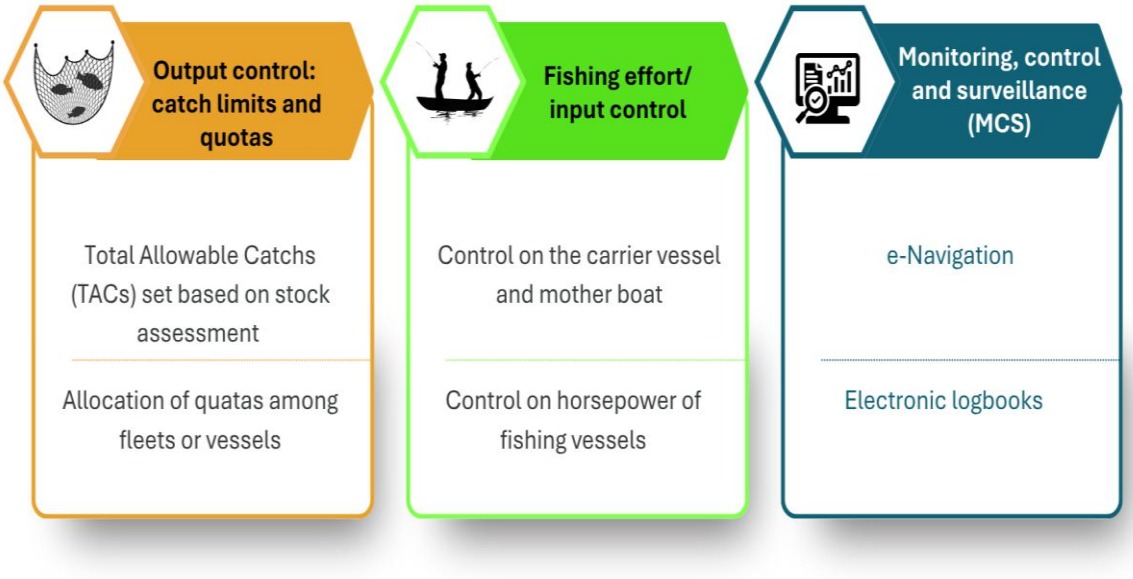


Figure 5.3: The conservation efforts and management strategies in this category are implemented by more than 50% of AMS.

Category 3: The conservation efforts and management strategies that are least implemented by the AMS (fewer than 50% of AMS implemented these strategies).



Figure 5.4: The conservation efforts and management strategies that are least implemented by the AMS.

Overall, AMS has implemented a variety of conservation efforts and management strategies for pelagic fisheries. The list in category 1 is more extensive than categories 2 and 3, indicating that AMS has taken excellent steps in management. The list of conservation efforts and management strategies for both categories require more comprehensive fish resource stock data and funding. AMS is working to increase expertise in fishery stock assessment and fishing gear technology.

5.3.2 CURRENT REGULATORY AND GOVERNANCE FRAMEWORK

AMS have established regulatory and governance frameworks to support fisheries conservation, including national management plans aligned with regional and international commitments. Common approaches include precautionary management, co-management with fishing communities, adaptive decision-making based on scientific advice, catch documentation systems, and stakeholder engagement. Market-based tools such as eco-certification and rights-based management (e.g., individual transferable quotas, ITQs) are implemented in only a few countries.

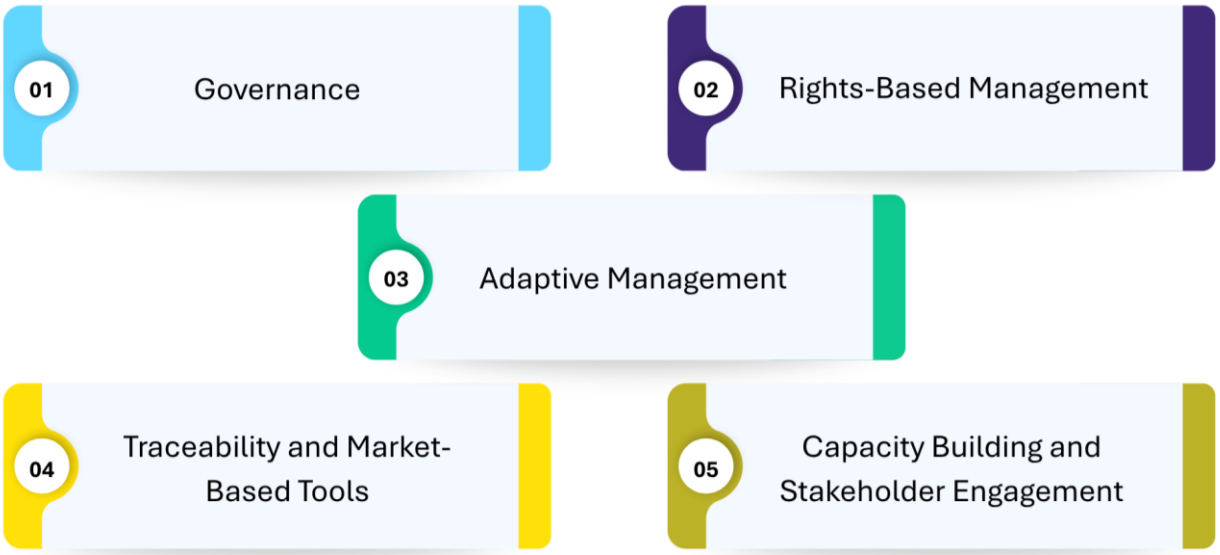


Figure 5.5: The current regulatory and governance framework.

i. Governance

All AMS have adopted and periodically updated regional measures for pelagic fisheries. Each country designates a national authority, typically under ministries responsible for agriculture or fisheries to oversee policy development. In some cases, such as Indonesia, Malaysia, and the Philippines, responsibilities are shared among multiple agencies, including research institutions and local governments.

Fishers' associations exist in most AMS, except Brunei Darussalam. While several countries apply precautionary approaches, implementation is not uniform across the region. In Malaysia, the Department of Fisheries (DOF) is currently undertaking Marine Spatial Planning (MSP) mapping, particularly for biodiversity, habitat protection, and fisheries, with outputs to be integrated into the MyFiRSt application.

Monitoring, Control, and Surveillance (MCS) systems are established in all AMS, often coordinated through multi-agency arrangements rather than a single authority.

ii. Rights-Based Management

Rights-Based Management (RBM) allocates defined and secure harvesting rights to individuals or groups to promote sustainability, efficiency, and stewardship. Its application remains limited in AMS. Thailand has implemented individual transferable quotas (ITQs), while Cambodia applies community-based quota systems. In contrast, co-management approaches involving fishing communities are widely practiced across the region.

iii. Adaptive Management

Adaptive management is an iterative process where management measures are continuously refined based on monitoring, evaluation, and new scientific knowledge. This approach helps reduce uncertainty and improve long-term fisheries outcomes.

iv. Traceability and Market-Based Tools

Most AMS have implemented catch documentation systems and trade measures to address IUU fishing. Some countries are also adopting eco-certification and traceability initiatives. Strengthening traceability systems, harmonising documentation requirements, and enhancing regional cooperation would further improve market access and support IUU mitigation efforts.

v. Capacity Building and Stakeholder Engagement

Capacity building and stakeholder engagement are central to effective fisheries management, particularly in data-limited contexts. AMS actively engages fishers and promotes inclusive governance involving governments, NGOs, industry, and local communities to enhance compliance and sustainability.

5.3.3 SUCCESS STORIES FROM AMS IN THE CONSERVATION EFFORTS AND MANAGEMENT STRATEGIES OF PELAGIC FISHERIES

This section presents success stories from AMS, highlighting effective conservation efforts and management strategies for pelagic fisheries. The national examples provided by AMS demonstrate a range of practical fisheries management measures, including:

- Capacity control and licensing reforms
- Gear restrictions
- Community-based fisheries management
- Ecosystem-based approaches
- Technological improvements in monitoring

SUCCESS STORY OF AMS

MARINE ECOSYSTEM MANAGEMENT INITIATIVES: DEPLOYMENT OF ARTIFICIAL REEFS IN BRUNEI DARUSSALAM WATERS

Enhancing Marine Resource Management: The Role of the Department of Fisheries

The Department of Fisheries is at the forefront of managing Brunei Darussalam's marine resources, playing a pivotal role in preserving biodiversity and ensuring the long-term sustainability of its aquatic ecosystems. Its efforts align with global initiatives aimed at conserving marine environments and promoting responsible fisheries management. Through a combination of strategic planning and innovative practices, the Department has implemented key marine management strategies, including fisheries resource management, the establishment of Marine Protected Areas (MPAs), and marine resource enhancement programs.

Fisheries Resource Management and Zonation

Fisheries resource management is a cornerstone of the Department's strategy, with fisheries zonation serving as a critical tool. By dividing marine areas into distinct zones, the Department ensures sustainable fishing practices while protecting vulnerable ecosystems. This approach helps balance the needs of local communities with the imperative to conserve marine biodiversity.

Marine Protected Areas (MPAs)

The establishment of MPAs is another vital component of the Department's efforts. These protected zones serve as sanctuaries for marine life, allowing ecosystems to thrive and recover from overfishing and other human activities. MPAs also play a crucial role in safeguarding coral reefs, which are essential habitats for countless marine species.

A) Marine Resource Enhancement

To further bolster marine ecosystems, the Department has implemented marine resource enhancement initiatives, primarily through the deployment of Artificial Reefs (ARs) and Fish Aggregating Devices (FADs).

1. Artificial Reefs (ARs)

Artificial reefs are strategically placed structures designed to mimic natural reefs, providing alternative fishing grounds outside MPAs. These reefs serve as feeding and breeding grounds for juvenile fish, promoting population growth and biodiversity. Additionally, they help protect coral reefs from illegal fishing activities by diverting fishing efforts away from sensitive areas.

In Brunei Darussalam waters, ARs are typically constructed from decommissioned oil rigs and large cement structures. Since 2020, the Department has deployed 1,408 units of ARs across Zones 1 to 3, with plans to deploy an additional 226 units in 2026. These efforts highlight the Department's commitment to enhancing marine habitats and supporting sustainable fisheries.

Table 5.2: Diversity of commercially important species observed around ARs deployed in Brunei Darussalam.

Scientific Name	English Name	Local Name
Lutjanus lutjanus	Rosy snapper	Pisang-pisang
Carangoides spp./*Caranx* spp.	Trevally	Ikan putih
Epinephelus spp.	Grouper	Kerapu
Lutjanus argentimaculatus	Mangrove jack	Ungah
Abalistes stellaris	Starry triggerfish	Ayam laut
Siganus spp.	Spinefoot	Belais
Loligo sp.	Squid	Sotong
Panulirus ornatus	Lobster	Bekara

2. Fish Aggregating Devices (FADs)

FADs are another innovative tool used to enhance marine resources. These devices attract fish, making it easier for fishers to locate and harvest them sustainably. By concentrating fish populations in specific areas, FADs help reduce overfishing in sensitive ecosystems while supporting the livelihoods of local fishing communities.

B) Looking Ahead

The Department of Fisheries continues to demonstrate leadership in marine conservation and sustainable resource management. By leveraging innovative strategies such as artificial reefs and FADs, Brunei Darussalam is making significant strides in preserving its marine biodiversity and ensuring the long-term health of its fisheries. These efforts not only benefit the environment but also support the socio-economic well-being of communities dependent on marine resources.

As global challenges such as climate change and overfishing intensify, the Department's proactive approach serves as a model for other nations striving to achieve sustainable marine resource management. Through continued collaboration and innovation, Brunei Darussalam is poised to make lasting contributions to the conservation of marine ecosystems worldwide.

CAMBODIA

TRANSITIONING FROM OPEN-ACCESS FISHERIES TOWARD A STRUCTURED, MULTI-LAYERED MANAGEMENT SYSTEM FOR PELAGIC SPECIES

Cambodia has made notable progress in transitioning from open-access fisheries toward a structured, multi-layered management system for pelagic species. Despite persistent challenges including IUU fishing, limited data, and capacity constraints the country has successfully institutionalized several science-based, participatory, and regulatory measures that are now operational across marine and coastal fisheries. This success is anchored in three interlinked pillars:

i. Species-specific management plans for key pelagic stocks (*Rastrelliger* spp., *Portunus pelagicus*, and *Encrasicholina heteroloba*), including catch limits, size regulations, and seasonal closures;
ii. Community-based co-management through the legally recognized Community Fisheries (CFi) system, which enables local stewardship, quota allocation, and compliance;
iii. Monitoring, Control, and Surveillance (MCS) framework, including VMS, logbooks, licensing, and Port State Measures to combat IUU fishing.

Together, these elements reflect a deliberate and nationally owned shift toward adaptive, inclusive, and ecosystem-conscious fisheries governance marking Cambodia's emergence as a proactive actor in sustainable pelagic fisheries management in the Gulf of Thailand region.

1. Adoption of Science-Based Output Controls for Key Pelagic Species

Success: Cambodia has begun implementing species-specific management plans for three priority pelagic species:

- *Rastrelliger* spp. (mackerel)
- *Portunus pelagicus* (blue swimming crab)
- *Encrasicholina heteroloba* (a small pelagic forage fish)

These include:

- Total Allowable Catches (TACs) based on stock assessments (even if limited),
- Minimum and maximum size limits
- Closed seasons for short mackerel from January-March and blue swimming crab from May to July

- In Kep Province, Cambodia, there is a closed season (temporary fishing ban) for the blue swimming crab (*Portunus pelagicus*) typically enforced from May-June (Kep Province) or May-July (national guideline, varies by area) each year. This measure is implemented by the General Directorate of Fisheries
- Catch prohibitions for vulnerable stocks.

This reflects a deliberate shift toward data-driven, species-specific fisheries management, aligning with international best practices.

Small pelagic stocks in Cambodia were sustainably exploited during 2022–2024, based on length-based methods (LBI, LBSPR and TropFishR) analyses. Fishing mortality was close to target reference points, indicating adequate spawning potential. Length-based, single-species assessments are practical tools under data-limited conditions, while improved catch - effort and biological data with standardized reporting are essential for stronger future management.

2. Expansion of Community-Based Co-Management via Community Fisheries (CFi)
Cambodia has institutionalized co-management with fishing communities through its Community Fisheries (CFi) system, which:

- Supports community-based quota allocations
- Enables local stewardship of pelagic resources, especially in small-scale and artisanal fisheries
- Enhances compliance and governance through inclusive participation of fishers, NGOs, and government

This model has strengthened local ownership and reduced open-access pressure, contributing to more sustainable pelagic fisheries.

3. Installation of Integrated Monitoring, Control, and Surveillance (MCS) Tools
Cambodia has scaled up an integrated MCS system combining VMS, logbooks, onboard observers, licensing, and Port State Measures, including:

- Vessel Monitoring Systems (VMS)
- Electronic and manual logbooks
- Onboard observers
- Licensing and vessel registration
- Port State Measures to block IUU-caught fish

Challenges:

- Increasing destructive fishing gears
- Limited law enforcement
- Limited budget and human resource
- Lack of collaboration from fishers
- Limited Monitoring, Control, and Surveillance (MCS) coverage

INDONESIA

FISHERIES MANAGEMENT PLAN (FMP) OF LEMURU (*Bali sardinella*)

Lemuru (Bali Sardine) is one of the leading small pelagic fishery commodities with high economic and social value in Indonesia, particularly in the Bali Strait, which is part of the Fisheries Management Area of the Republic of Indonesia (WPPNRI) or Fisheries Management Area (FMA) 573. The lemuru fishery in the Bali Strait is utilized by two provinces, namely East Java Province and Bali Province, which geographically share the same waters; therefore, its management requires strong coordination and synergy across regions.

1. Decree of the MoMAF No. 68 / 2016 vs No. 198 / 2023

Legal Basis

In an effort to ensure sustainable management of the lemuru fishery, Indonesia established the Lemuru Fisheries Management Plan (RPP Lemuru) in 2016 through the Minister of Marine Affairs and Fisheries Decree No. 68 of 2016, with an implementation period of five years. Over time, this plan required review and adjustment to reflect the dynamic condition of lemuru fish resources and the development of the latest regulatory frameworks in the marine and fisheries sector. Accordingly, in 2023, the Ministry of Marine Affairs and Fisheries revised and updated the RPP Lemuru through Ministerial Decree No. 198 of 2023. The formulation of this updated plan refers to national strategic policies, particularly the implementation of quota-based Measured Fishing (Penangkapan Ikan Terukur/PIT) as stipulated in Government Regulation No. 11 of 2023, while also adhering to the framework for fisheries management planning as outlined in Ministerial Regulation No. 22 of 2021.

Scientific Approach

In the 2023 review of the Lemuru Fisheries Management Plan, the scientific approach applied has become more specific, comprehensive, and data-driven compared to the 2016 plan. This improvement is marked by the application of advanced stock assessment methods, namely catch-based Maximum Sustainable Yield (cMSY) and the Biomass State Model (BSM). These approaches enable more accurate analysis of the dynamics of lemuru stocks in the Bali Strait, including estimates of sustainable potential, exploitation levels, and biomass conditions. As a result, the assessment not only reflects the current status but also provides more reliable projections to support management decision-making. This demonstrates a significant advancement in scientific information and confirms that lemuru fisheries management has transitioned toward a science-based fisheries management system, making policies more measurable, adaptive, and sustainable.

2. Objective, Indicator of Action Plan

Under Ministerial Decree No. 198 of 2023 concerning the Lemuru Fisheries Management Plan, key management components have been established, including issues, objectives, targets, indicators, and action plans. Targets represent the outcomes to be achieved through the implementation of agreed action plans; therefore, they must be clearly defined, measurable, and periodically evaluated to ensure effective monitoring of management performance. The established targets include increasing the proportion of lemuru catch above the size at first maturity (Lm = 16.6 cm) to 90% within five years, achieving 100% reporting of fishing vessel data and catch data by fishers and business actors to enumerators at fishing ports within the same period, and increasing active participation of fishers and fish processing unit (UPI) operators in sustainable lemuru fisheries management to 50% within five years. Collectively, these targets reflect a more structured, transparent, and data-driven fisheries management approach to support the sustainability of lemuru resources in the Bali Strait.

3. Institutional Arrangements

Strengthening fisheries governance began in 2021 with the establishment of the Fisheries Management Institution (*Lembaga Pengelola Perikanan*/LPP/UPP) WPPNRI, which serves to coordinate fisheries resource management in a more structured and integrated manner. The implementation of action plans within the RPP WPPNRI requires clearly designated persons in charge (PICs), involving key stakeholders such as the Directorate General of Capture Fisheries (DJPT), the Directorate General of Strengthening the Competitiveness of Marine and Fisheries Products (DJPDSPKP), and the Marine and Fisheries Human Resources Development and Extension Agency (BPPSDMKP). In this context, LPP/UPP WPPNRI 573 plays a highly strategic role as a platform for cross-sectoral and inter-regional coordination in managing the lemuru fishery, particularly in the Bali Strait, which is shared by more than one province. This reflects a transformation toward a more collaborative, synergistic, and integrated fisheries governance system, aimed at enhancing management effectiveness and ensuring the long-term sustainability of fishery resources.

Table 5.3: The management of Lemuru fishery in Bali Strait.

Point	2016	2023
Legal Basis	Decree of the MMAF No. 29/2012	Decree of the MMAF No. 22/2021, Government Regulation No. 11/2023 (PIT)
Scientific Approach	Descriptive; No stock assessment	Scientific based (model cMSY+ & BSM, MSY=37.500 ton/yrs)
Objective, Indicator of action plan	General	Measurable indicators size limit≥16.6 cm; ≥ 90% (total catch), fisher participation +50%
Institutional	DJPT & Local Government	DJPT, DJPDSPKP, BPPSDMKP, UPP WPPNRI573 (inter-provincial coordination)

MALAYSIA

MAINSTREAMING ARTIFICIAL REEFS INTO THE ECOSYSTEM APPROACH TO FISHERIES MANAGEMENT (EAFM) IN SARAWAK, MALAYSIA

1. OVERVIEW

This report details the successful integration of artificial reefs into the Ecosystem Approach to Fisheries Management (EAFM) in Sarawak, Malaysia. Originally presented at the 'Regional Technical Consultation on the Conservation Efforts and Management Strategies of Pelagic Resources in Southeast Asia' (6–8 January 2026), the initiative highlights Sarawak's leadership in advancing sustainable, ecosystem-based marine resource management.

Artificial reefs are mainstreamed as a strategic intervention within Malaysia's fisheries governance framework, not as standalone infrastructure, but as an integrated tool supporting ecosystem restoration, fisheries sustainability, and socio-economic resilience. The Sarawak experience demonstrates that aligning habitat enhancement measures with EAFM principles can deliver measurable ecological improvements, optimize fisheries productivity, and strengthen community livelihoods. The initiative is underpinned by national legislation such as the Fisheries Act 1985, supported by Fisheries Management Plans (FMPs), and aligned with regional and international frameworks including the Food and Agriculture Organization Code of Conduct for Responsible Fisheries (CCRF), Sustainable Development Goal (SDG) 14: Life Below Water and Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF).

2. STRATEGIC CONTEXT AND DEVELOPMENT

2.1 Policy Drivers

Malaysia's fisheries sector has faced increasing challenges, including:

- declining fish stocks,
- habitat degradation, and
- increasing fishing pressure, particularly in coastal zones.

These pressures necessitated a transition toward a more integrated and ecosystem-based management framework, leading to the adoption of EAFM as a national strategy.

2.2 National Expansion of EAFM

EAFM was first implemented in Sabah in 2012 under the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF). Its demonstrated success in improving governance and resource sustainability provided the foundation for national expansion, including implementation in Sarawak.

2.3 Integrated Intervention Approach

In Sarawak, EAFM is operationalized through a combination of:

- conservation measures,
- fisheries regulation, and
- strategic deployment of artificial reefs.

This integrated approach ensures that artificial reefs contribute directly to:

- ecosystem recovery,
- fisheries management objectives, and
- socio-economic development.

3. REGIONAL EAFM SITE PROFILES (SARAWAK)

The Sarawak EAFM programme adopts a site-based management approach, strategically targeting priority areas of high ecological and socio-economic importance. Implementation is underpinned by strong multi-agency collaboration, involving the Malaysian Maritime Enforcement Agency (MMEA), Marine Police, relevant government agencies, and local fishing communities. This coordinated governance framework enhances enforcement effectiveness, strengthens compliance, and ensures that management measures are both locally informed and operationally robust.

Table 5.4: The implementation status and management plan publication for the Sarawak EAFM.

Site	Implementation Status	Management Plan Publication
Lawas	Initiated in 2013 (first EAFM site in Sarawak)	Published 2015; Revised 2023
Sematan	Established in 2019	Published 2025
Mukah	Established in 2019	Scheduled for 2026

These sites serve as pilot and demonstration areas, showcasing the application of EAFM principles in real-world fisheries management contexts.

4. ROLE OF ARTIFICIAL REEFS IN EAFM

Artificial reefs are embedded within the EAFM framework to deliver multi-dimensional benefits:

Table 5.5: The multi-dimensional benefits of artificial reefs

Ecological Functions	Fisheries Management Functions	Socio-Economic Functions
• Restoration of degraded benthic habitats • Provision of spawning and nursery grounds • Enhancement of biodiversity and ecosystem resilience	• Redistribution of fishing effort away from overexploited coastal areas • Reduction of destructive fishing practices (e.g., trawling) • Support for stock recovery and recruitment	• Improved catch opportunities for small-scale fishers • Diversification of livelihoods (e.g., eco-tourism) • Strengthened community participation in fisheries governance

5. ARTIFICIAL REEF TECHNICAL IMPLEMENTATION (1984–2025)

Artificial reef deployment in Sarawak represents a large-scale, long-term investment by both federal and state governments.

5.1 Deployment Scale

- Total Units Deployed: 202,166 units
- Spatial Coverage: 1,617.25 hectares
- Number of Sites: 91 locations

5.2 Reef Design and Typology

A total of 15 reef types has been utilized, tailored to specific ecological and management objectives:

Standard Structures

- Tyres (previously used – now largely phased out due to environmental concerns and structural instability)
- Decommissioned vessels (previously used – currently less favoured due to high preparation costs and environmental risk considerations)
- Reef balls (engineered modular structures designed to enhance habitat complexity and support marine biodiversity)

- Cuboids (durable concrete structures with simple design, suitable for fish aggregation and ease of deployment)

Specialized Designs

- Anti-trawling reefs (24–30 tonnes) - designed to deter illegal trawling
- Soft-bottom reefs (23–27 tonnes) – suited for sediment-dominated habitats

Functional Reefs

- Recreational reefs
- Culverts
- Oil rig structures

This diversity reflects a targeted and adaptive approach to habitat enhancement and fisheries management.

6. STRATEGIC PARTNERSHIPS: 'RIGS-TO-REEFS' INITIATIVE

Sarawak pioneered the conversion of decommissioned offshore structures into artificial reefs through the 'Rigs-to-Reefs' initiative.

6.1 Key Milestones

- 2004: Malaysia's first oil rig transformed into an artificial reef.
  - Baram 8: A rig donated by Petronas, in collaboration with Shell Berhad, Sarawak Marine Fisheries Department (JPLS), and the Sarawak Tourism Board
- 2017 (expansion): Deployment of 'DANA' and 'D30' rigs in the waters of Miri and Bintulu.

6.2 Strategic Value

- Repurposes decommissioned offshore infrastructure
- Enhances marine habitat complexity
- Supports fisheries and dive tourism potential

6.3 This initiative demonstrates

- cross-sectoral collaboration,
- cost-effective reef deployment, and
- alignment with circular economy principles

This initiative exemplifies public-private partnership (PPP) in advancing marine sustainability.

7. SOCIO-ECONOMIC IMPACT

Empirical studies conducted in Lawas, Sematan, and Mukah (2014–2016) provide strong evidence of the programme's effectiveness:

7.1 Community Acceptance

- High level of acceptance among fishers
- Active support and demand for further reef deployment

7.2 Fisheries Productivity

- Sustained increases in fish catch following reef installation
- Improved local CPUE trends in reef-adjacent areas

7.3 Livelihood Enhancement

- Approximately 25% increase in fisher income
- Greater economic stability for coastal communities

These findings confirm that artificial reefs contribute to both economic resilience and social acceptance, key pillars of EAFM.

8. KEY SUCCESS FACTORS

The success of mainstreaming AR into EAFM in Sarawak can be attributed to:

- strong policy alignment with national and regional frameworks;
- long-term government commitment and investment;
- science-based and site-specific reef deployment;
- multi-agency coordination; and
- active community participation.

9. KEY CHALLENGES

Despite notable progress in implementation, several structural and operational constraints continue to limit the full effectiveness and long-term sustainability of the programme:

- Limited long-term ecological monitoring data
- Enforcement challenges in reef protection areas
- High costs of deployment and maintenance
- Need for stronger integration of scientific indicators into management.

10. POLICY IMPLICATIONS AND RECOMMENDATIONS

To ensure the long-term sustainability, scalability, and policy coherence of the Sarawak EAFM initiative, the following strategic actions are recommended:

10.1 Institutionalisation within EAFM

- Integrate artificial reef deployment as a core management measure within national EAFM frameworks

10.2 Strengthening Monitoring and Evaluation

- Enhance scientific monitoring of:
- fish biomass and biodiversity;
- habitat recovery;
- socioeconomic outcomes

10.3 Expansion of Strategic Partnerships

- Scale up Rigs-to-Reefs and other PPP models

10.4 Spatial Planning Integration

- Align reef deployment with:
- marine spatial planning (MSP);
- fisheries zoning;
- conservation priorities

10.5 Capacity Building

- Strengthen technical expertise in reef design, deployment, and impact assessment

Collectively, these measures will reinforce the role of artificial reefs as a strategic tool within EAFM, ensuring that ecological restoration objectives are effectively balanced with fisheries productivity and community livelihoods.

11. CONCLUSION

The mainstreaming of artificial reefs into EAFM in Sarawak represents a strategic, scalable, and evidence-based model for sustainable fisheries management in Malaysia. By integrating habitat enhancement within a broader ecosystem governance framework, Malaysia has demonstrated a practical pathway to reconcile ecological conservation with fisheries productivity and community well-being.

Moving forward, a transition toward fully institutionalized, data-driven, and policy-integrated implementation is essential to maximize long-term impacts. Strengthened governance, enhanced monitoring systems, and sustained multi-stakeholder collaboration will be critical to ensuring the resilience and sustainability of marine resources in Sarawak and beyond.

MYANMAR

CONSERVATION MEASURES AND MANAGEMENT STRATEGIES OF PELAGIC FISHERIES

In general, a few conservation measures and management strategies have been implemented in Myanmar such as:

Measure to Control Fishing Capacity

- ✓ Inspection and law enforcement
- ✓ Closed Season
- ✓ Measured fishing days at the sea
- ✓ Closed Species – Shrimps (lobster) bearded eggs, endanger species
- ✓ Measured mesh size and number of gears

Measure to Control Overfishing and Enhance Fishing Capacity

- ✓ All off-shore fishing vessels are prohibited from fishing less than 10 nautical miles from shore. Identified nursery areas are protected to ensure survival of juveniles of commercially important fish species.
- ✓ Closed season for all fishing grounds in Myanmar
  - In 2014, June, July, August, allowed for 50 % of operating vessels
  - In 2015, June, July, August, allowed for 40 % of operating vessels
  - In 2016, June, July, August, allowed for 40 % of operating vessels
  - In 2017, May, June, July, allowed for 30 % of operating vessels
  - From 2018 to until now, disallowed all of fishing operating vessels in closed season (April, May & June in 2024)

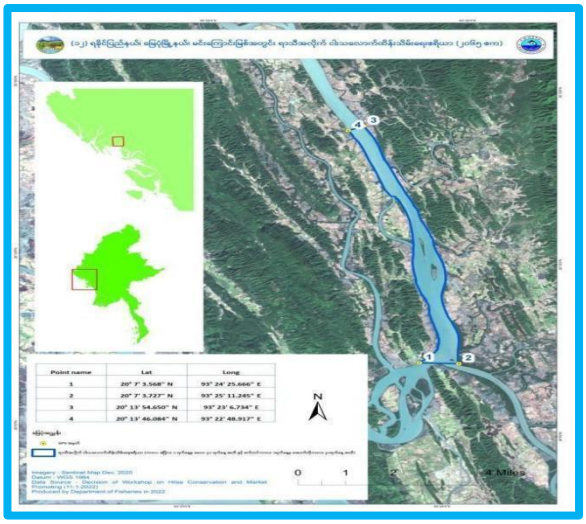
Following are descriptions on success story of management of pelagic fisheries in Myanmar.

1. Hilsa Fish Conservation Zone

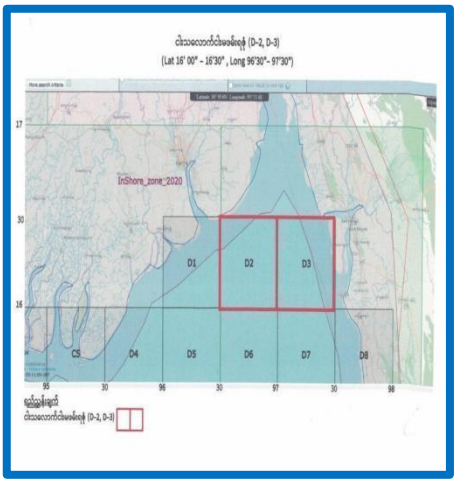
DOF is working with other relevant Ministries, Universities and NGO to develop technologies to monitor and enforce MPAs to ensure continuous fish stocking in Myanmar water. Research on the spawning seasonality of hilsa in Myanmar indicates one main spawning peak in September - October (particularly September).

Myanmar DOF banned 17 safety zones to protect Hilsa species female and larvae in 2022, namely in Ayeyarwady region, Mon state and Rakhine state. During the close season, the local DOF and NGO provide food to joint patrols with the community, and provide alternative jobs to hilsa fishermen during Myanmar's close season period at the local level. According to SDG 14 target, only 5% of all Myanmar waters are protected.

