

Marine Fisheries Management Plan of Thailand

A National Policy for Marine Fisheries Management

2015 - 2019



**Department of Fisheries
Ministry of Agriculture and Cooperatives, Thailand**

CONTENTS

Table of Abbreviations	3
Definitions	4
EXECUTIVE SUMMARY	5
1. INTRODUCTION	7
Scope	7
Vision and underlying principles	8
Policy Framework and National legislation.....	8
Operation of the FMP	9
2. CURRENT SITUATION OF THAI MARINE FISHERIES	10
Importance of marine fisheries to Thailand.....	10
History of Thai fisheries development	10
Current status of the fishery resources and habitats	11
Fleet profile and catches	13
Current management arrangements and measures	15
3. HIGH PRIORITY CHALLENGES	18
4. HIGH PRIORITY ISSUES: OBJECTIVES, TARGETS AND MANAGEMENT MEASURES	19
Detailed management measures, Key Performance Indicators (KPIs) and time frame	22
5. OTHER THREATS AND CHALLENGES	29
6. OTHER ISSUES: OBJECTIVES, TARGETS AND MANAGEMENT MEASURES	30
Detailed management measures, Key Performance Indicators (KPIs) and time frame	32
7. TIMELINES FOR IMPLEMENTATION	37
8. DATA AND INFORMATION NEEDS FOR MONITORING AND EVALUATION	43
9. FINANCING	45
10. REVIEW OF THE PLAN	49
APPENDIX A: Categories of fishing vessels in Thailand	50
APPENDIX B: Current fisheries management measures in Thailand	53
APPENDIX C: Fishing License System and Fisheries Controls of Thailand	55
APPENDIX D: The assessment of maximum sustainable yield (MSY) and optimal fishing effort in Thai waters	58
APPENDIX E: Implementation work plan for 2015/16	64
APPENDIX F: Assistance for fisheries operators affected by the government's measures to tackle IUU fishing and fleet reduction	87

Table of Abbreviations

ASEAN	The Association of Southeast Asian Nations
CCCIF	Committee of the Command Center for Combating Illegal Fishing
CCRF	Code of Conduct for Responsible Fisheries
CPUE	Catch per unit effort
CCAMLR	Commission for the Conservation of Antarctic Marine living Resources
DOF	Department of Fisheries, Ministry of Agriculture and Cooperatives, Thailand
DMCR	Department of Marine and Coastal Resources, Ministry of Natural Resources and Environment, Thailand
DNP	Department of National Parks and Wildlife and Plant Conservation
FAO	Food and Agriculture Organization of the United Nations
ICCAT	International Commission for the Conservation of Atlantic Tunas
IOTC	Indian Ocean Tuna Commission
IUU fishing	Illegal, Unreported and Unregulated fishing
IPOA-IUU	International Plan of Action to prevent, deter and eliminate illegal, unreported and unregulated fishing
KPI	Key Performance Indicator
MCS	Monitoring, Control and Surveillance
MCTD	Marine Catch Transshipment Document
MSY	Maximum Sustainable Yield
NESDP	National Economic and Social Development Plans
NPOA-IUU	National Plan of Action to prevent, deter and eliminate illegal, unreported and unregulated fishing
PIPO	Port in – Port out
PSMA	Port State Measure Agreement
RFMO	Regional Fisheries Management Organization
RPOA-IUU	Regional Plan of Action against IUU fishing
SEAFDEC	The Southeast Asian Fisheries Development Centre
UNCLOS	United Nations Convention on the Law of the Sea
UNFSA	United Nations Fish Stock Agreement
WCPFC	Western and Central Pacific Fisheries Commission
VDS	Vessel Day Scheme
VMS	Vessel Monitoring System

Definitions

Maximum Sustainable Yield (MSY): the maximum average annual catch that can be removed from a stock over an indefinite period without having any negative effect on resource potential under prevailing environmental conditions.

Overfishing:

Recruitment overfishing: describes a situation where excessive fishing has produced a decline of the abundance of spawning fish and consequently low recruitment of young fish back into the population. This recruitment overfishing may lead to a temporary or long term collapse of the stock.

Growth overfishing: Occurs when too many small fish are being harvested too early in their life history, through excessive fishing effort and poor selectivity (e.g. too small mesh sizes) and the fish are not given enough time to grow to the size that would produce the maximum yield (and price).

Overfished: a stock with an abundance below the sustainable level. A fish resource can remain overfished for a period of time after overfishing has been controlled.

Management measure:

Catch per Unit Effort (CPUE): The amount of catch per one unit effort (also known as catch rate e.g. kilogram/day). When standardized CPUE can be used as an indicator for measuring the change in the abundance of the fish resources.

EXECUTIVE SUMMARY

Marine fisheries are important both socially and economically for Thailand. However, there are a number of challenges that, unless addressed urgently, could have serious impact on the future of these fisheries. These include severe degradation of the fish resources through overcapacity that has resulted in lower catch rates, large quantities of small low value/trash fish, including juveniles of larger commercial species, and Illegal, unreported and unregulated fishing (IUU). Critical fish habitats (mangroves, sea grasses and coral reefs) degradation has contributed to this decline. This situation has occurred mainly as a result of a lack of control of an ever increasing number of vessels and uptake of new technologies over the past 30 years, resulting in excessive fishing capacity and fishing effort.

The amendments to the Fisheries Act Fisheries Act B.E. 2558 (2015) recognize the significance of managing the fisheries resources of Thailand sustainably and requires the development and implementation of a fisheries management plan. This Marine Fisheries Management Plan (FMP) 2015-2019 outlines the nature of the management challenges facing Thailand and details what actions and management measures are required to transform what is now essentially an open-access fishery into a limited-access fishery based on balancing the fishing effort with the productivity of the resources (maximum Sustainable yield (MSY)). The Marine Fisheries Management Plan (FMP) of Thailand is closely linked to the National Plan of Action to prevent, deter and eliminate Illegal, unreported and unregulated fishing 2015 (NPOA-IUU) and the National Control Plan (NCP) 2015.

The FMP recognizes that there are many threats to the sustainable management of marine fisheries in Thailand, but based on a risk assessment it has identified the high priority issues as (i) Overfishing and overcapacity, especially the commercial fleet and (i) IUU fishing.

The FMP aims to reduce the fishing capacity and fishing effort over the next 3 years. The specific capacity reductions targets include (i) for demersal fish; 40% in the Gulf of Thailand and 10% in the Andaman Sea by 2018 and (ii) for pelagic fish; 30% in the Gulf of Thailand and 20% in the Andaman Sea by 2018. The main measures to achieve include:

- the removal of currently illegal fishing vessels; and
- reducing the total allowable fishing days.

The FMP is also designed to reduce the level of IUU fishing to reduce the level that can be controlled through regular MCS arrangements in the future. Specific management measures to achieve this include:

- strengthening Monitoring, Control and Surveillance measures through institutional changes and increased resources and capacity for MCS; and
- improving the licensing and registration system as that all vessels are registered and licensed. Any vessel with a history of IUU will not be registered.

The FMP details all management measures needed to meet the FMP's objectives as well as key performance indicators and timelines. It also specifies how the measures are to be implemented and by whom in a Work plan for implementation 2015/16.

Other lower priority issues are being managed through a number measures that are relevant to these challenges. The high catch of juveniles of larger commercial species is being managed through mesh size limitations and spatial and temporal closures. Conflicts between sub-sectors are being managed through declaration of exclusive fishing rights to different zones (distance from the coast). Critical habitats will be restored through increased collaboration and cooperation with other agencies that are mandated to protect and conserve the marine environment.

The FMP also recognizes the importance of better data and information to inform management decision making and proposes several important changes on research, data and information that can be used in the future management of Thailand's marine fisheries.

Lastly the FMP recognizes the need for institutional changes and strengthening the human capacity to improve future fisheries management.

The implementation also requires the provision of the adequate financial, technical and human resources. The Thai Government commits to allocate funding as well as increase significant number of personnel for various activities of FMP implementation.

The FMP will be reviewed every year with a report on progress against the objectives. A major evaluation and review of this plan will be carried out every 2 years, and if appropriate, the issues, goals and objectives will be modified.

1. INTRODUCTION

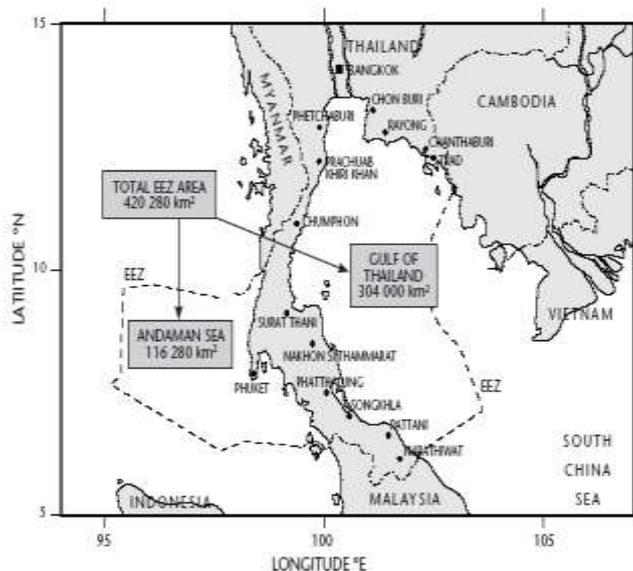
For the past 30 years, fisheries resources and the marine environment have been seriously degraded through overfishing brought about by a lack of control of fishing capacity that was allowed expand, both in terms of increasing number of fishing vessels and in adopting new technologies, which were not commensurate with the natural productivity of the resources. These challenges provided fertile ground for the proliferation of illegal, unreported and unregulated (IUU) fishing within Thai fisheries waters by both Thai and foreign vessels and outside Thai waters (high seas and fisheries waters of other States) by Thai fishing vessels

Thailand is now committed to turning this situation around through this Marine Fisheries Management Plan (FMP) of Thailand, which outlines the actions and measures needed to achieve sustainable fisheries in the future and to control the fishing capacity to a level commensurate with the maximum sustainable yield (MSY) of the resources. The FMP is closely linked to the National Plan of Action for Illegal, unreported and unregulated fishing 2015 (NPOA-IUU) and the National Control Plan (NCP 2015). The policies and plans are enabled through the Fisheries Act B.E. 2558 (2015). The amended Fisheries Act instructs the Department of Fisheries (Ministry of Agriculture and Cooperatives) to prepare and propose a management plan for consideration of the National Fisheries Policy Committee and to the Council of Ministers for approval.

Scope

The FMP applies to all marine capture fisheries both artisanal and commercial vessels in Thai waters as well as marine capture fisheries conducted by Thai vessels in the exclusive economic zone (EEZ) of other States and the high seas. In Thai waters the fishing areas are those in the east (Gulf of Thailand) and those to the west (Andaman Sea). These fishing areas are depicted in Fig. 1 below. Where real differences in management are required between the Gulf of Thailand and the Andaman Sea these have been specified in the plan's objectives (see Section 4 and 6: Objectives, targets and management measures).

Figure 1: Gulf of Thailand and Andaman Sea marine fishing areas



The FMP covers the species of:

- All pelagic species;
- All demersal species;
- All highly migratory tuna and tuna-like species (often managed under a Regional Fisheries Management Organization (RFMO));and
- Other non-target, associate or dependent species taken while fishing, such as endangered and threatened species.

Vision and underlying principles

The vision for the future of Thailand marine fisheries through the reform of fisheries development is:

Sustainable marine fisheries that are well governed and supported by healthy habitats and environment, resulting in combating IUU fishing, increasing economic returns and improving livelihoods

This FMP is based on international best practice and Thailand's international fisheries obligations and applies the Ecosystem Approach to Fisheries Management (EAFM) that aims to balance ecological well-being (fish resources and the environment) with human well-being (social and economic benefits).

Key principles of the FMP

- **Good governance** that facilitates the setting of rules and regulations and adequate resources and arrangements for compliance and enforcement;
- **Cooperation and coordination** both vertically across different levels of government and society and horizontally across agencies and sectors;
- **Adaptive management** that embraces change through learning and adapting; and
- **Precautionary approach** that does not delay action because of lack of information and manages cautiously when uncertainty exists (e.g. uncertainty in the MSY estimate).

Policy Framework and National legislation

The management plan is developed in accordance with the amended Fisheries Act B.E. 2558 (2015) and sets out management actions and key performance measures to allow for assessment of the degree to which the objectives are being achieved.

Operation of the FMP

This FMP will operate from 2015 to 2019 inclusive. During this period the Thailand Department of Fisheries (DOF) will use this plan to implement the measures and to develop the regulations for the fishery. The FMP will be reviewed annually, based on the best scientific information available and on the performance of the fishery, with a report to the Minister of Agriculture and Cooperatives and the National Fisheries Policy Committee on the performance of the fishery against all indicators and benchmarks.

2. CURRENT SITUATION OF THAI MARINE FISHERIES

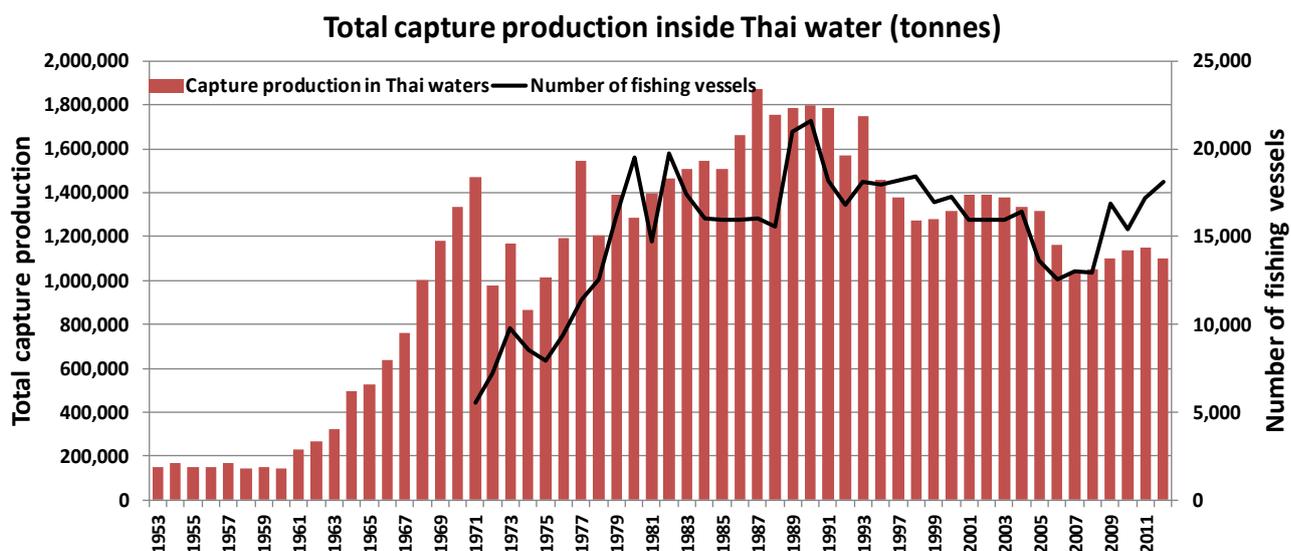
Importance of marine fisheries to Thailand

Marine fisheries are important both socially and economically for Thailand. Fish are very important to the food security and self-sufficiency of Thailand. Based on a recent survey (July 2015), a total number of 42,512 active Thai fishing vessels caught 1.34 million tonnes in 2014. This catch supports the livelihoods, incomes and employment for about 172,430 fishermen (82% migrants) and about 515,000 people employed in supporting industries, mostly women (e.g. fish processing industry, ship building industry, canned and frozen fisheries product factories, fish meal factories). For rural Thailand, fish constitutes a generally affordable source of protein, contributing significantly to dietary health and food security, particularly the more than 2,500 villages of artisanal fishing communities along the coasts. Thailand is also a major seafood producer and exporter. In 2014, exports totaled 1.7 million tonnes, valued at USD6,749 million and imports totaled 1.6 million tonnes valued at USD2,740 million (DOF, 2015).

History of Thai fisheries development

The expansion in fishing capacity can be seen in the time series of total landings inside Thai waters of marine fish (including crustacean and molluscs), which increased dramatically in the mid-1960s with the introduction of trawling and again in the 1970s as purse seining increased. The total catch inside Thai waters in mid-1980s plateaued around 1.8 million tonnes. An expansion to waters outside of Thailand occurred in 1990s and 2000s. Since 2005 the total catch inside Thai waters has been relatively constant (see Fig. 2 below). The total catch in 2014 was 1.34 million tonnes (DOF, 2015).

Figure 2: Total capture production of marine fish inside Thai waters and fishing vessel 1953-2012 (*Thai Fisheries Statistic, 2015*)



Current status of the fishery resources and habitats

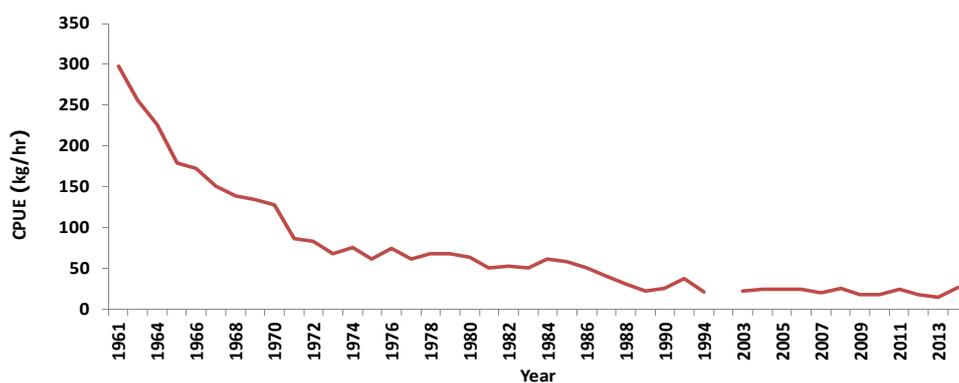
Fisheries resources

The fisheries resources, especially in coastal waters, are severely degraded as shown by:

1. Declining abundance as indicated in declining CPUE in trawl surveys;
2. Catches equal to or greater than estimated potential yields (MSY);

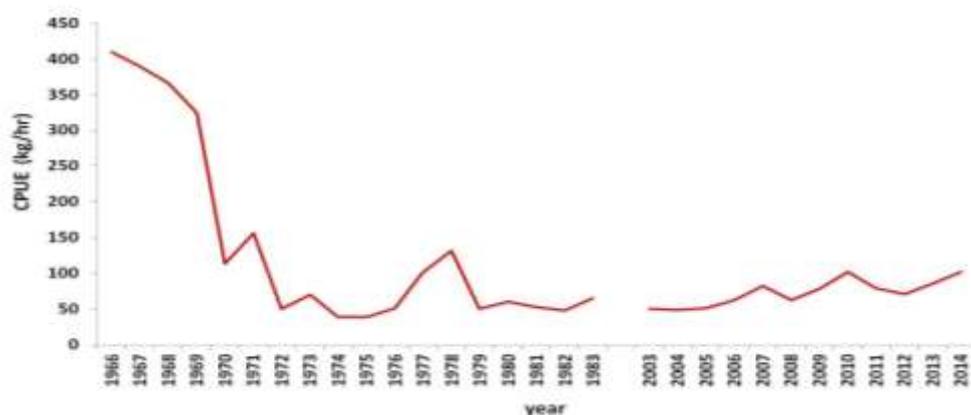
Declining CPUE of trawl surveys: Thailand has undertaken regular surveys with dedicated research vessels since the early 1960s. In the Gulf of Thailand, the CPUE declined steadily from 1961 to 1990 indicating an early decline in the abundance of demersal fish in the area during a time of heavy fishing pressure that coincided with introduction of trawling and then purse seining to Thailand. The CPUE then plateaued out at a level that is now only 9% of the original CPUE (Fig. 3).

