



**Food and Agriculture Organization  
of the United Nations**

## **National capacity assessment to strengthen fisheries and coastal natural resource management in pilot areas**

**Report of Enabling Transboundary Cooperation  
for Sustainable Management of the Indonesian Seas (ISLME project)**



**GLOBAL ENVIRONMENT FACILITY**  
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National capacity assessment to strengthen fisheries and  
coastal natural resource management in pilot areas

Report of Enabling Transboundary Cooperation  
for Sustainable Management of the Indonesian Seas (ISLME project)

Food and Agriculture Organization of the United Nations

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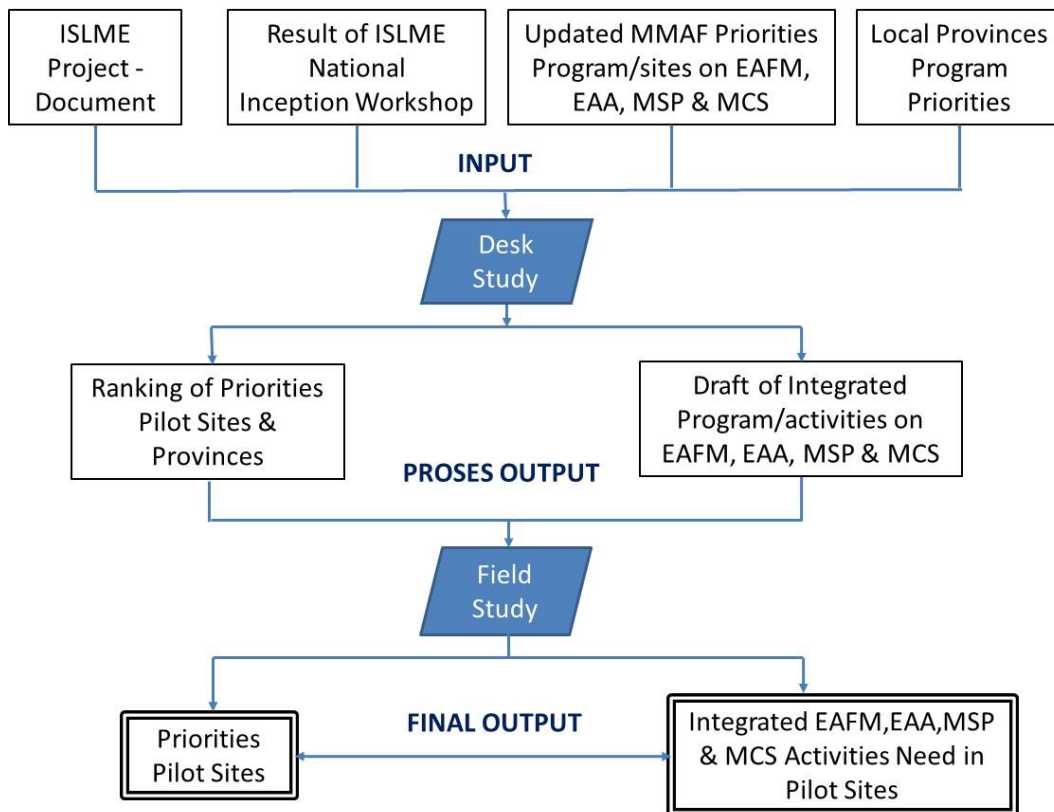
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## Abbreviations and acronyms