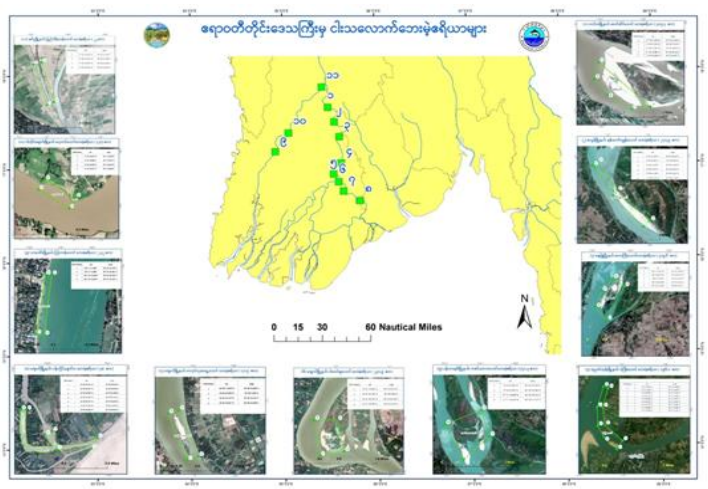
“Rakhine” Seasonal Close Area



“Mon” Coastal No Take Zone



“Ayeyarwady” delta tributaries of the conservation area



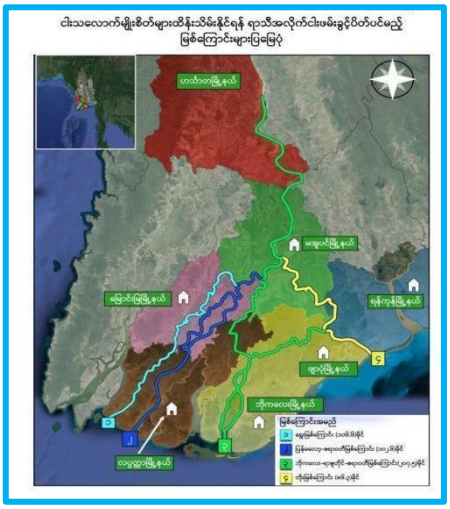


Figure 5.6: Hilsa Fish Conservation Zone.

2. Issuing Boats Registration and Fishing Licensing System in Myanmar

- Fishing Boat Registration must be renewed every year.
- Nowadays, we shall not allow the building of new boats for the purpose of fishing. Only can repair damaged boats.
- Markings and colour coding must be needed according to the place of license Issue.
- Shall not keep or use explosive substances, poisons, chemicals, prohibited fishing gears and other substances.
- License (implement) fee According to the type of fishing gear and number used.

Table 5.6: The Colour of the word or line of Hull in the hull of a vessel.

Description	Place of Licence Issue	Word colour on Line Colour of Hull
Off Shore Fishing Vessel	Tanintharyi	White
	Head Office/ Ayeyarwady/Mon	White
	Rakhine	White
Off Shore Carrier	Local Carrier	Blue -Black

3. Port Monitoring System for Fishing Vessels Before Departure

When Fishing vessels want to go-out to the fishing ground, they have to apply the sailing order to the DOF.

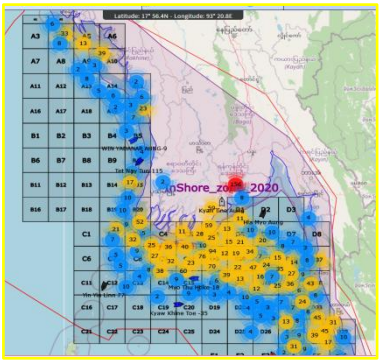
The members of One Stop Service (OSS) inspect the fishing vessels just before depart to the fishing ground-

(1) Fishing License
(2) Fisherman Registration Card
(3) National Registration Card
(4) Vessel Registration Certificate
(5) Life Saving Appliance (LSA)
(6) Navigation Certificate
(7) Mesh size of Fishing Net
(8) Fishing log book
(9) Communication equipment
(10) Vessel Monitoring Device

4. Vessel Monitoring System Implementation for MCS

The installation of the Vessel Monitoring System (VMS) commenced in 2019, coinciding with the start of the 2019-2020 fishing season. Installation began on September 1st, and by January 31st, 2020, all carrier vessels engaged in off-shore fishing were equipped with VMS equipment.

Table 5.7: VMS Main, Sub-station and Co-management on MCS.

Name	Figure
1.“Nay Pyi Taw” Main Station 2.“Yangon” Sub-station 3.“Tanintharyi” Sub-station 4.“Rakhine” Sub-station 5.“Ayeyarwady” Sub-station 6.“Mon” Sub-station  GIS View 	     
“Co-Management on MCS” ***1. Navy,*** *(8-VMS center)* ***2.Maritime Police Force,*** *(2-VMS center)* ***3. Coast Guard Force,*** *(2-VMS center)*	 

PHILIPPINES

SCIENCE-BASED TOOLS AND EVIDENCE TO STRENGTHEN PELAGIC FISHERIES MANAGEMENT

1. APPLYING SCIENCE-BASED TOOLS TO STRENGTHEN PELAGIC FISHERIES MANAGEMENT IN FMA 11

FMA 11 covers major pelagic fishing grounds in the central Philippines, including the Visayan Sea and Guimaras Strait. These areas are highly productive but experience intense fishing pressure and persistent IUU fishing. Management required standardized, transparent, and science-based tools to guide decision-making across multiple Local Government Units (LGUs)

Description of the Success Story

- Applied scientific reference points, harvest control rules, and fisheries modelling to support evidence-based management
- Used these tools in the development of Fishery Management Plans (FMPs) and an FMA-wide harvest strategy
- Implemented the IUU Fishing Index and Threat Assessment Tool (IFIT) to assess the level, distribution, and drivers of IUU fishing
- Complemented IFIT results with fisheries production data and gear profiling
- Integrated analytical outputs were translated into Fishery Management Plans and IUU Fishing Reduction Plans

* Science shows that targeted measures rather than drastic changes can meaningfully address key IUU risks.

Table 5.8: Challenges encountered and measures taken to strengthen pelagic fisheries management in FMA 11.

Challenges Encountered	Measures Taken
Limited visibility on the spatial distribution and drivers of IUU fishing across LGUs	Adoption of the IUU Fishing Index and Threat Assessment Tool (IFIT) as a standardized and participatory assessment tool
Widespread use of fine-meshed and prohibited fishing gears	Integration of multiple data sources, including IFIT results, fisheries production data, and gear profiling, to identify priority risks and target interventions
Need to convert complex analytical results into practical management actions	Conduct of multi-agency and stakeholder workshops to translate assessment and analysis into Fishery Management Plans (FMPs) and IUU Fishing Reduction Plans

Way forward

- ✓ Continue refining the use of reference points, fisheries modelling, and IFIT
- ✓ Expand IFIT application to remaining LGUs and conduct periodic reassessments
- ✓ Strengthen monitoring, evaluation, and reporting systems
- ✓ Further integrate science-based assessments into FMP implementation and enforcement strategies
- ✓ Sustain coordination among national agencies, LGUs, and stakeholders to support adaptive pelagic fisheries management

2. ADAPTIVE CLOSED FISHING SEASON BASED ON RECENT SCIENTIFIC EVIDENCE IN FMA 4

- Fisheries Management Area 4 covers the East Sulu Sea, Basilan Strait, and Sibugay Bay
- Supports a nationally significant sardine fishery, critical for food security and employment and industry value chains
- A closed fishing season has been implemented for over a decade
- In the most recent period, the closure was set from December 1 to March 1, as defined under BAC 255
- After more than 10 years of implementation, sufficient data became available to reassess the effectiveness of the existing closure period

After 12 years of implementation, NSAP data shows:

- ➢ Fishing pressure is high and continues to increase, resulting to decreased catch in 2021-2022 and as projected if fishing effort will continue
- ➢ Catches of juvenile sardines for the last 6 years is at 53%, breaching the proposed limit reference point of 50%.
- ➢ The highest peak of spawning is not protected by the seasonal closure.



Figure 5.7: The NSAP data for Closed Season in FMA 4 of the Philippines waters.

Scientific review used to inform adjustment of the closure period

The experience in FMA 4 shows that long-term closures benefit from periodic scientific review, allowing management to fine-tune timing so that protection aligns more closely with biological reality.

Way forward and future plans

- ✓ Continued monitoring using:
  - NSAP data
  - Size structure and juvenile catch indicators
  - Spawning and reproductive indices
- ✓ Periodic review of closure timing based on updated scientific evidence
- ✓ Sustained coordination with industry and stakeholders to support compliance
- ✓ Use of FMA 4 as a platform for adaptive, evidence-informed decision-making

THAILAND

OUTPUT CONTROL: CATCH LIMITS AND QUOTAS

Thailand is located in the tropical zone, which contributes to its high biodiversity in ecosystems. A wide variety of fishing gear is used, allowing the capture of aquatic animals in many sizes and species. Fishing is a crucial occupation for both livelihood and the economy, which contributes to the complex socio-cultural dynamics of the Gulf of Thailand.

Thailand has made efforts to improve fisheries management to achieve sustainability by setting catch limits (TAC), specifically, the Maximum Sustainable Yield (MSY) for multiple aquatic species, and by restricting fishing effort through gear limitations.

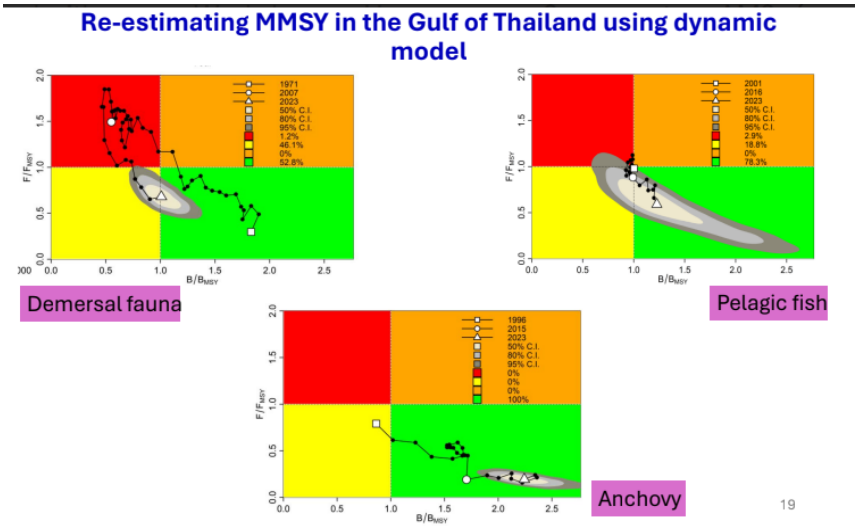
A. Current Fisheries Management in Thailand

- Multi-species Maximum Sustainable Yield (MMSY) in the Gulf of Thailand
  - ➢ Aggregated catch for 3 groups
  - ➢ MMSY used as reference point
  - ➢ Fox equilibrium model
- TAC set based on MMSY
- Fishing day limitations
- Seasonal area closures
- Permanent closures e.g. inshore coastal artisanal zone
- Mesh size limitations
- Fishing gear control e.g. Push-net ban and length/number of fishing gear limitations

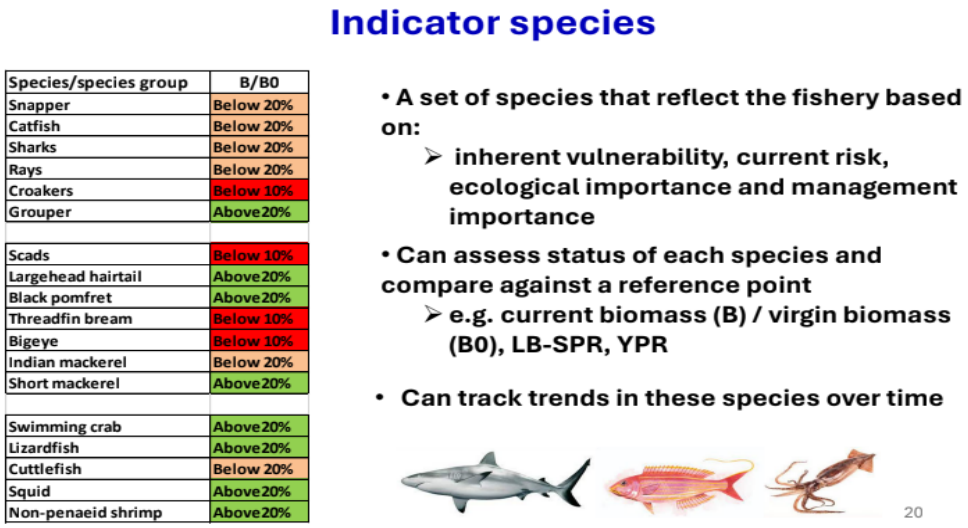
B. New approaches to assessing and managing of Thailand fisheries

Combining:

(i) Re-estimating MMSY using dynamic model



(ii) Indicator single species assessment



(iii) Ecosystem analyses and indicators

Context: System changes through time

- Use of Ecosystem Traits Index (ETI)

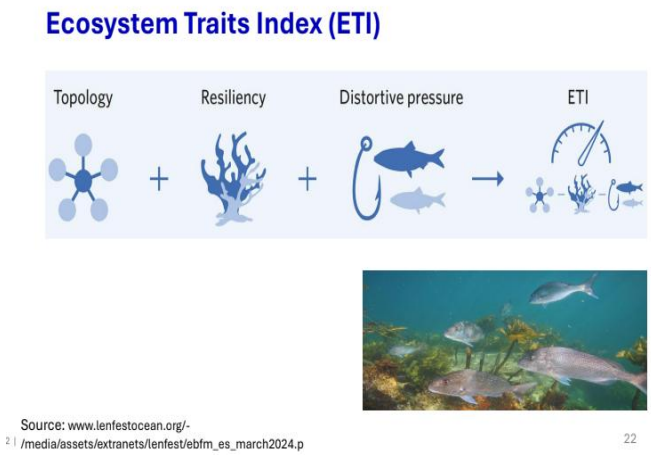


Figure 5.8: The new approach to assessing and managing Thailand's fisheries, which integrates re-estimation of Multispecies Maximum Sustainable Yield (MMSY) using a dynamic model, single-species indicator assessments, and the application of the Ecosystem Traits Index (ETI).

C. Future Fisheries Management of Thailand

- Multi species, multi gear fishery
- MMSY overall system
- Single species assessment of selected indicator species
- Ecosystem indicator
- Development of a new FMP by combining MMSY, single species, and ecosystem indicators through the use of harvest control rules



Figure 5.9: Examples of Thailand Marine Fisheries Management Plan books/reports.

VIET NAM

EFFECTS OF ARTIFICIAL REEF (AR) DEPLOYMENT ON FISHERIES RESOURCE RECOVERY IN VIET NAM

Marine fisheries resources in Viet Nam have shown a significant decline in recent decades. Key drivers include overfishing, and habitat degradation. Declining trends are reflected in reduced stock abundance, smaller size of commercially important species, and lower recruitment. These challenges pose serious concerns for sustainable fisheries management

Artificial reef (AR) deployment was therefore proposed as a management measure to restore habitats and support fisheries resource recovery. The deployment site for the artificial reef is identified as an area with a central coordinate of 107°55'E; 16°28'N located within the coastal waters of the Hue City (Figure 5.10). Around the central point, a total of 174 concrete block dimensions of 2.0 m × 2.0 m were deployed. The concrete block arrangement is designed in Figure 5.10. The deployment covered an area of approximately 1.5 km^2.

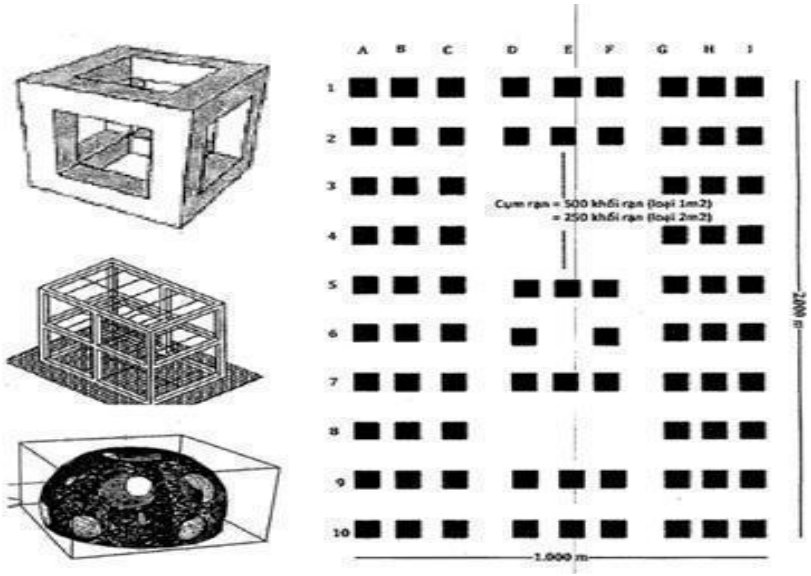


Figure 5.10: Designation of AR and deployment arrangement.

To assess the effects of AR deployment on fisheries resources recovery, the fisheries independent surveys (FIS) were conducted in the waters surrounding the AR site before and after the AR deployment. The FIS was carried out by commercial fishing boats. Specifically, the wooden-hulled vessels TH-90021-TS (400 horsepower [HP], overall length [OL] of 17.1 m) for the pre-deployment of AR survey (June 2022) and the TTH-40298-TS (240HP, OL = 13,9m) for the survey after 12 months of AR deployment (July 2025). The bottom trawl net with a 20mm cod-end stretched mesh was used to collect samples for both FIS.

A systematic sampling design was implemented. A total of 12 sampling stations were established along four transects oriented perpendicular to the coastline. Transects were spaced approximately 3.5 nautical miles apart, while stations within each transect were separated by distances of 3.5 – 4.5 nautical miles.

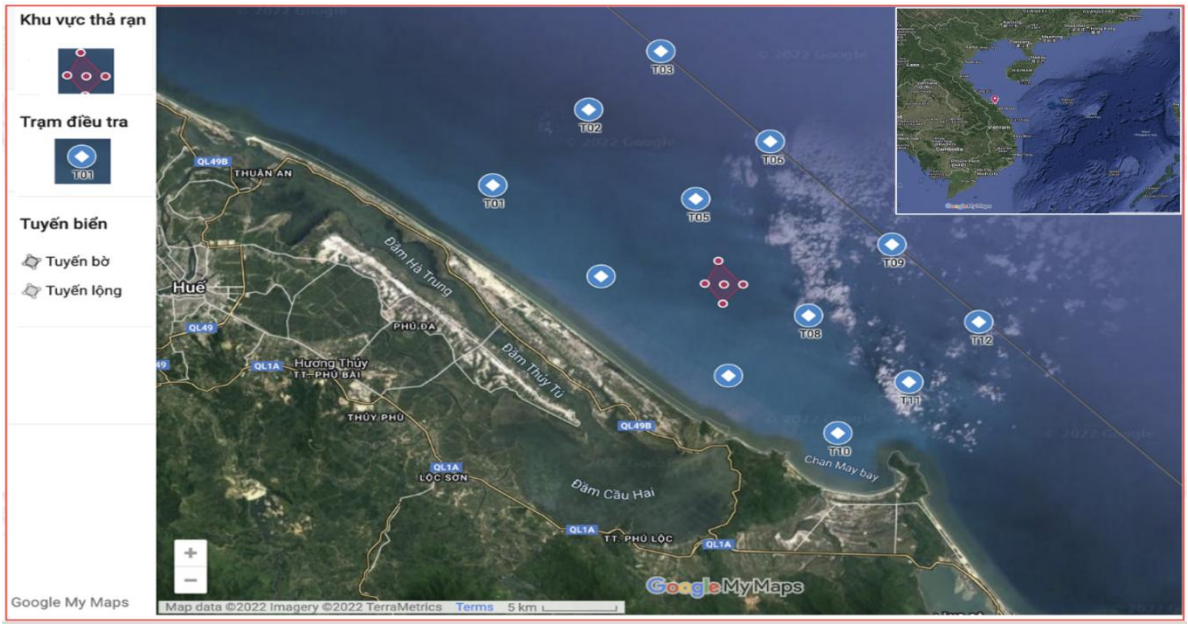


Figure 5.11: Location of AR deployment in the coastal waters of Hue City, Viet Nam and sampling stations for fisheries independence surveys.

At each station, the trawl net was towed at a speed about 2.0 knots for a duration of 45–60 minutes. All captured organisms were brought onboard, where fish and invertebrates were sorted and identified to the lowest possible taxonomic level. Specimens were subsequently preserved by freezing and transported to the laboratory for further biological analyses.
The effects of AR deployment on fisheries resource recovery in AR area were determined by comparative analyses of temporal variations in fisheries resource indicators between pre- and post-deployment survey. The main indicators included: species composition, frequency of occurrence of economically important species; abundance and biomass and size structure of selected commercial species.

EFFECTS OF AR DEPLOYMENT

Artificial reef deployment has had a positive effect on the recovery of marine fisheries resources in the study area. Improvements were observed in species richness, frequency of occurrence of economically important species, fisheries resource density and biomass and size structure of commercially important species.

1. Species richness

Species richness was higher in the post-deployment survey (July 2025) compared to the pre-deployment survey (June 2022), with mean values increasing from 30.08 to 38.08 species. This pattern is visually supported by the distribution of observations, where the 2025 survey shows a general upward shift in species counts across sampling stations.

However, statistical analysis indicated that this difference was not significant at the 95% confidence level (Welch's *t*-test: $t(20.57) = -1.83$, $p = 0.08$). The effect size was moderate (Hedges' $g = -0.72$; 95% CI: −1.51 to 0.09), suggesting substantial uncertainty in the magnitude and direction of the effect.

The violin plots further illustrate considerable variability within each survey, with overlapping distributions between the two periods. This overlap indicates that, despite a higher mean in 2025, species richness at some stations remained comparable to or lower than pre-deployment levels.

Overall, while the results suggest a potential increase in species richness following artificial reef deployment, the evidence remains inconclusive. Additional sampling and longer-term monitoring are necessary to improve statistical power and confirm whether the observed pattern reflects a consistent ecological response rather than sampling variability.

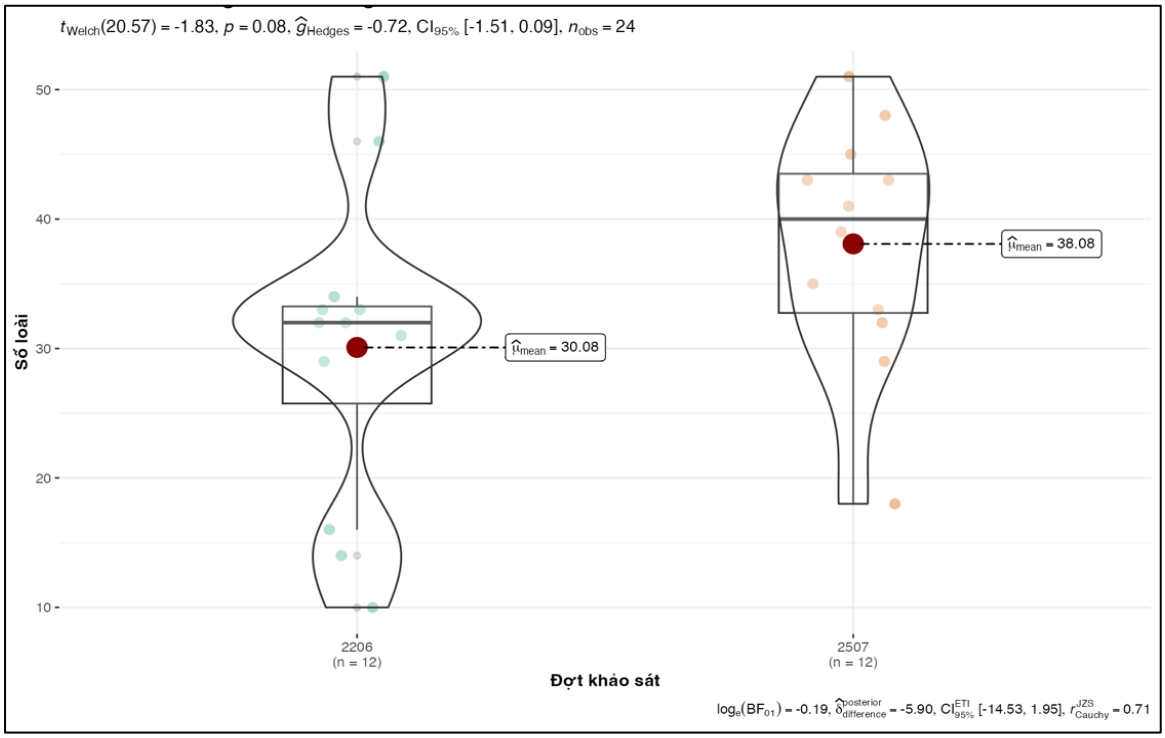


Figure 5.12: Comparison of species richness between the pre and post AR deployment survey.

2. Frequency of occurrence

The frequency of occurrence of marine species in the AR area was quantified based on their presence across sampling stations. Greater spatial coverage of species across the study area reflects higher species diversity and a more widely distributed community.

As shown in Figure 5.13, the frequency of occurrence of most species increased in the post-deployment survey compared to the pre-deployment survey. Many species exhibited substantially higher occurrence frequencies after AR deployment, with several reaching high or very high levels of occurrence across sampling stations.

In addition, the analysis revealed the presence of numerous species in the post-deployment survey that were not recorded prior to AR installation. This suggests a potential enhancement in habitat suitability and colonization processes associated with the artificial reef.

Overall, these results indicate a positive shift in species occurrence patterns following AR deployment, consistent with an increase in habitat complexity and ecological attractiveness. However, as with species richness, continued monitoring is required to confirm whether these patterns represent sustained ecological changes rather than short-term variability.

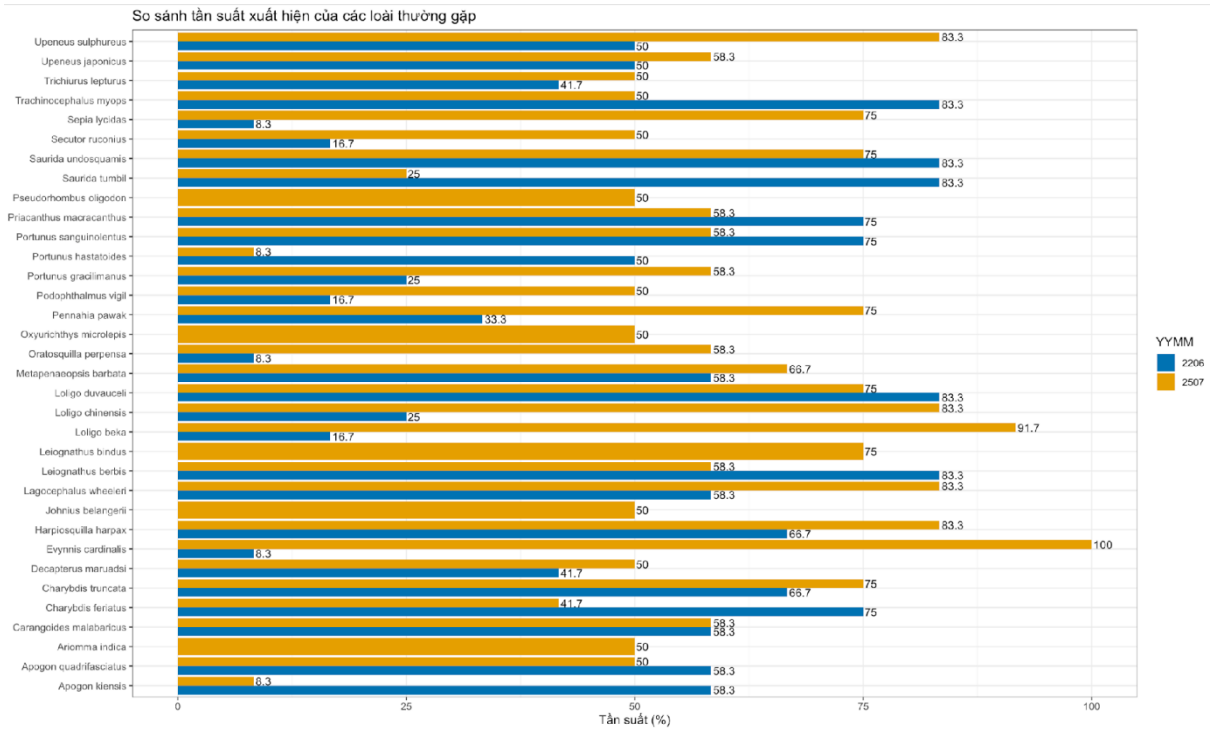


Figure 5.13: Comparison on frequency of occurrence of commercially important species between pre and post AR deployment based on the bottom trawl surveys.

3. Density of fisheries resources

Biomass-based density

The biomass-based density of fisheries resources in the AR area and adjacent waters increased markedly following reef deployment. Mean biomass rose from 129.42 kg km^{-2} in the pre-deployment survey to 385.75 kg km^{-2} in the post-deployment survey, representing an approximately 2.99-fold increase.

Statistical analysis using Welch's *t*-test indicated that this difference was significant at the 95% confidence level (p = 0.02), demonstrating a robust increase in biomass density after AR deployment. The distribution shown in Figure 8 also suggests a clear upward shift in biomass values across sampling stations, although some variability remains.

Abundance-based density

A similar trend was observed for abundance-based density. Prior to AR deployment, mean density was 8,875 individuals km^{-2}, whereas post-deployment density increased substantially to 30,580 individuals km^{-2}, corresponding to a 3.45-fold increase.

Welch's *t*-test confirmed that the difference in abundance between the two survey periods was statistically significant (p = 0.0041; Figure 9), indicating a strong increase in numerical density following AR installation.

The consistent and statistically significant increases in both biomass and abundance provide strong evidence of enhanced fisheries resource availability in the AR area. These results suggest that the artificial reef has improved habitat conditions, likely promoting aggregation, retention, and possibly recruitment of marine organisms.

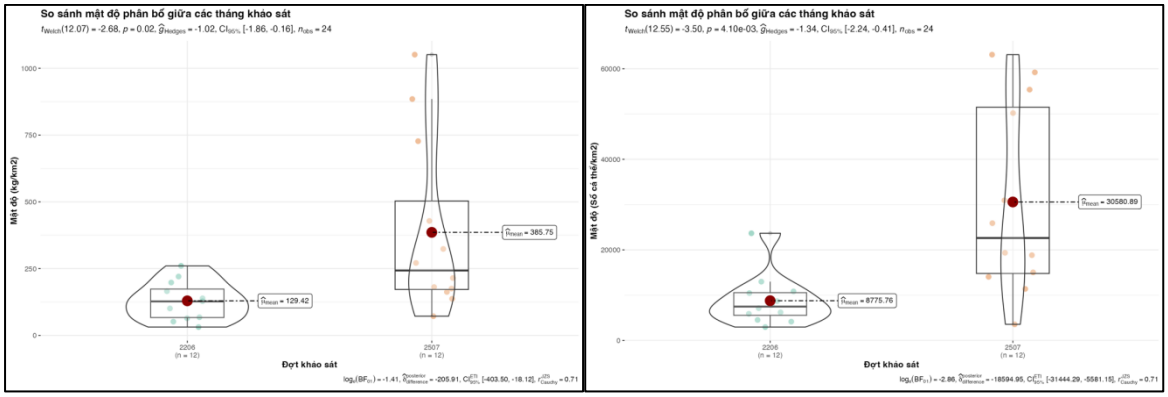


Figure 5.14: Comparison of fisheries resources density between pre and post AR deployment survey. The biomass-based density on the left and the abundance-based density on the right.

However, given the relatively short temporal coverage (two survey periods), it remains necessary to conduct long-term monitoring to distinguish between transient aggregation effects and sustained increases in production

Table 5.9: Trends of fisheries resources in the area surrounding the AR deployment in the coastal waters of Hue City based resource indicators.