Figure 3: CPUE (kg/hr) of research vessel in the Gulf of Thailand trawl surveys from 1961 to 2014.



In the Andaman Sea, the catch rate also declined steadily in the 1960s and the catch rate in 2014 was only about 25% of the 1966 value (Fig. 4).

Figure 4: CPUE (kg/hr) of research vessel trawl surveys in the Andaman Sea from 1966 to 2014



Catches equal to or greater than estimated potential yields (MSY): Based on recent stock assessments, the estimated fishing effort for demersal fish in the Gulf of Thailand exceeds the MSY effort by 32.8%, and 5.3% for the Andaman Sea. For pelagic fish (except anchovies), the current fishing effort exceeds the MSY effort by 27.0%, compared with 16.5% for the Andaman Sea. Fishing effort for anchovies appears to be in balance with the MSY. More details of the stock assessment methodology and results are at Appendix D presents detailed information on the MSY for of the fisheries resources of Thailand. Table 1 below presents a summary.

Table 1: Maximum Sustainable Yield of Marine Fisheries Resources in Thai waters

Location	MSY (tonnes)	Optimal Fishing Effort	Current Catch (tonnes)	Current Fishing Effort	Status of Fisheries	
					Exceeded/ Balanced/ Lower	Percentage
	(1) Demersal Fish*				Exceeded (million hours)	
Gulf of Thailand	794,771	24.33 mh**	503,276	36.20 mh	11.87	+32.8%
Andaman Sea	240,519	4.81 mh	177,684	5.09 mh	0.28	+5.3%
	(2) Anchovies				Lower/Exceeded (days)	
Gulf of Thailand	191,785	114,588 days	183,216	115,600 days	1,012	+0.9 %
Andaman Sea	32,944	52,014 days	33,903	51,520 days	494	-1.0%
	(3) Other pelagic fish				Exceeded (days)	
Gulf of Thailand	248,176	130,493 days	245,986	178,709 days	48,216	+27.0 %
Andaman Sea	118,477	54,238 days	99,039	64,925 days	10,687	+16.5 %

* Demersal fish refers to all bottom dwelling fish including crustacea and mollusks.

** mh = Million hours

Quantities of juvenile fish taken

In the Gulf of Thailand, the proportion of low value/trash fish in the fishery statistics has steadily increased. A significant part of this low value/trash fish is made up of juveniles of commercially important species that could grow to mature and spawn and also fetch a higher price.

Research in Thailand has shown that the around 50% of the catch of trawlers consists of small low value/trash fish. Of this huge quantity, about 35% consists of juveniles of larger more commercially valuable fish. (Supongpan and Boonchuwong, 2010)

Current status of critical habitats

As of the year 2015 Thailand had 2,455.34 km² of mangroves along the coasts of the Gulf of Thailand and the Andaman Sea (DMCR, 2015). Approximately 80–90% of mangrove forests along the Gulf of Thailand have disappeared in the last 30 years (Thampanya *et al.*, 2006).

The Andaman coast experienced less development pressure than the Gulf of Thailand but losses are high here also (20% between 1975 and 2005).

As of 2015 Thailand had 238.33 km² of coral reef (DMCR). On the Andaman Sea coast, it has been estimated that only 12% are in good condition while the remainder are fair to very poor. The total area of seagrass beds ca. 255.73 km² (DMCR, 2015), are also threatened by overexploitation of fish, physical modification, nutrient and sediment pollution, introduction of non-native species, and global climate change.

Fleet profile and catches

Fishing fleet

Fishing vessels in Thailand are categorized into two artisanal categories, three commercial categories based on size, as well a category of transshipment vessels. (See Appendix A for details). A survey of vessels in Thailand was conducted from 10 June to 31 July 2015 (presented in Table 2 below). A total of 45,805 vessels were discovered in the survey which consists of 42,512 active fishing vessels. (78% artisanal and 22% commercial) and 3,293 vessel were inactive, vessels operating outside of Thai waters and support vessels. Of these active fishing vessels, only 70% were registered and licensed.

Table 2: Total number of surveyed vessels by registration and licensing as of 1 August 2015

Category	Number of active fishing vessels operating in Thai waters	Number of vessels registered as fishing vessels	Number of vessels having fishing license	Number operating outside of Thai waters
Artisanal	33,205	27,631	20,546	
Commercial	9,307	10,382	9,307	
Total	42,512	38,013	29,853	238*

**Note: 238 surveyed fishing vessels have historical background of operating outside Thai waters, 76 fishing vessels obtained fishing licenses in 2014. In 2015, some vessels are not active due to license expiration of Coastal States, and some are applying for licenses for the high seas.*

Catch composition by fishing ground, vessel category and species groups

The total catch reported for the Thai fishing fleet in 2014 was 1.34 million tonnes; 69.4% was caught in the Gulf of Thailand, 23.1% in the Andaman Sea, and 7.5% from outside Thai waters. The bulk of the catch comes from commercial vessels. In 2014, commercial vessels in the Gulf of Thailand took 87.8% of the total catch, while in the Andaman Sea they accounted for 91.7%. This information is summarized in Table 3 below:

Table 3: Total estimated catches (tonnes) in 2014*

Resources	Gulf of Thailand		Andaman Sea		Outside Thai waters
	Artisanal	Commercial	Artisanal	Commercial	
“Demersal fish”**	86,050	417,226	16,229	161,455	
Anchovies	0	183,216	0	33,903	

Resources	Gulf of Thailand		Andaman Sea		Outside Thai waters
	Artisanal	Commercial	Artisanal	Commercial	
Other pelagic fish	28,157	217,829	9,425	89,614	
Subtotals	114,207	818,271	25,654	284,972	
Totals	932,478		310,626		101,165***
Grand totals	1,344,269				

* The catches of 2014 were estimated based on the total number of fishing vessels operated in Thai waters in 2015 multiplied by the average CPUE of each gear and the total fishing effort in 2012.

** "Demersal fish" refers all demersal species, including crustacean and molluscs.

*** Catch data from outside Thai waters based on imported catch by Thai FVs when applied for tax exemption at Fisheries Foreign Affair Division, DOF. The total catch landing for Thai FV operating outside Thai waters is not completely reported.

Thus, in formulating management measures and it is important to note that commercial fishing vessels make up only 20 percent of the number of fishing vessels but take about 90 percent of the catch tonnage. On the other hand, the majority of fishermen are artisanal fishermen and their catches support an important food supply chain that involves a large number of women in buying/selling and in processing. Fish also form an important part of the livelihoods of fishing communities; the fish caught by the fishermen are consumed at home. Therefore, any management measure needs to consider the impacts on the artisanal sub-sector with the goal to improving their standard of living.

Fishing gears

The main fishing gears used on the commercial vessels are bottom trawls, purse seines and falling nets. Smaller vessels use a wide variety of fishing gears including gill nets, falling nets, traps and hook and lines. Across the whole fleet, the most common net is the gill net, which is mainly operated by artisanal vessels. The largest number of trawls and purse seines are operated by the commercial vessels. This information is summarized in Table 4 below.

Table 4: Number of fishing gear categorized by size of fishing vessel according to the 2015 survey

Type of Fishing Gears	All Categories	Category of Fishing Vessels				
		Small Artisanal	Large Artisanal	Small commercial	Medium commercial	Large commercial
		< 5 GT	5 - < 10 GT	10 - < 20 GT	20 - <60 GT	>60 GT
Demersal fish	37,159	26,822	3,441	2,180	3,457	1,259
Trawl	4,087	225	304	517	1,945	1,096
Push nets	1,529	972	277	121	113	46
Gill nets	18,415	16,524	1,282	356	229	24
Traps	4,277	3,242	422	283	312	18
Hook and lines	2,447	2,097	230	73	43	4
Falling nets	3,470	1,452	673	672	638	35
Other	2,934	2,310	253	158	177	36
Anchovies	1,233	113	148	224	474	274
Anchovy purse seine	439	13	49	58	129	190

Type of Fishing Gears	Category of Fishing Vessels					
	All Categories	Small Artisanal	Large Artisanal	Small commercial	Medium commercial	Large commercial
		< 5 GT	5 - < 10 GT	10 - < 20 GT	20 - <60 GT	>60 GT
Anchovy Falling Nets	781	98	99	162	338	84
Anchovy Lift Nets	13	2	0	4	7	0
Other Pelagic fish	4,120	2,288	391	260	510	671
Surrounding nets (including purse seine)	1,090	35	46	68	312	629
Gill nets	2,929	2,185	329	184	189	42
Pound net	101	68	16	8	9	0
Grand Total	42,512	29,223	3,980	2,664	4,441	2,204

Catch from trawls and purse seines dominate the total catch, amounting to around 86% of the catch in 2012. Catch from trawls and purse seine were 564,264 and 382,423 tonnes (51% and 35%) respectively. Other gears (gill nets, light luring, hooks, stationary gears etc. were 152,727 tons (14%).

Current management arrangements and measures

Responsible agencies with Thailand

Thailand's marine fisheries are managed by the Department of Fisheries (DOF) of the Ministry of Agriculture and Cooperatives (MOAC) who also have overall responsibility for MCS. The Marine Department is responsible new vessel registration, vessel permit renewal, change of vessel lists, seaman book. Management of the marine environment is the responsibility the Department of Marine and Coastal Resources (DMCR) under the Ministry of Natural Resources and Environment (MNRE). The Thailand Maritime Enforcement Coordinating Centre (TMECC), headed by the Royal Thai Navy, handles security issues and protection of the marine resources. They also carry out the inspection on maritime transport safety, identify zones, and issue the mechanic and captain certificates.

Within Thailand DOF, DMCR, TMECC and the Marine Department collaborate and integrate efforts on the following five key areas:

- MCS operation;
- National observer program activities;
- Port sampling activities;
- Compliance and enforcement activities; and
- Data collection and management activities.

International and regional cooperation

Thailand has ratified a number of key legal instruments and is currently considering the ratification of the UN Fish Stock Agreement and accession to FAO Port State measures.

Some key global legal instruments relating to fisheries and the environment

Law of the Sea Convention (LOSC)	Convention on Biological Diversity (CBD)	Convention on International Trade in Endangered Species (CITES)	Ramsar Convention on Wetlands of International Importance (Ramsar)	UN Framework Convention on Climate Change (FCCC) and Kyoto Protocol	UN Fish Stocks Agreement	FAO Port State Measures
✓	✓	✓	✓	✓	U/C	U/C

Note: U/C = under consideration

Thailand as a member of the ASEAN community and is guided by the ASEAN Roadmap for an ASEAN Community (2009-2015) and its supporting Blueprints. Thailand has also endorsed the ASEAN-SEAFDEC Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020 (Res/POA).

Thailand is part of the Regional Plan of Action against IUU fishing (RPOA-IUU), which is a ministerial initiative of eleven countries: Australia, Brunei Darussalam, Cambodia, East Timor, Indonesia, Malaysia, Papua New Guinea, The Philippines, Singapore, Thailand and Vietnam to promote responsible fishing practices and combat IUU fishing in the SE Asian region.

Thailand is a member of the Indian Ocean Tuna Commission (IOTC), cooperating non-member of Western and Central Pacific Fisheries Commission (WCPFC) and non-contracting party of the International commission for the conservation of Atlantic Tunas (ICCAT) and the Commission for the conservation of Antarctic Marine living Resources (CCAMLR).

Current management measures

Thailand has put in place a range of management and technical measures through the Fisheries Act B.E. 2558 (2015), and the subordinate Ministerial Regulations and Department Rules. The management measures include registration of fishing vessels, licensing of fishing vessels, licensing of some types of fishing gears, freezing the number of trawlers, anchovy purse seiners and anchovy lift nets. There is also a ban on the use of push nets except for catching *Acetes* (Sergestids).

The Technical measures include protection of spawning stock and juveniles through closed seasons and areas, demarcation zones between artisanal and commercial fisheries; and reducing the efficiency of fishing gear according to the requirements for suitable mesh sizes for purse seines, anchovy purse seines, trawls, anchovy lift nets, collapsible crab traps and gill nets. Number and size of fishing gears and electric generator by vessel categories are limited to reduce fishing efficiency for trawls, purse seines, anchovy lift nets, squid cast nets, gill nets, collapsible crab traps, cuttlefish traps and octopus traps.

Marine Protected Areas (MPAs) have been declared as aquatic sanctuaries, non-hunting areas, marine national parks, mangrove swamps, coral reef areas, sea grass bed etc. The total area of MPA in Thailand is around 79,756.72 km²; about 25.23 % of the total sea area of Thai waters (316,118.24 km²). DOF is carrying out other conservation measures including, establishing artificial reefs for spawning grounds, fish shelter; and promoting community-based fishery management and EAFM.

3. HIGH PRIORITY CHALLENGES

There are many challenges confronting the marine fisheries of Thailand, but the following have been selected based on a risk assessment of their likelihood of occurring and their impact on the sustainable management of Thailand’s fisheries resources. The high priority issues are:

1. Overfishing and overcapacity, especially the commercial fleet; and
2. IUU fishing.

Table 5 below identifies the causes of the issues so that management can address the cause, not the symptom.

Table 5: High priority issues and their causes

Issue	Cause of the issue
1. Overfishing and overcapacity, especially the commercial fleets	<ul style="list-style-type: none"> • Too many vessels harvesting the marine resources, especially commercial vessels • No effective control of the size or number of fishing gears used • Weak enforcement of existing management measures
2. IUU fishing	<p>Thailand’s IUU fishing challenges are detailed in the NPOA-IUU. In summary, the causes of IUU fishing in Thailand include:</p> <p><i>In Thai waters</i></p> <ul style="list-style-type: none"> • Ineffective enforcement of the fisheries legislation • Inadequate coordination among agencies involved in MCS in Thailand; • Lack of information and control over foreign fishing vessels; • Lack of effective monitoring and surveillance schemes in place (port monitoring, observers, at sea and port inspections, etc.) • Inadequate communications systems to share monitoring information; • Insufficient deterrence for illegal fishing <p><i>Outside Thai waters (responsibility as a Flag State)</i></p> <ul style="list-style-type: none"> • Inadequate control of joint ventures arrangements and permission to fish in other States’ EEZ • Inadequate compliance with the rules and regulations of RFMOs • Inadequate cooperation by Thailand with other States <p><i>All waters</i></p> <ul style="list-style-type: none"> • Lack of an appropriate participatory National Control Plan (NCP) <p>These IUU fishing issues have been compounded by the excess fishing capacity and fishing effort of the Thai fishing fleet (see Issue 1 above).</p>

4. HIGH PRIORITY ISSUES: OBJECTIVES, TARGETS AND MANAGEMENT MEASURES

The overarching goal is to transform Thailand's marine fisheries into a limited access regime where the fishing effort is commensurate with the scientific evidence and IUU fishing is eliminated.

The specific objectives of for the high priority issues are:

1. Reducing fishing capacity and effort;
2. Rebuilding fish resources through artificial reefs and restocking programs; and
3. Minimizing IUU fishing of the marine resources through effective compliance and enforcement.

The detailed management measures and key performance indicators and timelines to achieve these objectives are presented in Table 6 and an Implementation Plan for 2015/16 is attached at Appendix E.

Objective 1: Reducing fishing capacity and fishing effort

Target: Reduction of the fishing capacity and effort within 3 years, especially commercial vessels

- For demersal fish; 40% in the Gulf of Thailand and 10% in the Andaman Sea
- For pelagic fish; 30% in the Gulf of Thailand and 20% in the Andaman Sea

A summary of the reduction of the numbers of fishing vessels and fishing days for Thailand's FMP are as follows:

1. Demersal Fish

1.1 Gulf of Thailand

Target: Reduction of the fishing capacity and effort 40 % from the current level

Management measures:

1. Remove illegal trawler and push netter, totally 2,051 which consisted of 826 non licensed trawler and 1,225 (all) push netter resulting reduce 35.64 % of fishing effort.
2. Reduce number of fishing days for trawler 5 days per month (60 days per year) resulting reduces 13.35 % of fishing effort.

1.2 Andaman Sea

Target: Reduction of the fishing capacity and effort 10 % from the current level

Management measures:

1. Remove illegal trawler and push netter, totally 415 which consisted of 410 non licensed trawler and 5 (all) push netter resulting reduce 44.94 % of fishing effort.

2. Reduce number of fishing days for trawler 5 days per month (60 days per year) resulting reduces 19.99 % of fishing effort.

2. Pelagic fish

2.1 Gulf of Thailand

Target: Reduction of the fishing capacity and effort 30 % from the current level

Management measures:

Reduce number of fishing days of 485 Purse seiners for 9 days per month (108 days per year) resulting reduces 30% of fishing effort. As all purse seines targeted for pelagic fisheries in the Gulf of Thailand are registered and licensed. The excessive fishing effort will be managed by the reduction of fishing days.

2.2 Andaman Sea

Target: Reduction of the fishing capacity and effort 20 % from the current level

Management measures:

Reduce number of fishing days of 262 purse seiners for 5 days per month (60days per year) resulting reduce 24.21% of fishing effort. As all purse seines targeted for pelagic fisheries in the Andaman Sea are registered and licensed. The excessive fishing effort will be managed by the reduction of fishing days.

3. Anchovies

3.1 Gulf of Thailand

Currently, 170 anchovy purse seiners and 162 anchovy falling/lift nets have no license in the Gulf of Thailand. To reduce the excess fishing effort based on the MSY estimate, five vessels will be removed. However, if all illegal vessels are removed, the fishing effort will be reduced by 58.12%.

3.2 Andaman Sea

There are 47 non-licensed vessels. Although the MSY analysis showed that there was no excessive fishing effort, if all illegal vessels are removed, the fishing effort will be reduced by 16.83%.

Objective 2: Rebuilding fish resources through artificial reefs and restocking programs

Target: Increase number of effective artificial reefs at least 10 sites per year and increase community stock enhancement projects 10 communities project per year.

To supplement the fleet and fishing effort reduction measures, rebuilding the fish resources will also occur through constructing artificial reefs and involving local communities in restocking schemes.

Objective 3: Minimizing IUU fishing through effective MCS

Target: Reduce the level of IUU fishing to a level that can be controlled through regular MCS arrangements

More detailed management measures to meet the objective of minimizing IUU fishing are contained in Thailand's National Plan of Action to Prevent, Deter and Eliminate IUU (NPOA-IUU). In summary, the measures are:

Strengthening Monitoring, Control and Surveillance (MCS) in Thailand (i) through institutional changes and increased support and capacity for MCS; (ii) improved the registration and licensing system (iii) increased surveillance through VMS and port State measures and coordination of patrol vessels and local community coast watch (iv) improved collaboration and coordination among Thailand agencies and (v) improved collaboration with other coastal States and regional and global fisheries and other organisations.

Table 6:

High priority issues: Detailed management measures, Key Performance Indicators (KPIs) and time frame

A Work Plan for implementing these measures¹ in 2015/16 is at Appendix E.