DKP	<i>Dinas Kelautan dan Perikanan</i> (Marine and Fisheries Agency, Provincial/district level)
DJPT	<i>Direktorat Jenderal Perikanan Tangkap</i> (Directorate General of Capture Fisheries, MMAF)
DJPB	<i>Direktorat Jenderal Perikanan Budidaya</i> (Directorate General of Aquaculture, MMAF)
DJPRL	<i>Direktorat Jenderal Pengelolaan Ruang Laut</i> (Directorate General of Marine Spatial Management, MMAF)
DJPSDKP	<i>Direktorat Jenderal Pengawasan Sumberdaya Kelautan dan Perikanan</i> (Directorate General of Surveillance of Marine and Fisheries Resources, MMAF)
EAA	Ecosystem Approach to Aquaculture
EAFM	Ecosystem Approach to Fisheries Management
FAO	Food and Agriculture Organisation of the United Nations
FMA	Fisheries Management Area
FMP	Fisheries Management Plan
GEF	Global Environment Facility
ISLME	Indonesian Sea Large Marine Ecosystem
RZWP3K	<i>Rencana Zonasi Wilayah Pesisir, Pulau-pulau Kecil</i> (Zonation Plan of Coastal area and Small Island)
MCS	Monitoring, Controlling, and Surveillance
MMAF	Ministry of Marine Affairs and Fisheries, Republic of Indonesia
MPA	Marine Protected Area
MSP	Marine Spatial Planning
FMANRI	<i>Wilayah Pengelolaan Perikanan, Negara Republik Indonesia</i> (Indonesia FMA)

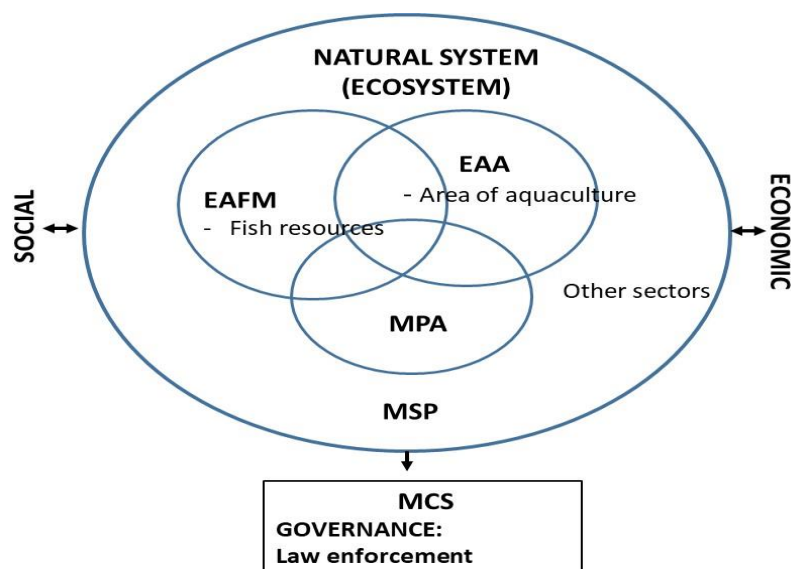
## **Executive summary**

- E1. Indonesian Sea Large Marine Ecosystem (ISLME) Project of “Enabling Transboundary cooperation for sustainable management of the Indonesia Seas” is a Project of GEF/FAO cooperation with Indonesia and Timor Leste to strengthen regional cooperation and support the effective and sustainable management of ISLME area. The implementation of ISLME project has been designed to improve fisheries resource management, in four Fisheries Management Areas (FMA or FMA) of Indonesia that are FMANRI 712, 713, 714 and 573 and the coast of Timor Leste bordered to Indonesia waters.
- E2. There are three components of the project namely: 1) Identifying and addressing threats to the marine environment including unsustainable fisheries; 2) Strengthening capacity for regional and sub-regional cooperation in marine resources management; and 3) Coordination with regional information networks, monitoring of project impacts, and dissemination and exchange of information. According to ISLME Project Document (GCF/RAS/289/GFF), through an important process under component 2, the project are piloted at seven sites, four of them will be in Indonesia (FMA 712, 713, 714, and 573) and two in Timor Leste and one in transboundary area.
- E3. In order to assess the priority pilot sites and program in the Indonesia project area this study has been carried out. The specific objectives this study are, to: (1) Conduct an in-depth institutional assessment of institutions and stakeholders in the identified pilot areas (seven provinces), including mapping of all relevant institutions/stakeholders, review of their existing programs, assessing the existing policies and regulatory framework; (2) Analyse the capacity of institutions and stakeholders at identified pilot areas to effectively implement fisheries management of the identified commodities at pilot areas; (3) Formulate an integrated model of project intervention that would suit the need of stakeholders at its best of the proposed pilot sites. To achieve the study objectives and outputs, a study approach is presented in Figure A, as following. An intensive consultative processes have been conducted in national level, particularly with Directorate of Fisheries Resources Management, Ministry of Marine Affairs and Fisheries, and others related institution (e.g. DG of Aquaculture, Marine Spatial Planning and Management, Surveillance), and in the 7 provinces (Banten, West Java, Central Java, East Java, West Nusa Tenggara, East Nusa Tenggara and East Kalimantan) related to 5 priorities group of fishery, i.e. blue swimming crab, snappers and groupers, small pelagic fish, lobsters, and mud crab.