No.	Indicator	Trend	Interpretation
1	Species richness	+	Increase
2	Biomass of fisheries resources (CPUA, kg/km^2)	+++	Strong increase
3	Density of fisheries resources (NPUA, N/km^2)	+++	Strong increase
4	Frequency of occurrence of species in the survey area	++	Increase

FINDINGS

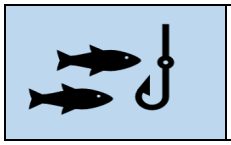
These findings suggest that artificial reefs can play an effective role in enhancing habitat quality and supporting fisheries resource restoration when combined with appropriate management measures. Viet Nam's experience demonstrates the importance of science-based monitoring and long-term assessment in evaluating conservation effectiveness and provides useful lessons for sustainable pelagic fisheries management

Chapter 6

OUTPUT 5



Caption 6: Monitoring, Control and Surveillance (MCS) activities and Vessel Monitoring Devices installation in Myanmar



Output 5: Terminal Report is prepared and published

6.1 ACTIVITIES FRAMEWORK

This output focuses on the publication of the Project Terminal Report, which documents the implementation process, key findings, achievements, lessons learned, and recommendations.

Preparation began with the Workshop on Drafting the Terminal Report for the Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity, held from 9 to 10 April 2026 at Brasmana Hotel, Perlis, Malaysia. During this workshop, participants reviewed and agreed on the overall structure and contents of the report, including summaries of Output 1 to Output 4, country reports under Output 3, and a compilation of success stories from AMS.

The draft was subsequently refined during the Technical Workshop on the Analysis of AMS' Success Stories for the Fishing Capacity Project in Kuching, Sarawak held from 29 June to 1 July 2026, where national success stories were consolidated and incorporated into the report. This ensured that practical experiences and lessons learned from AMS were highlighted as references for future regional initiatives.

Further improvements were made at the Technical Workshop on the Harmonization of the Draft Terminal Report for the Fishing Capacity Project, held from 13 to 15 July 2026 in Kota Kinabalu. This workshop focused on harmonizing the content, aligning recommendations with regional priorities, and ensuring consistency across sections. It also emphasized the integration of feedback from AMS to strengthen the report's relevance and applicability.

During the Regional End-of-Evaluation Project Meeting in Melaka from 12 to 14 August 2026, the draft Terminal Report was reviewed and revised by AMS representatives, ensuring collective ownership and accuracy of the document.

The Finalization Workshop on the Terminal Report for the Fishing Capacity Project, held from 9 to 11 September 2026 in Cameron Highlands finalized the draft, incorporated final amendments, and endorsed the report for publication. The completed Terminal Report will serve as a comprehensive reference, documenting the project's achievements, challenges, and recommendations for advancing sustainable fisheries management in the ASEAN region.

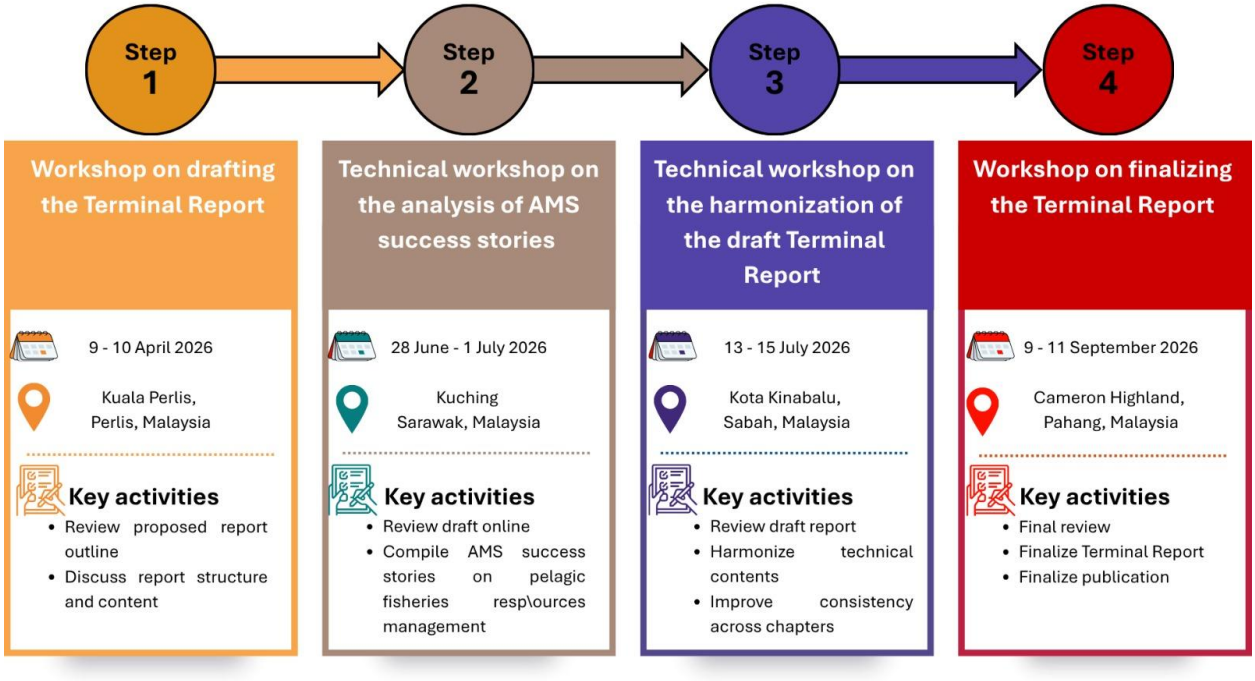


Figure 6.1: Implementation workflow for Output 5.

Chapter 7

OUTPUT 6





Caption 7: Capacity building program in the Philippines

Output 6: Project monitoring and evaluation are conducted

7.1 ACTIVITIES FRAMEWORK

For the final output, two activities were undertaken: the project midterm monitoring and the terminal project evaluation.

The Midterm Review and Evaluation Meeting was held on 22–24 April 2025 in Penang, Malaysia, involving 10 expert panel members, including a resource person from Universiti Utara Malaysia (UUM) and experts from the Department of Fisheries (DOF) Malaysia and SEAFDEC/MFRDMD. The panel reviewed the project's progress in achieving its objectives and planned outcomes, and provided guidance for adjustments to ensure effective implementation.

The Regional End-of-Project Evaluation Meeting on the Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity, held on 12–14 August 2026 in Melaka, Malaysia, was conducted in hybrid format. It involved three resource persons, senior fisheries officials from eight AMS, and experts from DOF Malaysia, research institutes, SEAFDEC Secretariat, SEAFDEC/TD, SEAFDEC/MFRDMD and a representative from JAIF Management Team. The meeting evaluated the overall project implementation, assessed the achievement of objectives and expected outputs, identified lessons learned, and formulated recommendations for future regional initiatives.

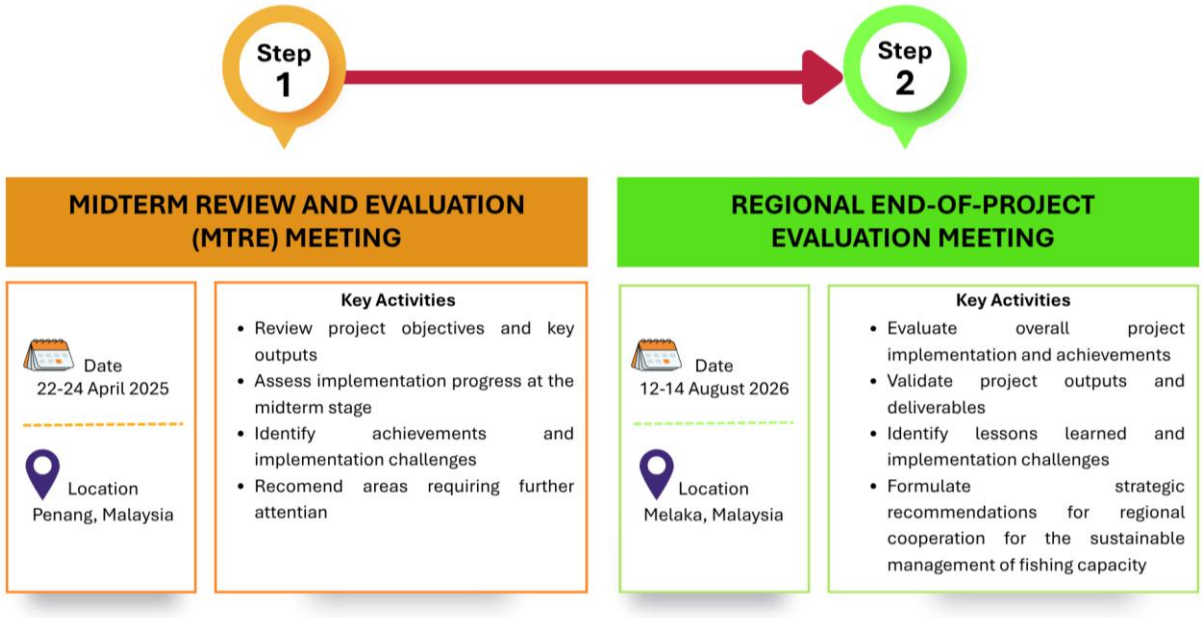
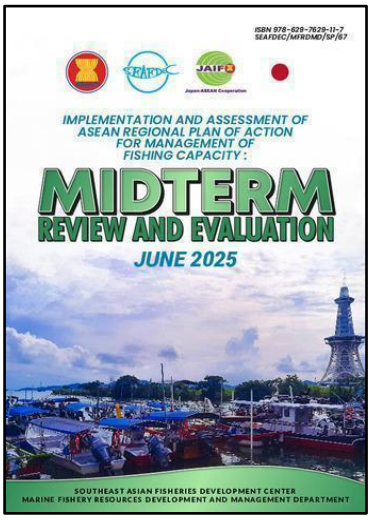
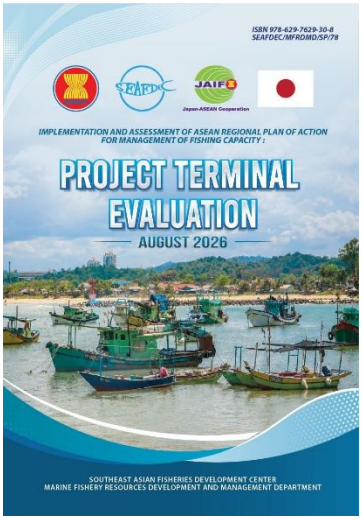


Figure 7.1: Implementation workflow for Output 6.

7.2 LIST OF PUBLICATIONS

There are two report books published under Output 6, as outlined below

Table 7.1: Publications for Output 6.

Report on the Implementation and Assessment of ASEAN Regional Plan of Action for Management of Fishing Capacity: MIDTERM REVIEW AND EVALUATION	https://repository.seafdec.org.my/handle/20.500.12561/2887	
Report on the Implementation and Assessment of ASEAN Regional Plan of Action for Management of Fishing Capacity: END OF PROJECT EVALUATION	https://repository.seafdec.org.my/handle/20.500.12561/3040	

7.3 RESULTS SUMMARY

The Midterm Review and Evaluation conducted in April 2025 confirmed the Fishing Capacity Project's effectiveness, efficiency, and relevance, with notable progress in fostering regional cooperation through data sharing, consultations, and exchanges. From August 2024 to April 2025, activities were largely implemented on time and within budget, supported by strong coordination among SEAFDEC/MFRDMD, DOF Malaysia, and AMSs, though minor delays occurred in data consolidation.

Resources were used cost-effectively, and the evaluation, based on instrument development and document review, scored about 80% (Acceptance with Minor Corrections), with recommendations to refine issue identification, data collection, and interpretation to strengthen outcomes.

From April 2025 onwards, more activities were undertaken to strengthen project implementation. Although the project was initially scheduled to conclude in April 2026, it was granted a No-Cost Extension and officially ended in October 2026.

The Project Terminal Evaluation (PTE), conducted in August 2026, assessed the overall implementation, achievements, and performance of the project, which was carried out from April 2024 to July 2026. **The evaluation yielded an average score of 4.34 out of 5 (86.80%), rounded to 87%, and classified as Highly Satisfactory**. This rating reflects strong overall implementation, with only minor areas requiring targeted improvements to further enhance alignment with project objectives.

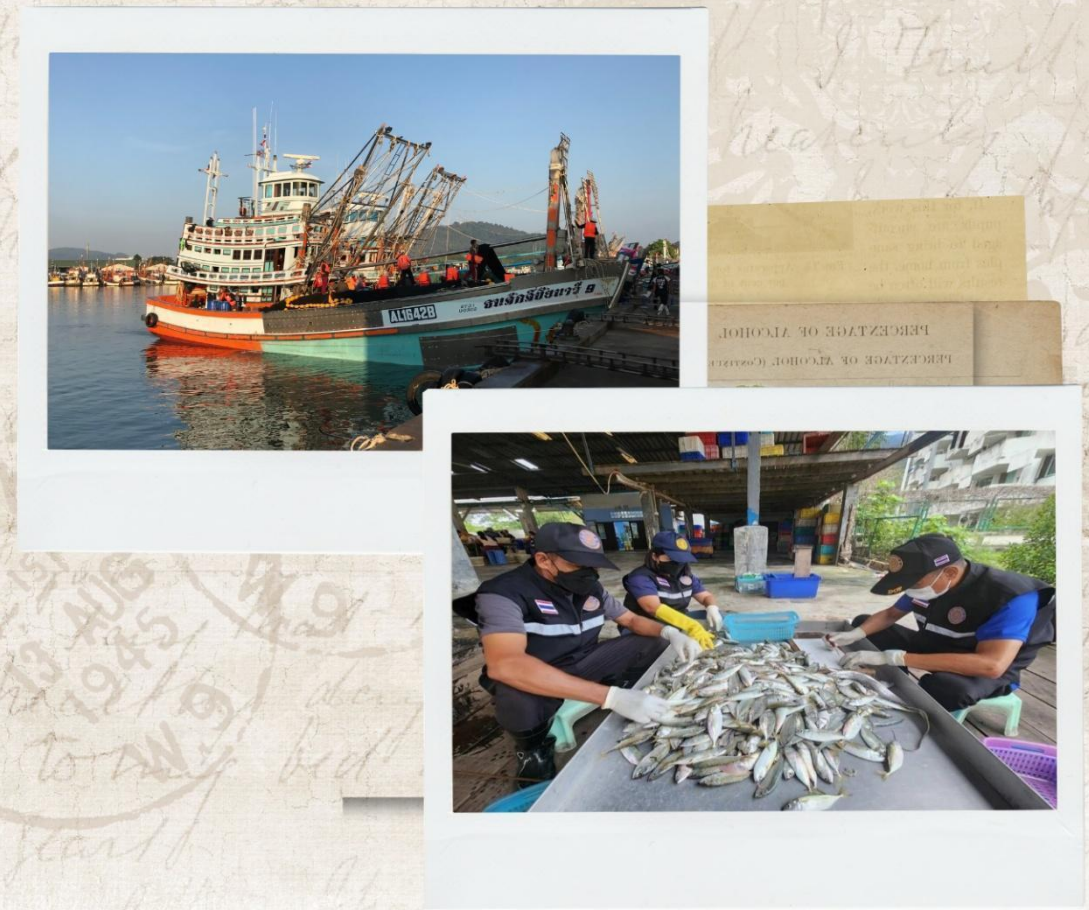


Figure 7.2: The result summary for Output 6.

In conclusion, the project Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity had successfully evaluated fishing capacity management across AMS, with particular focus on transboundary pelagic species, and was effectively planned and implemented.

Chapter 8

PROJECT CHALLENGES AND LESSON LEARNED



Caption 8: Fishing vessel and data collection in Thailand

The project successfully delivered the majority of planned outputs within the 2024–2026 implementation period, demonstrating strong coordination among participating AMS and effective support from the Japan-ASEAN Integration Fund (JAIF). Despite variations in national capacities, the collaborative mechanisms established under the project ensured consistent progress in capacity building, harmonisation of methodologies, and development of regional guidelines. Nevertheless, the core capacity-building and policy-support components were achieved as intended.

8. 1 THE MAJOR INPUTS

8.1.1 Contribution to ASEAN Regional Priorities

The project aligned strongly with the ASEAN strategic documents, including the ASEAN Community Vision 2025 and sectoral blueprints on environment, disaster risk reduction, and sustainable resource management. Through shared training, development of Standard Operating Procedures (SOPs), and the promotion of cross-border technical cooperation, the project contributed to improving regional resilience and strengthening collective action toward sustainable development. It also supported knowledge transfer from Japan to AMS, consistent with JAIF's objective of enhancing ASEAN integration.

The project remains highly relevant to the ASEAN Community Vision 2025 and to the work plans of relevant ASEAN sectoral bodies. It directly supports regional efforts to:

- Promote sustainable use of natural resources and enhance environmental resilience
- Strengthen institutional capacities and policy coherence across AMS
- Facilitate knowledge exchange and regional integration
- Enhance Japan–ASEAN cooperation through technical support and capacity development

8.1.2 Participation and Engagement of AMS

The meaningful participation of national focal points was critical for ensuring relevance and sustainability of outputs. Engagement of AMS was strong, actively involved in most regional activities. Participation included:

- nomination of national focal points
- submission of national inputs and data (where relevant)
- attendance in regional technical consultation (RTC)
- provision of feedback on draft outputs

8.1.3 Efficiency of Resource Use

The project was implemented efficiently despite external constraints such as administrative processing timelines and procurement challenges. Most activities were completed within the allocated budget, and cost-saving measures, such as RTC and hybrid consultation formats, helped maximise use of resources. The implementation strategy adopted a balanced mix of activities:

- regional workshops and consultations
- expert-led training and knowledge sharing
- validation sessions involving AMS representatives during RTC
- cross-sectoral consultations (when relevant)

8.2 PROJECT CHALLENGES

The implementation of the fishing capacity project faced several challenges that affected progress and coordination across AMS (Figure 8.1). These included technical difficulties in harmonizing data and standardizing information inputs, operational and logistical issues such as workshop scheduling and turnover of focal points, and administrative and procurement delays related to funding, approvals, and cross-border processes. In addition, capacity-related constraints such as varying national technical expertise and differing data-sharing policies limited the effectiveness of information exchange and adoption of project outputs.

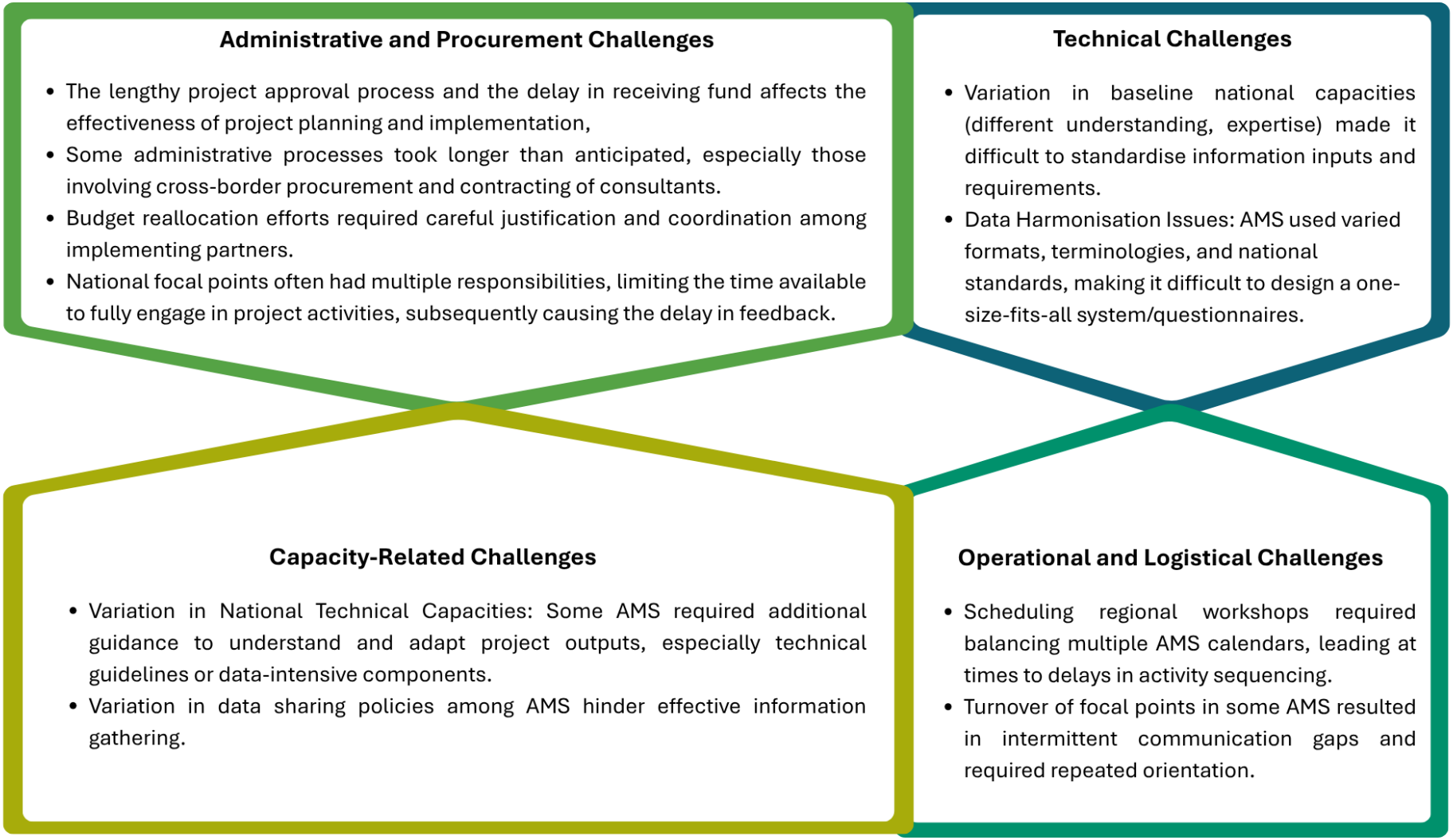


Figure 8.1: The challenges in implementing the fishing capacity project.

8.3 LESSON LEARNED

The fishing capacity project demonstrated that flexibility in implementation helps maintain momentum despite delays, while the strength of regional collaboration through consultations and peer learning enhanced ownership and partnerships among AMS (Figure 8.2). The value of dedicated focal points was evident in ensuring smoother communication and continuity, and the project outputs showed strong potential for sustainability and regional impact, with AMS expressing interest in continuing collaboration and operationalizing outputs nationally. Finally, the need for capacity building in project and fund application processes was highlighted to reduce approval delays and address turnover among responsible officers.

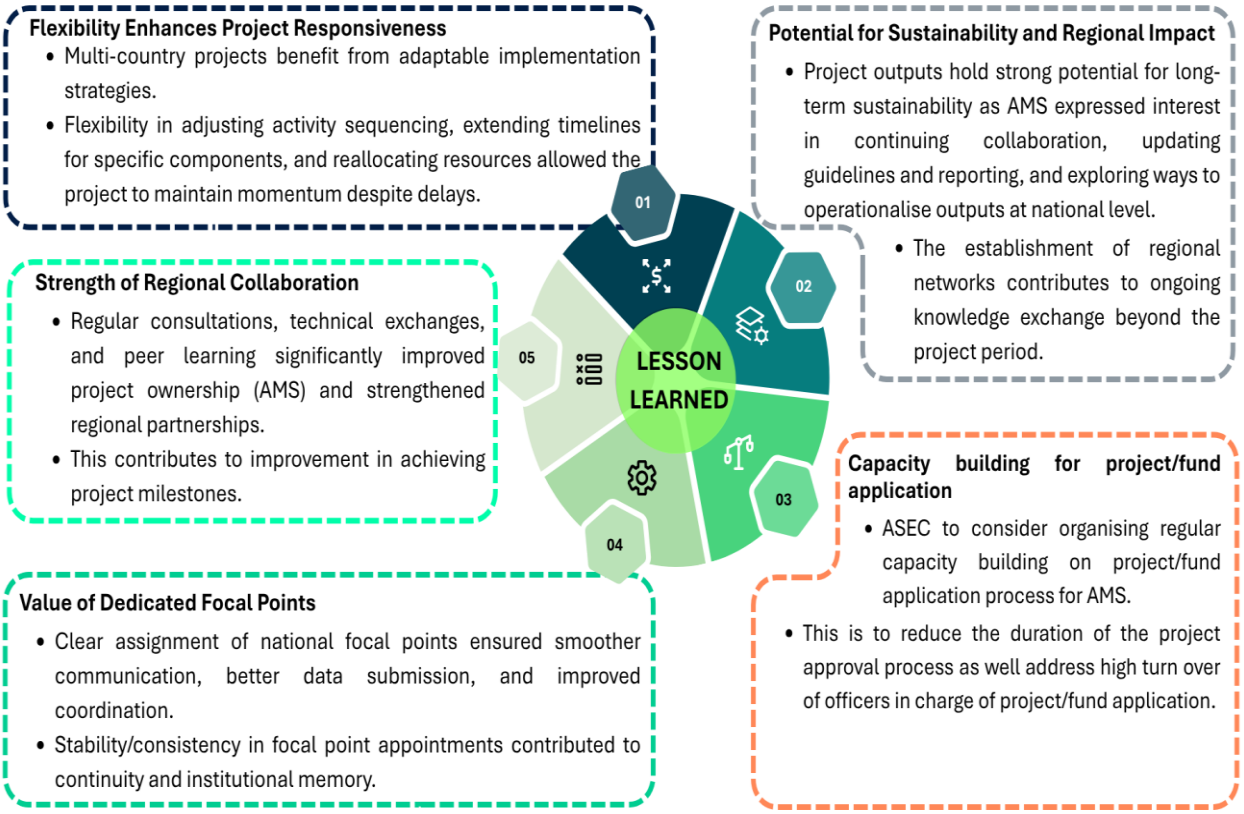


Figure 8.2: The lesson learned after implementing the fishing capacity project.

Chapter 9

CONCLUSION AND RECOMMENDATIONS



Caption 9: Fishing activity and AnGiang fishing port in Viet Nam

The project, implemented from 2024 to 2026 with support from the Japan–ASEAN Integration Fund (JAIF), successfully advanced regional cooperation, strengthened technical capacities of AMS, and contributed to the development of harmonised approaches across the region. Despite facing several operational and technical challenges, the project achieved the majority of its planned outputs and delivered tangible benefits that extend beyond the immediate project duration.

Throughout the implementation period, the project demonstrated clear relevance to ASEAN sectoral priorities, particularly those related to regional integration, capacity building, sustainable development, and alignment with ASEAN Community Vision 2025. The participation and engagement of AMS despite varying levels of national capacities reflected strong regional commitment and ownership. The collaborative process adopted in developing guidelines, training modules, and knowledge products ensured that outputs were practical, technically sound, and adaptable to diverse national contexts.

A key highlight of the project was its role in strengthening capacity across AMS through comprehensive workshops, technical consultations, and active engagement with regional experts/personnel. The project cultivated an informal network among AMS representatives, fostering ongoing communication and knowledge exchange that will remain operational beyond the project timeline. The project's outputs demonstrate strong potential for sustainability. The AMS and ASEAN sectoral body (SEAFDEC) involved are also well-positioned to continue supporting the mainstreaming of project outputs and monitoring ongoing progress especially in the implementation status of RPOA-Capacity and ASEAN Guidelines-IUU.

The project also generated important insights for future programme design within ASEAN, particularly the need for early technical feasibility assessments, flexible implementation arrangements, strengthened procurement planning, and enhanced data governance frameworks. These recommendations will support more effective and efficient execution of subsequent regional initiatives.

In conclusion, the project made significant progress toward strengthening regional capacity, promoting harmonised practices, and enhancing regional cooperation among AMS. It has laid a strong foundation for long-term impact, further development, and potential expansion. Continued commitment from AMS, ASEAN sectoral bodies, and development partners including JAIF will be critical in building upon the achievements of this project and advancing ASEAN's collective efforts toward sustainable and inclusive regional development.

9.1 SUMMARY OF THE FINDINGS

9.1.1 ASSESSMENT OF FISHING CAPACITY PROFILES AND IMPLEMENTATION STATUS OF RPOA-CAPACITY

In this assessment, 12 main management aspects in the RPOA-Capacity were discussed as presented in Figure 9.1.

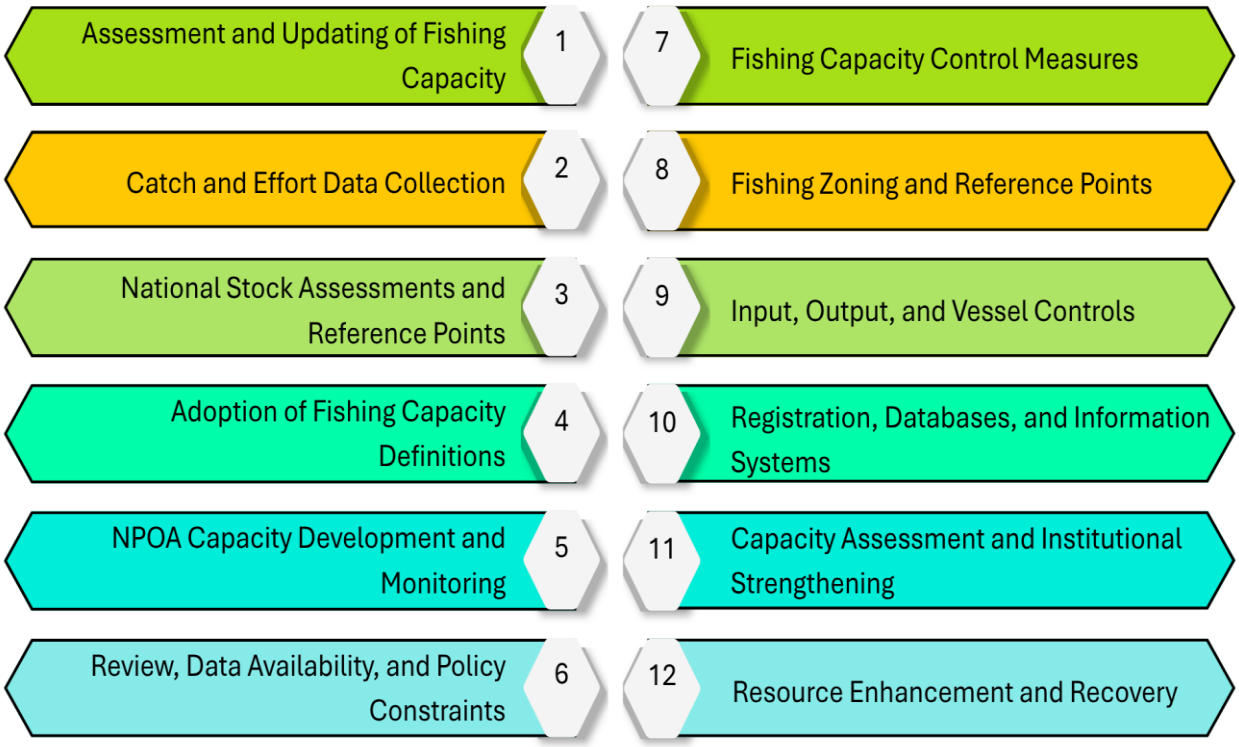


Figure 9.1: Management aspects in the RPOA-Capacity.

i. Assessment and Updating of Fishing Capacity

Most AMS regularly assess and update fishing capacity at national or local levels. Brunei Darussalam conducts gear-specific surveys, while Cambodia updates vessel registration and licensing through FiA/FiAC. Indonesia carries out annual reviews of vessels, gear, and catch data against national allocations. Malaysia updates capacity through the National Fish Stock Committee, and Myanmar follows NPOA guidelines. In contrast, the Philippines has relevant data but does not update it systematically. Thailand assesses capacity through its Fisheries Management Plan, including annual MSY analyses and vessel reduction measures, while Viet Nam is still refining its assessments based on stock status.

ii. Catch and Effort Data Collection

Data collection systems are improving across AMS. Brunei Darussalam uses digital platforms, while Cambodia relies on MaFReDi to collect national data. Indonesia has implemented electronic logbooks for offshore vessels since 2018. Malaysia uses stratified random sampling, and Myanmar collects data at landing sites and ports. The Philippines employs monitoring programmes, observer systems, and vessel registration data. Thailand conducts monthly port sampling covering all commercial fisheries and part of the artisanal sector. Viet Nam combines independent surveys (trawl and acoustic) with dependent data sources such as logbooks and observers.

iii. National Stock Assessments and Reference Points

Most AMS including Brunei Darussalam, Indonesia, Malaysia, Myanmar, the Philippines, Thailand, and Viet Nam conduct stock assessments to estimate indicators such as MSY, CPUE, and biomass. Indonesia conducts biannual assessments led by BRIN, while Malaysia applies multiple models supported by annual statistics. Thailand and Viet Nam conduct regular surveys and monitoring programmes. Myanmar collaborates with FAO and SEAFDEC, the Philippines applies a Fisheries Management Area framework, and Cambodia is undertaking ongoing assessments (2022–2024).

iv. Adoption of Fishing Capacity Definitions

Brunei Darussalam, Indonesia, Malaysia, Thailand and Viet Nam have established national definitions and frameworks for fishing capacity. Malaysia is strengthening implementation through its NPOA, while Thailand formalises definitions under fisheries legislation. Cambodia, Myanmar. Cambodia has introduced relevant legal frameworks, and Myanmar applies RPOA and NPOA-IUU guidelines in its management approach.

v. NPOA-Capacity Development and Monitoring

Several AMS have established NPOA-Capacity frameworks, including Malaysia (since 2008), the Philippines (NPOA approved in 2025), Thailand, and Viet Nam (NPOA approved in 2024). Indonesia is transitioning towards quota-based management, while Myanmar applies NPOA-IUU guidelines. Cambodia and Brunei Darussalam are still developing systems. Key constraints include limited technical capacity and funding.

vi. Review, Data Availability, and Policy Constraints

Malaysia, Thailand, and Viet Nam regularly review fisheries management systems, while Myanmar applies NPOA-IUU guidelines. Other AMS conduct ad-hoc or limited reviews due to resource constraints. Although stock assessments are conducted across the region, data gaps, limited expertise, and weak inter-agency coordination still affect policy development and implementation.

vii. Fishing Capacity Control Measures

AMS uses a mix of measures to manage fishing capacity, including licensing, vessel moratoriums, construction bans, and effort controls. Indonesia, Malaysia, Myanmar, the Philippines, and Thailand apply various input controls, while Indonesia and the Philippines are gradually introducing output-based systems. Cambodia and Brunei Darussalam are still developing comprehensive frameworks.

viii. Fishing Zoning and Reference Points

All AMS implement zoning systems such as Fisheries Management Areas (FMAs), coastal-offshore classifications, and restricted fishing areas. Management is guided by reference points such as MSY and CPUE, although regular assessments remain challenging in some countries due to budget and institutional limitations.

ix. Input, Output, and Vessel Controls

Input controls (licensing, gear, and effort restrictions) are widely used, while output controls are still emerging in some AMS. Vessel construction and importation are regulated through licensing systems, design standards, or bans on new vessels in several countries. Most AMS also apply fishing fee schemes linked to licensing, though resource-rent-based systems are limited.

x. Registration, Databases, and Information Systems

All AMS maintain vessel registration and licensing systems, with increasing use of digital platforms in Malaysia, Thailand, Indonesia, and the Philippines. National databases are being strengthened, and some countries participate in regional data-sharing initiatives through SEAFDEC, ASEN and FAO platforms.

xi. Capacity Assessment and Institutional Strengthening

Capacity impact assessments vary across AMS, with more advanced analyses in Malaysia and limited or emerging assessments elsewhere. Institutional frameworks are being strengthened through fisheries laws, co-management structures, and scientific advisory mechanisms across the region.

xii. Resource Enhancement and Recovery

Most AMS implement resource enhancement measures such as Marine Protected Areas (MPAs), artificial reefs, habitat restoration, and seasonal closures. Implementation intensity varies, with more comprehensive programs in Indonesia, Malaysia, Thailand, and Viet Nam. Cambodia, Brunei Darussalam, and Myanmar focus on targeted initiatives. Across all AMS, limited technical capacity and funding remain key constraints.

