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## **PROGRESS IN PREPARATION OF SOUTHEAST ASIAN STATE OF FISHERIES AND AQUACULTURE (SEASOFIA) 2022**

### **I. BACKGROUND**

Information on the status and trends of fisheries is widely recognized as crucial in serving as basis for sustainable development and management of fisheries. SEAFDEC throughout the past decades had undertaken several activities to compile various forms of fishery-related data and information, *e.g.* regional fishery statistics based on the national statistics data provided by the Southeast Asian countries, as well as other data and information from different SEAFDEC programs/projects. In order to ensure that the outputs from these initiatives could be integrated or digested into information that support the development and management for sustainable fisheries of the region, SEAFDEC in 2010 undertook a pilot exercise in developing the publication on “The Southeast Asian State of Fisheries and Aquaculture” or “SEASOFIA,” and the first volume of the publication was published in 2012. Such endeavor provided platform for compilation of synthesized data and information generated from various programs of activities, while incorporating other data and information available in the region, in order to provide better understanding on the status and trends of fisheries and aquaculture of the region.

Taking into consideration the usefulness of the first SEASOFIA publication, the SEAFDEC Council during its 44<sup>th</sup> Meeting in 2012 agreed that the publication could be published on a regular basis, *i.e.* every 5 years. The second SEASOFIA publication was therefore prepared and published in 2017. To further sustain this initiative, the SEAFDEC Council at its 52<sup>nd</sup> Meeting in 2020 supported the preparation of the next SEASOFIA to be published in 2022.

### **II. PROGRESS**

In line with the directives given by the 52<sup>nd</sup> Meeting of the SEAFDEC Council, the Secretariat undertook steps to prepare the next SEASOFIA to be published in 2022, the progress of which could be summarized as follows:

- 1<sup>st</sup> Inter-Departmental Consultation on Preparation for SEASOFIA 2022 (6-7 August 2020)
  - The Consultation came up with the first draft outline of the publication with identification of responsible Department and workplan. The Consultation suggested for development of questionnaires to gather additional inputs from AMSs.
- 2<sup>nd</sup> Inter-Departmental Consultation on Preparation for SEASOFIA 2022 (1 October 2020)
  - The Consultation came up with the revised draft outline with description of inputs, as well as set of questionnaires for gathering of additional inputs from AMSs
- 43<sup>rd</sup> PCM (10-12 November 2020)
  - The National Coordinators were requested to facilitate providing the necessary information through a set of questionnaires to ensure that the inputs into the SEASOFIA reflect the real picture of fisheries and aquaculture in the region.
- 53<sup>rd</sup> CM (27-28 April 2021)
  - The Council encouraged the countries that have yet to submit their inputs to the questionnaire issues by SEAFDEC to provide their respective inputs to facilitate the timely preparation of the publication.

- May- October 2021
  - The Secretariat and concerned Departments developed the draft content of inputs for SEASOFIA publication based on the agreed outline. SEAFDEC received the inputs through questionnaires from six (6) countries namely: Indonesia, Malaysia, Myanmar, Philippines, Singapore, and Thailand. These inputs are incorporated in the development of draft content of the publication which was subsequently consolidated by the Secretariat.
- 3<sup>rd</sup> Inter-Departmental Consultation on Preparation for SEASOFIA 2022 (18 and 20 October 2021)
  - The Consultation discussed on the consolidated draft SEASOFIA 2022, and provided comment/suggestions for finalization of the publication.
- 44<sup>th</sup> PCM (15-17 November 2021)
  - The PCM took note the progress and the draft content of SEASOFIA 2022, and were requested to provide additional inputs/comments by mid of December 2021.