**Figure A.** General approach of this study

E4. The integration general model for the project intervention is presented in the following Figure B. The program of EAFM, EAA, and MPA management is strongly integrated in a certain marine area under Marine Spatial Planning (MSP). Those four components of the project intervention is implemented in frame of Ecosystem Approach Management which is should harmonize with others economic activities in the ecosystem.



**Figure B.** Integration General Model

E5. Figure B. The Integrated model of EAFM (capture fisheries), EAA (Aquaculture), MPA (Conservation Area), and MSP (Marine Spatial Planning) related on integrated management of water area (ecosystem) for fisheries, aquaculture, and marine conservation. The MCS plays an important role to keep the harmonization among sectors through monitoring and law enforcement.

E6. As widely considered, both EAFM and EAA management have three main components and similar goals, namely: (1) ecosystem health, (2) human well being (welfare), and harmonization among the stakeholders in order to achieve sustainable use of the resources. There are strong relationships between the four project components as presented in the following matrix (Table A).

Table A. Matrix Integration model between component of EAFM, EAA, MPA, and MCS in frame of ISLME Project intervention. The number of symbol (√) shows level of integration needed through ISLME project intervention

Intervention components	EAFM (DJPT)	EAA (DJPB)	MSP/MPA (DJPRL)	MCS (DJPSDKP)
<b>EAFM (Capture Fisheries)</b>				
☐ Fisheries resources	√ √ √	√ √	√ √	-
☐ Socio – economic aspect	√ √ √	√	√	-
☐ Governance	√ √ √	√	√	√ √
<b>EAA (Aquaculture)</b>				
☐ Environment (area) of Aquaculture	√ √	√ √ √	√ √	-
☐ Socio – Economic Aspect	√	√ √ √	√	-
☐ Governance	√	√ √ √	√	√ √
<b>MSP (Marine Spatial Planning)</b>				
☐ Fishing Ground	√ √ √	√ √	√ √ √	√ √
☐ Aquaculture Area	√ √	√ √ √	√ √ √	√ √
☐ MPA	√ √	√ √	√ √ √	√ √
☐ Other sectors	√	√	√ √ √	-
<b>MCS (Monitoring Controlling and Surveillance )</b>	√ √ √	√ √	√ √	√ √ √

Note: **DJPT** = Ditjen Perikanan Tangkap (Directorate General of Capture Fisheries), **DJPB** = Ditjen Perikanan Budidaya (Directorate General of Aquaculture), **DJPRL** = Ditjen Pengelolaan Ruang Laut (Directorate General of Marine Spatial Management), **DJPSDKP** = Ditjen Pengawasan Sumberdaya Kelautan dan Perikanan (Directorate General of Surveillance of Marine and Fisheries Resources)

E7. This study recommended that the Priority location for the 5 fishery commodities and sites are: snappers and groupers fisheries recommended to be developed in Lamongan and Bontang Regencies, blue-swimming crab fisheries in Demak Regency, lobster fisheries in East and Central Lombok, small pelagic fisheries in East Flores Regency, and mangrove crab fisheries in Kutai Kertanegara Regency (Table B). Furthermore, this study has also recommended the priority framework program in the sites and communities is also presented in the Table B.