9.1.2 ASSESSMENT OF ASEAN GUIDELINES FOR PREVENTING THE ENTRY OF FISH AND FISHERY PRODUCTS FROM IUU FISHING ACTIVITIES INTO THE SUPPLY CHAIN

In this assessment, 5 main management aspects in the ASEAN Guidelines-IUU were discussed as presented in Figure 9.2.

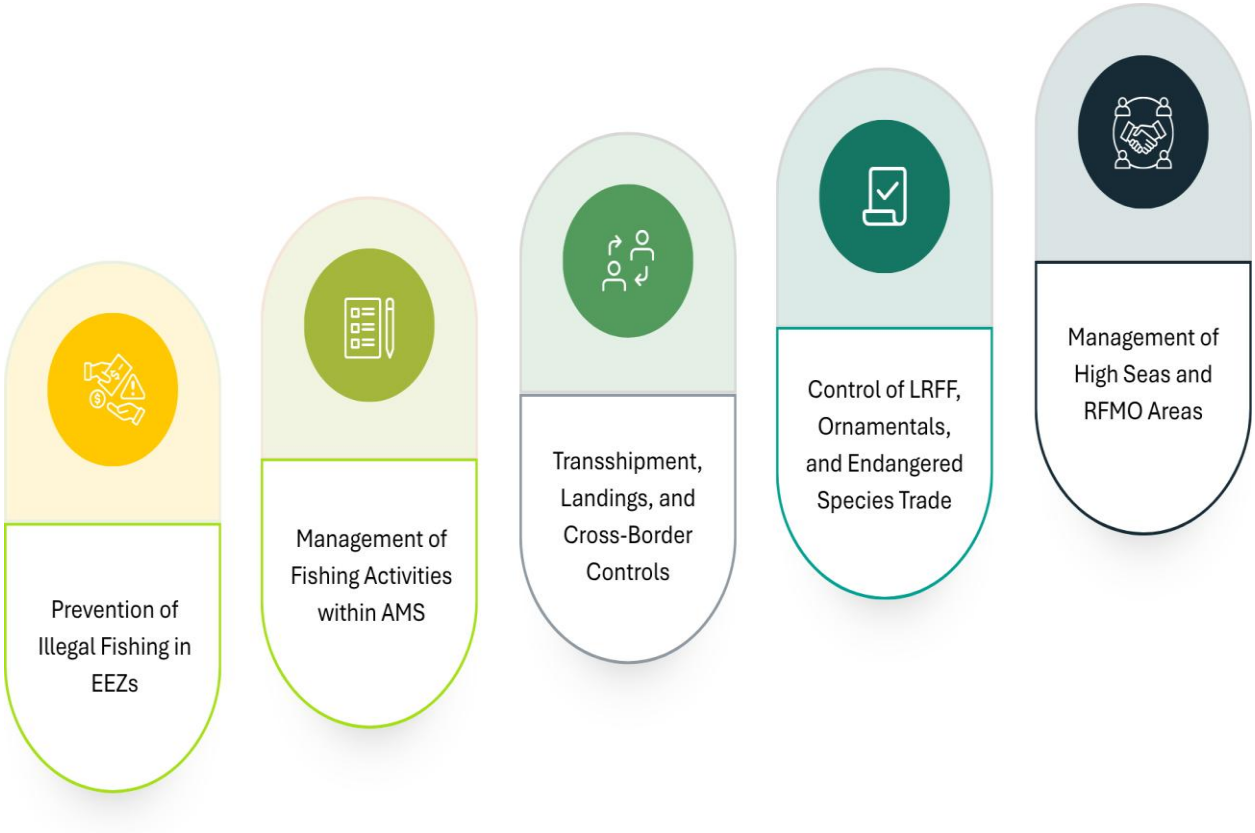


Figure 9.2: Management aspects in the ASEAN Guidelines-IUU.

i. Management of Fishing Activities within AMS

AMS regulates fishing access through vessel registration, licensing, and gear controls, supported by national vessel databases and marking systems. Most countries have strengthened legal frameworks, logbook systems, and alignment with regional initiatives such as RPOA-IUU. The VMS are widely used, although coverage and capacity vary, with some countries relying on AIS or partial implementation. Monitoring and enforcement are supported through patrols, port inspections, market checks, and community-based approaches. However, limitations in funding, enforcement capacity, and stakeholder participation remain common challenges.

ii. Transshipment, Landings, and Cross-Border Controls

Several AMS (e.g. Cambodia, Myanmar, Thailand, Viet Nam) engage in bilateral and regional cooperation on fisheries management and trade control. The Philippines and Viet Nam maintain port compliance and trade negotiations, while Thailand participates through ASEAN frameworks. In contrast, Brunei Darussalam, Indonesia, and Malaysia have limited formal landing agreements but may coordinate informally. Port State Measures (PSM-related controls) are implemented across most AMS, including inspections and monitoring of foreign vessels, though staffing constraints limit effectiveness in some cases. AMS also participates in regional data-sharing platforms such as RFVR and FAO systems, although the level of formal cooperation varies.

iii. Prevention of Illegal Fishing in EEZs

Coastal States enforce fisheries laws through flag, port, and coastal State measures. Several AMS have strengthened enforcement frameworks, including Malaysia's IUU vessel listing system, Indonesia's PSMA-based enforcement, and Thailand's strict legal sanctions. Regional IUU vessel lists and databases are maintained and shared through ASEAN and RFMO mechanisms, though coverage and updating vary among countries. Only a few AMS (Cambodia, Myanmar, Philippines) have formal bilateral or multilateral fishing access arrangements. Most others restrict or do not permit such agreements due to policy or capacity constraints.

iv. Control of LRFF, Ornamentals, and Endangered Species Trade

AMS regulates live reef food fish (LRFF), ornamental fish, and endangered species through inter-agency coordination, licensing systems, and CITES-related frameworks. Monitoring approaches vary, including traceability systems (Thailand), databases (Indonesia), licensing controls (Malaysia), and NGO-supported monitoring (Myanmar and Cambodia). All AMS restrict trade in endangered species, generally allowing exports only for research under strict permits. Small-scale fishers are increasingly engaged through co-management, awareness programmes, and habitat restoration initiatives, although implementation varies across countries. Regional cooperation on LRFF trade networks and traceability is also growing, particularly among AMS.

v. Management of High Seas and RFMO Areas

AMS implements Port State Measures (PSM) and RFMO-related controls to regulate fishing in high seas and international waters. Countries such as Thailand, Indonesia, the Philippines, Malaysia, and Viet Nam enforce port inspections, designated ports, and compliance systems. Flag State responsibilities include observer programmes and monitoring requirements, although implementation capacity varies. Cooperation with RFMOs includes Catch Documentation Schemes (CDS) and information sharing to prevent IUU products from entering international trade. However, participation levels differ, with some AMS having limited engagement due to fleet size or capacity constraints.

9.1.3 FISHERIES INFORMATION SYSTEMS AND/OR MECHANISMS IN AMS

Fisheries information systems in AMS are generally well established for marine capture fisheries, particularly for commercial sectors. Most countries collect data on fishing effort, vessel characteristics, landing statistics, CPUE, and trade flows. However, data coverage is uneven, especially for unlicensed vessels, small-scale fisheries, inland and recreational fisheries, and certain biological and environmental parameters.
Landing data are commonly recorded by gear type, vessel size, fishing area, and species, mainly at official landing sites, with subsampling widely used. While employment data for national fishers are generally available, information on foreign fishers remains limited. CPUE is reported in most AMS and used for MSY estimation in some countries.

Environmental data, bycatch, discard information, and fish life-stage data are inconsistently collected and often limited to research projects. Inland fisheries data are available in several AMS, while recreational fisheries data are scarce. Most AMS have trade and value chain data systems, with Thailand demonstrating advanced digital traceability integration.

Although national fisheries information systems exist in most AMS, challenges remain in system integration, digitalisation, standardisation of reporting formats, and linkage between scientific and administrative datasets. Data accessibility also varies, ranging from open public access to request-based systems. Regional data sharing exists through SEAFDEC and FAO, but compatibility with global systems is limited in most countries.

9.1.4 MANAGEMENT MEASURES AND GOVERNANCE FRAMEWORKS IN AMS

AMS applies a broad mix of management measures and governance frameworks to support the sustainable use of pelagic fisheries. These include output and input controls, spatial and temporal measures, ecosystem-based approaches, Monitoring, Control, and Surveillance (MCS), and resource enhancement initiatives, all supported by evolving regulatory and institutional arrangements.

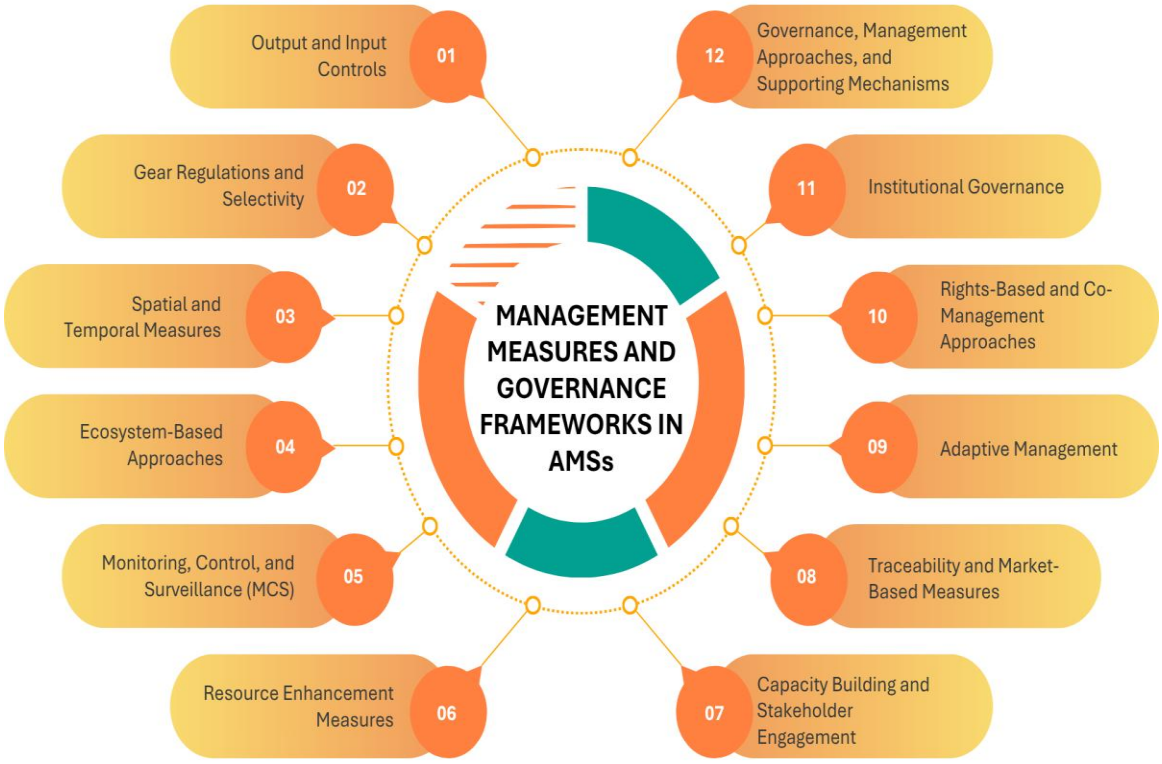


Figure 9.3: Management measures and governance frameworks to support the sustainable use of pelagic fisheries.

i. Output and Input Controls

AMS commonly regulate fisheries through catch limits and, in some cases, Total Allowable Catch (TAC) based on stock assessments. However, quota allocation systems and size-based limits remain limited, with Cambodia currently piloting slot limits. Fishing effort is primarily controlled through vessel licensing and registration, limits on vessel numbers and gear, and engine power restrictions. Some countries also regulate support vessels such as carriers and light boats.

ii. Gear Regulations and Selectivity

Gear-based measures are widely implemented, including controls on gear specifications, fishing aids, and bycatch mitigation devices. Regulations on mesh size, cod-end mesh size, and net dimensions are common in countries such as Cambodia, Indonesia, the Philippines, and Thailand. Malaysia is piloting a Fishing Gear Marking Program to improve traceability and address Abandoned, Lost, or Discarded Fishing Gear (ALDFG), as well as IUU fishing.

iii. Spatial and Temporal Measures

Spatial and temporal closures are extensively applied through Marine Protected Areas (MPAs), seasonal closures, and designated fishing restrictions to protect critical habitats and life stages. Additional approaches include community-led closures in Cambodia, tuna-related closures in Indonesia, and Locally Managed Marine Areas (LMMAs) in Myanmar. In Malaysia, Fisheries Conservation Zones (FCZ), covering coastal waters up to one nautical mile, have been implemented since 2014 in Kedah, Perak, and Selangor. These zones promote conservation through regulated fishing, ecosystem-based management, scientific input, and community participation.

iv. Ecosystem-Based Approaches

Several AMS are transitioning towards ecosystem-based fisheries management, focusing on ecosystem services rather than single-species management. However, monitoring of ecosystem dynamics such as predator–prey relationships, forage fish exploitation, and climate impacts remain limited and uneven across countries.

v. Monitoring, Control, and Surveillance (MCS)

MCS systems are a core component of fisheries governance in AMS. Common tools include Vessel Monitoring Systems (VMS), Automatic Identification Systems (AIS), logbooks, and port state measures to combat IUU fishing. Advanced tools such as electronic logbooks and onboard observers are less widely used, although countries such as Malaysia, Thailand, Viet Nam, and Cambodia are piloting or gradually implementing these systems, including community-based MCS approaches.

vi. Resource Enhancement Measures

Resource enhancement is widely practiced across AMS, including artificial reefs, stock enhancement, habitat restoration, and fisheries refugia. Additional initiatives, such as blue swimming crab banks and fish shelters in Thailand, further support stock recovery and ecosystem resilience.

vii. Governance, Management Approaches, and Supporting Mechanisms

AMS have developed governance frameworks aligned with regional and international commitments, supported by national fisheries management plans. These frameworks incorporate precautionary principles, co-management arrangements, adaptive management, and stakeholder engagement, although implementation varies across countries.

viii. Institutional Governance

All AMS have designated national authorities, typically under the Ministry fisheries or the agriculture's responsibility for managing pelagic fisheries. In some countries, including Indonesia, Malaysia, and the Philippines, responsibilities are shared across multiple agencies, including research institutions and local governments. Fishers' associations are present in most AMS, supporting stakeholder participation, although they are absent in Brunei Darussalam. Malaysia is also advancing Marine Spatial Planning (MSP), led by the Department of Fisheries, focusing on biodiversity conservation, habitat protection, and fisheries management, with outputs to be integrated into the MyFirst application.

ix. Rights-Based and Co-Management Approaches

Rights-Based Management (RBM) remains limited in the region. Thailand has implemented individual transferable quotas (ITQs), while Cambodia applies community-based quota systems. In contrast, co-management involving fishing communities is more widely practiced and serves as a key governance approach across AMS.

x. Adaptive Management

Adaptive management is increasingly recognized as an important approach, where policies are continuously refined based on monitoring results and scientific evidence. This allows for more responsive and effective fisheries management under changing conditions.

xi. Traceability and Market-Based Measures

Most AMS have implemented catch documentation systems and trade-related measures to address IUU fishing. Some countries are also adopting eco-certification and traceability systems. Strengthening these mechanisms—through improved data systems, harmonised documentation, and regional cooperation—would enhance market access and enforcement effectiveness.

xii. Capacity Building and Stakeholder Engagement

Capacity building and stakeholder engagement are central to fisheries governance in AMS. Strong collaboration among governments, fishing communities, NGOs, and industry supports compliance, inclusiveness, and long-term sustainability, particularly in data-limited fisheries contexts.

9.2 RECOMMENDATION FOR FUTURE CAPACITY BUILDING PROGRAMS

The findings, gaps, challenges, and lessons learned from each output along with insights from the Regional Technical Consultations have been synthesized to guide future steps for AMS, proposed capacity-building programs, and long-term management of pelagic resources. The capacity building programs are proposed by AMS during fourth Regional Technical Consultation in January 2026 and Regional End-of-Project Evaluation Meeting on the Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity convened in Melaka, Malaysia in August 2026.

AMS proposed various capacity building programmes aimed to strengthen technical expertise in stock assessment, data analysis, enforcement, and ecosystem-based fisheries management. Regional training platforms and knowledge exchange among AMS can reduce duplication and enhance collective capacity.

The proposed programs are divided into three main categories: **A) Fish stock assessment**, B) **Data analysis and management** and **C) Governance and Management**.

In the capacity building programs related to the stock assessment, three main programs are proposed at regional and national level as presented in Table 9.1. Technical focus for each program varies, taking into consideration the current needs by AMS.

Table 9.1: Proposed capacity building program related to **fish stock assessment**.

Programme title	ASEAN Small Pelagic Stock Assessment Training course	National/regional Training for stock assessment	Biological Sampling & Life-History Data Training
Technical focus	• Data-limited methods (LBB, LBSPR, CMSY, SPM, Length Based indicator, TropFish-R) • Length-frequency analysis, uncertainty & precautionary reference points • Reproductive biology • Gear selectivity • Mapping fishing ground • Standardization method of fishing effort • Ecosystem Traits Index • Ecopath and Ecosim • Harvest Control Rules (HCR) design tool • Method Evaluation for Risk assessment for data limited fisheries • Ecological Index	Stock assessment (e.g. Fish population dynamics)	Standardised sampling protocols (length, maturity, age), sampling design
Target participants	Fisheries scientists, research officers, fisheries officer	University student, Fishers, Communities	Field enumerators, researchers, Fisheries Officer
Format	Regional workshop + hands-on exercises	Workshop + hands-on exercises	Training + field-based practicum
Key Outputs/ Deliverables	Trained national focal points; pilot assessments for priority species	Trained related stakeholders (fishers, locals)	ASEAN sampling protocols; improved biological datasets
Suggested Timeframe	Short-term	Short-term	Short-term

In terms of the need for capacity building programs for data analysis and management, two programs are proposed (Table 9.2). This includes:

- Fisheries Data Analytics & Visualization Training
- Fisheries Database & Interoperability Programme

Table 9.2: Proposed capacity building program related to **data analysis and management**.

Programme title	ASEAN Fisheries Data Analytics & Visualization Training	Regional Fisheries Database & Interoperability Programme
Technical focus	Data cleaning, time-series analysis, visualization (R, QGIS), dashboard and AI	Database design, metadata standards, data governance
Target participants	Data analysts, scientists Fisheries Officer	Fisheries IT and data officers
Format	Hands-on regional training	Technical workshops + peer learning
Key Outputs/ Deliverables	Standard analysis scripts; improved national reporting	Agreed data standards; roadmap for regional database
Suggested Timeframe	Short-term	Short-term

Additionally, AMS propose two capacity building programs for governance and management of pelagic resources (Table 9.3)

Table 9.3: Proposed capacity building program related to **governance and management of pelagic resources**.

Programme title	Science-to-Policy Translation Programme	Regional Training on Co-management and socio-economics
Technical focus	• Translating stock assessments, socio-economic, ecological into management advice; HCRs, • Regulatory Impact Assessment Indicator • Marine Spatial Planning	• Co-management • Supply Chain of Fisheries Resources • Socioeconomic related to fisheries management and policy (indicators)
Target participants	Scientists and managers	Fisheries scientists, research officers, Fisheries Officer
Format	Joint workshops	Regional workshop + hands-on exercises
Key Outputs/ Deliverables	Policy briefs; improved uptake of science	Trained national focal points; pilot assessments for priority species
Suggested Timeframe	Short-term	Short-term

9.3 RECOMMENDATION ON THE FUTURE DIRECTION OF PELAGIC FISHERIES IN SOUTHEAST ASIAN REGION

The outputs of the activities have provided a lot of information related to the fishing capacity profile of AMS, existing fisheries information systems/mechanisms, the harmonization of indicators that will be used by all AMS and finally related to current and future conservation efforts and management strategies of pelagic fisheries that will benefit all AMS.

Therefore, a recommendation on the future direction of management and conservation of pelagic fisheries (2027–2036) is drafted during fourth Regional Technical Consultation in January 2026 and finalised during Regional End-of-Project Evaluation Meeting on the Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity convened in Melaka, Malaysia in August 2026.

This recommendation is proposed as a guiding framework to help ASEAN move from national-level efforts towards more coordinated regional action for small and non-tuna pelagic fisheries. The direction is structured in three phases over a ten-year horizon, recognising that many pelagic species are shared, climate-sensitive, and often data-limited (Figure 9.4 and 9.5).

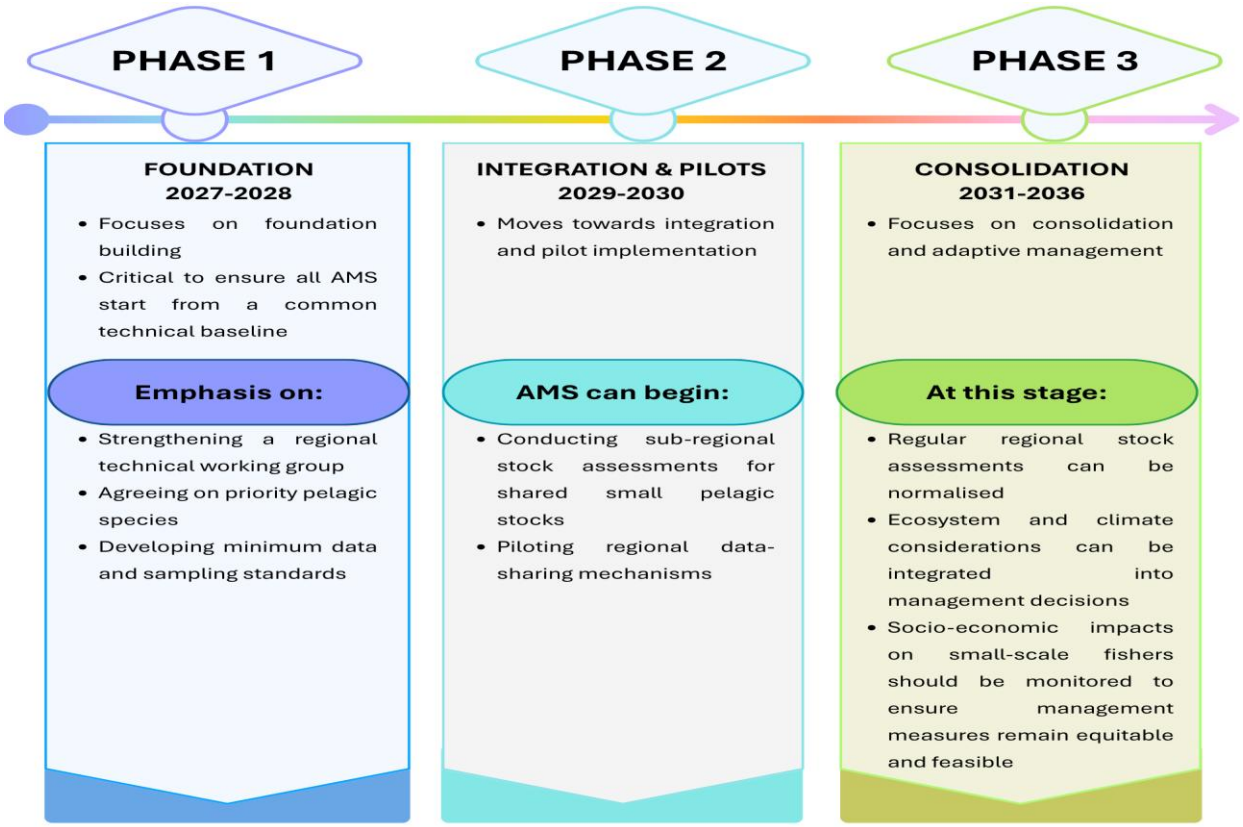


Figure 9.4: The suggested plan for the future direction of management and conservation of pelagic fisheries (2027–2036).

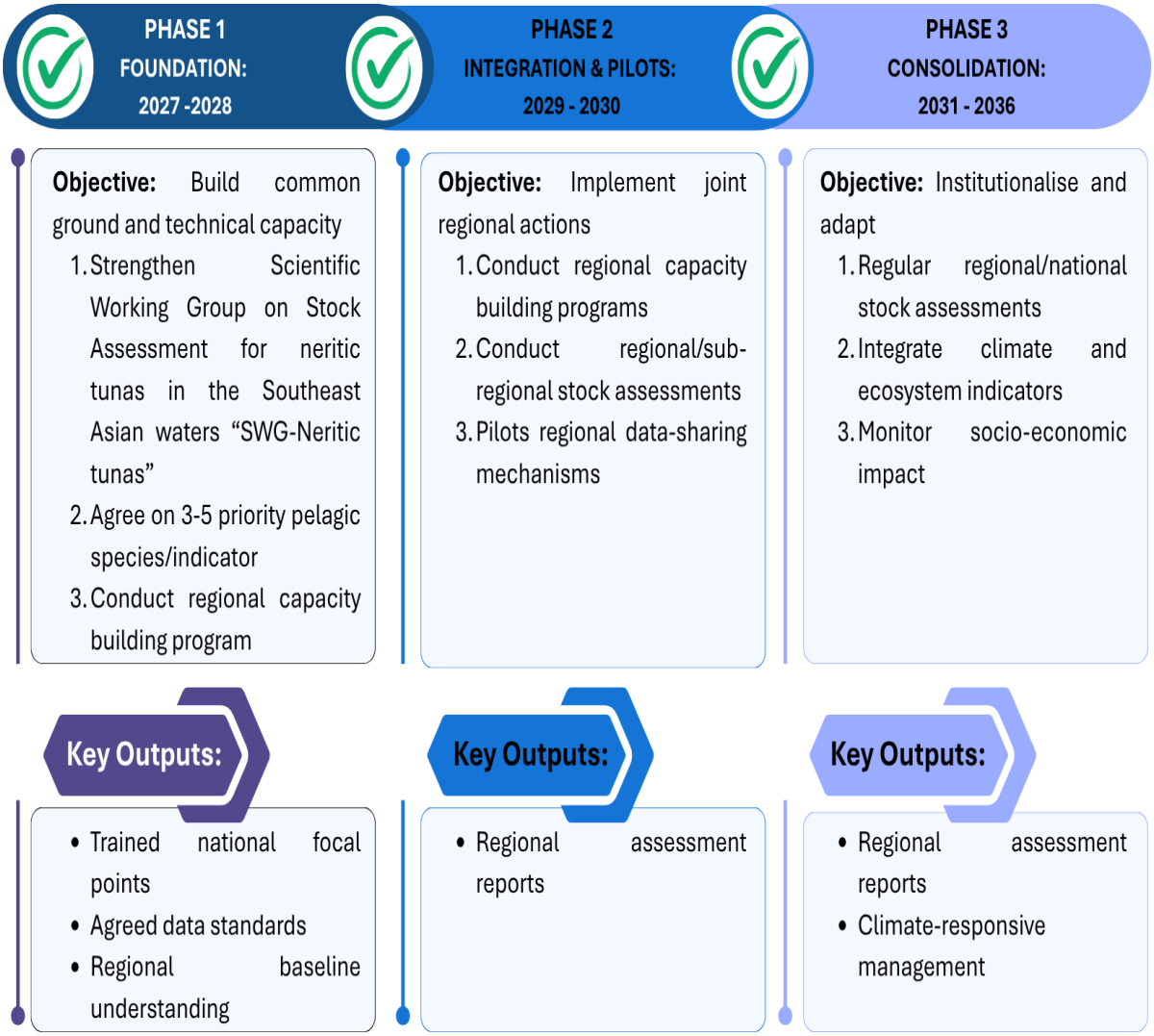


Figure 9.5: The Phase 1, Phase 2, and Phase 3 of the suggested plan for the future direction of management and conservation of pelagic fisheries (2027–2036).

These recommendations complement existing national frameworks by identifying areas where regional cooperation yields the greatest impact. To sustain this momentum post-project, these findings must be elevated to high-level authorities in AMS. Institutionalizing this work at senior policy levels will ensure the long-term integration of the developed collaborative frameworks, capacity-building strategies, and management tools into national and regional governance.