Objective 1: Reducing fishing capacity and fishing effort		
Target: Reduction of the fishing capacity and effort within 3years, especially commercial vessels		
<ul style="list-style-type: none"> • For demersal fish; 40% in the Gulf of Thailand and 10% in the Andaman Sea • For pelagic fish; 30% in the Gulf of Thailand and 20% in the Andaman Sea 		
Management measure	KPI	Time frame
I. All vessels in Thai waters		
1. AIV1: Survey of Fishing Vessels and transshipment vessels* ²	<ul style="list-style-type: none"> • List of active registered, unregistered, licensed, incorrect licensed and unlicensed fishing vessels 	<ul style="list-style-type: none"> • 2015
1.AIV2: Freeze the number of vessels registered for fishing purpose and number of fishing licenses during transitional period for further assessment of the appropriate number.*	<ul style="list-style-type: none"> • No additional vessel registration for fishing purpose • No additional number of fishing licenses • Number of fishing vessel for fleet policy development 	<ul style="list-style-type: none"> • 2015 • 2015 • 2015
1. AIV3: Remove all illegal FVs and banned push nets.*	<ul style="list-style-type: none"> • 100% of illegal FVs removed 	<ul style="list-style-type: none"> • 2015-16
1. AIV4: Reduce number of fishing days*	<ul style="list-style-type: none"> • Number of allowable fishing days reduced for trawlers targeting demersal fisheries in the Gulf of Thailand and the Andaman Sea. • Number of allowable fishing days reduced for purse seines targeting pelagic fisheries in the Gulf of Thailand and the Andaman Sea 	<ul style="list-style-type: none"> • 2015-2016

¹ AIV = all vessels; CV = commercial vessels; AV = artisanal vessels; IC = International cooperation for IUU; TC= Thailand Coastal; CS = Coastal State; FS = Flag State; PS = Port State; IM = International market; RB = Resource rebuilding;

² Action to be implemented 2015/16

Management measure	KPI	Time frame
1. AIIV5: Develop new electronics fishing license system for all FVs and ensure that all vessels are licensed and registered*	<ul style="list-style-type: none"> • Electronic fishing license system is operational by 2016 	<ul style="list-style-type: none"> • 2016
1. AIIV6: Consider a buyback scheme to remove any excess capacity that remains.* (See Appendix F)	<ul style="list-style-type: none"> • List of duly licensed vessels • List of vessels to be removed to compensation scheme • All excessive FVs have been removed • All affected FVs have been compensated 	<ul style="list-style-type: none"> • 2016 • 2015 – 2017 • 2019 • 2019
II. Small, medium and large commercial vessels in Thai waters		
1.CV1: Revoke license for anchovy purse-seine, lift net and trawl; if the FVs have been inactive for one year.*	<ul style="list-style-type: none"> • All inactive FVs for anchovy purse-seine and anchovy lift net and trawler removed 	<ul style="list-style-type: none"> • 2016
1.CV2: Cancel vessel registration, and vessel permit in the IUU vessels list without an option to replace vessel*	<ul style="list-style-type: none"> • Number of licenses revoked as a result of IUU infringement 	<ul style="list-style-type: none"> • 2016
1.CV3: Conduct research on the costs and benefits of introducing a Total Allowable Catch (TACs) and/or later Individual Transferable Quotas (ITQs) for selected species.* If beneficial, introduce a TACs system and/or later ITQs	<ul style="list-style-type: none"> • Report of costs and benefit is produced and submitted for consideration of the National Fisheries Policy Committee. • Introduction of TACs and/or ITQs 	<ul style="list-style-type: none"> • 2016-2018 • 2018
III. Small and Large Artisanal Vessels		
1.AV1: Enforce the limit on type and number of gears*	<ul style="list-style-type: none"> • All controlled fishing gears are controlled at optimum number 	<ul style="list-style-type: none"> • 2015

Objective 2: Rebuilding fish resources through artificial reefs and restocking programs		
Target: Increase number of effective artificial reefs at least 10 site per year and increase community stock enhancement projects 10 communities project per year		
Management measure	KPI	Time frame
2.RB1: Continue to build artificial reefs, especially along the zone border*	<ul style="list-style-type: none"> • Increase number of effective artificial reefs at least 10 sites per year 	<ul style="list-style-type: none"> • 2015-2019
2.RB2: “Marine Animal Bank” scheme for promoting stock enhancement*	<ul style="list-style-type: none"> • Increase 10 communities projects per year 	<ul style="list-style-type: none"> • 2015-2019

Objective 3: Minimizing IUU fishing through effective MCS		
Target: Reduce the level of IUU fishing to a level that can be controlled through regular MCS arrangements		
Management Measures	KPI	Time frame
I. International cooperation		
3.IC1: Compile and exchange information among States and RFMOs* 3.IC2: Exchange information on vessels >24 m and under 24 m if the fishing outside the EEZ through the ASEAN Regional Vessel Record* 3.IC3: Provide information on IUU vessels under the regional RPOA-IUU and share the IUU list (blacklist) with other agencies*	<ul style="list-style-type: none"> • Bi-lateral Information Exchange MOUs are formulated and/or signed with fishing and exporting States • Information exchange mechanism with coastal state/port state/RFMOs is operational • Thailand able to conduct the Information exchange through Regional Vessel Record • International IUU FVs list is officially announced. • International IUU FVs list is updated annually. • Thai IUU FVs list is developed and announced 	<ul style="list-style-type: none"> • 2015-2019 • 2016 • 2015 • 2016 • Annually • Annually
3.IC4: Harmonize the Combating IUU Policies among States, especially for inspection of foreign vessels*	<ul style="list-style-type: none"> • Dialogue to explore possibility for harmonization IUU policies among States in the region and States fished by Thai FVs. 	<ul style="list-style-type: none"> • 2016

Management Measures	KPI	Time frame
II. Coordination across Thailand agencies		
3.TC1: Strengthen coordination across DOF, DMCR, Customs Department, Royal Thai Navy, Marine Police Division, Marine Department, Provincial Administration Department, Ministry of Labor, and Thailand Maritime Enforcement Coordinating Centre (TMECC) through MOUs to exchange information and the authority to make arrests, prosecution and punishment*.	<ul style="list-style-type: none"> • Interagency Information Exchange and collaboration MOUs are signed. • Combined training exercise related to MCS conducted annually. • All arrested cases are prosecuted and followed up. 	<ul style="list-style-type: none"> • 2015 • Annually • 2015
3.TC2: Establish the following organization and/or mechanisms in DOF*: (i) Resource assessment technical unit (ii) Evaluation and recommendation unit (iii) Control and inspection unit	<ul style="list-style-type: none"> • DOF Restructuring finalized • New organizations are established. 	<ul style="list-style-type: none"> • 2016 • 2016
III. Thailand's Coastal State responsibilities		
3.CS1: Strengthen MCS in Thai waters through the implementation of the National Plan of Control and inspection	<ul style="list-style-type: none"> • IUU risk assessment carried out. • An agreed National Plan of Control among relevant agencies is developed and fully implemented. 	<ul style="list-style-type: none"> • 2015 • 2015 Implement start 2016
3.CS2: Set up a fishing information database containing fishermen, fishing vessels, fishing crews, fishing operators, licenses and fishery infringements*	<ul style="list-style-type: none"> • Fishing information database is developed. 	<ul style="list-style-type: none"> • 2015 onward
3.CS3: Enhance the operational capacity for Port in – Port out control to cover all areas*	<ul style="list-style-type: none"> • PIPO effective in all areas 	<ul style="list-style-type: none"> • Start 2015
3.CS4: Mandate the use of Vessel Monitoring System (VMS) for appropriate vessels*	<ul style="list-style-type: none"> • 100% coverage of mandated vessels (≥ 30 GT) 	<ul style="list-style-type: none"> • 2015
3.CS5: Strengthen log book system*	<ul style="list-style-type: none"> • 100% compliance with log book requirements for vessels (≥ 30 GT) 	<ul style="list-style-type: none"> • 2015
3.CS6: Ensure that all foreign vessel operating in Thai waters comply with Thai law and regulation* as prescribed in Thai Fisheries law	<ul style="list-style-type: none"> • Positive compliance report from monitoring control center 	<ul style="list-style-type: none"> • 2016
3.CS7: Raise awareness and support for preventing IUU fishing with local communities*	<ul style="list-style-type: none"> • Effective awareness campaigns developed and implemented 	<ul style="list-style-type: none"> • 2016
IV. Thailand's responsibilities as a Flag State		
3.FS1: Thai vessels that operate inside Thai's EEZ must have a license permit	<ul style="list-style-type: none"> • All Thai vessels that operate inside Thai's EEZ have a valid license permit 	<ul style="list-style-type: none"> • 2015

Management Measures	KPI	Time frame
3.FS2: Vessels operating in the EEZ of another State must have a permit from Thailand to fish in other States based on agreements made by the Governments of the two countries*	<ul style="list-style-type: none"> All vessels operating in the EEZ of another State have a valid permit 	<ul style="list-style-type: none"> Start 2015
3.FS3: All vessels fishing in the high seas must have a permit from Thailand to engage in this fishing*	<ul style="list-style-type: none"> All vessels operating in the high seas have valid permits 	<ul style="list-style-type: none"> Start 2015
3.FS4: All vessels targeting tuna must have a permit from Thailand to engage in fishing for tuna and tuna-like species*	<ul style="list-style-type: none"> All vessels operating in the high seas have a valid permit All active vessels are in the IOTC vessel list 	<ul style="list-style-type: none"> Start 2015
3.FS5: Mandate the use of Vessel Monitoring System (VMS) and set up a warning VMS system that warns of risks of vessels entering prohibited area and report on navigation routes of FVs.*	<ul style="list-style-type: none"> All overseas FVs installed with VMS VMS system working effectively and warning system developed. 	<ul style="list-style-type: none"> Start 2015 2016
3.FS6: FVs must report their position automatically, and/or appointed time when requested by VMS Centre and sharing data for enforcement..*	<ul style="list-style-type: none"> Standardization of Thai-VMS Develop legislation/regulations on using the VMS data 	<ul style="list-style-type: none"> 2015 2015
3.FS7: Set up an integrated database system with the Royal Thai Navy, DOF and Marine Department*	<ul style="list-style-type: none"> An integrated database system of Thai fishing vessels operating in overseas is developed and operational 	<ul style="list-style-type: none"> 2016
3.FS8: Survey and setup a database of fishing vessels with evidence of IUU fishing (blacklist)*	<ul style="list-style-type: none"> A blacklist criterion is drawn up. Database of Thai Blacklist IUU FVs is developed and announced. 	<ul style="list-style-type: none"> 2016 2016
3.FS9: Fishing vessels and transshipment vessels to report intent to carry out a fishing trip before departure and report back on arrival*	<ul style="list-style-type: none"> The regulations related to operating in the overseas fishing are amended. All Thai-flagged fishing and transshipment vessels operating overseas report through PIPO centers. 	<ul style="list-style-type: none"> 2016 2015
3.FS10: Development of Observer on board Program for both fishing vessels and transshipment vessels operating outside of the Thai waters based on a risk assessment*	<ul style="list-style-type: none"> Risk assessment carried out Observers on board program developed Training observer on board 	<ul style="list-style-type: none"> 2015
3.FS11: All vessels tuna targeting the areas covered by IOTC must comply with Regulations and Rules of the IOTC*	<ul style="list-style-type: none"> Positive compliance reports by IOTC 	<ul style="list-style-type: none"> 2015

Management Measures	KPI	Timeline
3.FS12: Vessels that operate inside and outside of Thai waters must comply with the law, regulation and rules as prescribed by the State where they are fishing*	<ul style="list-style-type: none"> • Positive compliance report 	<ul style="list-style-type: none"> • 2015
3.FS13: Impose strict penalties as prescribed in the Thai Law and of other Coastal State Law.*	<ul style="list-style-type: none"> • Fisheries Act is amended with strict penalties for such infringement 	<ul style="list-style-type: none"> • 2015
V. Thailand's measures as a Port States		
3.PS1: Thailand to ratify the United Nations Fish Stocks Agreement (UNFSA) and agree on Port State Measures (PSM)*	<ul style="list-style-type: none"> • Ratification and agreement 	<ul style="list-style-type: none"> • 2016
3.PS2: Minister Announcement and/or CCCIF Order declares a list of vessels that violate international obligations (blacklist) and coordinate information on foreign vessels especially the IUU list**	<ul style="list-style-type: none"> • International IUU vessel list is officially announced • IUU vessel list is officially announced and shared among Thai enforcement agencies • Confirmation of update of IUU vessels from website and contact with flag states 	<ul style="list-style-type: none"> • 2015 • 2015 • 2016-2019
3.PS3: Enforcing foreign FVs inspection as prescribed by national and international laws and international agreements, including measures agreed by the Flag State*	<ul style="list-style-type: none"> • Procedure for Port State Measures Inspection for foreign fishing and transshipment vessels • Designate landing ports for foreign vessel on port entry and landing/transshipment of fish, supplies and services • Related laws are amended according to PSM • A number of compliance reports submitted to RFMOs, e.g. IOTC. 	<ul style="list-style-type: none"> • 2015 • 2015 • 2016 • 2016
3.PS4: Provide legal basis to inspect and prosecute a foreign IUU vessel and catch*	<ul style="list-style-type: none"> • National legislation contains provisions for foreign IUU vessel inspection (according to Fisheries Act 2015) is approved. 	<ul style="list-style-type: none"> • 2015
3.PS5: Transshipment vessel landing fish in a Thai port must provide a transshipment report*	<ul style="list-style-type: none"> • 100% coverage in reports 	<ul style="list-style-type: none"> • 2016

Management Measures	KPI	Timeline
VI. Internationally accepted market measures		
3.IM1: Import and export goods must comply with the laws under the CITES convention and Wildlife and Protection Act*	<ul style="list-style-type: none"> • No CITES violation goods are imported to or exported from Thailand • Compliance with CITES 	<ul style="list-style-type: none"> • 2015
3.IM2: Strengthen traceability to verify the origin of raw material before it enters processing*	<ul style="list-style-type: none"> • Traceability systems is improved and strengthen through a software-based system and enhance inspection capacity • Increase the number of traceability inspectors, through recruitment of new officers or outsourcing 	<ul style="list-style-type: none"> • 2016 • 2015
3.IM3: Improve the Fishing Logbook, Marine Catch Purchasing (MCPD) and Marine Catch Transshipment Documents (MCTD) report system*	<ul style="list-style-type: none"> • Amend the related laws to ensure the functionality of the desired traceability system • 100% coverage of logbook and effective MCPD and MCTD reporting system in place 	<ul style="list-style-type: none"> • 2016 • 2016
3.IM4: Determine guidelines on verifying logbooks, MCPD and Marine Catch Transshipment Documents*	<ul style="list-style-type: none"> • Crossed-checking Guidelines is developed • Risk assessment carried out • Inspection is carried out at random 	<ul style="list-style-type: none"> • 2015 • 2016 • 2016

5. OTHER THREATS AND CHALLENGES

Issue	Cause of the issue
3. Catching a large quantities of juvenile fish of larger commercial species, which could grow bigger	<ul style="list-style-type: none"> • Demand for low value/trash fish for aquaculture • Small mesh sizes in fishing gear
4. Conflicts between artisanal and commercial fishers	<ul style="list-style-type: none"> • Competition for a depleted resource • Inadequate cooperation and coordination mechanisms across the vessel categories
5. Degraded critical habitat	<p>Mangroves</p> <ul style="list-style-type: none"> • Conversion to agriculture • Conversion to aquaculture • Urban development • Illegal forestry activities • Freshwater runoff and salt intrusions <p>Coral reefs</p> <ul style="list-style-type: none"> • Overfishing • Destructive fishing practices • Tourism • Acidification and temperature rises (climate change) <p>Sea grass</p> <ul style="list-style-type: none"> • Push nets • Mining • Land development • Destruction of mangroves <p>All critical habitats</p> <ul style="list-style-type: none"> • Lack of cooperation and coordination amongst agencies responsible for critical habitat protection and restoration
6. Inadequate fisheries data and information	<ul style="list-style-type: none"> • Inadequate human capacity of technical and scientific staff involved in data collection and analyses • Insufficient time and effort (and funds) allocated to collect and analyse data and information required for fisheries management e.g. Key KPIs in this FMP • Lack of regular reporting requirements and obligations to senior policy staff and the Minister • Inadequate scientific communication skills of scientists
7. Inadequate fisheries management capacity	<ul style="list-style-type: none"> • Lack of an effective fisheries management unit in DOF • Insufficient human capacity in fisheries management in DOF headquarters in Bangkok • Insufficient human capacity of provincial/district fishery officers in fisheries management

Note: Issue numbering follows on from the high priority issues

6. OTHER ISSUES: OBJECTIVES, TARGETS AND MANAGEMENT MEASURES

For the other issues the overarching goals are:

1. Increase benefits for and reduce conflicts among major stakeholders
2. Improve the marine environment; and
3. Strengthen capacity to sustainably manage the fisheries

The specific objectives are:

4. Reducing the catch of juveniles of the larger commercial species;
5. Resolving conflicts between artisanal and commercial fishers;
6. Restoring and maintaining critical habitats;
7. Improving fisheries data and information; and
8. Strengthening fisheries management capacity.

Note: Objective numbering follows the sequence of numbering for the high priority objectives.

The detailed and key performance indicators and timelines to achieve these objectives are later in Table 7 and an Implementation Plan for 2015/16 is at Appendix E.

Objective 4: Reducing the catch of juveniles of the larger commercial species

Target: Reduce the proportion of juvenile caught and landed to 50% of current levels in 5 years

Reducing the catch of juvenile fish will be achieved through technical measures including increasing mesh sizes and spatial/temporal closures, along with awareness rising for the fishermen. However, because juvenile of larger commercial species are caught as part of a small, low value/trash fish category that is largely used for making fish meal for animal feeds, especially aquaculture feeds, reducing the catch of juvenile fish will not be easy.

Objective 5: Resolving conflicts between small-scale and large-scale fishers

Target: Reduce the incidence of conflicts to a manageable level in all Provinces

Currently, each Province has a demarcation zone where only artisanal vessels are allowed only to fish. The main measure to further reduce conflict will be through changing the existing demarcation the Coastal Fishing Zone, according to scientific data and stakeholder consultation. Fishery Co-management Committees consisting of representatives of DOF, DMCR, artisanal, commercial vessels and other key stakeholders (e.g. traders) could also be effective.

Objective 6: Restoring and maintaining critical habitats**Target: 4,000 rai³ mangrove area increased by 2019****4% of coral reefs and 4% seagrass beds under effective management by 2019**

The DMCR is the government agency responsible for coastal habitat restoration and management. To achieve this objective DOF will have to become more involved in habitat protection and restoration activities carried out by other agencies at the national, provincial and district levels, especially on-going Integrated Coastal Management (ICM) activities. DOF can also Initiate Ecosystem Approach for Fisheries Management (EAFM) Programs for coastal communities.

Objective 7: Improving fisheries data and information**Target: Improve data collection and information dissemination systems to a level that can be easily used to monitor the performance of this FMP in 2 years**

The main measure to achieve this objective is developed a more systematic system for collecting and collating basic fishery statistics. This will involve developing a Portal/database system that links different sources of data for use in both stock assessment and fisheries management that is readily accessible to all.

Objective 8: Strengthening fisheries management capacity**Target: An effective and efficient fisheries management capacity within 5 years**

Implementing this FMP will require institutional changes that build new Fisheries Management Unit and develop the capacity of its staff.