Table B. Program recommendations for the 5 priority commodities in 7 provinces in Indonesia

Priority fisheries (commodity)	Priority locations	Priority recommended programs (Umbrella/Framework programs)
<b>Snapper and grouper</b>	Lamongan District	Implementation of EAFM Implementation of EAA Implementation of MCS Implementation of Marine Conservation
	Bontang Regency	Implementation of EAA Implementation of MCS Implementation MPA
<b>Blue-swimming crab</b>	Demak District	Implementation of EAFM Implementation of MCS Implementation conservation program
<b>Lobster</b>	East Lombok District Central Lombok District	Implementation of EAFM Implementation of EAA Implementation of MPA (marine conservation)
<b>Small pelagic</b>	East Flores District	Implementation of EAFM Implementation of MPA Implementation of MCS
<b>Mangrove crab</b>	Kutai Kertanegara District	Implementation of EAFM Implementation of MPA (mangrove conservation) Implementation of EAA Implementation of MCS

E8. These sites were selected based on a number of criteria, including (among others): a) Importance and suitability in term of priority group of fisheries (i.e., blue swimming crabs, snappers, groupers, lobster, small pelagic fish, and mud crabs, supported by aquaculture (EAA), RZP3K (MSP), and MCS program; b) Ongoing and planned support of the local government on this EAFM program and sites in the provinces; c) Capacity and interest of the local government in adopting EAFM and EAA approach and program for local communities and fishers as well as related stakeholders; d) Existing and planning supports of partners, e.g., NGOs, International Agencies in this Pilot Sites. Finally, the detail program in each sites are presented in the complete document of this study.

# 1. Introduction

## 1.1 Background

1. Indonesian Sea Large Marine Ecosystem (ISLME) Project of “Enabling Transboundary cooperation for sustainable management of the Indonesia Seas” Project is a GEF/FAO cooperation with Indonesia and Timor Leste to strengthen regional cooperation and support the effective and sustainable management of ISLME area. The implementation of ISLME project has been designed to improve fisheries resource management, in four Fisheries Management Areas (FMA or FMA) of Indonesia that are FMANRI 712, 713, 714 and 573 and the coast of Timor Leste bordered to Indonesia waters.

2. There are three components of the project namely: 1) Identifying and addressing threats to the marine environment including unsustainable fisheries; 2) Strengthening capacity for regional and sub-regional cooperation in marine resources management; and 3) Coordination with regional information networks, monitoring of project impacts, and dissemination and exchange of information. According to ISLME Project Document, through an important process under component 2, the project will have piloted at seven sites, four of them will be in Indonesia (FMA 712, 713, 714, and 573) and two in Timor Leste and one in transboundary area.

3. To officially implement this Indonesian Part of ISLME Project, an Inception Workshop on ISLME National Program and Indonesia National Project Steering Committee (NPSC) Meeting had been conducted in Bogor on 5–6 March 2019. The workshop identified priority Ecosystem Approach to Fisheries/ Ecosystem Approach to Aquaculture (EAFM/EAA) Pilot Sites and year-1 program, one of the priorities in this year is to assess the Pilot Project in each FMA of 712, 713, 714, and 573. The proposed pilot sites to be assessed are summarized in the following **Table 1**.