BIBLIOGRAPHY



Caption 10: The Tagal river management system in Sabah, Malaysia

Arinta, D.H and Mohd Aris, S. 2025. Simple and Practical Indicators for the Sustainable Management of Pelagic Fisheries in Indonesia. In Mazalina, A., Mohammad Faisal, M.S, Hamizah Nadia, A.Y., Muhammad Amirullah Al-Amin, A., and Khairiah, J. 2025. *Report on the Regional Technical Consultation on The Harmonization of Simple and Practical Indicators for Sustainable Pelagic Fisheries in Southeast Asia* (pp. 46-50). Subang, Malaysia.

Cambodia Fisheries Administration. 2025. *National Plan for Pelagic Fisheries Management*. Capture Fisheries Industry and Marine Ecosystem Division, Department of Fisheries. Chea. T. 2026. Status of pelagic fisheries in Cambodia," In Mazalina, A., Mohammad Faisal, M.S., Muhammad Amirullah Al-Amin, A., and Khairiah, J. "*Report on the Regional Technical Consultation on The Conservation Efforts and Management Strategies of Pelagic Fisheries Resources in Southeast Asia*" (pp50-54), Port Dickson, Malaysia.

FAO 2018 Dr. Fridtjof Nansen survey publications, National report on data collection from coastal region fish loading/unloading jetties surveys, etc.

FAO. 2018. *Length-Based Methods in Fisheries Research*. https://www.fao.org/4/T0535E/T0535E01.htm

Fricke, R., Kulbicki, M., Wantiez, L. 2011. Checklist of the fishes of New Caledonia, and their distribution in the Southwest Pacific Ocean (Pisces). *Stuttgarter Beiträge zur Naturkunde*. *Serie A, Biologie* 4:341- 463.

Hordyk, A.R., et al. 2015. *An evaluation of length-based spawning potential ratio*. ICES Journal of Marine Science.

Ganias, K. 2014. Biology and ecology of anchovy (Engraulidae) species in the Mediterranean and Black Seas. *In*: Anchovy Biology and Fisheries. CRC Press,pp 1-22.

Mazalina, A., Mohammad Faisal, M.S, Hamizah Nadia, A.Y., Muhammad Amirullah Al-Amin, A., and Khairiah, J. 2025. Report on the Regional Technical Consultation on The Harmonization of Simple and Practical Indicators for Sustainable Pelagic Fisheries in Southeast Asia, 22 – 24 October 2025, Subang, Malaysia. SEAFDEC/ MFRDMD/RM/53. 108 pp

Nuengruetai, Y. 2025. Simple and Practical Indicators for the Sustainable Management of Pelagic Fisheries in Thailand. In Mazalina, A., Mohammad Faisal, M.S, Hamizah Nadia, A.Y., Muhammad Amirullah Al-Amin, A., and Khairiah, J. 2025. Report on the Regional Technical Consultation on The Harmonization of Simple and Practical Indicators for Sustainable Pelagic Fisheries in Southeast Asia (pp 56-64). Subang, Malaysia.

Sparre, P., and Venema, S. C. 1998. Introduction to tropical fish stock assessment. Part 1. Manual. FAO Fisheries Technical Paper, No. 306.1, Rev. 2. Rome: FAO.

Young, S.S., Chiu, T.S., and Shen, S.C. 1995. Taxonomic description and distribution of larval anchovy (Engraulidae) occurred in the waters around Taiwan. *Acta Zoologica Taiwanica* 6(1):33-60.

Annex 1: Workplan and timeline

Objective/Output	Planned Activities	Time-frame										
		2024			2025				2026			
		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Objectives: Assessment on the implementation of the ASEAN Regional Plan of Action with regard to the management of the fishing capacity and regional fishery information systems/mechanisms is available												
Outputs 1: The status of the implementation of RPOA-Capacity in AMSs is assessed through the survey conducted in AMSs	**1.0 Management and Assessment of Fishing Capacity**											
	1.1 Develop questionnaires on the implementation of the RPOA-Capacity, fishing capacity profiles, fishing effort, and stock status in AMSs		27-29 Aug 2024, Kuantan, Pahang									
	1.2 Regional Hybrid Kick-Off Meeting			28-29 Oct 2024, Alor Setar, Kedah								
	1.3 Regional Technical Consultation (RTC) on status implementation of the RPOA-Capacity, fishing capacity profiles, fishing effort, and stock status in AMSs				25-27 Feb 2025, Kuala Lumpur							
	1.4 Assessment of fishing capacity based on the questionnaire					9-12 Apr 2025, Langkawi, Kedah						

Output 2: The relevant existing fisheries information systems and mechanisms are compiled and enhanced	**2.0 Compilation and Enhancement of Relevant Existing Fisheries Information Systems/Mechanisms**											
	2.1 Develop questionnaires on the current status of existing fisheries statistics and information or relevant system in AMSs and send the questionnaire to AMSs			24-26 Dec 2024, Kota Bharu, Kelantan								
	2.2 Regional Workshop on the current status of existing fisheries statistics and information or relevant system, proposed mechanisms to facilitate sharing, exchange, and compilation of statistics and information					28-30 May 2025, Kuala Lumpur						
	2.3 Compilation of information on fisheries statistics profile and gap analyses based on the questionnaire						17-18 July 2025, Cherating, Pahang					
Outputs 3: Simple and practical indicators are standardized in	**3.0 Standardization of Simple and Practical Indicators**											
	3.1 Regional workshop for standardization of simple and practical indicators to support planning and							22-24 Oct 2025, Subang, Selangor				

supporting planning and monitoring of sustainable fisheries of pelagic fish	monitoring of sustainable fisheries of pelagic fish											
Output 4: Current status and establishment of the closed season, closed areas, or other management strategies of selected pelagic species in AMSs are identified and documented	**4.0 Compilation and Assessment of Management Strategies of Selected Pelagic Species**											
	4.1 Develop questionnaires on the current status and proposed establishment of the closed season, closed areas, or other management strategies of selected pelagic species in AMSs and send the questionnaire to AMSs						10-12 Sept 2025, Sabak Bernam, Selangor					
	4.2 RTC on conservation efforts and management strategies of selected pelagic species in AMSs								6-8 Jan 2026, Port Dickson, Negeri Sembilan			
	4.3 Regional synthesis of proposed management strategies for selected pelagic species in AMSs based on the questionnaire								3-4 Feb 2026, Kota Bharu, Kelantan			

Output 5: Terminal report is prepared and published	**5.0 Compilation and Publication of the Terminal Report**											
	5.1 Compilation information for the success stories in AMSs									28 June-1 July 2026, Kuching, Sarawak		
	5.2 Compilation information for the draft of terminal report									9-10 Apr 2026, Kuala Perlis, Perlis		
	5.3 Harmonization of the draft of terminal report										13-15 July 2026, Kota Kinabalu, Sabah	
	5.4 Finalization of terminal report										9-11 Sept 2026, Cameron Highlands, Pahang	
Output 6: Project monitoring and evaluation are conducted	**6.0 Project Monitoring and Evaluation**											
	6.1 Project Midterm Review and Evaluation Meeting					22-24 Apr 2025, Penang						
	6.2. End-of-Project Evaluation Workshop										12-14 Aug 2026, Melaka	

ANNEX 2 Questionnaire template

Q1) Questionnaire on *National Fishing Capacity Profile for Pelagic Fisheries (FAO Fishing Area 57 & 71)*

National Fishing Capacity Profile for Pelagic Fisheries (FAO Fishing Area 57)

INSTRUCTION

1 This set of questionnaires is divided into **THREE** sections, which are:
i. Section 1.
ii. Section 2 (A, B, C, D).
iii. Section 3.

2 To make it easy to navigate, this questionnaire was designed by using **TWO** colours, which are:
i. Light green indicates questions that have been asked.
ii. Light yellow designates the respondent's answer space.

3 This questionnaire consists of two types of questions, which are:
i. Open-ended question: The respondent needs to fill in relevant answers.
ii. Closed-ended question: The respondent needs to choose between the options provided.

4 If you have any inquiries, please contact our secretariat, **Miss Mazalina Ali at mazalina@seafdec.org.my or +609-6175940 / +609-6177867 / +609-6171543.**

5 Please answer all questions.

Please provide the following information:	
Name of country	
Contact person	
Designation	
Email address	
Name of organization	
Date of filling out this questionnaire	

	SECTION 1: GENERAL INFORMATION					
No.	**Please answer the following questions:**					
i	Do you assess the pelagic stock?					
	How is the fishing effort recorded?	Per hour				
		Per day				
		Per trip				
		Per haul				
		Per vessel				
				Yes/No	**Assessment Year**	**Assessment Frequency**
ii	Assessment method	Survey at sea:	Acoustic survey			
			Long-line survey			
			Mid-water trawl survey			
			Other, specify:			
		Biological survey for the stock assessment:	Reproductive study			
			Genetic study			
			Population parameter study (e.g., length-weight, otolith analysis)			
			Other, specify:			
		Fisheries statistical analysis				
		Other, specify: Status stock analysis				
iii	Assessment model	Surplus production model				
		A Stock Production Model Incorporating Covariates (ASPIC)				
		Virtual population analysis (VPA)				
		Beverton–Holt (B&H)				
		Thompson and Bell (T&B)				

		Harvested Feedback Control (HFC)	
		Electronic Length Frequency Analysis (ELEFAN)	
		Monte Carlo Catch-MSY (CMSY)	
		Other, specify: Length-based Spawning Potential Ratio (LBSPR)	
iv	Percentage of current marine protected area (MPA), specify the percentage:		
v	List all types of marine management in your country (e.g., zonation, MPA etc.):		

SECTION 2(A): FISHING VESSEL INFORMATION				
No.	**Please list the three most dominant types of fishing vessels on pelagic fish production.**			
i	Type of fishing vessel used in pelagic fish production.			

SECTION 2(B): FISHING VESSEL INFORMATION				
No.	**Based on the listed fishing vessel below, please select "Yes" or "No" to best describe the following items.**			
i	Type of fishing vessel used in pelagic fish production.			
ii	One fishing vessel operates one fishing gear.			
iii	One fishing vessel operates multiple fishing gear.			
iv	The number of fishing vessels has increased over the past five years.			
v	The quantity of fishing gear has increased over the past five years.			
vi	Fishing vessels' horsepower has increased over the past five years.			
vii	Fishing vessels' horsepower has increased over the past 10 years.			
viii	Do fishing operations adhere to the guidelines of the marine management area? If not, please specify:			

SECTION 2(C): FISHING VESSEL INFORMATION					
No.	**Based on the listed fishing vessel below, please select "Yes" or "No" to best describe the following items.**				
i	Type of fishing vessel used in pelagic fish production.				
ii	Material is used for the body of a fishing vessel.	Fiberglass			
		Wood			
		Steel			
		Aluminium			
		Other, specify:			
iii	Application of advanced technology in capture fisheries	Acoustic – Fish finder			
		Acoustic – Sonar			
		Global Positioning System (GPS)/ navigation system			
		Tracking system, specify:			
		Fish forecasting system			
		Communication Systems, specify:			
		Electronic logbook			
		Drone			
		Other, specify:			
iv	Fish storage method	Ice Storage			
		Chilled Storage			
		Refrigerated Seawater (RSW) Tanks			
		Blast Freezers			
		Other, specify:			
v	Area of fishing	Coastal (i.e., less than 12nm)			
		Coastal (i.e., less than 30nm)			
		EEZ			
		Other, specify:			

SECTION 2(D): FISHING VESSEL INFORMATION					
No.	**Based on the listed fishing vessel below, please answer the following items**				
i	Type of fishing vessel used in pelagic fish production.				
ii	Number of fishing vessel sizes by GT	<5 GT			
		5-9.9 GT			
		10-19.9 GT			
		20-49.9 GT			
		50-99.9 GT			
		100-199.9 GT			
		≥200 GT			
iii	Average number of fishing days per vessel per month.				
iv	Cumulative number of fishing days per vessel per year.				
v	Average number of fishing trips per vessel per month.				
vi	Average number of operations per vessel per trip.				
vii	Regulated mesh size.				
viii	Average or regulated size of nets (length x width x height).				
ix	Average number of hooks (if any).				
x	Type of hook (if any).				
xi	Average distance between hooks for longline (if any).				
xii	Average number of crew on-board by GT	<5 GT			
		5-9.9 GT			
		10-19.9 GT			
		20-49.9 GT			
		50-99.9 GT			
		100-199.9 GT			
		≥200 GT			

xiii	Range of age of crew on-board	<15			
		16-18			
		19-40			
		41-60			
		>60			
xiv	Gender of the crew on-board	Male			
		Female			
xv	Method of fish searching	Free-school			
		fish aggregating devices (FADs)			
		Forecasting			
xvi	Types of fish aggregating devices (FADs)	Anchored			
		Drifting			
		Others, specify:			

SECTION 3: OVERALL CATCH INFORMATION						
Please provide the information below based on your latest year of catch (within the last 10 years).						
Year						
Overall current production of pelagic species (tonnes)	Seven dominant pelagic species or groups were caught	Latest volume of landings or catch for the species (tonnes)	Status of resource	Current trend of fisheries	Availability biomass estimation from previous assessment	Reference list (Book/ report/ journal et.)

Q2) Questionnaire on *ASEAN Regional Plan of Action for the Management of Fishing Capacity (RPOA-Capacity)*

ASEAN Regional Plan of Action for the Management of Fishing Capacity (RPOA-Capacity)

INSTRUCTION

This set of questionnaires is divided into FIVE sections, which are:
i. Section 1
ii. Section 2 (A, B, C)
iii. Section 3
iv. Section 4
v. Section 5

To make it easy to navigate, this questionnaire designed by using TWO colours, namely:
i. Light green refers to questions space assigned.
ii. Light yellow refers to the respondent to answer.

This questionnaire consists of:
i. Open-ended question: The respondent needs to fill in relevant answers. e.g., YES/ NO, specify.

If you have any inquiries, please contact our secretariat, **Miss Mazalina Ali** at **mazalina@seafdec.org.my** or +609-6175940 / +609-6177867 / +609-6171543.

Please answer all questions.

Please provide the following information:	
Name of country	
Contact person	
Designation	
Email address	
Name of organization	
Date of filling out this questionnaire	

SECTION 1: ASSESSMENT OF FISHING CAPACITY			
Diagnosis and Identification of Fisheries and Fishing Capacity			
No.	**ACTION IN RPOA CAPACITY**	**IMPLEMENTATION STATUS**	**ISSUES/ CONTRAINS**
i	AMS assesses and regularly updates the fishing capacity at the local and national level.		
ii	AMS improves the collection system for catch and effort data * Catch and effort data should include all types of fishing operations that catch pelagic fish. * Please mention the method of data collection		
iii	AMS conducts national assessments of fishery resources to estimate appropriate reference points (e.g., MSY, CPUE, BIOMASS, etc.). * Does the AMS compare the estimate with the actual fishing efforts at given times, as well as with the aggregated fishing effort in a defined subregion?		
iv	AMS adopt national measurements and definitions of fishing capacity. * Vessels, gears, people engaged in fisheries		

SECTION 2 (A): PREPARATION AND IMPLEMENTATION OF NATIONAL PLAN OF ACTION FOR THE MANAGEMENT OF FISHING CAPACITY			
Development of National plans and policies			
No.	**ACTION IN RPOA CAPACITY**	**IMPLEMENTATION STATUS**	**ISSUES/ CONTRAINS**
i	AMS establishes effort/system/mechanism to develop NPOA capacity and to monitor, evaluate, review its effectiveness and revise.		
ii	AMS revises the effectiveness of the effort, system, or mechanism.		
iii	The information on fisheries resources is sufficient to develop NPOA.		
iv	The insufficient information is the reason to delay the implementation of policies.		
v	AMS implements schemes to limit the number of fishing vessels and fishing licenses.		
vi	AMS has management systems that prevent fishing capacity from expanding beyond the optimum level.		
vii	AMS develops measures and mechanisms to prevent or eliminate excess fishing capacity.		
vii	AMS applies fishing zones as one of the management measures to restrict fishing capacity.		
ix	AMS uses any appropriate reference points (MSY, CPUE) as indicators of resource status.		
x	AMS encourages self-restraint by fishing operators (e.g., through awareness, etc.).		
xi	AMS encourages implementation of input and output control.		
xii	List management measures used in fishing capacity management.		
xii	AMS proactively controls fishing capacity through the development of fishing vessel construction and importation control measures.		

xiv	AMS conducted or considers the fishing fee scheme as the basis for fishing vessel registration and fishing licenses.		
xv	AMS establishes records of fishing vessel registration/ licensing.		
xvi	AMS improves national procedures for fishing vessel registration/ licensing.		
xvii	AMS shares information on registered vessels/issued fishing licenses within a sub-region and/or the region as a whole.		
xviii	AMS establishes a national database for fishing vessel registration/ licensing.		
xix	AMS conducts a systematic assessment of the impact of fishing capacity from a production and economic perspective.		
xx	AMS strengthens fisheries-related institutions and is consistent with national fishery laws/regulations.		
xxi	AMS develops and implements fishery resource enhancement programs/recovery plans. * Coordination with relevant agencies, provide adequate support on research, harmonize and coordinate the implementation of the NPOA capacity with other policies and programs), consider socioeconomic requirements, campaigns, and stakeholder participation.		

SECTION 2 (B): PREPARATION AND IMPLEMENTATION OF NATIONAL PLAN OF ACTION FOR THE MANAGEMENT OF FISHING CAPACITY			
Subsidies and economic incentives			
No.	**ACTION IN RPOA CAPACITY**	**IMPLEMENTATION STATUS**	**ISSUES/ CONTRAINS**
i	AMS assesses the impact of subsidies or economic incentives on the development and implementation of efforts to control fishing capacity.		
ii	AMS reviews various subsidies and economic incentives.		
iii	AMS reduces and eliminates fisheries subsidies/incentive that contribute to overfishing/overcapacity.		

SECTION 2 (C): PREPARATION AND IMPLEMENTATION OF NATIONAL PLAN OF ACTION FOR THE MANAGEMENT OF FISHING CAPACITY			
Regional consideration and cooperation			
No.	**ACTION IN RPOA CAPACITY**	**IMPLEMENTATION STATUS**	**ISSUES/ CONTRAINS**
i	AMS agrees to provide fisheries-related data (vessels, gear, and people engaged in fisheries) at sub-regional areas. Note: as well as other fisheries-related information with regards to catches, landings, and available stock.		
ii	AMS adopt appropriate measures based on scientific evidence.		
iii	AMS establishes subregional/regional fisheries management arrangements/bodies.		

SECTION 3: INTERNATIONAL CONSIDERATIONS AND FISHING IN HIGH SEAS OR RFMO COMPETENT AREAS			
No.	**ACTION IN RPOA CAPACITY**	**IMPLEMENTATION STATUS**	**ISSUES/ CONTRAINS**
i	AMS collaborates with regional fisheries management organizations (RFMOs). - Sharing information - Participate and develop a harmonized data collection system. - Supporting the actions of the respective RFMOs		
ii	AMS comply with the international agreements related to the management of fishing capacity. - No transfer of capacity to the jurisdiction - Compliance with the duties as Flag AMS		

SECTION 4: REQUIRED URGENT MEASURES FOR REGIONAL FISHERIES MANAGEMEMT			
No.	**ACTION IN RPOA CAPACITY**	**IMPLEMENTATION STATUS**	**ISSUES/ CONTRAINS**
i	AMS develops policy frameworks for the sub-regional/regional management of fishing capacity.		
ii	AMS assesses the extent of overcapacity in defined fishing areas. - Trans-boundary - Subregional - Regional		
iii	AMS develops sub-regional/regional conservation and management measures of fish stock that are currently unmanaged regionally.		
iv	AMS conducted fishers'/stakeholders' forum/engagement at subregional/regional levels.		
v	What is the level of political will and awareness of the AMS towards sub-regional/regional fisheries conservation and management measures?		
vi	AMS highly participates and cooperates with the sub-regional/regional monitoring, control, and surveillance (MCS) networks.		

SECTION 5: MECHANISM TO PROMOTE IMPLEMENTATION			
No.	**ACTION IN RPOA CAPACITY**	**IMPLEMENTATION STATUS**	**ISSUES/ CONTRAINS**
i	AMS develops information programs to increase awareness of the need for the management of fishing capacity.		
ii	AMS supports the sharing/exchange of scientific and technical information on issues related to the management of fishing capacity.		
iii	AMS supports capacity building to address issues related to the management of fishing capacity, specify the example of a capacity building program.		
iv	AMS supports institutional strengthening to address issues related to the management of fishing capacity.		
v	AMS provides financial, technical, and other assistance to some developing countries to address issues related to the management of fishing capacity.		
vi	AMS share/report to ASEAN and SEAFDEC on progress of assessment, development, and implementation of their respective plans for the management of fishing capacity.		

Q3) Questionnaire on *Implementation Status of the Regional Plan of Action (RPOA) to Promote Responsible Fishing Practices including Combating Illegal, Unreported and Unregulated (IUU) Fishing in the Region*

ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain
(ASEAN Guidelines IUU)

INSTRUCTION

1 This set of questionnaires is divided into FIVE sections, which are:
i. Section 1 (A)
ii. Section 1 (B)
iii. Section 1 (C)
iv. Section 1 (D)
v. Section 1 (E)

2 To make it easy to navigate, this questionnaire designed by using **TWO** colors, namely:
i. **Light green** refers to questions asked.
ii. **Light yellow** refers to space assigned to the respondent to answer.

3 This questionnaire consists of:
i. Open-ended question: The respondent needs to fill in relevant answers.
e.g., YES/ NO, specify.

4 If you have any inquiries, please contact our secretariat,
Miss Mazalina Ali at mazalina@seafdec.org.my or +609-6175940 / +609-6177867 / +609-6171543.

5 Please answer all questions.

Please provide the following information:	
Name of country	
Contact person	
Designation	
Email address	
Name of organization	
Date of filling out this questionnaire	

SECTION I (A): PREVENTING THE ENTRY OF FISH AND FISHERY PRODUCTS FROM IUU FISHING ACTIVITIES INTO THE SUPPLY CHAIN			
Managing Fishing Activities within an ASEAN Member State			
No.	**ACTION IN RPOA CAPACITY**	**IMPLEMENTATION STATUS**	**ISSUES/ CONTRAINS**
i	States control fishing access through proper registration and licensing system for fishing vessels and gears including their accurate specifications e.g. photographs of vessels, standard vessel markings i.e. colour coding of hull, marking system. *The vessel identification and licensing system of Malaysia could be used as reference by other AMS.		
ii	States promote responsible fishing practices and methods based on the Regional Guidelines for Responsible Fisheries in Southeast Asia: Responsible Fishing Operations, and the RPOA-IUU. States are encouraged to update related laws and regulations as well as a system of reporting catch and compiling appropriate logbook information.		
iii	States are monitoring all fishing vessels by maintaining records and their performance with respect to compliance to their national laws and regulations, including current owners and operators authorized to undertake fishing activities at designated fishing areas.		
iv	States have implemented, where appropriate, a Vessel Monitoring System (VMS) for all commercial fishing vessels licensed by the respective States.		
v	States have intensified efforts to address IUU fishing, especially destructive fishing by promoting community-based management approaches to prevent, deter and eliminate any violations with support from relevant government agencies and communities.		

vi	Coastal states intensify their respective surveillance during fishing operations where appropriate, as well as port state control at designated landing ports (after landing and at market places by checking market reports).		

SECTION I (B): PREVENTING THE ENTRY OF FISH AND FISHERY PRODUCTS FROM IUU FISHING ACTIVITIES INTO THE SUPPLY CHAIN			
Regulating Transshipment and Landing of Fish / Catch across Borders			
No.	**ACTION IN RPOA CAPACITY**	**IMPLEMENTATION STATUS**	**ISSUES/ CONTRAINS**
i	States establish formal arrangements with respect to landings between bordering countries		
ii	States conduct regular bilateral/multi-lateral meetings to discuss mutual agreements on licensing system, data recording, and sharing of information on licensing system, regulations, and other relevant information.		
iii	Port States strengthen measures to regulate fishing vessels accessing their ports for transhipping and/or landing catch and collect and exchange relevant data including origin of catch, among neighbouring countries.		

SECTION I (C): PREVENTING THE ENTRY OF FISH AND FISHERY PRODUCTS FROM IUU FISHING ACTIVITIES INTO THE SUPPLY CHAIN			
Preventing Poaching in the EEZs of ASEAN Member States			
No.	**ACTION IN RPOA CAPACITY**	**IMPLEMENTATION STATUS**	**ISSUES/ CONTRAINS**
i	Coastal States take appropriate actions against fishing vessels operating illegally beyond their designated areas, e.g. through flag States measures, port State measures and coastal State measures.		

ii	States cooperate in compiling a list of vessels reported to have been illegally operating (poaching) beyond their respective EEZs, and share this list among the relevant countries.		
iii	States support in regularly updating information for the Regional Fishing Vessels Record (RFVR) endorsed by the Special SOM -34th AMAF.		
iv	States are establishing mutual bilateral/multilateral agreements among neighbouring countries to set terms and conditions (including enforcement, penalties, and other regulations), for permission to fish in each other's fishing areas.		

SECTION I (D): PREVENTING THE ENTRY OF FISH AND FISHERY PRODUCTS FROM IUU FISHING ACTIVITIES INTO THE SUPPLY CHAIN			
Controlling Illegal Fishing and Trading Practices of Live Reef Food Fish, Reef-based Ornamentals and Endangered Aquatic Species			
No.	**ACTION IN RPOA CAPACITY**	**IMPLEMENTATION STATUS**	**ISSUES/ CONTRAINS**
i	States conduct regular inter- and intra-meetings among relevant authorities (including customs departments) and exporting companies for mutual agreements on harvesting practices and data reporting of live reef food fish, reef-based ornamentals, and endangered aquatic species.		
ii	States use appropriate mechanisms for the monitoring and data collection of live reef food fish and reef-based ornamental trades.		
iii	States ensure that export of endangered aquatic species is avoided, except for research and experimental purposes for which such export should be accompanied by appropriate documents.		

iv	States encourage participation of small-scale/artisanal fishers, who account for majority of LRFF production, in co-management, and to enhance their awareness of the impacts of illegal fishing and trading of such aquatic species.		
v	States establish a network between the LRFF importing and exporting countries, to strengthen LRFFT management at the regional level.		

SECTION I (E): PREVENTING THE ENTRY OF FISH AND FISHERY PRODUCTS FROM IUU FISHING ACTIVITIES INTO THE SUPPLY CHAIN			
Strengthening the Management of Fishing in the High Seas and RFMO Areas			
No.	**ACTION IN RPOA CAPACITY**	**IMPLEMENTATION STATUS**	**ISSUES/ CONTRAINS**
i	Port States strengthen their respective port state measures including control of port entry, use of port services, requirements for pre-port entry notification and designation of ports for fishing vessels.		
ii	Flag States implement, where appropriate, observer programs in accordance with relevant national, regional or international regulations with respect to high seas fisheries.		
iii	Flag States cooperate with the relevant RFMOs in complying with their Catch Document Schemes to prevent the landing of fish and fishery products from IUU fishing in the RFMO areas.		

Q4) Questionnaire on *Current Status of Existing Fisheries Information Systems/Mechanisms*



CURRENT STATUS OF EXISTING FISHERIES INFORMATION SYSTEMS/MECHANISMS

OVERVIEW OF THE QUESTIONNAIRE

1	The objective of this questionnaire is to obtain information related to the existing fisheries information systems or mechanisms in each country. This questionnaire requires each country to answer YES or NO where the answer will be used to see what has been implemented and what gaps exist.
2	This set of questionnaires is divided into **EIGHT** parts, which are: i. Part 1: A(i), A(ii), A(iii), A(iv) B(i) ii. Part 2 iii. Part 3 iv. Part 4 v. Part 5 vi. Part 6 vii. Part 7 viii. Part 8
3	To make it easy to navigate, this questionnaire was designed by using **TWO** colors, which are: i. Light green indicates questions that have been asked. ii. Light yellow designates the respondent's answer space.
4	This questionnaire consists of two types of questions, which are: i. Open-ended question: The respondent needs to fill in relevant answers. ii. Closed-ended question: The respondent needs to choose between the options provided (**YES/NO**).
5	If you have any inquiries, please contact our secretariat, **Miss Mazalina Ali at mazalina@seafdec.org.my or +609-6175940 / +609-6177867 / +609-6171543.**
6	Please answer all questions.

Please provide the following information:	
Name of country	
Contact person	
Designation	
Email address	
Name of organization	
Date of filling out this questionnaire	

Glossary	
Term	**Definition**
Bycatch	Refers to the unintended capture of non-target species while fishing for a specific type of fish or seafood.
Commercial	A commercial fishing vessel is a boat or ship that is used to catch fish and other seafood for sale and profit, rather than for personal use or recreation.
Discard	Refers to the portion of the catch that is thrown back into the sea—either dead or alive—instead of being landed or kept.
Economic value of fish resources	Refers to the worth or benefit that fish resources provide in terms of money or other measurable economic gain. Example, market value, commercial value, subsistence value, Ecological and indirect economic value, recreational value.
Fishing gears per vessel	Refers to the number or types of fishing gear that are used onboard a single fishing vessel.
Fishing vessel	A fishing vessel is a type of boat or ship that is specifically used for catching fish in the sea.
Fishing vessel by type	Refer to classifying fishing boats or ships based on the type of fishing gear they use to catch fish or other seafood.
International fishers	Refers to people who are employed in a country other than their country of origin.
Licensed	Has been approved formally by the relevant authority. Example; the number of fishing vessels licensed is the number of fishing vessels approved by the authority to fished in certain area.
Local fishers	Refers to employees who are citizens of a particular country.
Pelagic fish"	Refers to fish that live in the pelagic zone of the ocean, which means they inhabit the open water column, not near the bottom (benthic zone) or the shore (coastal areas). These fish are typically found in the midwater or surface layers of the sea.
Recreational	Recreational fishing (also known as sport fishing) is fishing done primarily for enjoyment, relaxation, or competition, rather than for commercial purposes or to obtain food for survival.
Small-scale	A small-scale fishing vessel refers to a relatively small boat or ship used for fishing, typically operated by individuals, families, or small crews and are often manually powered or use small engines. They're commonly used in coastal or inland waters, not far from shore. These vessels are often part of artisanal or traditional fisheries.
Supply chain of the landing	Refers to the entire process and flow of fish and seafood from the moment they are caught (landed) at the dock or port, all the way to the final consumer.
Unlicensed	Has not been approved formally by the relevant authority.

PART 1: MARINE CAPTURE FISHERIES						
A(i) - FISHING EFFORT						
Please answer the following questions:						
No.	**Item**		**Licensed**	**Remarks**	**Unlicensed**	**Remarks**
i	State has the formal data for	fishing vessel				
		fishing vessel by type				
		fishing gears per vessel				
		each type of fishing gears for that year				

PART 1: MARINE CAPTURE FISHERIES				
No.	**Please list the three most dominant types of fishing vessels on pelagic fish production.**			
i	Type of fishing vessel used in pelagic fish production (e.g., trawler, gillnetter etc.)			