Based on the inputs prepared by the SEAFDEC Secretariat and concerns Departments, the list of contributors appears as **Annex 1**. The structure of the publication, and status of preparation of inputs appears as follows (*underlined or crossed-out texts are topics that were modified from the original proposal*):

Topics	Contributor	Status
<b>Part I. Overview of the Status and Trends of Capture Fisheries and Aquaculture in Southeast Asia</b>		
1. Global Production and Utilization of Fish	Sec (IPC Office)	✓
2. Fishery Production of Southeast Asia		Remove 3.1.6 Seaweed because it is a few production come from marine capture fisheries and only two countries reported
3. Marine Capture Fisheries Production of Southeast Asia		
3.1 Economically Important Marine Species		
3.1.1 Tuna and Tuna-like Species		
3.1.2 Small Pelagic Species		
3.1.3 Demersal Fish Species		
3.1.4 Crustaceans		
3.1.5 Mollusks		
<del>3.1.6 Seaweeds</del>		
4. Inland Capture Fisheries Production of Southeast Asia		
5. Aquaculture Production of Southeast Asia		
5.1 Mariculture		
5.2 Brackishwater Culture		
5.3 Freshwater Culture		
6. Fishing Vessels		
7. Fishers and Fish Farmers		
8. Fish Processing Industry		
9. Fish Trade		
9.1 Global Trading of Fish and Fishery Products		
9.2 Southeast Asian Trading of Fish and Fishery Products		
<b>Part II. Issues and Challenges in Sustainable Development of Fisheries of the Southeast Asian Region</b>		
<b>1. Marine Fishery Resources</b>	MFRDMD (and SEC (PPC Office))	
1.1 Status, Issues and Concerns		
1.1.1 Tuna and Tuna-like Species		✓
1.1.2 <del>Round</del> Scads		✓
1.1.3 Mackerels		✓
1.1.4 Anchovies	✓	

Topics	Contributor	Status
1.1.5 Sardines		✓
1.1.6 Marine shrimps		✓
1.1.7 Seaweeds	AQD	✓
1.2 Challenges and Future Direction	MFRDMD (AQD and Sec)	✓
<b>2. Inland Fishery Resources</b>		
2.1 Status, Issues and Concerns	IFRDMD	✓
2.1.1 Contribution of Inland Fisheries to Food Security and Poverty Alleviation		
2.1.2 Data Collection on Inland Capture Fisheries	IFRDMD	✓
2.1.3 Impacts and Mitigation of Impacts of Water Barrier Construction on Inland Fisheries	IFRDMD (and TD)	✓
2.1.4 Increased Production through Culture-based Fisheries	IFRDMD (and AQD)	✓
2.1.5 <u>Conflicts on Used of Inland Water Resoutces among Various Sector</u> <del>Inland Water Use Conflicts on Use of Water Resources with Other Sectors</del>	IFRDMD	✓
2.2 Challenges and Future Direction	IFRDMD (AQD and TD)	✓
<b>3. Aquatic Species Under International Concern</b>		
3.1 Status, Issues and Concerns	MFRDMD, (TD, Sec (PPC Office))	✓
3.1.1 Sharks and Rays		
3.1.2 Anguillid Eels	IFRDMD (and Sec (JAIF))	✓
3.1.3 Sea Cucumbers	AQD (and MFRDMD)	✓
3.1.4 Seahorses	AQD	✓
3.1.5 Corals ( <del>hard and soft corals</del> ) and Coral Reef <del>Ornamental Species</del>	MFRDMD, (and TD)	✓
3.1.6 Inland Species		
• Irrawaddy Dolphin	IFRDMD	✓
• Asian Arowana		✓
3.2 Challenges and Future Direction	MFRDMD (TD, IFRDMD, SEC, and AQD)	✓
<b>4. Responsible Fishing Practices</b>		
4.1 Status, Issues and Concerns	TD	
4.1.1 Reduction of Fishing Impact to Environment		✓
4.1.2 <del>Optimizing Energy Use in Fisheries and Reducing Carbon Emission</del> <u>Innovation for Responsible Fishing Operation</u>	TD	(combine the original 4.1.2 and 4.1.4)
• <u>Energy Efficiency and Fuel-saving Option for Fishing Vessels</u>		✓
• <u>Fishing Site Identification System (FSI)</u>		✓
• <u>Technology on Preservation Onboard Fishing Vessels</u>		✓