**Table 1.** Proposed priority sites based on ISLME national inception workshop

FMANRI	Commodity target	Province	Priority district	Additional sites
712	Blue swimming crab	East Java	Pamekasan	Sumenep, Bangkalan, Sampang, and Gresik
	Snapper and groupers		Lamongan	Probolinggo
	Only groupers		Situbondo	Banyuwangi
	Blue swimming crab	Central Java	Demak	Tegal
			Pemalang	Brebes, Pekalongan, Batang, Kendal, Rembang, Cilacap, Jepara dan Pati
	Blue swimming crab	West Java	Cirebon	Bekasi
			Indramayu	Karawang
	Snapper and groupers		Indramayu	
	Snapper		Kerawang	
	Blue swimming crab	Banten	Kota Serang	Tangerang
Snapper and groupers		Kabupaten Serang	City of Serang, Pandeglang (FMA 572 and partly FMA 573)	
713	Mud crabs	East Kalimantan	Kutai Kertanegara	Anggana, Muara Badak
	Snapper and Groupers		Bontang (KJA)	North/South Bontang
			Balikpapan	Kampung Baru
714	Small pelagic ( <i>alternative for live fish bite</i> :	East Nusa Tenggara (NTT)		
	Milk fish		Alor	
	Sardine		East Flores	
	Anchovy		Lembata	
573	Lobster	West Nusa Tenggara (NTB)	Central Lombok (Awang & Gerubuk Bay)	
	Seaweed		East Lombok (Ekas Bay and Serewe)	

4. To assist in the identification of the capacity building needs to be implemented by ISLME project at the proposed pilot sites, an in-depth institutional and capacity assessment on EAFM, EAA, Marine Spatial Planning/Marine Protected Area (MSP/MPA) and Monitoring Control and Surveillance (MCS) are conducted: (1) to understand the current institutional situation of stakeholders in the implementation of fisheries management plans (in view of EAFM, EAA, MSP/MPA and MCS) and (2) to



serve as a baseline for ISLME Project intervention and monitoring of impacts on improved fisheries management in the proposed pilot sites. The result of this study expected to achieve the Project **Output point 2.1.1. National Capacity Needs Assessment of Relevant Institutions Needed for Fisheries and Coastal Natural Resource Management of the Pilot Areas in Indonesia**, as stated in ISLME Project document.

## 1.2 Objective

5. According to the Terms of Reference (TOR), the overall objective of the work carried out by SP is to conduct an in-depth institutional and capacity needs assessment on the implementation of fisheries management plans in proposed project pilot sites. The specific objectives within the scope of this work are to:

1. Conduct an in-depth institutional assessment of institutions and stakeholders in the identified pilot areas (seven provinces), including mapping of all relevant institutions/stakeholders, review of their existing programs, assessing the existing policies and regulatory framework;
2. Analyse the capacity of institutions and stakeholders at identified pilot areas to effectively implement fisheries management of the identified commodities at pilot areas;
3. Formulate an integrated model of project intervention that would suit the need of stakeholders at its best of the proposed pilot sites.

## 1.3 Output

6. An Institutional Analysis Report including agreed deliverables and recommendations :
  - a. An Institutional Analysis at national level and in the seven provinces identified as ISLME pilot areas in Indonesia that includes 1) mapping of national and provincial and organizations including their existing or planned programs
  - b. Assessment of relevant policies and legislation, and analysis of roles of institutions in policies and laws
  - c. Assessment of the capacity and performance of key organizations.
7. A Baseline Report of the proposed project sites:
  - a. Description of the marine/coastal environmental and socio-economic issues in the priority districts including a SWOT-analysis on the main/key issues
  - b. Based on the SWOT analysis, provide recommendation of 1 (one) pilot site per province
  - c. Propose a best-approach/model for EAFM, EAA, MSP/MPA, MCS for project intervention/activities at the site level.