PART 1: MARINE CAPTURE FISHERIES					
A(ii) - FISHING EFFORT					
Please answer the following questions:					
No.	**Item**	**Criteria**			
i	Please select one or more fishing effort/s recorded during fishing operation for each fishing gear	Trips per month			
		Days per trip			
		Hour per trip			
		Haul per days			
		Haul per hour			
		Hour of fishing operation per day			
		The number of traps per boat			
		Trap setting			
		Hour of trap submerged in the water (soaking time)			
		The number of hooks			
		Hook setting			

PART 1: MARINE CAPTURE FISHERIES						
A(iii) - VESSEL CHARACTERISTICS						
Please answer the following questions:						
No.	**Item**	**Criteria**	**Commercial**	**Remarks**	**Small-scale**	**Remarks**
i	State recorded vessel characteristics	Material				
		Length Overall (LOA)				
		Length				
		Overall breadth				
		Body Depth				
		Gross registered tonnage (GRT)/ gross tonnage (GT)				
		Year built				
		Country in which built				
		Hull conversion - year				
		Propulsive engine (steam-piston, steam-turbine, motor (combustion), electric coupling (diesel electric), others)				
		Fuel (coal, oil, petrol/gasoline, others)				
		Capacity fuel bankers				
		Horse Power (total all engines)				
		Type of propeller(s)				
		Propeller, revolutions per minute (free running)				
		Speed on trials (knots)				
		Changes in propulsive engine				
		Vessel identification marking				
		Vessel reporting system (Eg: eLogbook, logbook etc)				
		Vessel tracking/monitoring				

		system (e.g.: MTU, AIS etc)				
		Type of fish storage/hold (cooling system)				
		Capacity of fish storage				
		Navigation device				
		Fish tracking device				

PART 1: MARINE CAPTURE FISHERIES								
B (i) - TYPE OF LANDING DATA (RESOURCES) RECORDED, LOCATION OF DATA COLLECTION & METHOD OF DATA COLLECTION								
Please answer the following questions:								
No.	**Item**	**Criteria**	**Commercial**	**Remarks**	**Small-scale**	**Remarks**	**Recreational**	**Remarks**
i	Location of data collection	Government fish landing port						
		Private fish landing port - Company						
		Private fish landing port - Individual						
		Others, specify:						
ii	Source of data	Enumerator-private						
		Enumerator-government						
		Fisheries officer/personnel						
		Fishers record (catch log book/ sales receipt)						
		Electronic catch reporting system						
		Others, specify:						

iii	Method of data collection	From all landing						
		Subsampling (e.g: Stratified Random Sampling)						
		Others, specify:						
iv	State records the landing by	Species name						
		Genus name						
		Local name						
		English/ common name						
		Fish group						
		Category						
		Others, specify:						
v	State records the frequency of landing	Daily						
		Weekly						
		Monthly						
		Annually						
		Occasionally						
vi	State records the landing of fish by	Fishing gear						
		Fishing vessels size (GRT/GT/length)						
		Fishing area						
vii	State records the size of fish:	Length						
		Weight						
		Grade of size (e.g., small, medium, large)						

		Others, specify:						
viii	State records the landing of fish by	Commercial fish						
		Trash fish						
		Others, specify:						

PART 2: EMPLOYMENT IN MARINE CAPTURE FISHERIES						
Please answer the following questions:						
No.	**Item**	**Criteria**	**National/ Local**	**International/ Foreign**	**Unspecified**	**Remarks**
i	State records number of fishers on board according to:	Fishing gear				
		Fishing vessels (by size)				
		Fishing zone/area				
		Gender				
		Age				
		Ethnicity				
		Marital status				
		Employment status, e.g., full time, part time, occasional, unemployed				
		Fishers' category, e.g., skipper, mate, deck hand, learner				
		Ownership status, e.g., owner, skipper/owner, shareholder fishers, employee				
ii	State records the number of personnel according to	Onboard (crew)				
		Fishing port				
		Fish processing facility				

	fisheries section	Other fisheries related section, Please specify				
iii	State records the demographic information	Income				

PART 3: INLAND FISHERIES				
Please answer the following questions:				
No.	**Item**	**Criteria**		**Specify:**
i	State recorded the landing from inland fisheries			
ii	State recorded the landing by	Species name		
		Local name		
		English name/common name		
		Water bodies (e.g.: Rivers, lakes, dams)		
		Fishing vessels		
		Fishing gears		
iii	State recorded the values of landings by species based on	Wholesale price		
		Retail price		
iv	State recorded the number of fishers involved in inland fisheries			

PART 4: RECREATIONAL FISHERIES				
No.	**Item**		**Marine**	**Freshwater**
i	State recorded the number of recreational fishers			
ii	State recorded the catch from recreational fishers			
	If yes, state recorded the catch by	Area		
		Water bodies		
		Fishing gear		
		Species name		
		Genus name		
		Local name		
		Common name/English name		

PART 5: IMPORTS AND EXPORTS				
Please answer the following questions:				
No.	**Item**	**Criteria**	**Export**	**Import**
i	State recorded the total value of fishery commodities that has been exported/imported			
ii	State recorded the export/import commodities by	Country		
		Region		
		Resource composition (e.g.: live, frozen, chilled.)		
		Values		
iii	Method of data collection (Eg: Custom declaration, Marine Department), specify:			
iv	State has specific documentation procedure/guideline/scheme in export/import of fishery commodities, specify:			
v	State recorded the method of transportation			

PART 6: FISHERIES PRODUCT/COMMODITY/SUPPLY CHAIN			
Please answer the following questions:			
No.	**Item**	**Criteria**	
i	State recorded the utilization of the landing		
	If yes, state recorded the utilization/product (fish, squid, crustaceans, shrimps, prawns and other aquatic invertebrates:	Live	
		Fresh	
		Frozen-whole	
		Chilled- whole	
		Frozen-fillet	
		Chilled- fillet	
		Processes as fish meal for non-human consumption	
		Processes as fish oil	
		Processes as liver oil	
		Prepared/preserved	
		Salted	
		Dried	
		Others, specify:	
ii		Seaweed	

	Other commodities (marine and freshwater) of the state also include:	Ornamental Fish	
		Aquatic plants	
		Others, specify:	
iii	State recorded the product was marketed/distributed nationally based on	Location	
		Volume	

PART 7: ADDITIONAL INFORMATION				
Please answer the following questions:				
No.	**Item**	**Criteria**		**Remarks**
i	State presenting the Catch Per Unit Effort (CPUE) of the landing			
ii	State calculates the economic value of the fish resources			
iii	State records the amount of bycatch landed			
iv	State records the amount of 'discard'.			
	If yes, please mention the method of data collection			
v	State records the environmental data	pH		
		Salinity (PSU)		
		Temperature (°C)		
		Type of sediment		
		Depth (m)		
		Conductivity (µS/cm)		
		Total dissolved solids (mg/L)		
		Total dissolved oxygen (mg/L)		
		Water current		
		Wind speed		
		Climate change related data		
		Others, specify:		
vi	State records the supply chain of the landings (e.g., main producer to the consumer)			
vii	State records the distribution of the fish by life stages (e.g., larva, juvenile, adult)			

PART 8: FISHERIES INFORMATION SYSTEMS/MECHANISMS				
Please answer the following questions:				
No.	**Item**		**If YES, specify:**	**Constraint**
i	State has fisheries statistics and information system			
ii	State has centralized information systems			
iii	State has systematic fish landing data collection nationally			
iv	State has collaboration between fishers and government personnel in data collection process			
v	State develops systematic analysis of landing data			
vi	State publicly shares the information on the landing data			
vii	Fisheries statistical database/website are easily access by the public			
viii	State has mechanisms for sharing data with regional and international bodies			
ix	State ensures the system is compatible with other regional or global fisheries databases, ensuring smooth data exchange			
x	State shares stock status of the resources with regional and international bodies			

Q5) Questionnaire on *Compilation and Assessment on The Conservation Effort and Management Strategies of Pelagic Species*

COMPILATION AND ASSESSMENT ON THE CONSERVATION EFFORT AND MANAGEMENT STRATEGIES OF PELAGIC SPECIES

OVERVIEW OF THE QUESTIONNAIRE

1 The objective of this questionnaire is:
i. To obtain and compile the information on the current conservation efforts and management strategies of pelagic species conducted by AMSs
ii. To analyse the gaps in the conservation efforts and management strategies of pelagic species in AMSs countries
iii. To obtain and compile potential strategies for better conservation efforts and management of pelagic species

2 This set of questionnaires is divided into **FIVE** parts, which are:
i. Part 1
ii. Part 2: A & B
iii. Part 3
iv. Part 4
v. Part 5

3 To make it easy to navigate, this questionnaire was designed by using **TWO** colors, which are:
i. Light green indicates questions that have been asked.
ii. Light yellow designates the respondent's answer space.

4 This questionnaire consists of two types of questions, which are:
i. Open-ended question: The respondent needs to fill in relevant answers.
ii. Closed-ended question: The respondent needs to choose between the options provided (e.g. **YES/NO**).

5 If you have any inquiries, please contact our secretariat, **Miss Mazalina Ali at mazalina@seafdec.org.my or +609-6175940 / +609-6177867 / +609-6171543.**

6 Please answer all questions.

Please provide the following information:	
Name of country	
Contact person	
Designation	
Email address	
Name of organization	
Date of filling out this questionnaire	

Glossary	
Term	**Definition**
AIS	Automatic Identification System
Bycatch	Refers to the unintended capture of non-target species while fishing for a specific type of fish or seafood.
Climate-driven shifts	Changes in species distribution caused by warming oceans, changes in sea ice, increased storm frequency, and ocean acidification
Community-based allocations	Involve granting resource use rights, like fishing or carbon emission allowances, to a community or group rather than individuals or companies, aiming to achieve social, economic, and environmental goals
Discard	Refers to the portion of the catch that is thrown back into the sea—either dead or alive—instead of being landed or kept.
Ecosystem services	Also known as environmental services, are all those benefits that an ecosystem provides to society, and which influence the health, quality of life, and economic development of the people who make it up (benefits that human get from nature)
FAD	Fish Aggregating device
Fishing vessel	A fishing vessel is a type of boat or ship that is specifically used for catching fish in the sea.
Forage fish	Small schooling species of fish that serve as prey for larger ecologically, recreationally, culturally, and commercially important fish, marine mammals, and sea birds
Gear marking	The practice of physically or electronically marking fishing gear to establish ownership and legality, prevent abandoned, lost, or otherwise discarded fishing gear (ALDFG), combat illegal, unreported, and unregulated (IUU) fishing, reduce gear conflicts, and enhance safety at sea
Individual transferable quotas (ITQs)	Allocation of shares or portions of a total allowable catch (TAC) to individual fishers, vessels, communities or others with an interest in the fishery
IUU fishing	Illegal, unreported, unregulated fishing
Pelagic fish	Refers to fish that live in the pelagic zone of the ocean, which means they inhabit the open water column, not near the bottom (benthic zone) or the shore (coastal areas). These fish are typically found in the midwater or surface layers of the sea.
Predator-prey dynamics	Complex interactions between predator and prey fish species. Example: Predation can regulate the dynamics of prey populations directly by reducing recruitment and survival. Prey can also influence predators as prey quantity and quality affect feeding rates, growth, and reproductive success of predators.
Restocking	The release of hatchery seed to rebuild severely depleted fish stocks
Sea ranching	Release of hatchery seed in-put, grow and take operations
Slot Limit/ harvest limit	A slot limit is a type of fisheries regulation that specifies a size range of fish that must be released, while allowing fish both smaller and larger than that range to be harvested (harvest of intermediate size fish).
Stock enhancement	The release of hatchery seed to improve self-sustaining populations
TED	Turtle Excluder Device
Total Allowable Catches (TACs)	A catch limit, expressed in weight, that sets the maximum amount of a specific fish species or stock that can be harvested from a particular fishery during a given period, usually a year

PART 1: MAIN ISSUES IN THE FISHERIES OF PELAGIC SPECIES OF AMS			
The questions in this section are intended to obtain information regarding pelagic fish fisheries issues in each country. ***Pick and rank by order the TOP 5 issues that occur in your country.**			
No.	**Item**		**Top 5 issues**
i	Please select the main issues related to the management of pelagic resources in AMS	IUU (illegal, unreported, unregulated) fishing	
		Changes in species distribution	
		Overfishing	
		Overcapacity	
		Use of unsustainable fishing gears	
		Increase of fishing effort	
		Lack of management and conservation measures	
		Lack of data collection at fish landing sites	
		Lack of regulated/ authorised fish landing site	
		Lack of capacity in data collection	
		Lack of systematic data collection	
		Lack of regular fish stock assessment	

PART 2: CURRENT CONSERVATION EFFORTS AND MANAGEMENT STRATEGIES				
A. Current conservation efforts and management strategies implemented				
This section contains questions about the current management measures and conservation efforts for pelagic fisheries in AMS. Select YES if these measures and efforts are currently being implemented in your country, and provide specific details. ***This question pertains to management measures and conservation efforts that have already been implemented and are not in a trial, pilot, or experimental phase.**				
No.	**Item**		**YES/ NO**	**Specify:**
i	Output control: catch Limits and Quotas	Total Allowable Catches (TACs) set based on stock assessments		
		Allocation of quotas among fleets or vessels		
		Minimum fish size limit		
		Maximum fish size limit		
		Slot limit		

		Catch prohibition of certain pelagic species			
		Other (Please specify)			
ii	Gear Regulations and Selectivity Improvements	Use of circle hooks			
		Bycatch/ incidental reduction devices/ mitigation (e.g., Pinger, bird-scaring lines)			
		Control on gear modification (e.g., Prohibit high opening of trawl net)			
		Control on fishing aids in driftnets and purse seine operation (e.g., Intensity of lights, FADs, fish site identification, fish finder)			
		Gear marking			
		Control on gear specification	Mesh size control		
			Cod end mesh size		
			Depth of the net		
			Length of net		
			Other (Please specify)		
iii	Fishing Effort/ Input control	Limitation of the number of fishing vessels			
		Limitation of the number of fishing gears			
		Licensing and vessel registration system			
		Control on the carrier vessel and mother boat	Size		
			Numbers		
		Control on horsepower of fishing vessels			
		Control the number of light boats			
		Control of light usage on fishing vessel	Intensity of light		
			Colour of light		
			Use of underwater light		
			Other (Please specify)		
iv	Spatial and Temporal Closures	Marine protected areas (MPAs)			
		Closed season			
		Closed area			
		Other closures (Please specify)			

v	Ecosystem-Based Approaches	Monitoring predator-prey dynamics		
		Monitoring forage fish exploitation		
		Monitoring climate-driven shifts in pelagic ecosystems		
		Protecting ecosystem services, not just target species		
		Other (Please specify)		
vi	Monitoring, Control, and Surveillance (MCS)	Vessel Monitoring Systems (VMS)		
		Automatic Identification System (AIS)		
		e-Navigation		
		Manual logbooks		
		Electronic logbooks		
		Onboard observers		
		Port State Measures to prevent IUU fishing		
		Other (Please specify)		
vii	Resource enhancement measures	Deployment of artificial reef		
		Sea Ranching, Stock Enhancement, Restocking		
		Habitat restoration and rehabilitation		
		Fisheries Refugia		
		Other (Please specify)		

PART 2: CURRENT CONSERVATION EFFORTS AND MANAGEMENT STRATEGIES				
B. Current regulatory and governance frameworks to implement conservation goals effectively.				
This section contains questions about the Current regulatory and governance frameworks for pelagic fisheries in AMS. Select YES if these regulatory and framework are currently being implemented in your country, and provide specific details. ***This question pertains to management measures and conservation efforts that have already been implemented and are not in a trial, pilot, or experimental phase.**				
No.	**Item**		**YES/ NO**	**Specify:**
i		National Management Plans		

	Governance	Country adopts regional regulation and management measures (e.g., FAO Code of Conduct for Responsible Fisheries)		
		Periodically revise regulation or management measures		
		Main agency in the country responsible to formulate the management measure of pelagic resources (Please specify)		
		Country has fishers' association		
		Country adopting precautionary approach		
		Country adopting marine spatial planning		
		Country has MCS system		
ii	Rights-Based Management	Individual transferable quotas (ITQs)		
		Community-based quota allocations		
		Co-management with fishing communities, especially for small-scale (artisanal/ traditional) pelagic fisheries.		
iii	Adaptive Management	Incorporating new data and scientific advice into dynamic decision-making.		
		Adjusting strategies in response to climate change impacts (e.g., Shifting distributions of tuna stocks).		
iv	Traceability and Market-Based Tools	Eco-certifications [(e.g., Marine Stewardship Council (MSC)]		
		Catch documentation schemes		
		Trade restrictions on IUU (illegal, unreported, unregulated) products		
v	Capacity Building and Stakeholder Engagement	Train local managers and fishers in data collection and stock assessment		
		Engagement with fishers to enhance compliance		
		Inclusive governance involving governments, NGOs, industry, and communities		
vi	List of pelagic fish group/ species that have their own management plans			i. ii. iii.

PART 3: CHALLENGES IN IMPLEMENTATION OF CURRENT CONSERVATION AND MANAGEMENT STRATEGIES			
Please determine the challenges faced in implementing management measures, conservation efforts on pelagic fisheries in AMS. Select YES for the challenges faced by your country, and provide specific details. ***Pick and rank by order the TOP 5 challenges that occur in your country.**			
No.	**Item**	**Top 5 challenges**	**Specify:**
i	IUU (illegal, unreported, unregulated) fishing		
ii	Limited cooperation from fishers		
iii	Limited cooperation from other stakeholders		
iv	Limited support from government		
v	Climate change and distributional shifts of species		
vi	Lack of Monitoring, Control, and Surveillance (MCS)		
vii	Financial/ budget constraint		
viii	Overlapping of jurisdiction		
ix	Limited capacity (e.g., stock assessment, enforcement)		
x	Limited capability (e.g., stock assessment, enforcement)		
xi	Regulatory limitation and gaps		
xii	Lack of awareness among fishers		
xiii	Lack of compliance among fishers		
xiv	Inconsistency in governance mechanism		

PART 4: POTENTIAL NEW STRATEGIES IN CONSERVATION EFFORTS AND MANAGEMENT OF PELAGIC FISH			
This section aims to obtain input regarding strategies and approaches that will be taken by AMS in the management and conservation of pelagic fisheries in the future. Select YES for the related strategies in your country, and provide specific details. **Can choose more than one**			
No.	**Item**	**YES/ NO**	**Specify:**
i	Introduction of more sustainable fishing gears		
ii	Introduction of new fishing gear technologies		
iii	Development of more efficient post-harvest and processing equipment		
iv	Monitoring predator-prey dynamics		
v	Monitoring forage fish exploitation		
vi	Monitoring climate-driven shifts in pelagic ecosystems		
vii	Protecting ecosystem services, not just target species		
viii	Train local managers and fishers in data collection and stock assessment		
ix	Engagement with fishers to enhance compliance		
x	Inclusive governance involving governments, NGOs, industry, and communities.		
xi	Considering socioeconomic of fishers in formulation of management measures		
xii	Deployment of artificial reef		
xiii	Adopting artificial intelligence (AI) technology in data collection		
xiv	Increase financial/ funding/ allocation		
xv	Establish/ strengthen co-management with communities		
xvi	Other (Please specify)		

PART 5: SUCCESS STORIES	
This section is for sharing success stories related to the management and conservation of pelagic fish in each AMS. ***You can share more than one success story with us. This success story will be presented during regional technical consultation (RTC).**	
No.	**Success story**
i	
ii	
iii	

Annex 3: Workshops' list of participants and photos

Activity 1.1

Title: The Workshop for Developing Questionnaire for Management and Assessment of Fishing Capacity
Date: 27 – 29 August 2024
Venue: Rocana Hotel, Kuantan, Pahang, Malaysia

LIST OF PARTICIPANTS

1.	Assoc. Prof. Dr. Rumeaida Mat Piah	Resource Person from UMT
2.	Dr. Abdullah Mohamad	Resource Person from UMT
3.	Ms. Norhanida Daud	FRI Batu Maung, Pulau Pinang, Malaysia
4.	Mr. Sallehudin Jamon	FRI Kampung Acheh, Perak, Malaysia
5.	Mr. Ryon Siow	FRI Kampung Acheh, Perak, Malaysia
6.	Mr. Abd Haris Hilmi Ahmad Arshad	SEAFDEC/MFRDMD
7.	Dr. Masahito Hirota	SEAFDEC/MFRDMD
8.	Ms. Mazalina Ali	SEAFDEC/MFRDMD
9.	Mr. Mohammad Faisal Md. Saleh	SEAFDEC/MFRDMD
10.	Mr. Mohd Tamimi Ali Ahmad	SEAFDEC/MFRDMD
11.	Mr. Mohamad Syahidan Azmi	SEAFDEC/MFRDMD
12.	Mr. Nor Azman Zakaria	SEAFDEC/MFRDMD
13.	Mr. Muhammad Khairul Nizam Man	SEAFDEC/MFRDMD
14.	Mr. Mohamed Rukhemei Abdul Hamid	SEAFDEC/MFRDMD


REGISTRATION


WORKSHOP FOR DEVELOPING QUESTIONNAIRE
FOR MANAGEMENT AND ASSESSMENT
OF FISHING CAPACITY
KUANTAN, MALAYSIA
CHIEF OF MFRDMD
SDC


RESOURCE PERSON
FRIKA


MFRDMD


FRIKA


RESOURCE PERSON




WORKSHOP FOR DEVELOPING QUESTIONNAIRE
FOR MANAGEMENT AND ASSESSMENT
OF FISHING CAPACITY
Date :
27 29 AUGUST 2024
Venue :
KUANTAN, MALAYSIA
CHIEF OF MFRDMD
SDC

Activity 1.2

Title: The Regional Hybrid Kick-off Meeting for the Implementation and Assessment of ASEAN Regional Plan of Action for Management of Fishing Capacity
Date: 28 – 29 October 2024
Venue: Grand Alora Hotel, Alor Star, Kedah, Malaysia

LIST OF PARTICIPANTS

1.	Assoc. Prof. Dr. Rumeaida Mat Piah	Resource Person from UMT
2.	Dr. Abdullah Mohamad	Resource Person from UMT
3.	Ms. Haryati Abd Wahab	DOF Malaysia
4.	Ms. Noor Suhailis Zelani	DOF Malaysia
5.	Ms. Khaitrul Ediana Mohd Tahir	DOF Malaysia
6.	Mr. Sallehudin Jamon	FRI Kampung Acheh, Perak, Malaysia
7.	Mr. Ryon Siow	FRI Kampung Acheh, Perak, Malaysia
8.	Mr. Jamil Musel	FRI Bintawa, Sarawak, Malaysia
9.	Mr. Ernest Jinuat	DOF Sabah, Malaysia
10.	Mr. Affan Nasruddin Roshid	JPLS, Sarawak, Malaysia
11.	Mr. Abd Haris Hilmi Ahmad Arshad	SEAFDEC/MFRDMD
12.	Dr. Masahito Hirota	SEAFDEC/MFRDMD
13.	Ms. Mazalina Ali	SEAFDEC/MFRDMD
14.	Mr. Mohammad Faisal Md Saleh	SEAFDEC/MFRDMD
15.	Mr. Muhammad Amirullah Al Amin Ayob	SEAFDEC/MFRDMD
16.	Ms. Hamizah Nadia Alias @ Yusof	SEAFDEC/MFRDMD
17.	Mr. Mohamad Syahidan Azmi,	SEAFDEC/MFRDMD
18.	Ms. Khairiah Jaafar	SEAFDEC/MFRDMD
19.	Mr. Rosdi Mohd Nor	SEAFDEC/MFRDMD
20.	Mr. Ahmad Fairuz Mohamad	SEAFDEC/MFRDMD
21.	Ms. Nur Nabihah Arieyshabella Abdul Razif	Internship student (UMT)
22.	Mr. Muhammad Ikhwan Hashim	Internship student (UMT)
23.	Mr. Nurfarhan Yusup	Internship student (UMT)
24.	Ms. Nur Hayati Jusof	Internship student (UiTM Jengka)
25.	Ms. Najwa Athirah Zakaria	Internship student (UiTM Jengka)

Online participants

1.	Mr. Ching Uy	Cambodia
2.	Mr. Seyha Ly	Cambodia
3.	Mr. Alza Rendian	Indonesia
4.	Mr. Myat Thiha Saw	Myanmar
5.	Mr. Soe Win	Myanmar
6.	Dr. Nipa Kulanujaree	Thailand
7.	Ms. Nguyen Thi Hong Nhung	Viet Nam




REGIONAL HYBRID KICK-OFF MEETING
FOR THE IMPLEMENTATION AND ASSESSMENT
OF THE ASEAN REGIONAL PLAN OF ACTION
FOR THE MANAGEMENT OF FISHING CAPACITY


GRAND ALORA HOTEL




HQ DOF M


FRI BINTAWA




KELUAR

Activity 1.3

Title: The Workshop on the Analysis of the Regional Fishing Capacity Questionnaire
Date: 9 – 12 April 2025
Venue: HIG Hotel, Langkawi, Kedah, Malaysia

LIST OF PARTICIPANTS

1.	Assoc. Prof. Dr. Rumeaida Mat Piah	Resource Person from UMT
2.	Dr. Abdullah Mohamad	Resource Person from UMT
3.	Ms. Khaitrul Ediana Mohd Tahir	DOF Malaysia
4.	Mr. Mohamad Nur Hakim Abdullah	DOF Malaysia
5.	Mr. Sallehudin Jamon	FRI Kampung Acheh, Perak, Malaysia
6.	Mr. Jamil Musel	FRI Bintawa, Sarawak, Malaysia
7.	Ms. Norhanida Daud	FRI Batu Maung, Pulau Pinang, Malaysia
8.	Mr. Abd Haris Hilmi Ahmad Arshad	SEAFDEC/MFRDMD
9.	Dr. Masahito Hirota	SEAFDEC/MFRDMD
10.	Ms. Mazalina Ali	SEAFDEC/MFRDMD
11.	Mr. Mohammad Faisal Md Saleh	SEAFDEC/MFRDMD
12.	Mr. Muhammad Amirullah Al Amin Ayob	SEAFDEC/MFRDMD
13.	Ms. Hamizah Nadia Alias @ Yusof	SEAFDEC/MFRDMD
14.	Ms. Khairiah Jaafar	SEAFDEC/MFRDMD
15.	Mr. Rosdi Mohd Nor	SEAFDEC/MFRDMD
16.	Mr. Nor Azman Zakaria	SEAFDEC/MFRDMD
17.	Mr. Mohd Saki Noor	SEAFDEC/MFRDMD
18.	Mr. Mohd Sukri Muda	SEAFDEC/MFRDMD
19.	Mr. Noredzuan Hakimi Ghani	SEAFDEC/MFRDMD
20.	Mr. Muhammad Khairul Nizam Man	SEAFDEC/MFRDMD
21.	Mr. Azmeer Mohd Yusof	SEAFDEC/MFRDMD


HG HOTEL LANGKAWI


WORKSHOP ON THE ANALYSIS OF THE REGIONAL FISHING CAPACITY QUESTIONNAIRE


RESOURCE PERSON


HQ DOFM


FRI BINTAWA







Activity 1.4

Title: The Regional Technical Consultation on Fishing Capacity Profiles and Implementation Status of the RPOA-Capacity in the Asian Region
Date: 25 – 27 February 2025
Venue: AnCasa Hotel, Kuala Lumpur, Malaysia

Regional Technical Consultation on Fishing Capacity Profiles and Implementation Status of the RPOA-Capacity in the Asian Region
25-27 February 2025
Kuala Lumpur, Malaysia

PROVISIONAL PROSPECTUS & AGENDA

1. Background

In 2021, total marine capture fisheries production of ASEAN Member States (AMSs) was 17.95 million tonnes, a slight decrease of 1.48 percent compared with 2020, and 2.11 percent lower than the most recent peak of 18.33 million tonnes in 2018. Nonetheless, such production in 2021 still contributed approximately 22.35% to the global marine capture fisheries production. The total number of fishing vessels in the Asian region was increased from 693,641 vessels in 2018 to 1,051,626 vessels in 2021.

The rising number of fishing vessels 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. The sector also faces major challenges from climate change and disasters, water scarcity, pollution, biodiversity loss and other anthropogenic impacts. We need to accelerate efforts to ensure 100 percent of fishery stocks are placed under effective management, to reverse unsustainable practices, combat illegal, unreported and unregulated fishing, and reduce overfishing.

In line with the resolution and Plan of Action for ASEAN Region Towards 2030, this project aims to enhance ASEAN cooperation and facilitate the improvement of regional fisheries information systems/mechanisms through the implementation of RPOA-Capacity in the selected pelagic species fisheries management towards resource sustainability and environmental well-being. This project will be implemented for 2 years from April 2024 until March 2026 with a donor from Japan-ASEAN Integration Fund (JAIF) involving government agencies engaging in fisheries management in all AMSs except Lao PDR.

SEAFDEC/MFRDMD has conducted a series of meeting in 2024 *i.e.* 1) the Workshop for Developing Questionnaire for Management and Assessment of Fishing Capacity from 27 to 29

August 2024, in Kuantan, Pahang, Malaysia, 2) the Regional Hybrid Kick-off Meeting for the Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity via video conference from 28 to 29 October 2024 in Alor Setar, Kedah, Malaysia, and 3) the Workshop for Developing Questionnaire for Management and Assessment of Fishing Capacity from 24 to 26 December 2024, in Kota Bharu, Kelantan, Malaysia.

2. Objective of the Meeting

The main purpose of this RTC is to share information among AMSs on the feedback of the questionnaire on the fishing capacity profile, implementation status of the RPOA-Capacity and NPOA-IUU.

3. Expected Outputs

The main output from this RTC is the compilation of the feedback of the questionnaire on the fishing capacity profile, implementation status of the RPOA-Capacity and NPOA-IUU.

4. Date and Venue of the Meeting

The Regional Technical Consultation on Fishing Capacity Profiles and Implementation Status of the RPOA-Capacity in the Asian Region will be organized on 25 – 27 February 2025 in Kuala Lumpur, Malaysia.