Topics	Contributor	Status
<ul style="list-style-type: none"> <li>• <u>Reduction of Impacts of Fishing Operations on the Environment/Reduction of Carbon Emission)</u></li> <li>• <u>Reduction of Manpower in Purse Seine Fishing Operations</u></li> </ul>		✓ ✓
4.1.3 Gear Marking (ALDFG)	TD	✓
4.1.4 <del>Innovations in Responsible Fishing (fishing vessel design, deck machinery, gear innovation, fish handling facilities)</del>	TD	X
4.1 Challenges and Future Direction	TD	
<b>5. Utilization of Fishery Resources</b>		
5.1 Status, Issues and Concerns	MFRD (and AOD for non-food as aquaculture feed)	
5.1.1 <u>Utilization of Fishery Resources</u> <del>Fish Utilization</del>		✓ ✓
5.1.2 Management of Food Losses and Wastes (Preservation and Processing, cold chain management)		✓
5.1.3 Food Safety from <u>Marine Biotoxins</u> <ul style="list-style-type: none"> <li>• <del>Marine Biotoxins, and Scombrototoxin</del></li> </ul>		
5.2 Challenges and Future Direction	MFRD	✓
<b>6. Fishery Management</b>		
6.1 Status, Issues and Concerns		
6.1.1 Management of Fishing Capacity and Combating IUU Fishing <ul style="list-style-type: none"> <li>• Management of Fishing Capacity and <u>Combating IUU Fishing</u></li> </ul>	MFRDMD	✓
<ul style="list-style-type: none"> <li>• Fishing Vessels Registration and Fishing Licensing</li> <li>• <del>Development of a Database for Regional Fishing Vessels Record</del></li> <li>• Catch Documentation and Traceability Systems for Capture Fisheries Schemes</li> <li>• The Status, Action and Need of PSM for Implementation in Southeast Asia</li> <li>• <u>Port State Measures</u></li> </ul>	TD	✓ ✓ ✓
<ul style="list-style-type: none"> <li>• <u>MCS Systems and Regional Cooperation for Combating IUU Fishing</u></li> <li>• <del>MCS Systems and Networking</del></li> <li>• <del>Strengthening Regional Cooperation for Combating IUU Fishing</del></li> </ul>	Sec (PPC office) (and MFRDMD)	✓ Combine sub-topic on MCS System and Strengthening Regional Cooperation
<ul style="list-style-type: none"> <li>• Combating IUU Fishing in Inland Fisheries</li> </ul>	IFRDMD	✓
<ul style="list-style-type: none"> <li>• <u>Application of Innovative Technologies for Combating IUU Fishing</u></li> </ul>	Sec	✓
6.1.2 Management Concepts and Approaches <ul style="list-style-type: none"> <li>• Ecosystem Approach to Fisheries Management (EAFm) and Ecosystem Approach to Aquaculture (EAA)</li> <li>• Community-based and Co-management</li> </ul>	TD (IFRDMD, and AOD)	✓ ✓
6.1.3 Habitats Protection and Fishery Resources Enhancement	TD, (MFRDMD, and AOD, IFRDMD)	✓
6.1.4 <u>Application of Geographic Information System</u>	TD	✓