³ 1 hectare = 6.25 rai

Table 7:

Other issues: Detailed management measures, Key Performance Indicators (KPIs) and time frame

A Workplan for implementing these measures⁴ in 2015/16 is at Appendix E.

Objective 4: Reducing the catch of juveniles of the larger commercial species		
Target: Reduce the proportion of juvenile caught and landed to 50% of current levels in 5 years		
Management measure	KPI	Time frame
All vessels		
4.All1: Increase the legal limit on the mesh size of trawl nets and other gears*	<ul style="list-style-type: none"> • Limit of codend mesh size for trawler is announced • 100% of trawler using codend mesh size as legal limit • • Consultation with coastal community for other gears • 	<ul style="list-style-type: none"> • 2015 • After 90 days of announcement • 2016
4.All2: Introduce more seasonal and spatial closures based on research that shows that these times and areas protect juvenile nursery and spawning stock areas	<ul style="list-style-type: none"> • Number of seasonal closure area is increased • Prohibited area for commercial fisheries is increased 	<ul style="list-style-type: none"> • 2015 – 2019 • 2015 – 2019
4.All3: Encourage research to find fish meal substitutes*	<ul style="list-style-type: none"> • Effective substitute’s fish meal found 	<ul style="list-style-type: none"> • 2015 -2019

² RC = Resolving conflict; CH = critical habitat; DI = Data and information; FM = Fisheries Management

Objective 5: Resolving conflicts between small-scale and large-scale fishers		
Target: Reduce the incidence of conflicts to a manageable level in all Provinces		
Management measure	KPI	Time frame
5.RC1: Form Provincial Fishery Co-management Committees consisting of representatives of DOF, DMCR, artisanal, commercial vessels and other key stakeholders (e.g. traders)*	<ul style="list-style-type: none"> • Provincial Fisheries Co-management Committees formed 	<ul style="list-style-type: none"> • 2016
5.RC2: Establish and demarcation the Coastal Fishing Zone, according to scientific data and stakeholders consultation* - Artisanal FVs allowed only in the Coastal Fishing Zone and commercial FVs allowed only outside the Coastal Fishing Zone out to maritime boundary	<ul style="list-style-type: none"> • Public consultations undertaken • Demarcations of Coastal Fishing Area, by Province are completed and officially announced 	<ul style="list-style-type: none"> • 2015 • 2015
5.RC3: Code and color marking scheme is introduces to differentiate the fishing area and the type of commercial FVs*	<ul style="list-style-type: none"> • Code and color Marking scheme is introduced • 100% Commercial FVs complied with the regulation 	<ul style="list-style-type: none"> • 2016 • 2017
5.RC4: Develop a VMS warning system to alert entry into a prohibited zone/area * <ul style="list-style-type: none"> • Demarcation line is drawn in Electronics Chart Display Information System (ECDIS) or any acceptable navigation charts and embedded in the VMS control center. 	<ul style="list-style-type: none"> • VMS system working effectively and warning system developed 	<ul style="list-style-type: none"> • 2016
5.RC5: Strengthen existing co-management system and involve these the fishermen in any integrated coastal management (ICM) activities*	<ul style="list-style-type: none"> • Number of communities involved in the ICM 	<ul style="list-style-type: none"> • 2015

Objective 6: Restoring and maintaining critical habitats		
Target: Restore critical habitat areas 4,000 rai⁵ mangrove area increased, 4% of coral reefs and 4% seagrass beds under effective management		
Management measures	KPI	Time frame
6.CH1: Increase the total area of MPAs	<ul style="list-style-type: none"> • MPAs under DMCR, especially seagrass, coral reefs, mangrove and critical habitation of endangered species are maintained and increased in size. • MPAs under DNP especially marine national parks are maintained. • MPAs under DMCR are increased in size in at least 2 areas 	<ul style="list-style-type: none"> • 2015 • 2015 • 2016
6. CH2: Ensure that the National Fisheries Policy Committee and the Provincial Committees have representatives from the Environment agency and NGOs; and also include critical habitats on their agendas.	<ul style="list-style-type: none"> • National and Provisional Committees have representatives from Environment agency and NGOs • Critical habitats status is a standing item on the agenda 	<ul style="list-style-type: none"> • 2016 • annually
6. CH3: DOF to become more involved in habitat protection and restoration activities carried out by other agencies at the national, provincial and district levels, especially on-going Integrated Coastal Management (ICM) activities	<ul style="list-style-type: none"> • DOF staff are represented in any ICM activities and on any coordination arrangements with other agencies 	<ul style="list-style-type: none"> • 2016, annually
6. CH4: Initiate Ecosystem Approach for Fisheries Management (EAFM) Programs for coastal communities	<ul style="list-style-type: none"> • Consultation with the target fishing communities, to find specific fisheries and habitats • Train the local fishermen in EAFM. • Increase 5 communities project per year. 	<ul style="list-style-type: none"> • 2015 • 2015 • Annually

⁵ 1 hectare = 6.25 rai

Objective 7: Improving fisheries data and information		
Target: Improve data collection and information dissemination systems to a level that can be easily used to monitor the performance of this FMP in 2 years		
Management measure	KPI	Time frame
7.DI1:Conduct a gap analysis between the data and information needed for KPIs data FMP and the actual available data*	<ul style="list-style-type: none"> • Gap analysis completed • Recruitment of new officers • Data Collection System is improved 	<ul style="list-style-type: none"> • 2015 • 2016 • 2017
7.DI2:Portal/database system that links different sources of data for use in both stock assessment and fisheries management*	<ul style="list-style-type: none"> • Integrated database system is operational • Web-Portal accessing system is operational 	<ul style="list-style-type: none"> • 2016 • 2017
7.DI3:Develop a more systematic system for collecting and collating basic fishery statistics*	<ul style="list-style-type: none"> • National Data Collecting Systems is operational 	<ul style="list-style-type: none"> • 2017
7.DI4:Implement continuous capacity development for all technical and scientific staff *	<ul style="list-style-type: none"> • Training and higher education provided for the key staffs; especially in the area of maritime policy, and fishery management 	<ul style="list-style-type: none"> • 2015 -2016
7.DI5:Implement continuous capacity development for key staff in how to communicate scientific results to policy makers and stakeholders*	<ul style="list-style-type: none"> • Conduct at least two trainings, annually, for key staff 	<ul style="list-style-type: none"> • 2016 onwards
7.DI6:Strengthen data quality assurance systems by cross-validating data from different sources	<ul style="list-style-type: none"> • Automatic Data validation systems is in place and operating 	<ul style="list-style-type: none"> • 2017
7.DI7:Ensure that data required by RFMOs is of high quality and timeliness*	<ul style="list-style-type: none"> • A quality control system in place for data going to RFMOs and all reporting information requirement for RFMOs is on time 	<ul style="list-style-type: none"> • Start 2015

Objective 8: Strengthening fisheries management capacity		
Target: An effective and efficient fisheries management capacity within 5 years		
Management measure	KPI	Time frame
8.FM1: Conduct a gap analysis between the required system to be in place for effective fisheries management and the current organization structure and the capacity of personnel*	<ul style="list-style-type: none"> • Gap analysis completed • Strategic Plan for Organization Improvement and Manpower Capacity Building Program 	<ul style="list-style-type: none"> • 2015 • 2016
8.FM2: As the result of FM1, if applicable; Establish new sections responsible for fisheries resource management, allocation and license authorization in DOF, Bangkok	<ul style="list-style-type: none"> • New Division established that is responsible for fisheries resource management, allocation and license authorization. 	<ul style="list-style-type: none"> • 2016
8.FM3: As the result of FM1, if applicable; Establish a Surveillance Centre that coordinates effective VMS, patrols, aircraft etc.	<ul style="list-style-type: none"> • New Centre established , i.e., Operation Center on Combating IUU Fishing (MCS Center) 	<ul style="list-style-type: none"> • 2016-2017
8.FM4: As the result of FM1, if found applicable; Establish a Traceability and Catch Certification Division	<ul style="list-style-type: none"> • New division established responsible and dedicated to a catch certification scheme and traceability of catch from Thai and international waters as well as imported catch. 	<ul style="list-style-type: none"> • 2017-2018
8.FM5: As the result of FM1, if applicable; Develop the human capacity of DOF HQ staff, to implement this FMP*	<ul style="list-style-type: none"> • Human capacity sufficient to implement and monitor the FMP 	<ul style="list-style-type: none"> • start 2015
8.FM6: As the result of FM1, if found applicable; Develop the human capacity of Provincial/District fishery officers in fisheries management	<ul style="list-style-type: none"> • Human capacity of Provincial/District fishery officers in fisheries management increased 	<ul style="list-style-type: none"> • 2017-2018

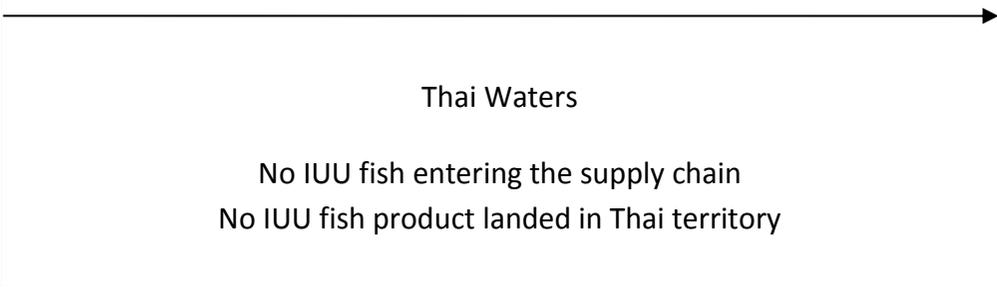
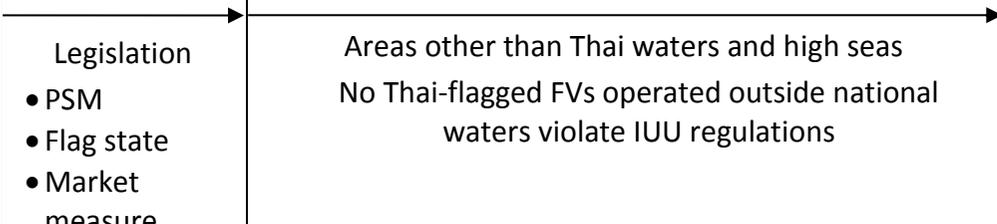
7. TIMELINES FOR IMPLEMENTATION

The following table (Table 8) gives an overview of the timelines for meeting the objectives

Table 8: Overview of the timelines for meeting the objectives

Objective	Targets	2015	2016		2017		2018		2019	
		2 nd Half	1 st Half	2 nd Half	1 st Half	2 nd Half	1 st Half	2 nd Half	1 st Half	2 nd Half
1. Reducing fishing capacity and fishing effort	<u>For demersal fish</u> A 40% reduction in the fishing effort in Gulf of Thailand	→	→	→	→	→	→	→	→	→
		20% reduction in fishing effort from the current level	30% cumulative reduction in fishing effort from the current level	40% cumulative reduction in fishing effort from the current level						
	<u>For demersal fish</u> A 10% reduction in the fishing effort in Andaman Sea	→	→	→	→	→	→	→	→	→
		5% reduction in fishing effort from the current level	8% cumulative reduction in fishing effort from the current level	10% cumulative reduction in fishing effort from the current level						

Objective	Targets	2015	2016		2017		2018		2019	
		2 nd Half	1 st Half	2 nd Half	1 st Half	2 nd Half	1 st Half	2 nd Half	1 st Half	2 nd Half
	<u>For pelagic fish</u> A 30% reduction in the fishing effort in Gulf of Thailand	20% reduction in fishing effort from the current level		25% cumulative reduction in fishing effort from the current level		30% cumulative reduction in fishing effort from the current level				
	<u>For pelagic fish</u> A 20% reduction in the fishing effort in Andaman Sea	10% reduction in fishing effort from the current level		15% cumulative reduction in fishing effort from the current level		20% cumulative reduction in fishing effort from the current level				
2. Rebuilding fish resources through artificial reefs and restocking	Increase number of effective artificial reefs at least 10 site per year and increase community stock enhancement projects 10 communities project per year	10 effective artificial reefs increase 10 communities project in stock enhancement		10 effective artificial reefs increase 10 communities		10 effective artificial reefs increase 10 communities		10 effective artificial reefs increase 10 communities		

Objective	Targets	2015	2016		2017		2018		2019	
		2 nd Half	1 st Half	2 nd Half	1 st Half	2 nd Half	1 st Half	2 nd Half	1 st Half	2 nd Half
		projects increase		project in stock enhancement projects increase		project in stock enhancement projects increase		project in stock enhancement projects increase		
3. Minimizing IUU fishing through effective MCS	Reduce the level of IUU fishing to a level that can be controlled through regular MCS arrangements	 <p style="text-align: center;">Thai Waters</p> <p style="text-align: center;">No IUU fish entering the supply chain No IUU fish product landed in Thai territory</p>								
		Legislation <ul style="list-style-type: none"> • PSM • Flag state • Market measure 	 <p style="text-align: center;">Areas other than Thai waters and high seas</p> <p style="text-align: center;">No Thai-flagged FVs operated outside national waters violate IUU regulations</p>							

Objective	Targets	2015	2016		2017		2018		2019	
		2 nd Half	1 st Half	2 nd Half	1 st Half	2 nd Half	1 st Half	2 nd Half	1 st Half	2 nd Half
4. Reducing the catch of juvenile fish of larger commercial species	Reduce the proportion of juvenile caught and landed to 50% of current levels in 5 years	10% reduction in juvenile caught and landing from the current level	20% cumulative reduction in juvenile caught and landing from the current level		30% cumulative reduction in juvenile caught and landing from the current level		40% cumulative reduction in juvenile caught and landing from the current level		50% cumulative reduction in juvenile caught and landing from the current level	
5. Resolving conflicts between small-scale and large-scale fishers	Reduce the incidence of conflicts to a manageable level in all Provinces <ul style="list-style-type: none"> • Artisanal fishers 	Stakeholders Consultation Demarcation Fishing zone								
	<ul style="list-style-type: none"> • Commercial fishers 		VMS Warning system Code and color scheme	Robust laws enforcement at sea						

Objective	Targets	2015	2016		2017		2018		2019	
		2 nd Half	1 st Half	2 nd Half	1 st Half	2 nd Half	1 st Half	2 nd Half	1 st Half	2 nd Half
6. Restoring and maintaining critical habitats	Restore critical habitat areas 4,000 rai of mangrove area increased, 4% of coral reefs and 4% seagrass beds under effective management (1 hectare=6.25 rai)	1000 rai increase in area of mangroves 1% increase in coral reefs under management 1% increase in sea grass area under management	1000 rai increase in area of mangroves 1% increase in coral reefs under management 1% increase in sea grass area under management	1000 rai increase in area of mangroves 1% increase in coral reefs under management 1% increase in sea grass area under management	1000 rai increase in area of mangroves 1% increase in coral reefs under management 1% increase in sea grass area under management	1000 rai increase in area of mangroves 1% increase in coral reefs under management 1% increase in sea grass area under management	1000 rai increase in area of mangroves 1% increase in coral reefs under management 1% increase in sea grass area under management	1000 rai increase in area of mangroves 1% increase in coral reefs under management 1% increase in sea grass area under management		
7. Improving fisheries data and information	Improve data collection and information dissemination systems to a level that can be easily used to monitor the performance of this FMP in 2 years	Gap analysis result	Integrated Database system	Systematic Data Collection						

Objective	Targets	2015	2016		2017		2018		2019	
		2 nd Half	1 st Half	2 nd Half	1 st Half	2 nd Half	1 st Half	2 nd Half	1 st Half	2 nd Half
8. Strengthening fisheries management capacity	An effective and efficient fisheries management capacity within 5 years									
		Gap analysis undertaken	3 DOF agencies are formed		Systematic Fisheries Management					

8. DATA AND INFORMATION NEEDS FOR MONITORING AND EVALUATION

A broad set of data and information will be needed to evaluate progress against the KPIs. The data and information will need to come from a number of sources including DOF Statistics, Marine Department, DOF Research Bureaus, MCS agencies, other government agencies such as DMCR, central statistics agencies (e.g. National Census).

The research program of the different agencies, especially those attached to DOF will also have to be re-focused at providing data and information relevant to this FMP. Most importantly the trawl surveys will need to be continued. Other important research topics include (i) cost benefits of TACs and ITQs for selected species, (ii) cost benefits of artificial reefs as a means of increasing fish abundance and (iii) cost benefits of restocking for rebuilding fish resources.

Examples of the type of data and information needed for the KPIs

Agency in [] is the responsible agency.

1. Reducing fishing capacity and effort	
Number of registered and licensed vessels by vessel category [Marine Department/DOF]	Catch by category by species group [Statistics DOF]
Fishing effort by vessel category by species group [Statistics DOF]	Catch by product type (e.g. food fish/trash fish)
Number of vessels by categories removed from the fisheries	Number of fishermen compensated
CPUE from trawl surveys in the Gulf of Thailand and the Andaman Sea [Research]	MSY by species group/fishing effort at MSY/number of boats needed to catch MSY
Number of fishermen by age group [Census]	Number of fishing households
Number of women engaged in fishing related activities [Census]	-
2. Rebuilding fish resources through building artificial reefs and restocking	
Number and location of existing and new artificial reefs	Number of community restocking programs supported
3. IUU fishing	
Number of vessels unregistered	Number of vessels unlicensed
Number of unlicensed gear	Number of permits granted to fish outside Thai waters
IUU list (black list)	IUU history of vessels
Number of arrests for violation of the law	VMS records of entry into prohibited areas and seasons

Number of illegal gears (port inspections of gear e.g. mesh size)	Reports from fishing communities on compliance
4. Catching of large quantities of juvenile fish	
Percentage of juvenile fish of key species landed at a sample of ports (sampled every 6 months)	Location and timing of major spawning and nursery grounds for key species
5. Conflicts between artisanal and commercial vessels	
Number of conflicts reported each year	Participation and minutes from Provincial Committees
Co-management activities involving fishing communities	Reports of encroachment into prohibited areas, especially the near-shore zone
6. Restoring and maintaining critical habitats	
Area of mangroves	Area of sea grass
Number of coral reefs effectively protected	Evidence of increased collaboration and coordination across agencies
7. Data and information	
Feedback on annual Fishery Status Report/KPIs	Peer review of stock assessment methods and assumptions
8. Institutional reform	
DOF restructure	Number of staff trained in fisheries management

9. FINANCING

The implementation of this FMP requires the provision of the adequate financial, technical and human resources. The Thai Government commits to allocate funding as well as increase significantly the number of personnel for various activities of FMP implementation.

The finance for developing and implementing initial activities of this FMP during May – October 2015 through the CCCIF and the DOF was approved by the cabinet at 346 Million Baht. This included the cost for studies and drafting of all related documentations, hiring of experts and additional personnel for traceability system, survey of active fishing vessels, operations of Port-In Port-Out Controlling Center, and Fishing One Stop Service Center, improvement to traceability system, expanding surveillance, maintenance of patrol crafts, and conducting the robust laws enforcement at sea and coastal area.

The budget to support the implementation of this FMP for November 2015 – April 2016 is being drafted by CCCIF and DOF and seeking approval from the government. The amount of requested is 900 Million Baht.