5. Participants of the Meeting

It is envisaged that the participants of the meeting will be:

a. Two resource persons
b. Two representatives from AMSs except Lao PDR and Singapore
c. Representatives from Fisheries Research Institute (FRI) Kg. Acheh, Perak, FRI Batu Maung, Pulau Pinang, and FRI Bintawa, Sarawak
d. Two representatives from SEAFDEC Secretariat and / or Training Department
e. Chief, Deputy Chief, Project Coordinator, and relevant officers from SEAFDEC/MFRDMD

6. Tentative Agenda

Agenda 1: Opening of the Meeting
Agenda 2: Adoption of Agenda
Agenda 3: Introduction of the Project
Agenda 4: Country Presentation on Fishing Capacity Profile
Agenda 5 Country Presentation on Implementation Status of RPOA-Capacity
Agenda 6: Country Presentation on Implementation Status of ASEAN Guidelines IUU
Agenda 7: Finalization of the Questionnaire on Current Status of Existing Fisheries Statistics and Information or Relevant System
Agenda 8: Conclusion and Way Forward

LIST OF PARTICIPANTS

1.	Assoc. Prof. Dr. Rumeaida Mat Piah	Resource Person from UMT
2.	Dr. Abdullah Mohamad	Resource Person from UMT
3.	Ms. Desimawati Haji Metali	Brunei Darussalam
4.	Ms. Siti Nur Nisrina Matali	Brunei Darussalam
5.	Dr. Touch Bunthang	Cambodia
6.	Mr. Chhuon Kimchhea	Cambodia
7.	Mr. Haryo Topo Yuwono	Indonesia
8.	Mr. Hasan El Fakhri	Indonesia
9.	Mr. Haji Bakri Miswan	Malaysia
10.	Ms. Khaitrul Ediana Mohd Tahir	Malaysia
11.	Mr. Mohamad Nur Hakim Abdullah	Malaysia
12.	Mr. Syed Yusuf Wan Drahman	Malaysia
13.	Mr. Aung Nyi Toe	Myanmar
14.	Mr. Zaw Khaing	Myanmar
15.	Ms. Kima Karla Habala Cedo	Philippines
16.	Mr. Weerapol Thitipongtrakul	Thailand
17.	Mr. Preecha Phothong	Thailand
18.	Dr. Vu Viet Ha	Viet Nam
19.	Mr. Nguyen Van Minh	Viet Nam
20.	Mr. Sallehudin Jamon	FRI Kampung Acheh, Perak, Malaysia
21.	Mr. Ryon Siow	FRI Kampung Acheh, Perak, Malaysia
22.	Ms. Norhanida Daud	FRI Batu Maung, Penang, Malaysia
23.	Mr. Qhairil Shyamri bin Rosli	FRI Bintawa, Sarawak, Malaysia
24.	Ms. Saivason Klinsukhon	SEAFDEC Secretariat
25.	Ms. Yanida Suthipol	SEAFDEC Training Department
26.	Mr. Abd Haris Hilmi Ahmad Arshad	SEAFDEC/MFRDMD
27.	Dr. Masahito Hirota	SEAFDEC/MFRDMD
28.	Ms. Mazalina Ali	SEAFDEC/MFRDMD
29.	Mr. Mohammad Faisal Md Saleh	SEAFDEC/MFRDMD
30.	Mr. Muhammad Amirullah Al Amin Ayob	SEAFDEC/MFRDMD
31.	Ms. Hamizah Nadia Alias @ Yusof	SEAFDEC/MFRDMD
32.	Ms. Khairiah Jaafar	SEAFDEC/MFRDMD
33.	Mr. Rosdi Mohd Nor	SEAFDEC/MFRDMD
34.	Ms. Fauzana Che Su	SEAFDEC/MFRDMD
35.	Mr. Nor Azman Zakaria	SEAFDEC/MFRDMD
36.	Mr. Mohd Saki Noor	SEAFDEC/MFRDMD
37.	Mr. Mohd Sukri Muda	SEAFDEC/MFRDMD
38.	Mr. Noredzuan Hakimi Ghani	SEAFDEC/MFRDMD
39.	Mr. Muhammad Khairul Nizam Man	SEAFDEC/MFRDMD
40.	Mr. Azmeer Mohd Yusof	SEAFDEC/MFRDMD
41.	Mr. Mohamed Rukhemei Abdul Hamid	SEAFDEC/MFRDMD




THE REGIONAL TECHNICAL CONSULTATION
ON FISHING CAPACITY PROFILES AND
IMPLEMENTATION STATUS OF THE
RPOA - CAPACITY IN THE ASIAN REGION
25 - 27 FEBRUARY 2025
KUALA LUMPUR, MALAYSIA


THE REGIONAL TECHNICAL CONSULTATION
ON FISHING CAPACITY PROFILES AND
IMPLEMENTATION STATUS OF THE
A - CAPACITY IN THE ASIAN REGION
SDC


SDC
RESOURCE PERSON






PHILIPPINES


CAMBODIA

Activity 2.1

Title: Report of the Workshop for Developing Questionnaire on the Current Status of Existing Fisheries Statistics and Information or Relevant System in AMSs
Date: 24 – 26 December 2024
Venue: H Elite Hotel, Kota Bharu, Kelantan, Malaysia

LIST OF PARTICIPANTS

1.	Assoc. Prof. Dr. Rumeaida Mat Piah	Resource Person from UMT
2.	Dr. Abdullah Mohamad	Resource Person from UMT
3.	Ms. Bahrinah Bahrim	DOF Malaysia
4.	Mr. Muhammad Shakirin Suhaimi	DOF Malaysia
5.	Mr. Sallehudin Jamon	FRI Kampung Acheh, Perak, Malaysia
6.	Mr. Wan Muhammad Luqman Wan Rosdi	FRI Kampung Acheh, Perak, Malaysia
7.	Ms. Norhanida Daud	FRI Batu Maung, Pulau Pinang, Malaysia
8.	Mr. Abd Haris Hilmi Ahmad Arshad	SEAFDEC/MFRDMD
9.	Ms. Mazalina Ali	SEAFDEC/MFRDMD
10.	Mr. Mohammad Faisal Md Saleh	SEAFDEC/MFRDMD
11.	Mr. Muhammad Amirullah Al Amin Ayob	SEAFDEC/MFRDMD
12.	Mr. Mohamad Syahidan Azmi,	SEAFDEC/MFRDMD
13.	Ms. Norwani Ab. Ghani	SEAFDEC/MFRDMD
14.	Mr. Nor Azman Zakaria	SEAFDEC/MFRDMD
15.	Mr. Mohd Saki Noor	SEAFDEC/MFRDMD
16.	Mr. Mohd Sukri Muda	SEAFDEC/MFRDMD
17.	Mr. Noredzuan Hakimi Ghani	SEAFDEC/MFRDMD
18.	Mr. Muhammad Khairul Nizam Man	SEAFDEC/MFRDMD
19.	Mr. Azmeer Mohd Yusof	SEAFDEC/MFRDMD
20.	Mr. Mohamed Rukhemie Abdul Hamid	SEAFDEC/MFRDMD
21.	Mr. Mohd Zulazlan Mat Ripin	SEAFDEC/MFRDMD
22.	Mr. Muhammad Ikhwan Hashim	Latihan Industri (UMT)
23.	Mr. Nurfarhan Yusup	Latihan Industri (UMT)
24.	Ms. Najwa Athirah Zakaria	Latihan Industri (UiTM Jengka)




CHIEF OF MFRDMD


RESOURCE PERSON


PROJECT COORDINATOR


FRIKA


MFRDMD


FRIBM



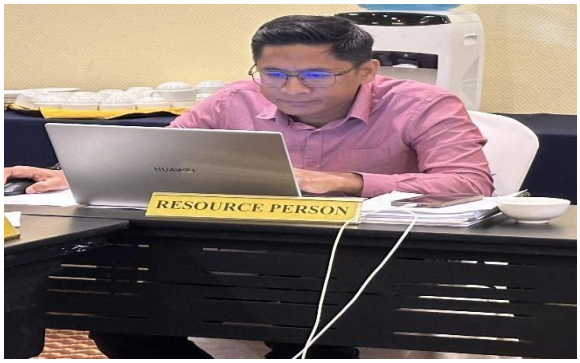
Activity 2.2

Title: Workshop on the Assessment of Regional Fisheries Information or Mechanism Questionnaire
Date: 17 – 18 July 2025
Venue: Holiday Inn Resort, Cherating, Pahang, Malaysia

LIST OF PARTICIPANTS

1.	Assoc. Prof. Dr. Rumeaida Mat Piah (online)	Resource Person from UMT
2.	Dr. Abdullah Mohamad	Resource Person from UMT
3.	Ms. Haryati Abd Wahab	DOF Malaysia
4.	Ms. Marlinda Anim Marham	DOF Malaysia
5.	Mr. Sallehudin Jamon	FRI Kampung Acheh, Perak, Malaysia
6.	Mr. Ryon Siow	FRI Kampung Acheh, Perak, Malaysia
7.	Mr. Jamil Musel	FRI Bintawa, Sarawak, Malaysia
8.	Ms. Norhanida Daud	FRI Batu Maung, Pulau Pinang, Malaysia
9.	Mr. Lawrence Kissol Jr	DOF Sabah, Malaysia
10.	Mr. Abd Haris Hilmi Ahmad Arshad	SEAFDEC/MFRDMD
11.	Ms. Mazalina Ali	SEAFDEC/MFRDMD
12.	Mr. Mohammad Faisal Md Saleh	SEAFDEC/MFRDMD
13.	Ms. Hamizah Nadia Alias @ Yusof	SEAFDEC/MFRDMD
14.	Ms. Khairiah Jaafar	SEAFDEC/MFRDMD
15.	Mr. Rosdi Mohd Nor	SEAFDEC/MFRDMD
16.	Ms. Fauzana Che Su	SEAFDEC/MFRDMD
17.	Ms. Che Nurfatihah Che Le @ Che Ali	SEAFDEC/MFRDMD
18.	Ms. Nurul Syazwani Mustaffa	SEAFDEC/MFRDMD
19.	Mr. Mohamed Rukhemei Abdul Hamid	SEAFDEC/MFRDMD
20.	Mr. Ahmad Fairuz Mohamad	SEAFDEC/MFRDMD


WORKSHOP
ON THE
ASSESSMENT
OF REGIONAL
FISHERIES
INFORMATION/
MECHANISMS
QUESTIONNAIRE
WORKSHOP
ON THE
ASSESSMENT
OF REGIONAL
FISHERIES
INFORMATION/
MECHANISMS
QUESTIONNAIRE


RESOURCE PERSON






KEUARZI


FRI KA


FRI KA


WORKSHOP ON THE ASSESSMENT OF
REGIONAL FISHERIES INFORMATION /
MECHANISMS QUESTIONNAIRE
MFRDMD

Activity 2.3

Title: The Regional Technical Consultation on the Current Status of the Regional Fisheries Information or Mechanism in the Asian Region
Date: 28 – 30 May 2025
Venue: TAMU Hotel, Kuala Lumpur, Malaysia

Regional Technical Consultation on Current Status of Regional Fisheries Information/Mechanisms in the Asian Region

28-30 May 2025
Kuala Lumpur, Malaysia

PROVISIONAL PROSPECTUS

1. Background

In 2021, total marine capture fisheries production of ASEAN Member States (AMSs) was 17.95 million tonnes, a slight decrease of 1.48 percent compared with 2020, and 2.11 percent lower than the most recent peak of 18.33 million tonnes in 2018. Nonetheless, such production in 2021 still contributed approximately 22.35% to the global marine capture fisheries production. The total number of fishing vessels in the Asian region was increased from 693,641 vessels in 2018 to 1,051,626 vessels in 2021.

The rising number of fishing vessels 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. The sector also faces major challenges from climate change and disasters, water scarcity, pollution, biodiversity loss and other anthropogenic impacts. We need to accelerate efforts to ensure 100 percent of fishery stocks are placed under effective management, to reverse unsustainable practices, combat illegal, unreported and unregulated fishing, and reduce overfishing.

In line with the resolution and Plan of Action for ASEAN Region Towards 2030, this project aims to enhance ASEAN cooperation and facilitate the improvement of regional fisheries information systems/mechanisms through the implementation of RPOA-Capacity in the selected pelagic species fisheries management towards resource sustainability and environmental well-being. This project will be implemented for 2 years from April 2024 until March 2026 with donors from Japan-ASEAN Integration Fund (JAIF) involving government agencies engaging in fisheries management in all AMSs.

SEAFDEC/MFRDMD has conducted a series of meeting in 2024 *i.e.* 1) the Workshop for Developing Questionnaire for Management and Assessment of Fishing Capacity from 27 to 29 August 2024, in Kuantan, Pahang, Malaysia, 2) the Regional Hybrid Kick-off Meeting for the Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of

Fishing Capacity via video conference from 28 to 29 October 2024 in Alor Setar, Kedah, Malaysia, and 3) the Workshop for Developing Questionnaire for Management and Assessment of Fishing Capacity from 24 to 26 December 2024, in Kota Bharu, Kelantan, Malaysia. Additionally, the project recently convened the Regional Technical Consultation on Fishing Capacity Profiles and Implementation Status of the RPOA-Capacity from 25 to 27 February 2025 in Kuala Lumpur, Malaysia.

2. Objective of the Meeting

The main purpose of this RTC is to share the questionnaire responses regarding the current status of regional fisheries information/mechanisms among AMSs.

3. Expected Outputs

The main output from this RTC is the compilation of the questionnaire responses on the current status of the regional fisheries information/mechanisms.

4. Date and Venue of the Meeting

The Regional Technical Consultation on Current Status of Regional Fisheries Information/Mechanisms in the Asian Region will be organized on 28-30 May 2025 in Kuala Lumpur, Malaysia.

5. Participants of the Meeting

It is envisaged that the participants of the meeting will be:

f. Two resource persons
g. Two representatives from AMSs
h. Representatives from Fisheries Research Institute (FRI) Kg. Acheh, FRI Batu Maung, FRI Bintawa, and DOF Sabah
i. Two representatives from SEAFDEC Secretariat and/or Training Department
j. Chief, Deputy Chief, Project Coordinator, and relevant officers from SEAFDEC/MFRDMD

6. Tentative Agenda

Agenda 1: Opening of the Meeting
Agenda 2: Adoption of Agenda
Agenda 3: Introduction of the Project
Agenda 4: Analysis on the Regional Fishing Capacity Questionnaire
Agenda 5: Country Presentation on Current Status of Regional Fisheries Information /Mechanisms
Agenda 6: Way Forward of the Project
Agenda 7: Closing of the Meeting

LIST OF PARTICIPANTS

1.	Assoc. Prof. Dr. Rumeaida Mat Piah	Resource Person from UMT
2.	Dr. Abdullah Mohamad	Resource Person from UMT
3.	Ms. Noor Dafinah Haji Jelani	Brunei Darussalam
4.	Ms. Nur Diyana Besar	Brunei Darussalam
5.	Dr. Chea Tharith	Cambodia
6.	Mr. Hem Rady	Cambodia
7.	Mr. Aris Budiarto	Indonesia
8.	Mr. Krisna Fery Rahmantya	Indonesia
9.	Ms. Bahrinah binti Bahrim	Malaysia
10.	Ms. Faizah binti Ismail	Malaysia
11.	Dr. Arkar Myo	Myanmar
12.	Mr. Zaw Khaing	Myanmar
13.	Mr. Jirapon Sonprasert	Thailand
14.	Mr. Chairat Bamrungsoo	Thailand
15.	Dr. Vu Viet Ha	Viet Nam
16.	Mr. Nguyen Van Minh	Viet Nam
17.	Ms. Saivason Klinsukhon	SEAFDEC Secretariat
18.	Ms. Namfon Imsamran	SEAFDEC Training Department
19.	Mr. Sallehudin Jamon	FRI Kampung Acheh, Perak, Malaysia
20.	Mr. Ryon Siow	FRI Kampung Acheh, Perak, Malaysia
21.	Ms. Norhanida Daud	FRI Batu Maung, Penang, Malaysia
22.	Mr. Jamil Musel	FRI Bintawa, Sarawak
23.	Mr. Lawrence Kissol Jr	DOF Sabah, Malaysia
24.	Mr. Abd Haris Hilmi Ahmad Arshad	SEAFDEC/MFRDMD
25.	Ms. Mazalina Ali	SEAFDEC/MFRDMD
26.	Mr. Mohammad Faisal Md Saleh	SEAFDEC/MFRDMD
27.	Mr. Muhammad Amirullah Al Amin Ayob	SEAFDEC/MFRDMD
28.	Ms. Hamizah Nadia Alias @ Yusof	SEAFDEC/MFRDMD
29.	Ms. Khairiah Jaafar	SEAFDEC/MFRDMD
30.	Mr. Rosdi Mohd Nor	SEAFDEC/MFRDMD
31.	Ms. Fauzana Che Su	SEAFDEC/MFRDMD
32.	Mr. Muhammad Khairul Nizam Man	SEAFDEC/MFRDMD
33.	Ms. Che Nurfatihah Che Le @ Che Ali	SEAFDEC/MFRDMD
34.	Ms. Nurul Syazwani Mustaffa	SEAFDEC/MFRDMD
35.	Mr. Mohamed Rukhemei Abdul Hamid	SEAFDEC/MFRDMD
36.	Mr. Ahmad Fairuz Mohamad	SEAFDEC/MFRDMD
37.	Ms. Nur Ainin Sofiya Rozab	Internship Student (UMT)
38.	Ms. Akila Wardah Abd Rahim	Internship Student (UMT)








REGIONAL TECHNICAL CONSULTATION
ON CURRENT STATUS OF REGIONAL
FISHERIES INFORMATION / MECHANISMS
IN THE ASEAN REGION
28-29 MAY 2015 | KUALA LUMPUR






TD
PRESENTER


MALAYSIA

Activity 3.1

Title: The Regional Technical Consultation on Harmonization of Simple and Practical Indicators for Sustainable Pelagic Fisheries in Southeast Asia
Date: 22 – 24 October 2025
Venue: Summit Hotel, Subang, Malaysia

Regional Technical Consultation on The Harmonization of Simple and Practical Indicators for Sustainable Pelagic Fisheries in Southeast Asia

22-24 October 2025
Subang, Malaysia

PROVISIONAL PROSPECTUS

1. Background

Pelagic fisheries play a vital role in the socio-economic and food security landscape of Southeast Asia, contributing significantly to the total marine capture fisheries production in the region. These species form the backbone of many coastal and island communities' livelihoods and are integral to regional and international seafood trade. Pelagic fisheries consistently contributed approximately 45–60% of the total marine capture fisheries production in Southeast Asia. Countries such as Indonesia, Philippines, Thailand, and Viet Nam are among the largest producers, contributing substantial volumes of pelagic fish both for domestic consumption and export markets. In recent years, the region has seen an increase in demand for pelagic species, driven by population growth, changing consumption patterns, and international market pressures.

The sustainability of pelagic fisheries in Southeast Asia is under growing pressure due to overfishing, illegal, unreported and unregulated (IUU) fishing, habitat degradation, climate change, and limited management capacity. The transboundary nature of many pelagic fisheries, coupled with disparities in data collection and monitoring among ASEAN Member States (AMSs), further complicates effective regional management. In response, regional and international frameworks have emphasized the importance of using indicators to assess the status and sustainability of fisheries. However, many existing indicators are overly complex or lack harmonization, limiting their practical application.

To address these challenges, there is an urgent need to harmonize simple and practical indicators that are scientifically valid, easy to implement, and adaptable to the diverse conditions across Southeast Asia. Indicators such as Catch Per Unit Effort (CPUE), Spawning Potential Ratio (SPR), Bycatch Ratio, and Species Composition Index can serve as essential tools for harmonizing data collection, supporting evidence-based management, and promoting sustainable pelagic fisheries across the region. These indicators should support national and regional efforts to achieve sustainable fisheries, in line with key policy frameworks such as the ASEAN-

SEAFDEC Resolution and Plan of Action on Sustainable Fisheries for Food Security, the FAO Code of Conduct for Responsible Fisheries, and the United Nations Sustainable Development Goals (particularly SDG 14 – Life Below Water).

In this context, the Regional Technical Consultation (RTC) provides a platform for AMSs, technical experts, and regional organizations to share experiences, review existing national indicator systems, and collaboratively develop a harmonized set of simple and practical indicators for sustainable pelagic fisheries in Southeast Asia. The outcomes of this consultation will contribute to strengthening regional cooperation, promoting responsible fisheries, and ensuring the long-term sustainability of vital pelagic resources for current and future generations.

2. Objective of the RTC

The RTC aims to:

1. Exchange information on existing national and regional indicators used to monitor and assess the sustainability of pelagic fisheries in Southeast Asia.
2. Develop a harmonized set of simple and practical indicators that are scientifically sound, regionally applicable, and easy to implement.

3. Expected Outputs

The RTC is expected to produce:

- A compilation of existing indicators for pelagic fisheries sustainability,
- A draft set of harmonized simple and practical indicators for sustainable pelagic fisheries.

4. Date and Venue of the RTC

Regional Technical Consultation on the Harmonization of Simple and Practical Indicators for Sustainable Pelagic Fisheries in Southeast Asia will be held from 22nd to 24th October 2025 in Subang, Malaysia.

5. Participants of the Meeting

It is envisaged that the participants of the meeting will be:

a. Two resource persons,
b. Two representatives from AMSs except Lao PDR and Malaysia,
c. Representatives from Department of Fisheries (DOF) Malaysia, DOF Sabah, Department of Marine Fisheries Sarawak, Fisheries Research Institute (FRI) Kg. Acheh, and FRI Bintawa,
d. Chief, Deputy Chief, Project Coordinator, and relevant officers from SEAFDEC/MFRDMD.

6. Tentative Agenda

Agenda 1: Opening Session
Agenda 2: Adoption of Agenda and Introduction of the project

Agenda 3: Overview of the Feedback on Regional Fisheries Information System/ Mechanisms Questionnaire
Agenda 4: Introduction to Simple and Practical Indicators for Sustainable Pelagic Fisheries
Agenda 5: Country Presentations on Indicators for Sustainable Pelagic Fisheries
Agenda 6: Criteria and Principles for Harmonizing Indicators
Agenda 7: Drafting Harmonized Simple and Practical Indicators for Sustainable Pelagic Fisheries
Agenda 8: Finalization of the Questionnaire on Conservation Efforts and Management Strategies in AMSs
Agenda 9: Conclusion and Way Forward
Agenda 10: Closing Session

LIST OF PARTICIPANTS

1.	Assoc. Prof. Dr. Rumeaida Mat Piah	Resource Person from UMT
2.	Dr. Abdullah Mohamad	Resource Person from UMT
3.	Ms. Desimawati Haji Metali	Brunei Darussalam
4.	Ms. Siti Nur Nisrina Matali	Brunei Darussalam
5.	Dr. Chea Tharith	Cambodia
6.	Mr. Leng Syvann	Cambodia
7.	Ms. Arinta Dwi Hapsari	Indonesia
8.	Mr. Mohamad Aris Setiawan Indrianto	Indonesia
9.	Ms. Marlinda Anim Marham	Malaysia
10.	Ms. Haryati Abd Wahab	Malaysia
11.	Mr. Jackson Clive Jusak	Malaysia
12.	Mr. Irman Isnain	DOF Sabah, Malaysia
13.	Mr. Sallehudin Jamon	FRI Kampung Acheh, Perak, Malaysia
14.	Mr. Ryon Siow	FRI Kampung Acheh, Perak, Malaysia
15.	Mr. Jamil Musel	FRI Bintawa, Sarawak, Malaysia
16.	Mr. Soe Win	Myanmar
17.	Mr. Zaw Khaing	Myanmar
18.	Mr. Sakol Pheaphabrattana	Thailand
19.	Ms. Nuengruetai Yoknoi	Thailand
20.	Dr. Vu Viet Ha	Viet Nam
21.	Ms. Nguyen Thi Hong Nhung	Viet Nam
22.	Mr. Abd Haris Hilmi Ahmad Arshad	SEAFDEC/MFRDMD
23.	Dr. Masahito Hirota	SEAFDEC/MFRDMD
24.	Ms. Mazalina Ali	SEAFDEC/MFRDMD
25.	Mr. Mohammad Faisal Md Saleh	SEAFDEC/MFRDMD
26.	Mr. Muhammad Amirullah Al Amin Ayob	SEAFDEC/MFRDMD
27.	Ms. Hamizah Nadia Alias @ Yusof	SEAFDEC/MFRDMD
28.	Ms. Khairiah Jaafar	SEAFDEC/MFRDMD
29.	Mr. Rosdi Mohd Nor	SEAFDEC/MFRDMD
30.	Mr. Nor Azman Zakaria	SEAFDEC/MFRDMD
31.	Mr. Mohd Sukri Muda	SEAFDEC/MFRDMD
32.	Mr. Noredzuan Hakimi Ghani	SEAFDEC/MFRDMD
33.	Mr. Muhammad Khairul Nizam Man	SEAFDEC/MFRDMD
34.	Mr. Azmeer Mohd Yusof	SEAFDEC/MFRDMD
35.	Ms. Che Nurfatihah Che Le @ Che Ali	SEAFDEC/MFRDMD
36.	Mr. Ahmad Fairuz Mohamad	SEAFDEC/MFRDMD
37.	Mr. Ahmad Akid Ajwad Yamani	Internship student (UIA)


SUMMIT HOTEL
Regional Technical Consultation on the Harmonization of Simple and Practical Indicators for Sustainable Pelagic Fisheries in Southeast Asia
22-24 October 2025
Subang, Malaysia










RESOURCE PERSON
SIK


CAMBODIA


Regional Technical Consultation on the Harmonization of Simple and Practical Indicators for Sustainable Pelagic Fisheries in Southeast Asia
22-24 October 2025 | Subang, Malaysia
INDONESIA

Activity 4.1

Title: Workshop for Developing Questionnaire on the Pelagic Fisheries Management Strategies in the Asian Regions
Date: 10 – 12 September 2025
Venue: Grand Sabak, Sabak Bernam, Selangor, Malaysia

LIST OF PARTICIPANTS

1.	Assoc. Prof. Dr. Rumeaida Mat Piah	Resource Person from UMT
2.	Dr. Abdullah Mohamad	Resource Person from UMT
3.	Mr. Azlan Mohd Nor	DOF Malaysia
4.	Ms. Lim Ai Gaik	DOF Malaysia
5.	Ms. Haryati Abd Wahab	DOF Malaysia
6.	Dr. Siti Nabilah binti Ishak	DOF Malaysia
7.	Mr. Irman bin Isnain	DOF Sabah
8.	Mr. Ryon Siow	FRI Kampung Acheh, Perak, Malaysia
9.	Mr. Jamil Musel	FRI Bintawa, Sarawak, Malaysia
10.	Ms. Norhanida Daud	FRI Batu Maung, Pulau Pinang, Malaysia
11.	Mr. Abd Haris Hilmi Ahmad Arshad	SEAFDEC/MFRDMD
12.	Ms. Mazalina Ali	SEAFDEC/MFRDMD
13.	Mr. Mohammad Faisal Md Saleh	SEAFDEC/MFRDMD
14.	Ms. Khairiah Jaafar	SEAFDEC/MFRDMD
15.	Mr. Rosdi Mohd Nor	SEAFDEC/MFRDMD
16.	Ms. Fauzana Che Su	SEAFDEC/MFRDMD
17.	Ms. Nurul Syazwani Mustaffa	SEAFDEC/MFRDMD
18.	Mr. Mohd Zulazlan Mat Ripin	SEAFDEC/MFRDMD






SDC


MFRDMD


HQ DOEM


RESOURCE PERSON


FRI BINTAWA
DOF SABAH


FRI KA
FRI BM

Activity 4.2

Title: Workshop on the Assessment of the Conservation Effort and Management Strategies of Pelagic Fisheries Resources in Southeast Asia Questionnaire
Date: 3 – 4 February 2026
Venue: Renai Hotel, Kota Bharu, Kelantan, Malaysia

LIST OF PARTICIPANTS

1.	Assoc. Prof. Dr. Rumeaida Mat Piah	Resource Person from UMT
2.	Dr. Abdullah Mohamad	Resource Person from UMT
3.	Ms. Khaitrul Ediana Mohd Tahir	DOF Malaysia
4.	Ms. Haryati Abd Wahab	DOF Malaysia
5.	Mr. Sallehudin Jamon	FRI Kampung Acheh, Perak, Malaysia
6.	Ms. Norhanida Daud	FRI Batu Maung, Pulau Pinang, Malaysia
7.	Mr. Abd Haris Hilmi Ahmad Arshad	SEAFDEC/MFRDMD
8.	Ms. Mazalina Ali	SEAFDEC/MFRDMD
9.	Mr. Muhammad Amirullah Al Amin Ayob	SEAFDEC/MFRDMD
10.	Ms. Hamizah Nadia Alias @ Yusof	SEAFDEC/MFRDMD
11.	Ms. Khairiah Jaafar	SEAFDEC/MFRDMD
12.	Mr. Rosdi Mohd Nor	SEAFDEC/MFRDMD
13.	Mr. Nor Azman Zakaria	SEAFDEC/MFRDMD
14.	Mr. Mohd Saki Noor	SEAFDEC/MFRDMD
15.	Mr. Mohd Sukri Muda	SEAFDEC/MFRDMD
16.	Mr. Muhammad Khairul Nizam Man	SEAFDEC/MFRDMD
17.	Mr. Noredzuan Hakimi Ghani	SEAFDEC/MFRDMD
18.	Mr. Azmeer Mohd Yusof	SEAFDEC/MFRDMD
19.	Ms. Che Nurfatihah Che Le @ Che Ali	SEAFDEC/MFRDMD
20.	Mr. Mohamed Rukhemei Abdul Hamid	SEAFDEC/MFRDMD
21.	Mr. Mohammad Bakri Mat Saad	FRI Kampung Acheh, Perak, Malaysia


Kenai Hotel
Kota Bharu




Workshop on the Assessment of the Conservation Effort and Management Strategies of Pelagic Fisheries Resources in Southeast Asia Questionnaire
3-4 February 2026 | Kota Bharu, Kelantan


Workshop on the Assessment of the Conservation Effort and Management Strategies of Pelagic Fisheries Resources in Southeast Asia Questionnaire
3-4 February 2026 | Kota Bharu, Kelantan


SDC


RESOURCE PERSON


FRI KA


3-4 February 2026 | Kota Bharu,
HQ DOFM

Activity 4.3

Title: The Regional Technical Consultation on the Conservation Effort and Management Strategies of Pelagic Fisheries Resources in Southeast Asia
Date: 6-8 January 2026
Venue: D Wharf Hotel, Port Dickson, Negeri Sembilan, Malaysia

The Regional Technical Consultation on the Conservation Efforts and Management Strategies of Pelagic Fisheries Resources in Southeast Asia

6 to 8 January 2026
Port Dickson, Malaysia

PROVISIONAL PROSPECTUS

1. Background

Pelagic fisheries play a vital role in the socio-economic and food security landscape of Southeast Asia, contributing significantly to the total marine capture fisheries production in the region. These species form the backbone of many coastal and island communities' livelihoods and are integral to regional and international seafood trade. Pelagic fisheries consistently contributed approximately 45–60% of the total marine capture fisheries production in Southeast Asia. Countries such as Indonesia, Philippines, Thailand, and Viet Nam are among the largest producers, contributing substantial volumes of pelagic fish both for domestic consumption and export markets. In recent years, the region has seen an increase in demand for pelagic species, driven by population growth, changing consumption patterns, and international market pressures.

The sustainability of pelagic fisheries in Southeast Asia is under growing pressure due to overfishing, illegal, unreported and unregulated (IUU) fishing, habitat degradation, climate change, and limited management capacity. The transboundary nature of many pelagic fisheries, coupled with disparities in data collection and monitoring among ASEAN Member States (AMSs), further complicates effective regional management.

Recognizing these challenges, SEAFDEC, through MFRDMD, has been implementing regional initiatives to strengthen pelagic fisheries management frameworks and enhance scientific knowledge, including stock assessments, indicators for monitoring, and regional cooperation mechanisms for shared and transboundary stocks. AMSs also have undertaken various conservation efforts and management strategies to safeguard pelagic resources. These include the establishment of marine protected areas, seasonal fishing closures, gear restrictions, catch documentation schemes, and community-based fisheries management. Regional cooperation has also been strengthened through initiatives aligned with international frameworks such as the ASEAN-SEAFDEC Resolution and Plan of Action on Sustainable Fisheries for Food Security, the FAO Code of Conduct for Responsible Fisheries, and the United Nations Sustainable Development Goals, particularly SDG 14: Life Below Water.

Recognizing the urgent need for coordinated regional action, this Regional Technical Consultation (RTC) aims to consolidate national and regional experiences, identify priority, strengthen conservation efforts and harmonize management strategies, and develop recommendations to support sustainable pelagic fisheries in Southeast Asia.

2. Objective of the RTC

This RTC aims to:

- Assess the current status of pelagic fisheries resources in Southeast Asia.
- Discuss conservation and management measures currently applied in AMSs and identify good practices, lessons learned, and gaps.
- Identify common challenges and opportunities for regional collaboration.
- Develop regional recommendations and strategies to enhance conservation and management efforts of pelagic fisheries.
- Strengthen partnerships among governments, research institutions, and regional organizations.

3. Expected Outputs

This RTC is expected to:

- Consolidated regional overview on pelagic fisheries status.
- Documentation of country management practices/strategies, conservation, and challenges.
- Recommendations for capacity building, action plan, and regional frameworks for conservation and management strategies.

4. Date and Venue of the RTM

The Regional Technical Consultation on the Conservation Efforts and Management Strategies of Pelagic Fisheries Resources in Southeast Asia will be held from 6th to 8th January 2026 in Port Dickson, Malaysia.

5. Participants of the Meeting

It is envisaged that the participants of the meeting will be:

e. Two resource persons,
f. Two representatives from AMSs except Lao PDR and Malaysia,
g. Representatives from Department of Fisheries (DOF) Malaysia, DOF Sabah, Department of Marine Fisheries Sarawak, Fisheries Research Institute (FRI) Kg. Acheh, FRI Batu Maung, and FRI Bintawa,
h. Chief, Deputy Chief, Project Coordinator, and relevant officers from SEAFDEC/MFRDMD.