Topics	Contributor	Status
(GIS) and Remote Sensing (RS) for Fisheries Management Application of Fishery Information Systems for Fisheries Management (including remote sensing technology, GIS)	(MFRDMD, and AQD)	
6.2 Challenges and Future Direction	Sec (PPC Office)	✓
<b>7. Aquaculture Development</b>		
7.1 Status, Issues and Concerns	AQD	
7.1.1 Socio-economic Importance of Aquaculture for Food Security and Poverty Alleviation		✓
7.1.2 Fish Health Management (including Aquatic Emergency Preparedness and Response Systems)	AQD	✓
7.1.3 <u>Overcoming</u> Fish Meal Dependence in Aquaculture	AQD	✓
7.1.4 Production and Dissemination of Good Quality Seedstocks	AQD	✓
7.1.5 Production of Safe and Quality Aquaculture Products	AQD	✓
7.1.6 Impacts of Intensification of Aquaculture on the Environment	AQD	✓
7.1.7 Genetics in Aquaculture	AQD	✓
7.1.8 Traceability of Aquaculture Products	MFRD	✓
7.2 Challenges and Future Direction	AQD	✓
<b>8. Fisheries-related Issues</b>		✓
8.1 Climate Change and Natural Disasters	Sec (and AQD)	
8.2 Aquatic Pollution	TD	✓
8.3 Impacts of COVID-19 Pandemics to Fisheries and Aquaculture	Sec	✓
8.4 Fisheries Subsidies	Sec	✓
<b>9. Socio-economic Well-being in the Fisheries Sector</b>		
9.1 Labor in Fisheries and Fish Workers: working condition, safety at sea, migrant workers	TD	✓
9.2 Micro-finance, Credit, Insurance in Support of Small-scale Fisheries	TD	✓
9.3 Gender Equity in Fisheries	TD	✓
<b>Part III. Outlook of Fisheries and Aquaculture for the Southeast Asia</b>		
1. Growing Demand for Fish and Fishery Products	Sec (IPC Office)	✓
2. Issues and Challenges Towards Sustainable Utilization of Fishery Resources	Sec (PPC Office)	✓

✓ Draft text prepared

X Inputs not available

### III. WORKPLAN AND TIMEFRAME

	2020	2021	2022
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	2020			2021												2022			
Activity	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A
Meeting																			

#### IV. REQUIRED CONSIDERATION BY THE DCM

The DCM is requested to take note of the progress in preparation of the SEASOFIA 2022, including its final structure, list of contributors, and workplan and timeframe of remaining works.

## List of Contributors to SEASOFIA 2022

<b>Part I. Overview of the Status and Trends of Capture Fisheries and Aquaculture in Southeast Asia</b>	
	Saivason Klinsukhon, Nualanong Tongdee, and Virgilia T. Sulit ( <i>Secretariat</i> )
<b>Part II. Issues and Challenges in Sustainable Development of Fisheries of the Southeast Asian Region</b>	
<b>Marine Fishery Resources</b>	
• Tuna and Tuna-like Species	Mohammad Faisal Md. Saleh, Wahidah Mohd Arshaad, Annie Nunis Billy, Mazalina Ali, and Mohamad Syahidan Azmi ( <i>MFRDMD</i> )
• Scads	Mohammad Faisal Md. Saleh, Wahidah Mohd Arshaad, Mazalina Ali, Mohamad Syahidan Azmi and Raihana Abdul Rahman ( <i>MFRDMD</i> )
• Mackerels	Mohammad Faisal Md. Saleh, Wahidah Mohd Arshaad, Mohamad ( <i>MFRDMD</i> )
• Anchovies	Abd Haris Hilmi Ahmad Arshad and Muhammad Faisal Md Saleh ( <i>MFRDMD</i> )  Nur Hidayah Asgnari, Zulifah Rohani, Nadiyatul Atikah Harun, and Nik Syafizah Ghazali ( <i>DOF Malaysia</i> )
• Sardines	Wahidah Mohd Arshaad and Mohammad Faisal Md. Saleh ( <i>MFRDMD</i> )
• Marine Shrimps	Abd Haris Hilmi Ahmad Arshad ( <i>MFRDMD</i> )
• Seaweeds	Joseph P. Faisan, Jr., Hananiah Sollesta-Pitogo, and Leobert de la Peña ( <i>AQD</i> )
<b>Inland Fishery Resources</b>	
• Contribution of Inland Fisheries to Food Security and Poverty Alleviation	Sevi Sawestri ( <i>IFRDMD</i> )
• Data Collection on Inland Capture Fisheries	Sevi Sawestri ( <i>IFRDMD</i> )
• Impact and Mitigation of Impact of Water Barrier Construction on Inland Fisheries	Yoga Candra Ditya, Nana Dahlia, Dwi Atminarso, ( <i>IFRDMD</i> ); and Lee Baumgartner ( <i>Charles Sturt University</i> )
• Increased Production through Culture-based Fisheries and Mitigating Impacts from Aquaculture	Siswanta Kaban, Dina Muthmainah, Dwi Atminarso, and Dian Pamularsih ( <i>IFRDMD</i> )
• Conflicts on Use of Inland Water Resources Among Various Sectors	Yoga Candra Ditya, Nana Dahlia, and Dian Pamularsih ( <i>IFRDMD</i> )
<b>Aquatic Species Under International Concern</b>	
• Sharks and Rays	Wahidah Mohd Arshaad, Hamizah Nadia Alias@Yusof and Abd Haris Hilmi Ahmad Arshad ( <i>MFRDMD</i> )
• Anguillid Eels	Ni Komang Suryati & Dr. Dina Muthmainnah ( <i>IFRDMD</i> )
• Sea Cucumbers	Altamirano, J.P. ( <i>AQD</i> ) and Zaidnuddin, I. ( <i>DOF Malaysia</i> )
• Seahorses	Shelah Mae B. Ursua ( <i>AQD</i> )
• Corals	Mazalina Ali and Masaya Katoh ( <i>MFRDMD</i> )
• Irrawady Dolphin	Ni Komang Suryati & Dina Muthmainnah, and Siswanta Kaban ( <i>IFRDMD</i> )
• Asian Arowana	Ni Komang Suryati & Dina Muthmainnah, and Siswanta Kaban ( <i>IFRDMD</i> )
<b>Responsible Fishing Practices</b>	
• Reduction of Fishing Impact to Environment	Isara Chanrachkij ( <i>TD</i> )