The details of important budget costs corresponding to the implementation of this FMP are shown below (Table 9):

Table 9: Budget requirements to implement the FMP during May 2015 to April 2016

Management measure/action	Details	Budget (Million Baht)
Objective 1: Reducing fishing capacity and fishing effort		
1. AllV1: Survey of Fishing Vessels *	22 mobile survey units as per coastal provinces	9.1
1. AllV3: Remove all illegal FVs and banned push nets* 1. AllV6: Consider a buyback scheme to remove any excess capacity that remains.*	Compensation and support scheme	50.0
1. AllV5: Develop new electronics fishing license system for all FVs and ensure that all vessels are licensed and registered*	E-licensing Software development and hardware implementation	40.0
Objective 2: Rebuilding fish resources through artificial reefs and restocking programs		
2.RB1: Continue to build artificial reefs, especially along the zone border*	11 artificial reef sites	103.0
2.RB2: "Marine Animal Bank" scheme for promoting stock enhancement*	10 communities	2.0
Objective 3: Minimizing IUU fishing through effective MCS		
3.IC1: Compile and exchange information among States and RFMOs* 3.IC2: Exchange information on vessels >24 m	Information exchange Development of database and services	5.0

Management measure/action	Details	Budget (Million Baht)
and under 24 m if the fishing outside the EEZ through the ASEAN Regional Vessel Record* 3.IC3: Provide information on IUU vessels under the regional RPOA-IUU and share the IUU list (blacklist) with other agencies*		
3.TC1: Strengthen coordination across DOF, DMCR, Customs Department, Royal Thai Navy, Marine Police Division, Marine Department, Provincial Administration Department, Ministry of Labor, and THAI-MECC *	Development of jointed database system	50.0
3.CS1: Strengthen MCS in Thai waters through the implementation of the National Plan of Control and inspection	Robust laws enforcement operations of 3 task forces; - 18 Patrol Vessels - 3 Helicopters - 20 DOF Patrol Vessels	440.0
3.CS2: Set up a fishing information database containing fishermen, fishing vessels, fishing crews, fishing operators, licenses and fishery infringements*	Continue from 3.TC1 Development mobile application, and hardware for 18 law enforcement units	50.0
3.CS3: Enhance the operational capacity for Port in – Port out control to cover all areas*	Operations of 28 PIPO Centers	60.0
3.CS4: Mandate the use of Vessel Monitoring System (VMS) for appropriate vessels*	Set up and operating of VMS Control Center	40.0
3.CS5: Strengthen log book system*	Workshop for fishermen on filling e-logbook to complied with RFMO regulation	1.0
3.CS7: Raise awareness and support for preventing IUU fishing with local communities*	Consulting meeting with stakeholders on the Marine Fisheries management plan	2.0
3.FS1: Thai vessels that operate inside Thai's EEZ must have a license permit	Development of electronics one stop service application and hardware development	10.0
3.PS1: Thailand to ratify the United Nations Fish Stocks Agreement (UNFSA) and agree on Port State Measures (PSM)*	Ratification process and administrative cost	2.0
3.IM2: Strengthen traceability to verify the origin of raw material before it enters processing*	Hiring of 40 landing inspectors and development of traceability system	140.0
Objective 4: Reducing the catch of juveniles of the larger commercial species		
4.All1: Increase the legal limit on the mesh size of trawl nets and other gears*	Net changing with larger mesh size of trawl's cod end for RVs: 1 set*5 RVs	1.25

Management measure/action	Details	Budget (Million Baht)
4.All2: Introduce more seasonal and spatial closures based on research that shows that these times and areas protect juvenile nursery and spawning stock areas	Robust law enforcement	40.0
4.All3: Encourage research to find fish meal substitutes*	2 Researches	2.0
Objective 5: Resolving conflicts between small-scale and large-scale fishers		
5.RC2: Establish and demarcation the Coastal Fishing Zone, according to scientific data and stakeholders consultation*	Development of scheme, and Electronics Navigation Chart	5.0
5.RC3: Code and color marking scheme is introduces to differentiate the fishing area and the type of commercial FVs*	Development of scheme, and introduction of prototype paint vessels	5.0
5.RC4: Develop a VMS warning system to alert entry into a prohibited zone/area *	Development VMS Warning Application	5.0
Objective 7: Improving fisheries data and information		
7.DI1: Conduct a gap analysis between the data and information needed for KPIs data FMP and the actual available data*		0.5
7.DI2:Portal/database system that links different sources of data for use in both stock assessment and fisheries management*	Providing computers and Statistic Software Program 3 sets; with regional fisheries research centers	1.0
7.DI3:Develop a more systematic system for collecting and collating basic fishery statistics* - Cruise survey - Landed catch survey (by scientific staff) - Landed catch survey (with fishermen) - Providing vehicles for field survey	2 times*5 RVs 6 times*7 centers 6 times*7 centers 9 cars	4.65 3.0 3.0 7.8
7.DI4:Implement continuous capacity development for all technical and scientific staff * - Working team workshop for data analysis and Workshop on Gap analysis of fisheries statistics Consultant contracts for fisheries management, stock assessment and impact analysis - Thai expert on fisheries management - Thai expert on stock assessment - International expert on fisheries management - International expert on foreign fisheries	Hiring of experts and development workshop	4.0

Management measure/action	Details	Budget (Million Baht)
<ul style="list-style-type: none"> - Scientists for data and technical paper analysis and translation - Institute/ teams for the Marine Fisheries management plan public hearing Documented of Marine Fisheries management plan and publish		
Objective 8: Strengthening fisheries management capacity		
8.FM1:Conduct a gap analysis between the required system to be in place for effective fisheries management and the current organization structure and the capacity of personnel*	Meetings and gap analysis	0.5
Grand Total		1,086.8

10. REVIEW OF THE PLAN

An evaluation of the performance of this plan against its objectives will be made each year. The yearly evaluations may trigger a review and adaptive responses in the management (if they are not working very well) and in the compliance and enforcement (MCS) activities.

A major evaluation and review will be carried out every 2 years, and if appropriate, the issues, goals and objectives will be modified. At this review, social and economic impacts will be assessed and incentives and compensation will be considered.

APPENDIX A: Categories of fishing vessels in Thailand

The fishing fleet is categorized into five categories of fishing vessels plus transshipment vessels:

1. Small artisanal fishing vessels are fishing vessels with engine power less than 180 horsepower and vessel capacity less than 5 gross tonnages;
2. Large artisanal fishing vessels are fishing vessels with engine power between 180-220 horsepower and vessel capacity between 5 – less than 10 gross tonnages;
3. Small commercial fishing vessels are fishing vessels with engine power between 220-380 horsepower and vessel capacity between 10 – less than 20 gross tonnages;
4. Medium commercial fishing vessels are fishing vessels with engine power over 380 horsepower and vessel capacity between 20 – 60 gross tonnages;
5. Large commercial vessels are fishing vessels with a vessel capacity over 60 gross tonnages;
6. Transshipment vessels
 - 1) Domestic transshipment vessels are transshipment vessels operating in Thai waters with a vessel capacity of over 30 gross tonnages. Ices are used to store and preserve the fish transshipped.
 - 2) Transshipment vessels outside Thai waters are transshipment vessels with a vessel capacity of over 60 gross tonnages and operating outside Thai waters. A freezing system is used to store and preserve the fish transshipped.

Vessels importing fish into Thailand consist of four types:

- 1) Thai vessels fishing in the EEZ of another State under an agreement or authorization of that State and bring fish back to Thailand;
- 2) Thai vessels fishing in the EEZ of another State and flying that State's flag;
- 3) Foreign fishing vessels that bring fish for sale in Thailand; and
- 4) Artisanal fishing vessels of neighboring States that land fish in Thailand for sale.

Pictures of fishing vessels for each category as following:

1. Small artisanal fishing vessels



2. Large artisanal fishing vessels



3. Small commercial fishing vessels



4. Medium commercial fishing vessels



5. Large commercial vessels



6. Transshipment vessels



Inside Thai waters



Outside Thai waters

APPENDIX B: Current fisheries management measures in Thailand

Management measures include:

All fishing vessels

- Must be registered where they are intended to operate.
- Some types of fishing gears prescribed under the Ministerial Regulations must be licensed;
- Numbers trawlers, push nets, Anchovy purse seiners and Anchovy lift nets, controlled under the Ministerial Regulations, must be frozen; and
- Commercial fishing vessels \geq 30 GT are required to install VMS as they have a capacity to operate in waters outside Thailand.

For fishing vessels importing fish into Thailand, depending on the type of vessel

- Port in-port out measures;
- Port State measures; and
- A range of measure for artisanal fishing vessels from neighbouring countries, including (Note: Full Port State Measures not applied to these vessels yet.)
 - Registered at the port to record vessel details;
 - Submission of a copy of their fishing license;
 - Information on the vessel, fishing activity and catch;
 - Advance notification prior to port in;
 - Thai Officer inspections.

Technical measures include:

All commercial fishing

- Protection of spawning stock and juveniles through closed seasons and areas;
- Demarcation zones between artisanal and commercial fisheries; and
- Reduction of the efficiency of fishing gear according to the requirements for suitable mesh sizes, such as purse seines, trawls, anchovy lift nets, collapsible crab traps and gill nets.

Trawl fishing

- Reduce fishing capacity by the enlargement of mesh size and the limitation of the ground rope.

Purse seine fishing

- Reduce fishing capacity through limitation of mesh size; and
- Control fishing areas by zoning (special case of anchovy fishery).

Push net fishing

- Ban on all push nets except fishing for *Acetes* (Sergestids) nets.

Encircling gill nets

- Reduce fishing capacity through closed seasons and areas to protect spawners especially for Indo-Pacific mackerel.

Other Management measures and activities in Thailand include:

- Prohibiting trawlers and push net from fishing within 3 nautical miles from the coastline;
- Marine Protected Areas (MPAs) for full protection varies from aquatic sanctuaries, non-hunting area, marine national park, mangrove swamps, coral reef areas, sea grass bed etc. The total area of MPA in Thailand is around 79,756.72 km². It is about 25.23 % of total sea area in Thai water (316,118.24 km²); and
- Reserved areas for special purposes, e.g. coral reefs, sea grass beds and mangroves.

DOF is carrying out other conservation measures including:

- Establishing artificial reefs for spawning grounds, fish shelter; and
- Promoting community-based fishery management and EAFM.

APPENDIX C: Fishing License System and Fisheries Controls of Thailand

The authorization of fishing licenses in the Kingdom of Thailand is conducted under the Fisheries Act B.E. 2558 (2015) and the Revised Fisheries Act B.E. 2558 (2015), which is under the drafting process. Each year, the fishing licenses are granted with consideration to resources availability in order to promote resources sustainability. The fishing license allocation committee and the marine fisheries resource utilization committee, in which the Department of Fisheries is a committee and secretary, will be established to consider the number of fishing licenses granted annually. For granting Thai overseas fishing licenses, it will be considered under the cooperation among the Thai government and coastal states and relevant Regional Fisheries Management Organizations (RFMOs). Thai fishing license system has two components as follows:

1. Types of fishing licenses: Thai fishing licenses are classified into three groups as the following:

- (1) Fishing licenses for artisanal fishing vessels, which are divided into two sub-groups, i.e. fishing licenses for small artisanal fishing vessels and fishing licenses for large artisanal fishing vessels;
- (2) Fishing licenses for small commercial fishing vessels;
- (3) Fishing licenses for medium commercial vessels; and
- (4) Fishing licenses for large commercial fishing vessels

The criteria for granting fishing licenses are as follows:

- 1.1 The granted number of fishing licenses is based on the consideration of the fishing license allocation committee and the marine fisheries resource utilization committee;
- 1.2 Licensee must be the owner of fishing vessel or leaseholder with legal leasing contract;
- 1.3 Licensed small, medium and large commercial fishing vessels must conform to the fishing area color coding as established by the Department of Fisheries;
- 1.4 District Chief Officers, Minor District Chief Officers, and the Director of Bangkok Provincial Fisheries Office for Bangkok area have the authority to issue fishing licenses;
- 1.5 The fishing license shall be valid for one year and expire on 31 December of each year. The license must be renewed 60 days before the expiry date. Renewal of license will be considered based upon the fishing history of previous year. The renewal of license will be suspended for any IUU fishing engaged, i.e., 3-6 month suspension for small-commercial fishing vessels and 6 months to one year suspension for medium and large commercial fishing vessels;
- 1.6 Small, medium and large commercial fishing vessels can apply for fishing license of only one type of fishing gears, but artisanal fishing vessels may apply for the fishing license of more than one type of fishing gears;
- 1.7 License fee will be imposed based on types and numbers of fishing gears;

1.8 Commercial fishing vessels shall install VMS and submit fishing operation report through Port-in and Port-out control system, as well as record on fishery logbooks; and

1.9 For fishing vessels with capacity over 100 gross tonnages, there must be observers on board. (To be further discussed with involved agencies.)

2. Thai overseas fishing licenses are divided into 2 groups:

(1) Fishing licenses for operation in the EEZ(s) of coastal states and

(2) Fishing licenses for operation on the high seas.

The criteria for granting overseas fishing licenses are as follows:

2.1 Department of Fisheries will seek for overseas fishing grounds and resources quotas by arranging bilateral fisheries agreements with coastal States. Fishing vessels that are willing to operate overseas must obtain the license to use Thai fishing vessel outside Thai jurisdictional waters before applying for a contract/fishing license with other coastal States or conducting fisheries on the high seas;

2.2 The licensing authority is the Director General of the Department of Fisheries;

2.3 Fishing licenses shall be valid for one year or based on the agreement of coastal States;

2.4 The duty charge is based on the monitoring expenses, i.e. the expense for VMS monitoring agencies and the expense for observers on board; and

2.5 Fishers must install VMS on board, record on fishing logbooks, and arrange for observers on board. Furthermore, they must abide by the Port State Measure Agreement, the regulations of the flag state, the agreements of RFMOs, and relevant international agreements.

3. Vessel licenses for transshipment of marine catch are divided into 2 groups:

(1) Vessel license for domestic transshipment of marine catch

(2) Vessel license for transshipment of marine catch outside Thai waters

The vessel licensing criteria for transshipment of marine catch are as follows:

3.1 The vessel licensing authorities are the Governor (in case of the vessel license for domestic transshipment of marine catch) and the Director General of the Department of Fisheries (in case of vessel license for transshipment of marine catch outside Thai waters);

3.2 Transshipment vessels of marine catch must install VMS and submit their Port-in and Port-out reports while being in Thai waters, or comply with the Port State Measures while being outside Thai waters. Transshipment vessels of marine catch must abide by the regulations of the port states, the agreements of RFMOs, and relevant international agreements;

3.3 Observers on board must always present during transshipping marine catch. Domestic transshipment of marine catch must proceed in the areas assigned by the Department of Fisheries. Transshipping marine catch outside Thai waters must abide by regulations of the port states, the agreements of RFMOs, and relevant international agreements;

3.4 Marine catch transshipment vessels must provide the Marine Catch Transshipment Document (MCTD), as well as submit the fishing log book of applicable fishing vessels and the records of observers on board; and

3.5 The duty charge is based on the monitoring expenses, i.e. the expense for VMS monitoring agencies and the expense for observers on board.

APPENDIX D: The assessment of maximum sustainable yield (MSY) and optimal fishing effort in Thai waters

The Maximum Sustainable Yield (MSY) assessment aims to estimate the biological reference point at which stocks can be harvested without any negative effect on resources and equilibrium with the production of nature in Thai waters. MSY for the Gulf of Thailand and the Andaman Sea was estimated by using the Fox surplus production model (Fox, 1970). This model requires statistical data and information on catch, CPUE and effort data of all fishing operations⁶, particularly small-scale fishing gears and large-scale fishing gears of demersal fish, pelagic fishes and anchovies. The equilibrium yield is given by:

$$\frac{y_i}{f_i} = e^{c+d*f_i}$$

Where f is fishing effort (hours), c and d are constants obtained by fitting a linear regression.

$$MSY = -1/d$$

$$F_{MSY} = -(1/d)e^{c-1}$$

Fishing effort estimates were based on the fishing vessel survey carried out in June and July 2015. A total number of 45,805 fishing vessels was found in the survey, but only 42,512 active vessels that operate in Thai waters were used for the MSY assessment. The MSY assessment was conducted for three species groups 1) demersal fish that referring to all demersal species including demersal fishes, squids, cuttlefishes and shrimps; 2) pelagic fishes; and 3) anchovies. Both artisanal fishing vessels and commercial fishing vessels were used in the assessment as the following:-

1. Demersal fish
 - Artisanal fishing vessels, i.e. blue swimming crab gill net, other gill nets, trap (fish, squid and crab), hook, squid falling net, squid lift net and push net
 - Commercial fishing vessels, i.e. pair trawl, otter board trawl, beam trawl and push net
2. Pelagic fishes
 - Artisanal fishing vessels, i.e. encircling gill net, fish gill net, and pound net
 - Commercial fishing vessels, i.e. purse seine (Thai purse seine, Thai purse seine with light luring, and FAD) excluding anchovy purse seine
3. Anchovies, i.e. anchovy purse seine, anchovy falling net and anchovy lift net operated by both artisanal and commercial vessels.

⁶ Statistics based on the sampling survey, from 1980 to 2014 (demersal fish), 1997 to 2014 (pelagic fishes), 1996 to 2014 (anchovies).

The fishing community production survey from 1980 to 2014 (demersal fish), 1997 to 2014 (pelagic fishes), 1996 to 2014 (anchovies).