6. Tentative Agenda

Agenda 1: Opening Session

Agenda 2: Adoption of Agenda

Agenda 3: Introduction of the project

Agenda 4: Introduction to the Conservation Efforts Management Strategies of Pelagic Fisheries

Agenda 5: Country Presentations on the Conservation Efforts and Management Strategies of Pelagic Fisheries Resources

Agenda 6: Technical Discussion on the Conservation Efforts and Management Strategies of Pelagic Fisheries Resources in Southeast Asia

Agenda 7: Conclusion and Way Forward

Agenda 8: Closing Session

LIST OF PARTICIPANTS

1.	Assoc. Prof. Dr. Rumeaida Mat Piah	Resource Person from UMT
2.	Ms. Desimawati Haji Metali	Brunei Darussalam
3.	Ms. Siti Nur Nisrina Matali	Brunei Darussalam
4.	Dr. Chea Tharith	Cambodia
5.	Mr. Leng Syvann	Cambodia
6.	Mr. Djoko Arye Prasetyo	Indonesia
7.	Mr. Karto Pulung	Indonesia
8.	Ms. Marlinda Anim Marham	Malaysia
9.	Ms. Haryati Abd Wahab	Malaysia
10.	Ms. Noor Suhailis Zelani	Malaysia
11.	Ms. Liza Haji Long	JPLS, Sarawak
12.	Mr. Irman Isnain	DOF Sabah, Malaysia
13.	Mr. Jamil Musel	FRI Bintawa, Sarawak, Malaysia
14.	Ms. Norhanida Daud	FRI Batu Maung, Penang, Malaysia
15.	Mr. Sallehudin Jamon	FRI Kampung Acheh, Perak, Malaysia
16.	Mr. Ryon Siow	FRI Kampung Acheh, Perak, Malaysia
17.	Mr. Soe Win	Myanmar
18.	Mr. Zaw Khaing	Myanmar
19.	Ms. Kima Karla H. Cedo	Philippines
20.	Ms. Noimie Rose B. Dicdiquin	Philippines
21.	Ms. Jitrapohn Khaemasook	Thailand
22.	Dr. Nipa Kulanujaree	Thailand
23.	Dr. Vu Viet Ha	Viet Nam
24.	Mr. Le Huu Tuan Anh	Viet Nam
25.	Ms. Pattaratjit Kaewnuratchadasorn	SEAFDEC Secretariat
26.	Dr. Supapong Pattarapongpan	SEAFDEC Training Department
27.	Mr. Abd Haris Hilmi Ahmad Arshad	SEAFDEC/MFRDMD
28.	Ms. Mazalina Ali	SEAFDEC/MFRDMD
29.	Mr. Mohammad Faisal Md Saleh	SEAFDEC/MFRDMD
30.	Mr. Muhammad Amirullah Al- Amin Ayob	SEAFDEC/MFRDMD
31.	Mr. Rosdi Mohd Nor	SEAFDEC/MFRDMD
32.	Ms. Khairiah Jaafar	SEAFDEC/MFRDMD
33.	Ms. Che Nurfatihah Che Le @ Che Ali	SEAFDEC/MFRDMD
34.	Mr. Nor Azman Zakaria	SEAFDEC/MFRDMD
35.	Mr. Mohd Saki Noor	SEAFDEC/MFRDMD
36.	Mr. Mohd Sukri Muda	SEAFDEC/MFRDMD
37.	Mr. Noredzuan Hakimi Ghani	SEAFDEC/MFRDMD
38.	Mr. Azmeer Mohd Yusof	SEAFDEC/MFRDMD
39.	Mr. Muhammad Khairul Nizam Man	SEAFDEC/MFRDMD
40.	Mr. Ahmad Fairuz Mohamad	SEAFDEC/MFRDMD
41.	Mr. Ahmad Akid Ajwad Yamani	Internship student (UIA)




RESOURCE PERSON


BRUNEI DS


PHILIPPINES








FRI BM
FRI KA

Activity 5.1

Title: Technical Workshop on the Analysis of AMSs Success Stories for the Fishing Capacity Project.
Date: 28 June – 2 July 2026
Venue: Grand Continental Hotel, Kuching, Sarawak

LIST OF PARTICIPANTS

1.	Ms. Mazalina Ali	SEAFDEC/MFRDMD
2.	Mr. Muhammad Amirullah Al Amin Ayob	SEAFDEC/MFRDMD
3.	Mr. Rosdi Mohd Nor	SEAFDEC/MFRDMD
4.	Ms. Khairiah Jaafar	SEAFDEC/MFRDMD
5.	Mr. Nor Azman Zakaria	SEAFDEC/MFRDMD
6.	Mr. Muhammad Khairul Nizam Man	SEAFDEC/MFRDMD
7.	Mr. Noredzuan Hakimi Ghani	SEAFDEC/MFRDMD
8.	Mr. Mohd Saki Noor	SEAFDEC/MFRDMD
9.	Mr. Mohd Sukri Muda	SEAFDEC/MFRDMD


Technical Workshop on the Analysis of AMSs Success Stories for the Fishing Capacity Project
Technical Workshop on the Analysis of AMSs Success Stories for the Fishing Capacity Project


Technical Workshop on the Analysis of AMSs Success Stories for the Fishing Capacity Project
Technical Workshop on the Analysis of AMSs Success Stories for the Fishing Capacity Project










Technical Workshop on the Analysis of AMSs Success Stories for the Fishing Capacity Project
29 June - 1 July 2026 | Kuching, Sarawak


Technical Workshop on the Analysis of AMSs Success Stories for the Fishing Capacity Project
29 June - 1 July 2026 | Kuching, Sarawak

Activity 5.2

Title: Workshop on Drafting of the Terminal Report for the Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity
Date: 9 – 10 April 2026
Venue: Putra Brasmana Hotel, Kuala Perlis, Perlis, Malaysia

LIST OF PARTICIPANTS

1.	Assoc. Prof. Dr. Rumeaida Mat Piah	Resource Person from UMT
2.	Dr. Abdullah Mohamad	Resource Person from UMT
3.	Ms. Lim Ai Gaik	DOF Malaysia
4.	Ms. Intan Mawarni Mohamed Zain	DOF Malaysia
5.	Ms. Khaitrul Ediana Mohd Tahir	DOF Malaysia
6.	Mr. Ryon Siow	FRI Kampung Acheh, Perak, Malaysia
7.	Ms. Norhanida Daud	FRI Batu Maung, Pulau Pinang, Malaysia
8.	Mr. Abd Haris Hilmi Ahmad Arshad	SEAFDEC/MFRDMD
9.	Ms. Mazalina Ali	SEAFDEC/MFRDMD
10.	Mr. Mohammad Faisal Md Saleh	SEAFDEC/MFRDMD
11.	Mr. Muhammad Amirullah Al Amin Ayob	SEAFDEC/MFRDMD
12.	Mr. Rosdi Mohd Nor	SEAFDEC/MFRDMD
13.	Ms. Khairiah Jaafar	SEAFDEC/MFRDMD
14.	Mr. Nor Azman Zakaria	SEAFDEC/MFRDMD
15.	Mr. Muhammad Khairul Nizam Man	SEAFDEC/MFRDMD
16.	Mr. Noredzuan Hakimi Ghani	SEAFDEC/MFRDMD
17.	Mr. Mohamed Rukhemei Abdul Hamid	SEAFDEC/MFRDMD
18.	Ms. Nureen Afiani Zulaikha Ahmad Rifai	Internship student (UMT)
19.	Mr. Muhammad Hasqarin Has	Internship student (UMT)


Workshop on the Drafting of the Terminal Report for the Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity Project








CHIEF OF MFRDMD


SDC




HQ DOFM
SDC

Activity 5.3

Title: Technical Workshop on the Harmonization of the Draft Terminal Report for the Fishing Capacity Project
Date: 13-15 July 2026
Venue: The Klagan Hotel, Kota Kinabalu, Sabah

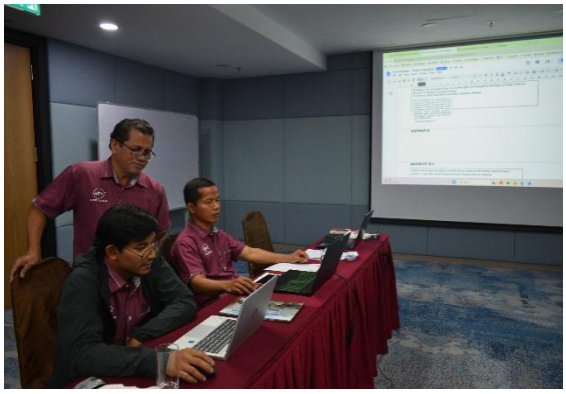
LIST OF PARTICIPANTS

1.	Mr. Abd Haris Hilmi Ahmad Arshad	SEAFDEC/MFRDMD
2.	Ms. Mazalina Ali	SEAFDEC/MFRDMD
3.	Mr. Muhammad Amirullah Al Amin Ayob	SEAFDEC/MFRDMD
4.	Mr. Rosdi Mohd Nor	SEAFDEC/MFRDMD
5.	Ms. Khairiah Jaafar	SEAFDEC/MFRDMD
6	Mr. Mohd Saki Noor	SEAFDEC/MFRDMD
7.	Mr. Nor Azman Zakaria	SEAFDEC/MFRDMD
8.	Mr. Mohd Sukri Muda	SEAFDEC/MFRDMD
9.	Mr. Muhammad Khairul Nizam Man	SEAFDEC/MFRDMD
10.	Mr. Noredzuan Hakimi Ghani	SEAFDEC/MFRDMD
11.	Mr. Azmeer Mohd Yusof	SEAFDEC/MFRDMD


TECHNICAL WORKSHOP ON THE HARMONIZATION OF THE DRAFT TERMINAL REPORT FOR THE FISHING CAPACITY PROJECT
13-15 July 2026
Kota Kinabalu, Sabah















Activity 5.4

Title: Workshop on the Finalization of the Project Reports for the Implementation and Assessment Of the ASEAN Regional Plan of Action for the Management of Fishing Capacity
Date: 9-11 Sept 2026
Venue: Zenith Hotel, Cameron Highlands, Pahang

LIST OF PARTICIPANTS

1.	Assoc. Prof. Dr. Rumeaida Mat Piah	Resource Person from UMT
2.	Dr. Abdullah Mohamad	Resource Person from UMT
3.	Mr. Abd Haris Hilmi Ahmad Arshad	Resource Person
4.	Mr. Lawrence Kissol Jr	DOF Sabah
5.	Ms. Lim Ai Gaik	DOF HQ Malaysia
6.	Ms. Noor Suhailis binti Zelani	DOF HQ Malaysia
7.	Ms. Norfarahin Safar	DOF HQ Malaysia
8.	Mr. Sallehudin Jamon	FRI Kampung Acheh, Perak
9.	Mr. Ryon Siow	FRI Kampung Acheh, Perak
10.	Ms. Norhanida Daud	FRI Batu Maung, Pulau Pinang
11.	Mr. Jamil Musel	FRI Bintawa, Sarawak
12.	Ts. Dr. Daud Awang	SEAFDEC/MFRDMD
13.	Ms. Mazalina Ali	SEAFDEC/MFRDMD
14.	Mr. Mohammad Faisal Md Saleh	SEAFDEC/MFRDMD
15.	Mr. Muhammad Amirullah Al Amin Ayob	SEAFDEC/MFRDMD
16.	Ms. Hamizah Nadia Alias @ Yusof	SEAFDEC/MFRDMD
17.	Dr. Muhammad Asyraf Abd Latip	SEAFDEC/MFRDMD
18.	Mr. Rosdi Mohd Nor	SEAFDEC/MFRDMD
19.	Ms. Khairiah Jaafar	SEAFDEC/MFRDMD
20.	Ms. Che Nurfatihah Che Le @ Che Ali	SEAFDEC/MFRDMD
21.	Mr. Mohd Saki Noor	SEAFDEC/MFRDMD
22.	Mr. Nor Azman Zakaria	SEAFDEC/MFRDMD
23.	Mr. Mohd Sukri Muda	SEAFDEC/MFRDMD
24.	Mr. Muhammad Khairul Nizam Man	SEAFDEC/MFRDMD
25.	Mr. Noredzuan Hakimi Ghani	SEAFDEC/MFRDMD
26.	Mr. Azmeer Mohd Yusof	SEAFDEC/MFRDMD
27.	Mr. Mohamed Rukhemei Abdul Hamid	SEAFDEC/MFRDMD






WORKSHOP ON THE FINALIZATION OF
THE PROJECT REPORTS FOR
THE IMPLEMENTATION AND ASSESSMENT
OF THE ASEAN REGIONAL PLAN OF ACTION FOR
THE MANAGEMENT OF FISHING CAPACITY
9-11 SEPTEMBER 2026
CAMERON HIGHLANDS
CHIEF OF MFRDMD
SDC






ERI BINTAWA
FRI KA


MARDI
GEDUNG INOVASI AGROMAKANAN



Activity 6.1

Title: Midterm Review and Evaluation Meeting
Date: 22 -24 April 2025
Venue: Berjaya Hotel, Penang, Malaysia

LIST OF PARTICIPANTS

1.	Prof. Dr. Che Azlan Taib	Resource Person from Universiti Utara Malaysia (UUM)
2.	Mr. Nazri Ishak	DOF Malaysia
3.	Mr. Ruzaidi Mamat	DOF Malaysia
4.	Mr. Zainudin Abd Wahab	DOF Malaysia
5.	Ms. Lim Ai Gaik	DOF Malaysia
6.	Ms. Noor Suhailis Zelani	DOF Malaysia
7.	Mr. Sallehudin Jamon	FRI Kampung Acheh, Perak, Malaysia
8.	Mr. Jamil Musel	FRI Bintawa, Sarawak, Malaysia
9.	Mr. Abd Haris Hilmi Ahmad Arshad	SEAFDEC/MFRDMD
10.	Dr. Masahito Hirota	SEAFDEC/MFRDMD
11.	Ms. Mazalina Ali	SEAFDEC/MFRDMD
12.	Mr. Mohammad Faisal Md Saleh	SEAFDEC/MFRDMD
13.	Ms. Hamizah Nadia Alias @ Yusof	SEAFDEC/MFRDMD
14.	Ms. Khairiah Jaafar	SEAFDEC/MFRDMD
15.	Mr. Nor Azman Zakaria	SEAFDEC/MFRDMD
16.	Mr. Mohd Saki Noor	SEAFDEC/MFRDMD
17.	Mr. Mohd Sukri Muda	SEAFDEC/MFRDMD
18.	Mr. Noredzuan Hakimi Ghani	SEAFDEC/MFRDMD
19.	Mr. Azmeer Mohd Yusof	SEAFDEC/MFRDMD
20.	Mr. Ahmad Fairuz Mohamad	SEAFDEC/MFRDMD


MIDTERM REVIEW
AND EVALUATION MEETING














MIDTERM REVIEW
AND EVALUATION MEETING

Activity 6.2

Title: Regional End-of-Project Evaluation Meeting on the Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity
Date: 12-14 August 2026
Venue: Hatten Hotel, Melaka, Malaysia

Regional End-of-Project Evaluation Meeting on the Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity

12-14 August 2026
Melaka, Malaysia

PROVISIONAL PROSPECTUS

1. Background

Pelagic fisheries play a vital role in Southeast Asia by contributing significantly to food security, livelihoods, marine capture fisheries production, and regional economic development. However, the sustainability of these fisheries continues to face growing challenges, including overfishing, illegal, unreported, and unregulated (IUU) fishing, habitat degradation, climate change, and disparities in fisheries management, monitoring, and data collection among ASEAN Member States (AMSs). These challenges highlight the importance of strengthened regional cooperation and coordinated management of shared fisheries resources.

To address these challenges, the Southeast Asian Fisheries Development Center/Marine Fishery Resources Development and Management Department (SEAFDEC/MFRDMD), with financial support from the Japan-ASEAN Integration Fund (JAIF), has been implementing the Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity (RPOA-Capacity) project since April 2024. The Project supports the implementation of the RPOA-Capacity by enhancing regional cooperation, improving fisheries information systems, and promoting the sustainable management of selected pelagic fisheries. The Project involves the participation of Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Viet Nam.

Throughout its implementation, three sets of regional questionnaires were developed and completed by participating AMSs, four Regional Technical Consultations (RTCs), and a series of technical workshops were successfully convened. The Project has generated valuable regional information on the status of RPOA-Capacity implementation, strengthened fisheries information systems, developed simple and practical indicators for sustainable pelagic fisheries management, documented conservation and management strategies adopted by participating AMSs, and produced a series of technical publications to support evidence-based fisheries management and regional policy development.

As the Project approaches its completion, SEAFDEC/MFRDMD will convene the *Regional End-of-Project Evaluation Meeting on the Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity*. The Meeting will provide a platform for participating AMSs, the ASEAN Secretariat, JAIF, SEAFDEC, and other relevant stakeholders to review and evaluate the overall implementation and achievement of the Project, validate its key outputs and deliverables, identify lessons learned and implementation challenges, and formulate strategic recommendations to strengthen regional cooperation on the sustainable management of fishing capacity in Southeast Asia.

2. Objectives

The Meeting aims to:

a. Review and evaluate the overall implementation, achievement, and performance of the Project,
b. Identify key lessons learned, implementation challenges, and opportunities for improving future regional initiatives on the management of fishing capacity,
c. Review and provide comments on the draft Project Terminal Report and the Draft End-of-Project Evaluation Report,
d. Formulate strategic recommendations and strengthen collaboration among AMSs to support the effective implementation of the RPOA-Capacity and address common and transboundary fisheries management challenges.

3. Expected Outputs

The Meeting is expected to achieve the following outputs:

a. The implementation status, key achievements, and overall contributions of the Project are reviewed and validated,
b. Key lessons learned, implementation challenges, and opportunities for improvement are identified and documented to support the planning and implementation of future regional initiatives,
c. The Draft Project Terminal Report and the Draft End-of-Project Evaluation Report are reviewed, refined, and endorsed for finalization,
d. Strategic recommendations and follow-up actions are formulated to strengthen the implementation of the RPOA-Capacity, enhance regional cooperation among AMSs, and promote the sustainable management of pelagic fisheries.

4. Date and Venue

The Regional End-of-Project Evaluation Meeting on the Implementation and Assessment of the ASEAN Regional Plan of Action for the Management of Fishing Capacity will be held from 12th to 14th August 2026 in Melaka, Malaysia.

5. Meeting Format

The Meeting will be conducted in a hybrid format, allowing participants to attend either in person or virtually.

6. Participants

The meeting is expected to be attended by:

a. Resource persons,
b. Representatives from AMSs participating in the Project,
c. Representatives from the JAIF Management Team (JMT),
d. Representatives from ASEAN Secretariat,
e. Representatives from SEAFDEC Secretariat,
f. Representatives from relevant SEAFDEC Departments
g. Officials from the Department of Fisheries Malaysia,
h. SEAFDEC/MFRDMD Project Team and Secretariat.

7. Working Language

The meeting will be conducted in English.

8. Financial Arrangements

Financial support for invited participants will be provided by SEAFDEC/MFRDMD under the Project, in accordance with SEAFDEC's rules and procedures, and will include:

- Round-trip economy-class airfare;
- Hotel accommodation; and
- Daily Subsistence Allowance (DSA)

9. Tentative Agenda

Agenda 1: Opening Session

The Opening Session will commence with welcoming remarks by the Chief of SEAFDEC/MFRDMD, followed by opening remarks and the official opening of the Meeting by the representative of the Department of Fisheries Malaysia, highlighting the significance of regional cooperation in strengthening the suitable management of fishing capacity in Southeast Asia.

Agenda 2: Adoption of Agenda and Introduction to the Meeting

Participants will consider and adopt the Meeting agenda. An overview of the Meeting objectives, expected outputs, programme, and working arrangements will be presented.

Agenda 3: Overview of the Project Implementation and Key Achievements

SEAFDEC/MFRDMD will present an overview of the Project, including its background, objectives, implementation framework, major activities undertaken, key milestones achieved, and outputs delivered. The presentation will also highlight the Project's contributions towards the implementation of the ASEAN Regional Plan of Action for the Management of Fishing Capacity (RPOA-Capacity).

Agenda 4: Evaluation of Project Performance, Outcomes, and Achievements

Participants will review and evaluate the overall performance and outcomes of the Project, including its relevance, effectiveness, efficiency, sustainability, achievements, and contributions towards strengthening fisheries management, regional cooperation, and the implementation of the RPOA-Capacity.

Agenda 5: Review and Discussion of the Draft Project Terminal Reports and the Draft Executive Summary

Participants will review and discuss the Draft Project Terminal Report and Draft Executive Summary. Comments, recommendations, and inputs from participants will be considered to ensure the accuracy, completeness, and relevance of the documents prior to finalization.

Agenda 6: Future Directions and Way Forward

Participants will discuss future directions and follow-up actions to sustain the achievements of the Projects and further strengthen the implementation of the ASEAN Regional Plan of Action for the Management of Fishing Capacity (RPOA-Capacity). The session will also provide an opportunity to identify potential areas for future collaboration and regional initiatives on sustainable fisheries management.

Agenda 7: Closing Session

The Meeting will conclude with a summary of the key outcomes, conclusions, and agreed follow-up actions arising from the discussions. Closing remarks will be delivered by the Chief of SEAFDEC/MFRDMD, followed by the official closure of the Meeting.

Secretariat and Correspondence

All correspondence regarding the meeting should be addressed to:

Ms. Mazalina Ali
mazalina@seafdec.org.my
Special Department Coordinator
SEAFDEC/MFRDMD
Kuala Terengganu, Malaysia
Tel: 609 – 617 5940

Ms. Khairiah Jaafar
khairiahjaafar2004@gmail.com
Temporary Assistant Officer
SEAFDEC/MFRDMD
Kuala Terengganu, Malaysia
Tel: 609 617 1543

LIST OF PARTICIPANTS

1.	YBhg Dato' Haji Azahari Haji Othman	Deputy Director General of Fisheries (Development) of Department of Fisheries Malaysia
2.	Prof. Dr. Che Azlan Taib	Resource Person from Universiti Utara Malaysia (UUM)
3.	Assoc. Prof. Dr. Rumeaida Mat Piah	Resource Person from Universiti Malaysia Terengganu (UMT)
4.	Dr. Abdullah Mohamad	Resource Person from Universiti Malaysia Terengganu (UMT)
5.	Ms. Yumiko Kaneko	JAIF Management Team
6.	Mr. Irwan Haji Mohd Noor	Brunei Darussalam
7.	Mr. Muhammad Abdul Hakeem Julaihi	Brunei Darussalam
8.	Mr. Buoy Roitana	Cambodia
9.	Mr. Leng Syvann	Cambodia
10.	Ms. Yusra Hayati	Indonesia
11.	Mr. Muhammad Febrianoer	Indonesia
12.	Mr. Ruzaidi Mamat	Malaysia
13.	Ms. Yazeereen A. Bakar	Malaysia
14.	Ms. Lim Ai Gaik	Malaysia
15.	Ms. Noor Suhailis Zelani	Malaysia
16.	Ms. Norarziah Abdullah	Malaysia
17.	Mr. Jamil Musel	FRI Bintawa, Sarawak, Malaysia
18.	Mr. Sallehudin Jamon	FRI Kampung Acheh, Perak, Malaysia
19	Mr. Ryon Siow	FRI Kampung Acheh, Perak, Malaysia
20.	Ms. Norhanida Daud	FRI Batu Maung, Pulau Pinang, Malaysia
21.	Mr. Hlwan Moe Zaw	Myanmar
22.	Dr. Arkar Myo	Myanmar
23.	Mr. Edmundo M. Amican III	Philippines
24.	Ms. Divina B. Ignacio	Philippines
25.	Dr. Pavarot Noranarttragoon	Thailand
26.	Dr. Nipa Kulanujaree	Thailand
27.	Dr. Vu Viet Ha	Viet Nam
28.	Ms. Sawitree Chamsai	SEAFDEC Secretariat
29.	Dr. Supapong Pattarapongpan	SEAFDEC TD
30.	Ms. Mazalina Ali	SEAFDEC/MFRDMD
31.	Mr. Mohammad Faisal Md Saleh	SEAFDEC/MFRDMD
32.	Mr. Muhammad Amirullah Al Amin Ayob	SEAFDEC/MFRDMD
33.	Mr. Rosdi Mohd Nor	SEAFDEC/MFRDMD
34.	Ms. Khairiah Jaafar	SEAFDEC/MFRDMD

35.	Ms. Fauzana Che Su	SEAFDEC/MFRDMD
36.	Ms. Che Nurfatihah Che Ali @ Che Le	SEAFDEC/MFRDMD
37.	Mr. Mohd Saki Noor	SEAFDEC/MFRDMD
38.	Mr. Nor Azman Zakaria	SEAFDEC/MFRDMD
39.	Mr. Mohd Sukri Muda	SEAFDEC/MFRDMD
40.	Mr. Noredzuan Hakimi Ghani	SEAFDEC/MFRDMD
41.	Mr. Azmeer Mohd Yusof	SEAFDEC/MFRDMD
42.	Mr. Khairul Nizam Man	SEAFDEC/MFRDMD
43.	Mr. Mohamed Rukhemei Abdul Hamid	SEAFDEC/MFRDMD
44.	Ms. Rozieyana Atirah Azaman	Internship Student (UNISZA)
45	Ms. Nur Izzaty Idayu Mohd Zaid	Internship Student (UNISZA)

ONLINE PARTICIPANTS

1.	Mr. Kosaburo Shimose	First Secretary of Mission of Japan to ASEAN
2.	Dr. Masahito Hirota	SEAFDEC/MFRDMD










MALAYSIA


PHILIPPINES


THAILAND



Annex 4: Template for Country Reporting for Indicator Report

Title: Status of [*selected pelagic fish group*] assessed by [*mention the indicators selected: ecological or social or environment or economics or compliance indicators*]

Prepared by:
[Name of Presenter]
[Designation, Organization/Department]
[Country]

Abstract
Summary of the project

1.0 Introduction
Overview of the stock
Current management measures
Problems faced related to pelagic resources

2.0 Objectives

3.0 Materials and Methods
*Indicators used
*Data collection
*Data analysis

4.0 Results
*Trend/value of the indicator over time

5.0 Discussion

*Current status of the stock
*Implications for the management of the stock
*Application of indicators in management-how indicators can be applied in decision making process

Challenges and limitations

- Limitations in data collection or indicator reliability
- Technical, financial, or institutional challenges
- Gaps in capacity or coordination among agencies

Future Plans and Recommendations

- Proposed improvements in indicators or data systems
- Plans for integrating indicators into management plans or decision-making
- Areas for regional collaboration and technical support

6.0 Conclusion

- *Key findings and takeaways*
- *Summary of indicators contributing to sustainable management*
- *Country's commitment to continued improvement and regional cooperation*

7.0 References

8.0 Acknowledgement

Annex 5: List of Articles, Presentations and Newsletters

No.	List of completed publications	Type of media	Attached e-file
1.	SEAFDEC Annual Report 2024	Article	https://repository.seafdec.org/handle/20.500.12066/7609
2.	SEAFDEC Annual Report 2025	Article	https://repository.seafdec.org/handle/20.500.12066/7668
3.	"MFRDMD conducts workshop on developing questionnaire for assessing fisheries statistics, information system" SEAFDEC Newsletter Vol. 47 No.4, 2024 page 13	Newsletter	https://repository.seafdec.org/handle/20.500.12066/7587
4.	"SEAFDEC Secretariat, TD attend RTC on Fishing Capacity" SEAFDEC Newsletter Vol. 48 No.1, 2025, page 16	Newsletter	https://repository.seafdec.org/handle/20.500.12066/7602
5.	"MFRDMD conducts series of activities on the management of fishing capacity" SEAFDEC Newsletter Vol. 48 No.2, 2025 page 16 & 19	Newsletter	https://repository.seafdec.org/handle/20.500.12066/7625
6.	"MFRDMD conducts two workshops under the project on the management of fishing capacity" SEAFDEC Newsletter Vol. 48 No.3, 2025 page 21	Newsletter	https://repository.seafdec.org/handle/20.500.12066/7629
7.	"Consultation to harmonize simple and practical indicators for sustainable pelagic fisheries" SEAFDEC Newsletter Vol. 48 No.4, 2025 page 32)	Newsletter	https://repository.seafdec.org/handle/20.500.12066/7655
8.	"Regional Technical Consultation and Analysis Workshop on Pelagic Fisheries Management"	Newsletter	https://repository.seafdec.org/handle/20.500.12066/7665

No.	List of completed publications	Type of media	Attached e-file
	SEAFDEC Newsletter Vol. 49 No.1, 2026 page 19&20		
9.	"JAIF-supported fishing capacity project enters terminal reporting phase" SEAFDEC Newsletter Vol. 49 No.2, 2026 page 24	Newsletter	https://repository.seafdec.org/handle/20.500.12066/7680
10.	"Fisheries Profile of Small Pelagic Fish in ASEAN Member States (AMSs)," was presented during the Research Seminar Series 3 on 13 August 2025.	Slides	-
11.	"Assessment of the Implementation Status of ASEAN Guidelines on IUU in AMSs," was presented during the Research Seminar Series 5 on 20 August 2025.	Slides	-
12.	"Implementation And Assessment of The Asean Regional Plan of Action for The Management of Fishing Capacity" was presented during the 47PCM on 2 December 2024 in Singapore	Slides	-
13.	"Implementation And Assessment of The Asean Regional Plan of Action for The Management of Fishing Capacity" was presented during the 48PCM on 3-5 November 2025 in Langkawi, Malaysia	Slides	-
14.	"Management of Fishing Capacity" for inclusion in The Southeast Asian State of Fisheries and Aquaculture (SEASOFIA) 2027.	Article	-To be updated once SEASOFIA 2027 is published
15.	"Regional Cooperation and Frameworks for Sustainable Fishing Capacity Management and Governance in Southeast Asia", for inclusion in the 60th Anniversary of SEAFDEC	Short article	-To be updated once the 60th Anniversary of SEAFDEC is published

Southeast Asian Fisheries Development Center (SEAFDEC)



What is SEAFDEC?

SEAFDEC is an autonomous intergovernmental body established as a regional treaty organization in 1967 to promote sustainable fisheries development in Southeast Asia. SEAFDEC currently comprises 11 Member Countries: Brunei Darussalam, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam.

Vision

Sustainable management and development of fisheries and aquaculture to contribute to food security, poverty alleviation and livelihood of people in the Southeast Asian region.

Mission

To promote and facilitate concerted actions among the Member Countries to ensure the sustainability of fisheries and aquaculture in Southeast Asia through:

i. Research and development in fisheries, aquaculture, post-harvest, processing, and marketing of fish and fisheries products, socio-economy and ecosystem to provide reliable scientific data and information.

ii. Formulation and provision of policy guidelines based on the available scientific data and information, local knowledge, regional consultations and prevailing international measures.

iii. Technology transfer and capacity building to enhance the capacity of Member Countries in the application of technologies, and implementation of fisheries policies and management tools for the sustainable utilization of fishery resources and aquaculture.

iv. Monitoring and evaluation of the implementation of the regional fisheries policies and management frameworks adopted under the ASEAN-SEAFDEC collaborative mechanism, and the emerging international fisheries-related issues including their impacts on fisheries, food security and socio-economics of the region.

SEAFDEC Addresses

Secretariat
P.O. Box 1046
Kasetsart Post Office
Bangkok 10903
Thailand
Tel: (66-2) 940-6326
Fax: (66-2) 940-6336
E-mail: secretariat@seafdec.org
http://www.seafdec.org

Training Department (TD)
P.O. Box 97
Phrasamutchedi
Samut Prakan 10290
Thailand
Tel: (66-2) 425-6100
Fax: (66-2) 425-6110 to 11
E-mail: td@seafdec.org
http://www.seafdec.or.th

Marine Fisheries Research Department (MFRD)
52, Jurong Gateway Road,
#14-01, Singapore 608550
Tel: (65) 9046-4787
Fax: (65) 6334-1831
E-mail: Org_Yihang@sfa.gov.sg
http://www.seafdec.org

Aquaculture Department (AQD)
Main Office: Tigbauan,
5021 Iloilo, Philippines
(63-33) 330-7000
Fax: (63-33) 330-7002
Manila Office: Rm 102 G/F
Philippine Social Science Center (PSSC)
Commonwealth Avenue, Diliman
Quezon City 1101 Philippines
Tel & Fax: (63-2) 927-7825
E-mail: aqdchief@seafdec.org.ph
http://www.seafdec.org.ph

Marine Fishery Resources Development and Management Department (MFRDMD)
Taman Perikanan Chendering,
21080 Kuala Terengganu, Malaysia
Tel: (609) 617-5940
Fax: (609) 617-5136
E-mail: mfrdmd@seafdec.org.my
http://www.seafdec.org.my

Inland Fishery Resources Development and Management Department (IFRDMD)
Jl. Gub. HA. Bastari No.08
RT.29 RW.07 Kel. Silaberanti
Kec. Seberang Ulu I, Jakabaring,
Palembang 30252
Sumatera Selatan, Indonesia
Tel: +62711 5649600;
Fax: +62711 5649601
E-mail: ifrdmd@seafdec.id
http://www.seafdec.id

ISBN: 978-629-7629-29-2
9 786297 629292