• Energy Efficiency and Fuel-saving Options for Fishing Vessels	Suthipong Thanasarnsakorn and Thaweesak Thimkrap ( <i>TD</i> )
• Fishing Site Identification (FSI) System	Annie Nunis Billy, Raja Bidin Raja Hassan, Mohammad Faisal Md Salleh, Osman Muda, Rosdi Mohd Nor and Raihana Abdul Rahman ( <i>DOF Malaysia</i> )
• Improved Catch Preservation Technology Onboard Fishing Vessels	Suthipong Thanasarnsakorn and Thaweesak Thimkrap ( <i>TD</i> )
• Reduction of the Impact of Fishing Operation on the Environment/Reduction of Carbon Emission	Suthipong Thanasarnsakorn and Thaweesak Thimkrap ( <i>TD</i> )
• Reducing Labor in Purse Seine Fishing Operations	Suthipong Thanasarnsakorn and Thaweesak Thimkrap ( <i>TD</i> )
• Addressing the ALDFG Issues	Taweekiet Amornpiyakrit ( <i>TD</i> )
<b>Utilization of Fishery Resources</b>	
• Utilization of Fishery Resources	Anastasia Eu, Chia Siok ( <i>MFRD</i> ), and Joseph B. Biñas ( <i>AQD</i> )
• Management of Food Losses and Wastes	Anastasia Eu and Chia Siok ( <i>MFRD</i> )
• Food Safety from Marine Biotoxins	Joachim Chua and Leyau Yu Lee ( <i>Singapore Food Agency, SFA</i> )
<b>Fishery Management</b>	
• Management of Fishing Capacity and Combating IUU Fishing	Mazalina Ali ( <i>MFRDMD</i> ); Dwi Atminarso, Dian Pamularsih Anggraeni, and Siswanta Kaban ( <i>IFRDMD</i> )
• Fishing Vessels Registration and Fishing Licensing	Kongpathai Sarapaivanich ( <i>TD</i> )
• Catch Documentation and Traceability Systems for Capture Fisheries	Kongpathai Sarapaivanich ( <i>TD</i> )
• Port State Measures (PSM) Implementation	Kongpathai Sarapaivanich ( <i>TD</i> )
• MCS and Regional Cooperation for Combat IUU Fishing	Pattaratjit Kaewnuratchadasorn ( <i>Secretariat</i> ) and Mazalina Ali ( <i>MFRDMD</i> )
• Combating IUU Fishing in Inland Fisheries	Dian Pamularsih Anggraeni, Siswanta Kaban ( <i>IFRDMD</i> ), and Dwi Atminarso ( <i>Charles Sturt University (CSU)</i> )
• Application of Innovative Technologies for Combating IUU Fishing	Pattaratjit Kaewnuratchadasorn ( <i>Secretariat</i> ) and Mazalina Ali ( <i>MFRDMD</i> )
• Ecosystem Approach to Fisheries Management (EAFM) and Ecosystem Approach to Aquaculture (EAA)	Panitnard Weerawat ( <i>TD</i> ), Dina Muthmainnah and Siswanta Kaban ( <i>IFRDMD</i> )
• Community-based and Co-management	Rattana Tiaye ( <i>TD</i> ), Dina Muthmainnah ( <i>IFRDMD</i> )
• Habitat Protection and Fishery Resources Enhancement	Ahmad Ali ( <i>MFRDMD</i> ) and Sukchai Arnupapboon ( <i>TD</i> )
• Application of Geographic Information System (GIS) and Remote Sensing (RS) for Fisheries Management	Siriporn Pangsorn ( <i>TD</i> )
<b>Aquaculture Development</b>	
• Socio-economic Importance of Aquaculture for Food Security and Poverty Alleviation	Nerissa D. Salayo, Raisa Joy G. Castel and Quenie S. Montinola ( <i>AQD</i> )
• Fish Health Management	Leobert D. de la Peña, Eleonor A. Tendencia, and Edgar C. Amar ( <i>AQD</i> )
• Overcoming Fishmeal Dependence in Aquaculture	Joseph Biñas, Frolan Aya, and Roger Edward Mamauag ( <i>AQD</i> )
• Production and Dissemination of Good Quality Seedstocks	Peter A. Palma, Mary Anne E. Mandario, Ma. Irene C. Cabanilla-Legaspi, Marinelle S. Espino, Marwin B. dela Cruz, and Roger Edward P. Mamauag ( <i>AQD</i> )
• Production of Safe and Quality Aquaculture	Eleonor A. Tendencia, Jeralyn Panizales, and