Assessment Results and management recommendations

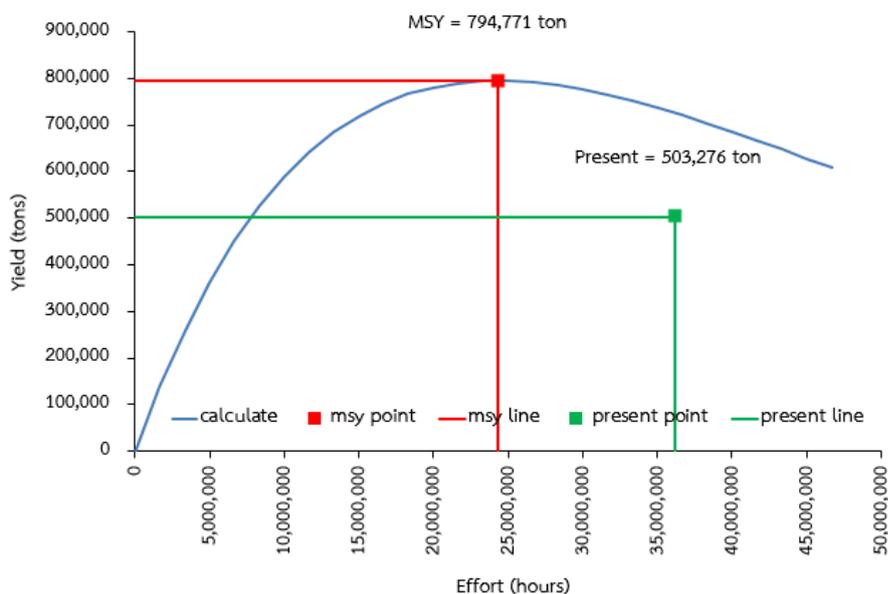
1. Demersal fish

Location	MSY (tonnes)	Optimal Fishing Effort (million hours)	Current Catch (tonnes)	Current Fishing Effort (million hours)	Status of Fisheries	
					Exceeded/ Balanced/ Lower	Percentage
	(1) Demersal Fish*				Exceeded (million hours)	
Gulf of Thailand	794,771	24.33	503,276	36.20	11.87	+32.8%
Andaman Sea	240,519	4.81	177,684	5.09	0.28	+5.3%

1.1 Gulf of Thailand

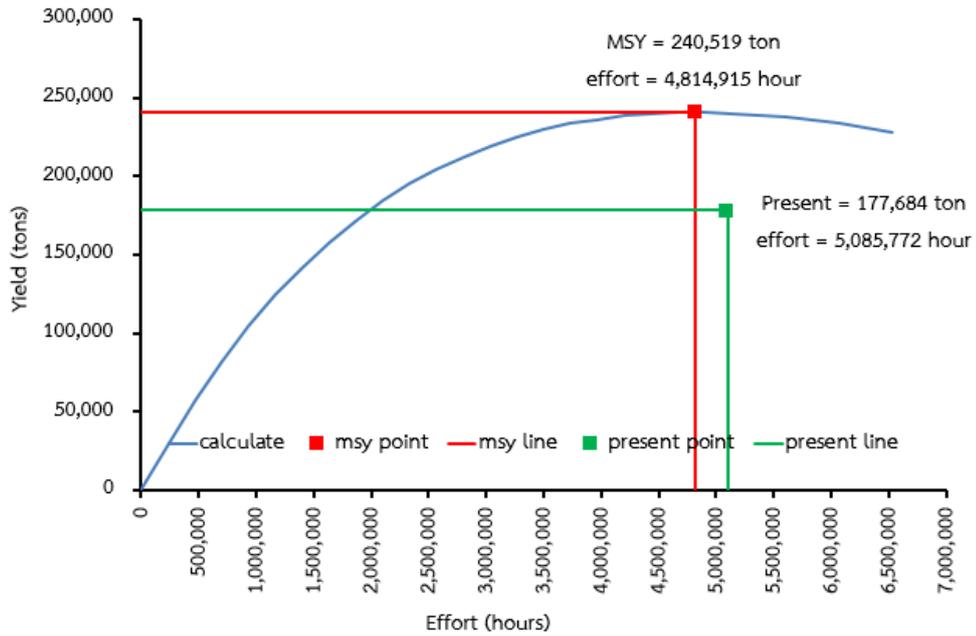
The total number of fishing vessels used for MSY assessment of demersal fish in the Gulf of Thailand was 28,279 vessels, consisting of 4,425 commercial vessels and 23,754 artisanal vessels. The result shows that the MSY of demersal fish is 794,771 tonnes with the optimum fishing effort of 24.33 million hours. The 2014 catch of demersal fish was 503,276 tonnes with fishing effort of 36.20 million hours.

This indicates that the present effort is greater than the optimum level by 32.8%, and it should therefore be reduced.



1.2 Andaman Sea

The total number of fishing vessels used for MSY assessment of demersal fish in the Andaman Sea was 8,980 vessels, consisting of 892 commercial vessels and 8,088 artisanal vessels. The result shows that the MSY of demersal fish is 240,519 tonnes with the optimum fishing effort of 4.81 million hours. The present catch of demersal fish is 177,684 tonnes with the fishing effort of 5.09 million hours. Thus, the present fishing effort is greater than the optimum level by 5.3%.

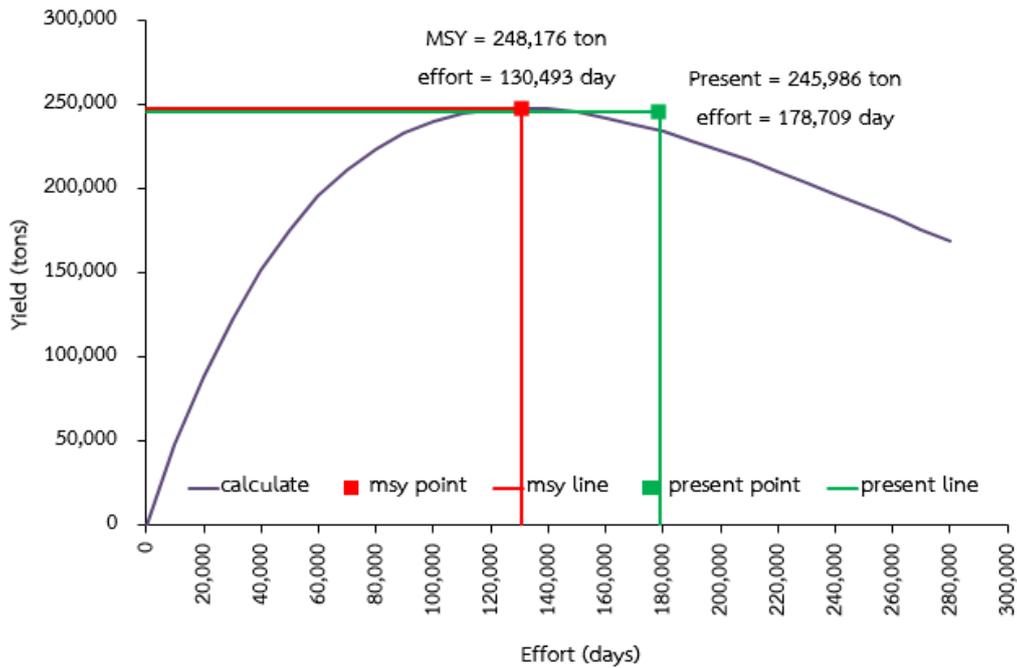


2. Pelagic fishes

Location	MSY (tonnes)	Optimal Fishing Effort (million hours)	Current Catch (tonnes)	Current Fishing Effort (million hours)	Status of Fisheries	
					Exceeded/ Balanced/ Lower	Percentage
(3) Other pelagic fish					Exceeded (days)	
Gulf of Thailand	248,176	130,493	245,986	178,709	48,216	+27.0 %
Andaman Sea	118,477	54,238	99,039	64,925	10,687	+16.5 %

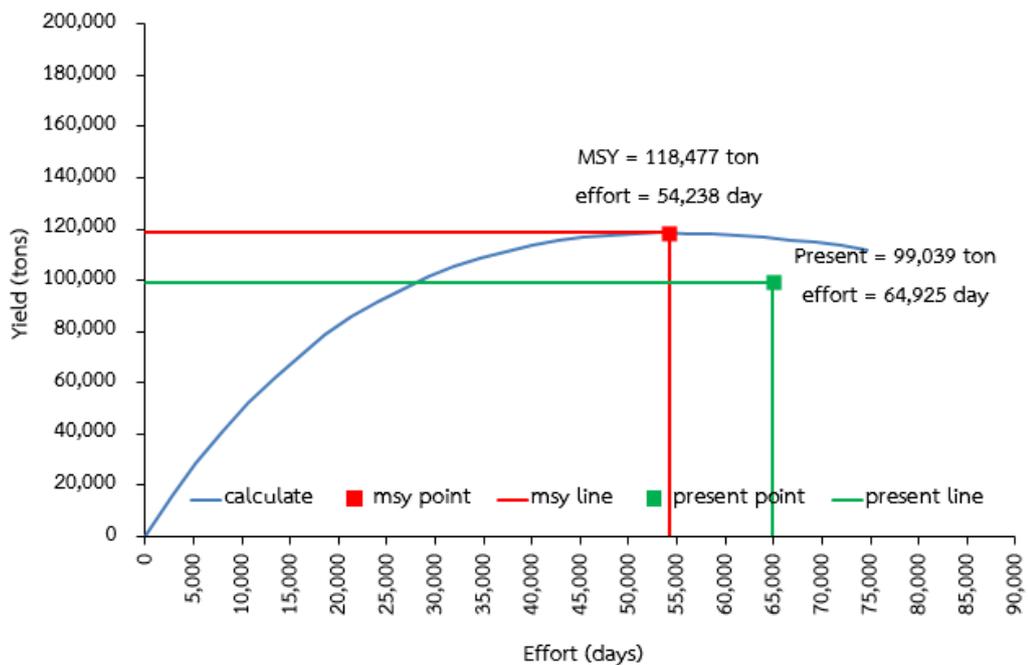
2.1 Gulf of Thailand

The total number of fishing vessels used for MSY assessment of pelagic fishes in the Gulf of Thailand was 3,202 units, consisting of 485 commercial vessels and 2,717 artisanal vessels. The result shows that the MSY of pelagic fishes is 248,176 tonnes with the optimum fishing effort of 130,493 days, whereas the present catch of pelagic fishes is 245,986 tonnes with the fishing effort of 178,709 days. The present effort is, therefore, greater than the optimum level by 27.0%.



2.2 Andaman Sea

The total number of fishing vessel used for MSY assessment of pelagic fishes in the Andaman Sea was 918 vessels, including 262 commercial vessels and 656 artisanal vessels. The result shows that the MSY of pelagic fishes is 118,477 tonnes with the optimum fishing effort of 54,238 days, whereas the present catch of pelagic fishes is 99,039 tonnes with a fishing effort of 64,925 days. This indicates that the present effort is greater than the optimum level by 16.5%.

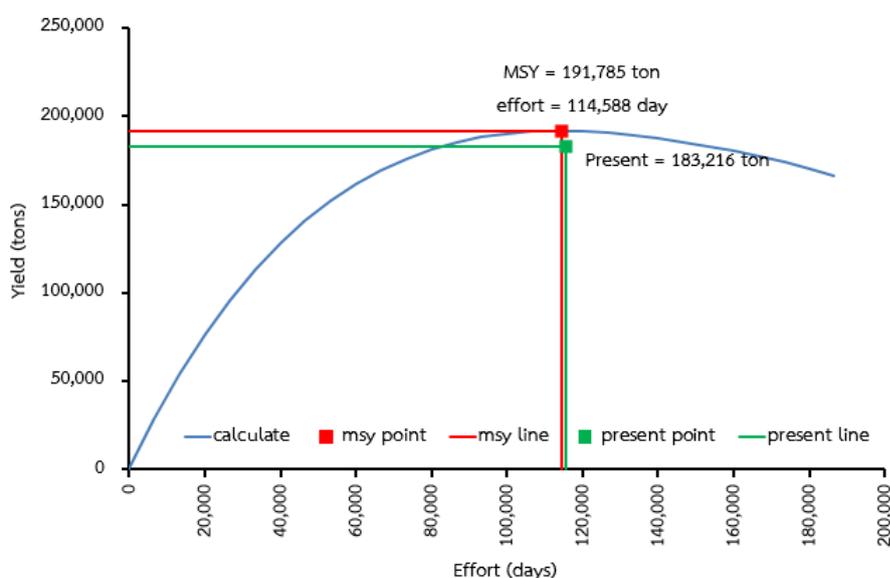


3. Anchovies

Location	MSY (tonnes)	Optimal Fishing Effort (days)	Current Catch (tonnes)	Current Fishing Effort (days)	Status of Fisheries	
					Exceeded/ Balanced/ Lower	Percentage
	(2) Anchovies				Lower/Exceeded (days)	
Gulf of Thailand	191,785	114,588	183,216	115,600	1,012	+0.9 %
Andaman Sea	32,944	52,014	33,903	51,520	494	-1.0%

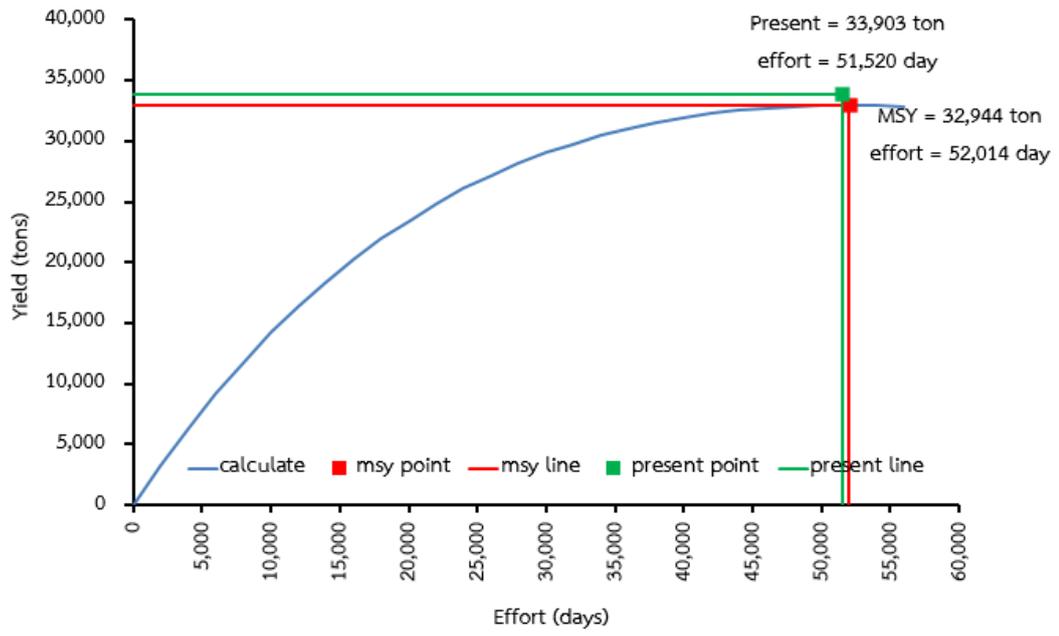
3.1 Gulf of Thailand

The total number of fishing vessel used for MSY assessment of anchovies in the Gulf of Thailand was 1,027 vessels, including 357 anchovy purse seiners and 670 anchovy falling nets and lift net. Based on the assessment, the MSY of anchovies is 191,785 tons with the optimum fishing effort of 114,588 days, while the present catch of anchovies is 183,216 tons with fishing effort of 115,600 days. This indicates that the present effort is close to the optimum level (over by 0.9%).



3.2 Andaman Sea

The total number of fishing vessel used for MSY assessment of anchovies in the Andaman Sea was 159 vessels, including 77 anchovy purse seiners and 82 anchovy falling nets and lift net. Based on the assessment, the MSY of anchovies is 32,994 tonnes with the optimum fishing effort of 52,014 days, while the present catch of anchovies is 33,903 tonnes with fishing effort of 51,520 days.



APPENDIX E: Implementation work plan for 2015/16

AllV = all vessels; CV = commercial vessels; AV = artisanal vessels; IC = International cooperation for IUU; TC= Thailand Coastal; CS = Coastal State; FS = Flag State; PS = Port State; IM = International market; RB = Resource rebuilding; CH = Critical habitat; DI = Data and information; FM = Fisheries Management

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
Objective 1: Reducing fishing capacity and fishing effort			
Target: Reduction of the fishing capacity and effort within 3years, especially commercial vessels			
<ul style="list-style-type: none"> • For demersal fish; 40% in the Gulf of Thailand and 10% in the Andaman Sea • For pelagic fish; 30% in the Gulf of Thailand and 20% in the Andaman Sea 			
All vessels and fishing license in Thai waters			
1. AllV1: Survey of Fishing Vessels *	<ul style="list-style-type: none"> • Sample all ports and landing areas 	<ul style="list-style-type: none"> • List of vessel 	<ul style="list-style-type: none"> • CCCIF • DOF • MD
1.AllV2: Freeze the number of vessels registered for fishing purpose and number of fishing licenses*	<ul style="list-style-type: none"> • Revise related laws and regulations • Electronics license system • Laws enforcement • Strict monitoring of license 	<ul style="list-style-type: none"> • Registration • License • At port/sea enforcement • PIPO • VMS 	<ul style="list-style-type: none"> • DOF • MD • TMECC • Law enforcement agencies
1. AllV3: Remove all illegal FVs and banned push nets*	<ul style="list-style-type: none"> • Surveying all FVs and prepare the list of Illegal commercial FVs (non-license) • Prepare for Compensation Scheme • Stakeholders consultations • Revise related regulations and introduce to the cabinet • 100% FVs do not have fishing licenses will be removed through a compensation scheme • Introduce alternative occupation • Alternative low impact gears 	<ul style="list-style-type: none"> • On the ground survey of documentations and actual FVs and gears • Registration • License • At port/sea enforcement • Registration • License • PIPO 	<ul style="list-style-type: none"> • DOF • MD • CCCIF • TMECC • Law enforcement agencies

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
1. AIIV4: Reduce number of fishing days*	<ul style="list-style-type: none"> • Revise related laws and regulations • FVs Code and Marking Scheme • Define condition to access to the fisheries of the according to type of license • Electronics license system 	<ul style="list-style-type: none"> • On the ground survey of documentations and actual FVs and gears • Registration • License • At port/sea enforcement • Registration • License • PIPO 	<ul style="list-style-type: none"> • DOF • MD • CCCIF • TMECC • Law enforcement agencies
1. AIIV5: Develop new electronics fishing license system for all FVs and ensure that all vessels are licensed and registered*	<ul style="list-style-type: none"> • Revise related laws and regulations • Introduce to the cabinet • Issue a procedure handbook and educate the involved officials and the fishermen • Develop new electronics fishing license system • Laws enforcement 	<ul style="list-style-type: none"> • Registration • License • At port/sea enforcement • PIPO <p>Condition: The number of licenses is controlled annually by the National Fisheries Policy Committee, according to the current MSY. The license for using the vessel for fishing has to be issued before requesting the registration of such vessel with the Marine Department</p>	<ul style="list-style-type: none"> • DOF • MD • TMECC • Law enforcement agencies
1. AIIV6: Consider a buyback scheme to remove any excess capacity that remains.* (See Appendix F)	<ul style="list-style-type: none"> • Initiate compensation scheme or buy back scheme and ensure that any vessel that is bought back is removed • Incentives such as alternative occupation or alternative low impact gears 	<ul style="list-style-type: none"> • Buy back scheme committee consideration • Cabinet consideration and approval • Government budget allocation • Impacted fishermen/beneficiaries monitoring and verification 	<ul style="list-style-type: none"> • Cabinet • DOF

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
Small, medium and large commercial vessels in Thai waters			
1.CV1: Revoke license for anchovy purse-seine, lift net and trawl; if the FVs have been inactive for one year.*	<ul style="list-style-type: none"> • Revise related laws and regulations • Electronics license system • Laws enforcement • Strict monitoring of license 	<ul style="list-style-type: none"> • License • At port/sea enforcement • PIPO • VMS 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
1.CV2: Cancel vessel registration, and vessel permit in the IUU vessels list without an option to replace vessel*	<ul style="list-style-type: none"> • Revise related laws and regulations • Setup IUU offender monitoring mechanism • Electronics license system • Laws enforcement 	<ul style="list-style-type: none"> • License • Registration • At port/sea enforcement • PIPO • VMS 	<ul style="list-style-type: none"> • DOF • MD • TMECC • Law enforcement agencies
1.CV3: Conduct research on the costs and benefits of introducing a Total Allowable Catch (TACs) and/or later Individual Transferable Quotas (ITQs) for selected species.* If beneficial, introduce a TACs system and/or later ITQs	<ul style="list-style-type: none"> • Conduct researches , stakeholder consultation and report on examination of costs and benefit is produced and reported for consideration of the National Fisheries Policy Committee • Pilot scheme for specific gear types and species • Introduce, if appropriate 	<ul style="list-style-type: none"> • Research • Pilot scheme 	<ul style="list-style-type: none"> • DOF
Large and small artisanal vessels			
1.AV1: Enforce the limit on type and number of gears*	<ul style="list-style-type: none"> • All controlled fishing gears are controlled at optimum number 	<ul style="list-style-type: none"> • MCS 	<ul style="list-style-type: none"> • DOF