## 1.4 Scope of the activities

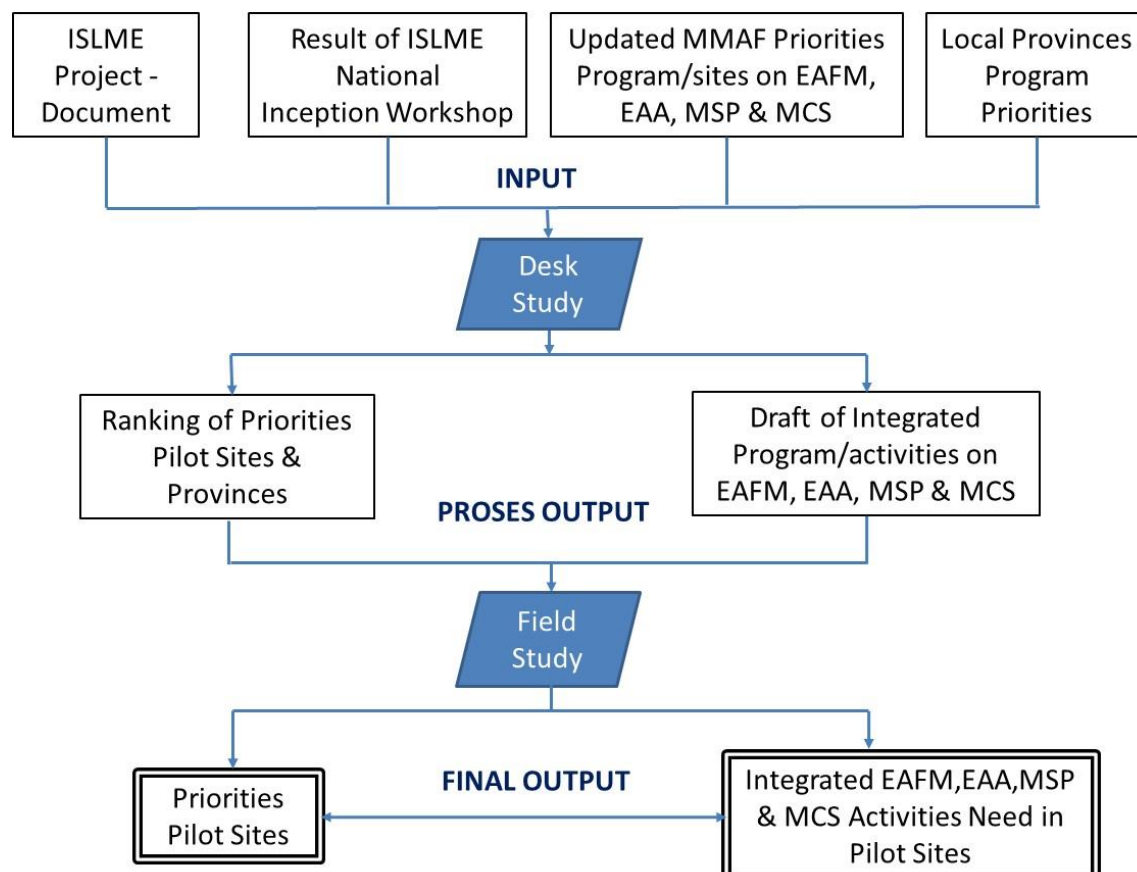
8. The scope of activities in this study is as follows.
  1. Preparation
    - a. Formulate detailed work plan
    - b. Present the proposal with special focus on the methodology.
  2. Implementation
    - a. Study desk: consisting of stakeholders and national mapping institutions
    - b. Review policies related to EAFM, EAA, MSP/MPA, and MCS at the Project Pilot site

- c. Carry out rapid assessment EAFM, EAA, MSP/MPA and MCS indicators at the pilot project location.
3. Analysis and preparation of recommendations
4. Report