Products	Leobert D. de la Peña ( <i>AQD</i> )
• Impacts of Intensification of Aquaculture on the Environment	Erish Estante-Superio, Jeralyn Panizales, Hannah Mae Arganioza, and Dan D. Baliao ( <i>AQD</i> )
• Genetic in Aquaculture	Maria Rowena R. Romana-Eguia ( <i>AQD</i> )
• Traceability of Aquaculture Products	Anastasia Eu and Chia Siok ( <i>MFRD</i> )
<b>Fisheries-related Issues</b>	
• Climate Change and Natural Disasters	Sawitree Chamsai and Worawit Wanchana ( <i>Secretariat</i> )
• Aquatic Pollution	Sukchai Arnupapboon ( <i>TD</i> )
• Impacts of COVID-19 Pandemic on Fisheries and Aquaculture	Witsarut Choseng and Shiela Villamor Chumchuen ( <i>Secretariat</i> )
• Fisheries Subsidies	Sawitree Chamsai and Worawit Wanchana ( <i>Secretariat</i> )
• Labor in Fisheries and Fish Workers: working conditions, safety at sea, migrant workers	Jariya Sornkliang ( <i>TD</i> ) and Nualnong Tongdee ( <i>Secretariat</i> )
• Micro-finance, Credit, Insurance in Support of Small-scale Fisheries	Thanyalak Suasi ( <i>TD</i> )
• Gender Equity in Fisheries	Jariya Sornkliang ( <i>TD</i> ) and Shiela Villamor Chumchuen ( <i>Secretariat</i> )
<b>Part III. Outlook of Fisheries and Aquaculture for the Southeast Asia</b>	
• Growing Demand for Fish and Fishery Products	Sawitree Chamsai and Nualnong Tongdee ( <i>Secretariat</i> )
• Issues and Challenges Towards Sustainable Utilization of Fishery Resources	Sawitree Chamsai and Nualnong Tongdee ( <i>Secretariat</i> )