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
Objective 2: Rebuilding fish resources through artificial reefs and restocking programs			
Target: Increase number of effective artificial reefs at least 10 site per year and increase community stock enhancement projects 10 communities project per year			
2.RB1: Continue to build artificial reefs, especially along the zone border*	<ul style="list-style-type: none"> • Determine the appropriate area for artificial reefs deployment with communities based on technical data • Installation of artificial reefs • Regularly monitor the status of ecosystem after installation 	<ul style="list-style-type: none"> • Permission from relevant authorities e.g. Royal Thai Navy, Marine Department. 	<ul style="list-style-type: none"> • DOF • DMCR • Province
2.RB2:“Marine Animal Bank” scheme for promoting stock enhancement*	<ul style="list-style-type: none"> • Determine the appropriate area and marine species with communities based on technical data • Establish communities agreement • Establish Marine Animal Bank • Regularly monitor the specific marine species after establishment 	<ul style="list-style-type: none"> • Community agreement 	<ul style="list-style-type: none"> • DOF • DMCR • Province

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
Objective 3: Minimizing IUU fishing through effective MCS			
Target: Reduce the level of IUU fishing to a level that can be controlled through regular MCS arrangements			
International cooperation			
3.IC1: Compile and exchange information among States and RFMOs*	<ul style="list-style-type: none"> • Bi-lateral Information Exchange MOUs • Negotiate the information exchange mechanism with the countries that Thai FVs are operating in their waters. • Legislations • Work on Technical Details of information exchange, • Thailand becomes a member of Western and Central Pacific Fisheries Commission (WCPFC) • Ask for approval from the cabinet • Ratify the WPCFC Regulations by amending national laws & regulations • Become the member of WPCFC 	<ul style="list-style-type: none"> • Legislation • MOUs • RFMOs Meetings 	<ul style="list-style-type: none"> • DOF • TMECC
3.IC2: Exchange information on vessels >24 m and under 24 m if the fishing outside the EEZ through the ASEAN Regional Vessel Record*	<ul style="list-style-type: none"> • Thailand enable to conduct the Information exchange through Regional Fishing Vessel Record • RFVR Database as a management tool to reduce IUU fishing, starting with vessels measuring under 24 meters in length and over Review and improve fishing license, boats registration of vessels measuring under 24 meters in length and over • Work on Technical Details of information exchange 	<ul style="list-style-type: none"> • VMS • Information Sharing Mechanism 	<ul style="list-style-type: none"> • DOF • TMECC

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
3.IC3: Provide information o IUU vessels under the regional RPOA-IUU and share the IUU list (blacklist) with other agencies*	<ul style="list-style-type: none"> • IUU FVs list is officially announced • Coordinate with RPOA-IUU • Issue the Ministerial Order • Information exchange with laws enforcement agencies • Communicate with Thai fishing industries of the banned IUU blacklist, and not to get involves • IUU Blacklist is inputted in the VMS database • IUU FVs list is updated annually 	<ul style="list-style-type: none"> • Legislation • Information Sharing Mechanism • VMS 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
3.IC4: Harmonize the Combating IUUF Policy among States, especially for inspection of foreign vessels*	<ul style="list-style-type: none"> • Sharing data and ask for cooperation in inspection of their vessels 	<ul style="list-style-type: none"> • Legislation • Information Sharing Mechanism • Trainings • Meetings 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
Coordination across Thailand agencies			
3.TC1: Strengthen coordination across DOF, DMCR, Customs Department, Royal Thai Navy, Marine Police Division, Marine Department, Provincial Administration Department, Ministry of Labor, and Thailand Maritime Enforcement Coordinating Centre (TMECC) through MOUs to exchange information and the authority to make arrests, prosecution and punishment*.	<ul style="list-style-type: none"> • Information Sharing MOU for Fishing Information System • Draft of MOU • Signatory and start information sharing • Amend the related laws and regulations • Training sessions for laws enforcement officers to use the system to inspect and make arrest • Combined annually training exercise • All arrested cases are prosecuted and followed up 	<ul style="list-style-type: none"> • Legislation • Information Sharing Mechanism • Trainings • Meetings 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
3.TC2: Establish the following organization and/or mechanisms in DOF*: (i) Resource assessment technical unit	<ul style="list-style-type: none"> • The feasibility study of restructuring of DOF and bodies to oversee the fisheries management and related matters will be carried out. • The aim of the studies is to find the solutions for the followings duties or mechanisms 	<ul style="list-style-type: none"> • Feasibility studies • Legislation 	<ul style="list-style-type: none"> • DOF • CCCIF • TMECC • Law enforcement agencies

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
(ii) Evaluation and recommendation unit (iii) Control and inspection unit	<ul style="list-style-type: none"> • The result will be reported to the cabinet and the recommendations for the responsible bodies for fisheries management • Amend related laws and regulations 		
Thailand's Coastal State responsibilities			
3.CS1: Strengthen MCS in Thai waters through the implementation of the National Plan of Control and inspection	<ul style="list-style-type: none"> • IUU risk assessment carried out • An agreed National Plan of Control developed and implemented • Amend related laws and regulations • Take a robust action in MCS process and ask for cooperation between involved agencies such as TMECC, Navy, and stake holders 	<ul style="list-style-type: none"> • Risk Assessment • National Plan of Control • Law enforcement at port/sea 	<ul style="list-style-type: none"> • DOF • CCCIF • TMECC • Law enforcement agencies
3.CS2: Set up a fishing information database containing fishers, fishing vessels, fishing crews, fishing operators, licenses and fishery infringements*	<ul style="list-style-type: none"> • See measure in 3.TC1 • The electronics database shall include the fields described above, as well as other related fields such as the port-in port-out reporting data etc. • The database is continuously maintained and made available across different agencies. • Authorized officials can access to the database is through online web-portal or through standalone machine with interval updates. 	<ul style="list-style-type: none"> • Information Sharing MOU • Electronic database development as the Fishing Information System • Meetings 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
3.CS3: Enhance the operational capacity for Port in – Port out control to cover all areas*	<ul style="list-style-type: none"> • Gap analysis for the current PIPO coverage area and the requirement for new PIPOs • Amends regulations • Approval and budgeting • Recruit new personnel • New PIPOs are established • Providing training on laws, regulations and inspection scheme and techniques 	<ul style="list-style-type: none"> • Gap Analysis • Legislation • Budgeting • Law enforcement at port 	<ul style="list-style-type: none"> • DOF • CCCIF • TMECC • Law enforcement agencies

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
3.CS4: Mandate the use of Vessel Monitoring System (VMS) for appropriate vessels*	<ul style="list-style-type: none"> • Revise related laws and regulations • VMS Standardization • Initiate on-loan scheme 	<ul style="list-style-type: none"> • Inspection • PIPO/PSM • VMS • At port/sea enforcement 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
3.CS5: Strengthen log book system*	<ul style="list-style-type: none"> • Revise related laws and regulations • Set staff and system for collect the logbook • Educate the fisherman how to fill in the logbook and be complied with the regulations • Documentations control • Cross-checking • Information sharing between states • Measuring the effectiveness of log book system 	<ul style="list-style-type: none"> • Documentation control Permit, Logbook • PIPO/ PSM • VMS • At port/sea enforcement 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
3.CS6: Ensure that all foreign vessel operating in Thai waters comply with Thai law and regulation* as prescribed in Thai Fisheries law	<ul style="list-style-type: none"> • Sharing information between Thai as coastal state and foreign vessel state i.e. license permit • Enhance port state measure • Strict penalty of infringement as prescribed in Thai Fisheries law 	<ul style="list-style-type: none"> • Documentation control Permit, Logbook • PIPO/ PSM • VMS • At port/sea enforcement • Inspection 	<ul style="list-style-type: none"> • DOF • RTN • TMECC
3.CS7: Raise awareness and support for preventing IUU fishing with local communities*	<ul style="list-style-type: none"> • Effective awareness campaigns developed and implemented • Establishment of network of coast watches activities by cooperation with the local coastal communities. • The co-management is implemented 	<ul style="list-style-type: none"> • Community involvements • Co-management • Meetings 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies • DCMR • DNP • Research institutes • Environment agencies

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
Thailand's responsibilities as a Flag State			
3.FS1: Thai vessels that operate inside Thai's EEZ must have a license permit	<ul style="list-style-type: none"> • Announce the information about essential document and procedure • Permit control • Surveillance • Laws enforcement 	<ul style="list-style-type: none"> • Permit • VMS (≥ 30 GT) • Laws and regulations • PIPO/PSM 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
3.FS2: Vessels operating in the EEZ of another State must have a permit from Thailand to fish in other States based on agreements made by the Governments of the two countries*	<ul style="list-style-type: none"> • Seek out bilateral fishing MOUs • Announce the information about essential document and procedure • Permit control • Surveillance • Laws enforcement 	<ul style="list-style-type: none"> • Permit • VMS • Laws and regulations • PIPO/PSM 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
3.FS3: All vessels fishing in the high seas must have a permit from Thailand to engage in this fishing*	<ul style="list-style-type: none"> • Announce the information about essential document and procedure • Permit control • Surveillance • Laws enforcement 	<ul style="list-style-type: none"> • Permit • VMS • Laws and regulations • PIPO/PSM 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
3.FS4: All vessels targeting tuna must have a permit from Thailand to engage in fishing for tuna and tuna-like species*	<ul style="list-style-type: none"> • Revise related laws and regulations • Announce the information about essential document and procedure • Control fisheries permit from Thailand • Surveillance • Laws enforcement 	<ul style="list-style-type: none"> • Permit • VMS • Laws and regulations • PIPO/PSM 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
3.FS5: Mandate the use of Vessel Monitoring System (VMS) and set up a warning VMS system that warns of risks of vessels entering prohibited area and report on navigation routes of FVs.*	<ul style="list-style-type: none"> • Revise related laws and regulations • Technical Standard regulation to be in line with international standard • Amend existing regulation so that only the vessel equipped with VMS will be permitted to fishing outside the Thai EEZ. The specification of the VMS must be as addressed in "The 	<ul style="list-style-type: none"> • Legislation • VMS • PIPO • Logbook • Surveillance • Law enforcement at port/sea 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
	<p>Announcement on Performance Standard and Functional Requirements for Vessel Monitoring System” which declared on 16 March 2015</p> <ul style="list-style-type: none"> • Establish Information exchange with the coastal states on prohibited areas required to be embedded in VMS mapping system • VMS is upgraded with the warning capability • Cross checking the VMS data with logbook, species of catch etc. To see any sign of infringement when landing • Initiate on-loan scheme 		
<p>3.FS6: FVs must report their position automatically, and/or appointed time when requested by VMS Centre and sharing data for enforcement.*</p>	<ul style="list-style-type: none"> • Standardization of Thai-VMS • Amendment of legislation on using the VMS data as an evidence in the prosecution procedure and criminalized the act of tampering with VMS equipment • Sharing VMS data among agencies 	<ul style="list-style-type: none"> • Legislation • VMS • PIPO • Logbook • Surveillance • Law enforcement at port/sea 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
<p>3.FS7: Set up an integrated database system with the Royal Thai Navy, DOF and Marine Department*</p>	<ul style="list-style-type: none"> • Related to 3.TC1 on information sharing MOU • Establishment of the electronic fisheries database that can be hierarchically accessed by authorized officials of the three organizations, Royal Thai Navy, DOF and Marine Department. • Set up automatic link between the VMS of DOF, VTMISS of MD, and Maritime Information Sharing System of TMECC to make a complete maritime picture 	<ul style="list-style-type: none"> • VMS • VTMISS • MISC • Information Sharing Mechanism 	<ul style="list-style-type: none"> • DOF • MD • TMECC • RTN
<p>3.FS8: Survey and setup a database of fishing vessels with evidence of IUU fishing (blacklist)*</p>	<ul style="list-style-type: none"> • Blacklist criteria is drawn up, in accordance with international standards • Record and formalization of the provisional IUU vessel list with the official procedure and timeframe to adopt the list 	<ul style="list-style-type: none"> • RFMO / EU IUU FVs List • Legislation • Law enforcement at port/sea 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
	<ul style="list-style-type: none"> • Database of Thai Blacklist IUU FVs is announced • Using the database and IUU list as a reference to enforce and penalties 		
3.FS9: Fishing vessels and transshipment vessels to report intent to carry out a fishing trip before departure and report back on arrival*	<ul style="list-style-type: none"> • The regulations related to operating in the overseas fishing is amended • All overseas FVs report through PIPO center • The authority will inspect vessel of departure the port and arrival at the port whether they have the required equipment e.g. VMS and required document e.g. license, vessel permit, logbook and etc. 	<ul style="list-style-type: none"> • Documentation control Permit, Logbook, MCPD, MCTD • PIPO • VMS • At port/sea enforcement 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
3.FS10: Development of Observer on board Program for both fishing vessels and transshipment vessels operating outside of the Thai waters based on a risk assessment*	<ul style="list-style-type: none"> • Revise related laws and regulations • Risk assessment carried out • Set a new unit for make the observer on board and recruit new staff • Build capacity of staff • An effective observer scheme in operation • Measuring the effectiveness of enforcement at sea 	<ul style="list-style-type: none"> • Documentation control Logbook, MCPD, MCTD observer report • VMS • At sea enforcement 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
3.FS11: All vessels tuna targeting the areas covered by IOTC must comply with Regulations and Rules of the IOTC*	<ul style="list-style-type: none"> • Revise related laws and regulations • Educate fishermen on IOTC regulations • Set team to monitor laws, regulations and rules of IOTC and advice the fisherman when they have a doubt 	<ul style="list-style-type: none"> • Log book • VMS • PSM • Observer on board • List of IOTC active vessel • Other measure related to IOTC resolution 	<ul style="list-style-type: none"> • DOF

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
3.FS12: Vessels that operate inside and outside of Thai waters must comply with the law, regulation and rules as prescribed by the State where they are fishing*	<ul style="list-style-type: none"> • Amend the existing regulations and update any new management in the Ministerial Order • All overseas FVs compliance with laws, regulations and rules of other States • All Thai vessels compliance with law and regulation rules of Thailand • Impose the law, regulation and rules on the vessels that operate outside of Thai waters as prescribe by the State <p>Ensure the understanding of vessels that operate outside of Thai waters as prescribe by the State on the law, regulation and rules</p>	<ul style="list-style-type: none"> • Documentation control Permit, Logbook, MCPD, MCTD • PIPO • VMS • PSM • At port/sea enforcement 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
3.FS13: Impose strict penalties as prescribed in the Thai Law and of other Coastal State Law.*	<ul style="list-style-type: none"> • Fishery Act is amended with strict penalties for such infringement 	<ul style="list-style-type: none"> • Legislation 	<ul style="list-style-type: none"> • DOF
Thailand's measures as a Port State			
3.PS1: Thailand to ratify the United Nations Fish Stocks Agreement (UNFSA) and agree on Port State Measures (PSM)*	<ul style="list-style-type: none"> • Revise related laws and regulations • Educate fishermen on UNFSA/PSM 	<ul style="list-style-type: none"> • Legislation 	<ul style="list-style-type: none"> • DOF
3.PS2: Minister Announcement and/or CCCIF Order declares a list of vessels that violate international obligations (blacklist) and coordinate information on foreign vessels especially the IUU list**	<ul style="list-style-type: none"> • See 3.IC3, IUU FVs list is officially announced, IUU FVs list is updated annually • See 3.IC3, IUU FVs list and shared among Thai enforcement agencies 	<ul style="list-style-type: none"> • Legislation • Information Sharing Mechanism • VMS 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
3.PS3: Enforcing foreign FVs inspection as prescribed by national and international laws and international agreements, including measures agreed by the Flag State*	<ul style="list-style-type: none"> • Prepare an inspection guideline • Define the landing ports for foreign FVs • Related laws are amended according to PSM • Foreign FVs inspection covered by national and international law 	<ul style="list-style-type: none"> • Legislation • Information Sharing Mechanism • VMS 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
	<ul style="list-style-type: none"> • Ensure the understanding of foreign vessels that operate outside of Thai waters as prescribe by the State on the law, regulation and rules 		
3.PS4: Provide legal basis to inspect and prosecute a foreign IUU vessel and catch*	<ul style="list-style-type: none"> • National legislation contains provisions for foreign IUU vessel inspection is approved • Control the port in for IUU vessels and the transshipment at the sea • Report the information to the responsibility organization 	<ul style="list-style-type: none"> • Legislation 	<ul style="list-style-type: none"> • DOF
3.PS5: Transshipment vessel landing fish in a Thai port must provide a transshipment report*	<ul style="list-style-type: none"> • Revise related laws and regulations • Set staff establish system for collect the transshipment report • Cross-checking • Information sharing between states • Set traceability system • Measuring the effectiveness of landing declaration 	<ul style="list-style-type: none"> • Documentation control • VMS • PIPO /PSM • At port enforcement 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
Internationally accepted market measures			
3.IM1: Import and export goods must comply with the laws under the CITES convention and Wildlife and Protection Act*	<ul style="list-style-type: none"> • National Inspection Plan shall include the plan for CITES and Wildlife and Protection Act; to ensure the compliance with CITES especially Declaration document for the import goods under the CITES convention and Wildlife and Protection Act • Ensure that No CITES violation goods are imported to or exported from Thailand, as well • Official development course in 3.PS4 shall include the spot check for CITES and Wildlife and Protection Act infringement 	<ul style="list-style-type: none"> • Documentation control • PIPO / VMS • At port/sea enforcement • Traceability Inspection 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
3.IM2: Strengthen traceability to verify the origin of raw material before it enters processing*	<ul style="list-style-type: none"> • Develop the Traceability Plan to be able to cover all major landing ports and along the food processing chains • Recruitment for new landing inspection officers; and or outsourcing depending on the result of the study in 3.TC2 • A software-based Traceability system is to be improved and strengthen through and enhance inspection capacity • Verify the origin of raw material from before entering the process for the traceability • Impose the accuracy information and report of the origin of raw material 	<ul style="list-style-type: none"> • Documentation control • PIPO / VMS • At port enforcement • Traceability Inspection 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
3.IM3: Improve the Fishing Logbook, Marine Catch Purchasing (MCPD) and Marine Catch Transshipment Documents (MCTD) report system*	<ul style="list-style-type: none"> • Related to logbook improvement in 3.CS5 • Amend the related laws to ensure the functionality of the desired traceability system • Revise the log book and the process of data reporting • Strict monitoring of the data reported from the inspection offices • 100% coverage of logbook and effective MCPD and MCTD reporting system in place 	<ul style="list-style-type: none"> • Documentation control • MCPD • MCTD • Logbook • PIPO / VMS • At port enforcement • Traceability Inspection and software 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
3.IM4: Determine guidelines on verifying logbooks, MCPD and Marine Catch Transshipment Documents*	<ul style="list-style-type: none"> • Related to logbook improvement in 3.CS5, Crossed-checking Guidelines is developed for verifying logbooks, MCPD and Marine Catch Transshipment Documents accepted/followed the international standards • Risk assessment carried out • Inspection is carried out at random • Educate and train the inspectors for the guideline annually 	<ul style="list-style-type: none"> • Documentation control • MCPD • MCTD • Logbook • PIPO / VMS • At port enforcement • Traceability Inspection and software 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
Objective 4: Reducing the catch of juveniles of the larger commercial species			
Target: Reduce the proportion of juvenile caught and landed to 50% of current levels in 5 years			
All vessels			
4.All1: Increase the legal limit on the mesh size* <ul style="list-style-type: none"> • Trawler net • Other gears 	<ul style="list-style-type: none"> • Consultation with coastal community • Cod-end mesh size is expanded to 5 cm • Issue Comprehensive Standard of Fishing Gears is legislated and officially announced through the Ministerial Order • Develop a support scheme for the fishermen to change the fishing gears in accordance to the standard • Enforcement of the standard 	<ul style="list-style-type: none"> • Gears Inspection • At port/sea enforcement • PIPO • VMS 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
4.All2: Introduce more seasonal and spatial closures based on research that shows these times and areas protect juvenile nursery and spawning stock areas	<ul style="list-style-type: none"> • Continue to conduct scientific research on the seasonal / area closure which has been carried out continuously since 1985; • Increase in the seasonal closures duration and area through the Ministerial Order • Enforcement of the closure by Jointed Operation see 3.TC1 	<ul style="list-style-type: none"> • At port/sea enforcement • PIPO • VMS 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies
4.All3: Encourage research to find fish meal substitutes*	<ul style="list-style-type: none"> • Conduct at least two researches, on fishmeal replacement by collaborating with national and international research 	<ul style="list-style-type: none"> • Research 	<ul style="list-style-type: none"> • DOF

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
Objective 5: Resolving conflicts between small-scale and large-scale fishers			
Target: Reduce the incidence of conflicts to a manageable level in all Provinces			
5.RC1: Form Provincial Fishery Co-management Committees consisting of representatives of DOF, DMCR, artisanal, commercial vessels and other key stakeholders (e.g. traders)*	<ul style="list-style-type: none"> • Provincial Fisheries Co-management Committees is formed in accordance with the Fisheries Act 2015, and the subsequent amendment act • Meeting at least twice a year 	<ul style="list-style-type: none"> • Legislation • Community based Consultation 	<ul style="list-style-type: none"> • DOF • Department of Provincial Administration • Provincial Administration
5.RC2: Establish and demarcation the Coastal Fishing Zone, according to scientific data and stakeholders consultation* -Artisanal FVs allowed only in the Coastal Fishing Zone and commercial FVs allowed only outside the Coastal Fishing Zone out to maritime boundary	<ul style="list-style-type: none"> • Public consultations with stakeholders • Demarcations of Coastal Fishing Area, different from province to province basis, are completed and officially announced; in accordance with oceanographic data, marine life, local gears, tradition, and local livelihood • Artisanal FVs allowed in the Coastal Fishing Area • Commercial FVs allowed only outside the Coastal Fishing Area up to maritime boundary 	<ul style="list-style-type: none"> • Legislation • Community based Consultation 	<ul style="list-style-type: none"> • DOF • TMECC • Department of Provincial Administration • Provincial Administration • Law enforcement agencies
5.RC3: Code and color marking scheme is introduced to differentiate the fishing area and the type of commercial FVs*	<ul style="list-style-type: none"> • Code and colour Marking scheme is introduced; based on FAO recommendation scheme • Ministerial Order on scheme • Develop a support scheme for the fishermen to adopt the scheme • Communicate to the fishermen on correct code/colour for different type of FVs • Commercial FVs compliance by 2016 • 100% Commercial FVs complied with the regulation 	<ul style="list-style-type: none"> • License • Registration • At port/sea enforcement • PIPO • VMS 	<ul style="list-style-type: none"> • DOF • TMECC • Law enforcement agencies

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
<p>5.RC4: Develop a VMS warning system to alert entry into a prohibited zone/area * Demarcation line is drawn in Electronics Chart Display Information System (ECDIS) or any acceptable navigation charts and embedded in the VMS control center.</p>	<ul style="list-style-type: none"> • Development of Electronics Chart Display Information System (ECDIS) having the Demarcation lines, drawn in and embedded in the VMS control center • Develop a VMS warning system to alert entry into a prohibited zone/area • Officials at the VMS control center and Maritime Information Sharing Centre can flagged any vessel using the incorrect area for fishing • Laws enforcement maritime ships, and aircraft install and update ECDIC with demarcation line to cross-check the code/colour of FVs against area of fishing • Laws Enforcement and Prosecution 	<ul style="list-style-type: none"> • License • Registration • At port/sea enforcement • PIPO • VMS 	<ul style="list-style-type: none"> • DOF • RTN • TMECC • Law enforcement agencies
<p>5.RC5: Strengthen existing co-management system and involve these the fishermen in any integrated coastal management (ICM) activities*</p>	<ul style="list-style-type: none"> • Targeting community, with vulnerable environment • Increase number of community each year 	<ul style="list-style-type: none"> • Consultations • Meetings 	<ul style="list-style-type: none"> • DOF

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
Objective 6: Restoring and maintaining critical habitats			
Target: Restore critical habitat areas 4,000 rai mangrove area increased, 4% of coral reefs and 4% seagrass beds under effective management			
6.CH1: Increase the total area of MPAs	<ul style="list-style-type: none"> • Determine the appropriate critical resources and habitats under DNP and DMCR based on technical data • Reforestation and Afforestation of mangrove / Seagrass and Coral transplantation • Coral Reef Clean-up Project • Increase no take zone for utilization in coral reef and seagrass through the Ministerial Order • Regularly monitor and maintain the MPA after establishment / Evaluate the effectiveness of the MPA 	<ul style="list-style-type: none"> • Mapping of critical resources and habitats • Community agreement • At sea enforcement • VMS • Research 	<ul style="list-style-type: none"> • DMCR • DNP • DOF
6. CH2: Ensure that the National Fisheries Policy Committee and the Provincial Committees have representatives from the Environment agency and NGOs; and also include critical habitats on their agendas.	<ul style="list-style-type: none"> • Establish the National Fisheries Policy Committee and the Provincial Committees by selection from the appropriated agency and community see 6.CH1 • Regularly consultation of the National Fisheries Policy Committee and the Provincial Committees 	<ul style="list-style-type: none"> • Legislation 	<ul style="list-style-type: none"> • DMCR • DNP • DOF
6. CH3: DOF to become more involved in habitat protection and restoration activities carried out by other agencies at the national, provincial and district levels, especially on-going Integrated Coastal Management (ICM) activities	<ul style="list-style-type: none"> • Determine the appropriate critical resources and habitats under DMCR and DOF based on technical data • Establish fisher community agreement • Regularly monitor and report the progress and result of ICM after establishment 	<ul style="list-style-type: none"> • Mapping of critical resources and habitats • Community agreement • At sea enforcement • VMS • Research 	<ul style="list-style-type: none"> • DOF • DMCR

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
6. CH4: Initiate Ecosystem Approach for Fisheries Management (EAFM) Programs for coastal communities	<ul style="list-style-type: none"> • Consultation with the target fishing communities, to find specific fisheries and habitats • Assessment of fishing impact on natural resources base on local carrying capacity • Train the local fisher in EAFM 	<ul style="list-style-type: none"> • Fact finding of fishing community • EAFM was implementation at fishing community 	<ul style="list-style-type: none"> • DOF • DMCR

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
Objective 7: Improving fisheries data and information⁷			
Target: Improve data collection and information dissemination systems to a level that can be easily used to monitor the performance of this FMP in 2 years			
7.DI1:Conduct a gap analysis between the data and information needed for KPIs data FMP and the actual available data*	<ul style="list-style-type: none"> • Conduct a Gap analysis in conjunction with the feasibility study in 3.TC2 • Data Collection System is improved • Recruitment of new officers 	<ul style="list-style-type: none"> • Gap Analysis/ Feasibility Studies of DOF restructuring • Legislation 	<ul style="list-style-type: none"> • SEAFDEC/DOF • CCCIF • Research Institutes
7.DI2:Portal/database system that links different sources of data for use in both stock assessment and fisheries management*	<ul style="list-style-type: none"> • Integrated database to monitor the status of marine resource is developed and maintained that links different sources of data among related offices • Seek out information sharing cooperation with the marine environment agencies and research institutes • Web-Portal accessing system is introduced, contracted and operational 	<ul style="list-style-type: none"> • Effective database available 	<ul style="list-style-type: none"> • DOF • DMCR • DNP • Research Institutes • Related officials
7.DI3:Develop a more systematic system for collecting and collating basic fishery statistics*	<ul style="list-style-type: none"> • National Data Collecting Systems is contracted, delivered, and operational • Recruit the statisticians to collect and link the required data/basic fishery statistics for unique and handy in use 	<ul style="list-style-type: none"> • Information Sharing 	<ul style="list-style-type: none"> • SEAFDEC/DOF • DMCR • DNP • Research Institutes • Related officials
7.DI4:Implement continuous capacity development for all technical and scientific staff *	<ul style="list-style-type: none"> • Conduct at least two trainings, annually, for related officers, especially the provincial offices for scientific data collection and analysis 	<ul style="list-style-type: none"> • Training 	<ul style="list-style-type: none"> • DOF • DMCR • DNP

⁷Fisheries data and information to include catches/landings, fishing effort, specific biological data needed for stock assessments, determination of closed seasons and areas, etc

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
			<ul style="list-style-type: none"> • Research Institutes • Related officials
7.DI5:Implement continuous capacity development for key staff in how to communicate scientific results to policy makers and stakeholders*	<ul style="list-style-type: none"> • Conduct at least two trainings, annually, for key staff • Increase number of higher education for the key staffs; especially in the area of maritime policy, and fishery management 	<ul style="list-style-type: none"> • Training • Higher education 	<ul style="list-style-type: none"> • DOF
7.DI6:Strengthen data quality assurance systems by cross-validating data from different sources	<ul style="list-style-type: none"> • Automatic Data validation systems is in place and operating • Cross checking 	<ul style="list-style-type: none"> • Data validation and Sharing 	<ul style="list-style-type: none"> • DOF • DMCR • DNP • Research Institutes • Related officials
7.DI7:Ensure that data required by RFMOs is of high quality and timeliness*	<ul style="list-style-type: none"> • Setup a framework to collect, collate and analyze the RFMOs data • Regularly follow up/update the requirement data of RFMOs to make sure that our data is suit /high quality and timeliness • A quality control system in place for data going to RFMOs is complied with the related regulations • All reporting information requirement for RFMOs is on time 	<ul style="list-style-type: none"> • Data validation and Sharing 	<ul style="list-style-type: none"> • DOF

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
Objective 8: Strengthening fisheries management capacity			
Target: An effective and efficient fisheries management capacity within 5 years			
8.FM1: Conduct a gap analysis between the required system to be in place for effective fisheries management and the current organization structure and the capacity of personnel*	<ul style="list-style-type: none"> • Related to 3.TC2 the feasibility study of restructuring of DOF and bodies to overseeing the fisheries management and related matters. • Strategic Plan for Organization Improvement and Manpower Capacity Building Program are to be prepared • The result will be reported to the cabinet and the recommendations for the responsible bodies for fisheries management • Amend related laws and regulations 	<ul style="list-style-type: none"> • Gap Analysis/ Feasibility Studies of DOF restructuring • Legislation 	<ul style="list-style-type: none"> • DOF • CCCIF
8.FM2: As the result of FM1, if applicable; Establish a new sections responsible for fisheries resource management, allocation and license authorization in DOF, Bangkok	<ul style="list-style-type: none"> • Related to 8.FM1 • Ministerial Order on setup a new office, and/or through other form of laws and regulations • Infrastructure Development • Recruitment/outsourcing • Personnel Development; training, post-graduated scholarships on Fisheries Management, Maritime Policy and related field 	<ul style="list-style-type: none"> • Legislation • Budgeting 	<ul style="list-style-type: none"> • DOF

Management measure/action	Means of Implementation	Modes of Implementation and Enforcement	Responsible Agencies
8.FM3: As the result of FM1, if applicable; Establish a Surveillance Centre that coordinates effective VMS, patrols, aircraft etc.	<ul style="list-style-type: none"> • Related to 8.FM1 • Ministerial Order / Amend related laws and regulations Infrastructure Development • Software Development / Information sharing • Recruitment/outsourcing • Personnel Development; training 	<ul style="list-style-type: none"> • Legislation • Budgeting 	<ul style="list-style-type: none"> • DOF • CCCIF • TMECC • Law enforcement agencies
8.FM4: As the result of FM1, if found applicable; Establish a Traceability and Catch Certification Division	<ul style="list-style-type: none"> • Related to 8.FM1 • Ministerial Order on setup new offices • Software Development / Information sharing • Regional offices development • Recruitment/outsourcing • Personnel Development; training 	<ul style="list-style-type: none"> • Legislation • Budgeting 	<ul style="list-style-type: none"> • DOF
8.FM5: As the result of FM1, if applicable; Develop the human capacity of DOF HQ staff, to implement this FMP*	<ul style="list-style-type: none"> • Related to 8.FM1 • Recruit new staff • Educate and train the existing and new staff to have experience and knowledge to manage the fisheries 	<ul style="list-style-type: none"> • Legislation • Budgeting 	<ul style="list-style-type: none"> • DOF
8.FM6: As the result of FM1, if found applicable; Develop the human capacity of Provincial/District fishery officers in fisheries management	<ul style="list-style-type: none"> • Related to 8.FM1 • Recruit new staff for provincial offices • Educate and train the existing and new staff to have experience and knowledge to manage the fisheries 	<ul style="list-style-type: none"> • Legislation • Budgeting 	<ul style="list-style-type: none"> • DOF

APPENDIX F: Assistance for fisheries operators affected by the government's measures to tackle IUU fishing and fleet reduction

The Royal Thailand Government is committed to resolving illegal, unreported and unregulated fishing (IUU) and is carrying out systematic and continuous actions and measures. The Government has appointed a sub-committee on tackling IUU, established the Command Center for Tackling IUU (CCTI) and assigned the Commander-in-chief of the Royal Thai Navy as the commander of the center. The Commander-in-chief shall have the absolute power to integrate every relevant agency especially Department of Fisheries, Marine Department, Ministry of Labour, Marine Police, Immigration Office, Office of the Council of State to administer the measures to tackle IUU. However, such measures will affect many fishery operators, especially the reduction the numbers of fishing vessels, termination of issuing of fishing licenses, termination of fishing registration, including the use of some fishing gear that impact on the environment e.g. push nets from powered vessels, set bag nets, seine nets with the width smaller than the legal minimum size, collapsible traps, trawl nets with a mesh smaller than the legal minimum size and other fishing gears as prescribed by the CCTI. The fishery operators affected can be divided primarily as follows:

1. 330 fishing vessels with push nets and 4 vessels with set bag nets will have to stop such operations;
2. 1,334 fishery operators with license and/or fishing license prior to B.E. 2539 (1996) and registered at PIPO;
3. Fishery operators with debts arising from loans from commercial or government banks, in which the fishery operators put their deeds/ properties as mortgage for money spent on improvement of fishing vessels and/or fishing gears including educational loans from different agencies as commercial banks provide loans with interest.

The Prime Minister assigned the Committee to implement strategies of the National Council for Peace and Order, which the deputy Prime Minister is the Chairperson. The first sub-committee is responsible for economy, finances, public finances, and solving the problems of disparity of the public. It is responsible for providing assistance to those affected from measures to eliminate IUU. The sub-committee held 6 meetings with the relevant agencies and fishery operators around the country: (i) 1st meeting was on the 10th of August B.E. 2558 (2015) at National Fisheries Association of Thailand; (ii) 2nd – 4th meetings were on the 18th, 25th of August B.E. 2558 (2015) and (iii) 1st of September B.E. 2558 (2015) at Department of Fisheries, (iv) the 5th meeting was on the 2nd of September B.E. 2558 (2015) at CCIT, Royal Thai Navy and (v) 6th meeting was on the 4th of September B.E. 2558 (2015) which was a mission in Suratthani province. The impact on fishery operators can be concluded as follows:

- Some fishery operators have debts from commercial banks and other loan sources, for instance, educational loan fund. The fact that the fishery operators has to stop using the fishing vessels affects installation payment and payment of interest;
- Fishery operators with the fishing gears that are prohibited as prescribed by order/notifications for prohibitions of such fishing gears. Some fishery operators wish to change to the fishing gears as prescribed by law whilst others wish to change their profession by proposing the state to buy fishing vessels. Such vessels are to be destroyed and/or to make corals;
- Fishery operators affected from the Notification to stop fishing in the Gulf of Thailand for 9 days per month and for 5 days per month in the Andaman Sea.

With respect to solving the issue of debts of fishery operators, the government assigned the Ministry of Interior by which the 22 Provincial Governors assigned the Center for Justice to collect data on every debt to systematically integrate these into the rehabilitation scheme. The cooperation with Thai bankers associations is to restructure the debts and suspend debts during the transitional period where the fishery operators are adjusting and being affected and the data shall be collected by mid September B.E. 2558 (2015);

With respect to a change of fishing gears or a change of profession, National Fisheries Association of Thailand and the government have conducted the consultations in order to find the procedure for assistance under the principle that the fishery operators shall have professions and live in Thai society peacefully. A change of fishing gears shall be as prescribed by the government and shall not affect the balance of natural sea resources and aquatic animals. In respect of a change of profession, the government has cooperated with relevant agencies to ensure that the problem is being solved systematic, for instance, the Ministry of Labour shall provide knowledge on professions; Ministry of Commerce shall help providing markets for sale of outputs or products; Ministry of Agriculture and Cooperatives shall provide assistance on changing professions to shell or fish farming; Ministry of Natural Resources and Environment; Ministry of Interior shall help with the land; and SME Bank shall provide financial support by giving out loan with low interest rate.

A total of 34 fishery operators who used push nets wish to be part of a model project to change the fishing gears as prescribed and to receive support money in the process. 20 fishery operators are in Samutsakorn province, 3 in Phetburi province, 5 in Suratthani province and 6 in Chumporn province. To carry out such tasks, Department of Fisheries and Marine Department have been assigned to conduct a study and estimate the expenses.

A committee to consider the appropriateness of the cost in procurement of purchase and sale of fishing vessels has been formed consisting of the Deputy Permanent Secretary of Ministry of Agriculture and Cooperatives as the chairperson, Representatives from the Department of Fisheries, Marine Department, Navy Dockyard Department, Office of Agriculture Economy, Ministry of Agriculture and Cooperatives, dockyard engineering

department, Kasetsat University, National Fisheries Association of Thailand, dockyard Association of Thailand and Bureau of the Budget, to prescribe the appropriate established price for purchase and sale of fishing vessels with components. Another committee will consider operators who are to receive compensation and appropriateness of the compensation during the time they cease to fish in accordance with Orders of the CCCTI consisting of representatives from the Ministry of Agriculture and Cooperatives, Ministry of Labour, Ministry of Finance, Bureau of the Budget, Department of Fisheries, Marine Department and Royal Thai Navy. This is an urgent matter and, primarily, the calculation basis for compensation is established as follows:

- labour wage while waiting for a change of fishing gear 300 Baht/day/person;
- food expense for crews 70 Baht/day/person;
- rental fee for docking and electricity 200 Baht/day/person;
- living expense for family and loss of income average of 3 person per family and 500 Baht per person or 1,500 Baht/family/day;
- wage for a person who monitors a vessel and only for a particular type of vessel 300 Baht/day/person

The compensation can be divided into 2 parts as follows:

- a fishing vessel less than 10 gross tonnage with a legal fishing license which uses push nets shall be compensated for 2,200 Baht/day; 10-30 gross tonnage compensated for 3,200 Baht/day; 30-60 gross tonnage compensated for 3,900 Baht/day and over 60 gross tonnage compensated for 4,650 Baht/day;
- a fishing vessel between 30-60 gross tonnage with no fishing license using trawl nets compensated for 2,460 Baht/day and other remaining fishing vessels with no fishing license compensated for 2,070 Baht/day