## 2. Approach and methodology

### 2.1 Approach of study

9. To achieve the study objectives and outputs, a study approach is presented in Figure 1 and more detail in Figure 2.



**Figure 1.** General approach of this study

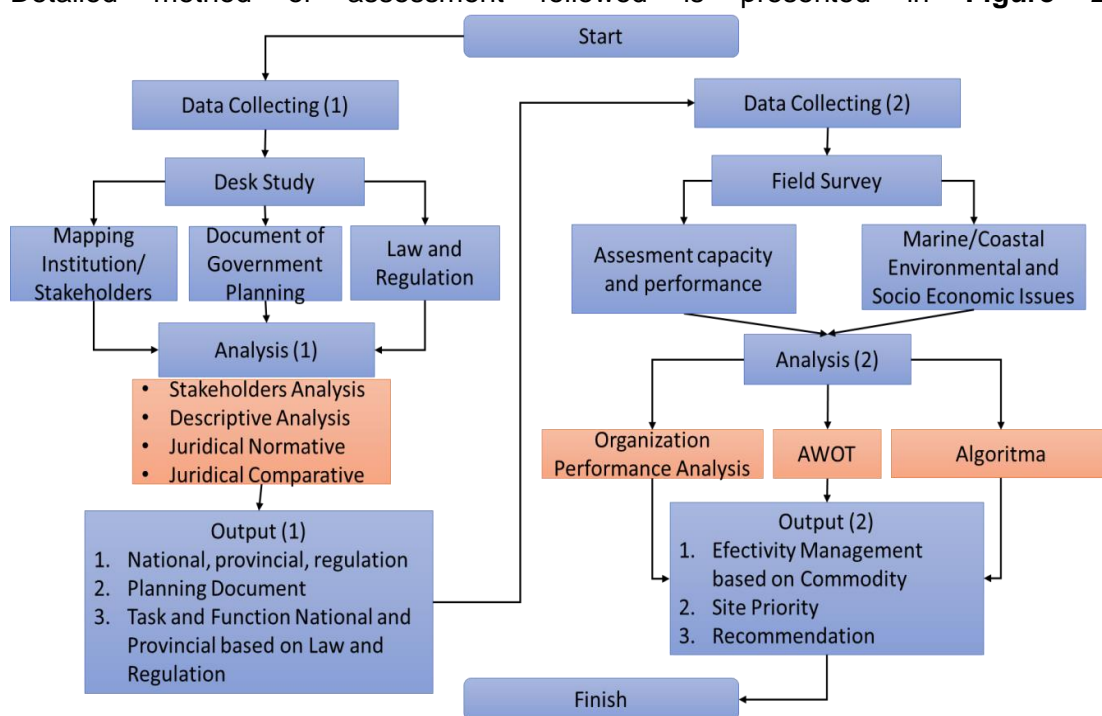
10. The main input for **desk study** are: 1) ISLME Project document entitled “Enabling Transboundary Cooperation for Sustainable Management of the Indonesian Sea”, 2) The result of ISLME Inception Workshop on 5–6 March 2019, 3) Updated MMAF Priorities Program and Sites in the field of EAFM, EAA, MSP/MPA and MCS, 4) Priorities program of the province governments related to EAFM, MSP/MPA, and MCS. According to the ISLME Project document, there were four proposed Pilot Sites for these main fields, namely: North Coast Java or Fisheries management area (FMA) 712, East Kalimantan Province (FMA 713), Lombok (FMA 573), and East Flores, NTT (FMA 714). The ISLME national Inception Workshop conducted on 5–6 March 2019 has resulted in the tentative priority pilot sites and activities particularly related on those target species managements.

11. Furthermore, after the workshop, DGCF - MMAF (c.q. Directorate of Fisheries Resources Management/PSDI) had conducted a series of workshops to develop the harvest strategy of these target species (Table 1). From this, there are some further updates concerning priority sites flagged for the target species, for example, Blue Swimming Crabs is focused in FMA 712, Snappers and Groupers fisheries harvest strategy will be focused in the FMA 713. In this study, the last updated program of PSDI is used as an important input in the desk study. Similarly, the latest condition and policies of the local provinces are taken into consideration in the desk study.

Some criteria are used to assessment of the priority sites, e.g.:

- Importance and suitability in term of priority group of species fisheries (i.e., Blue swimming crabs, snappers, groupers, lobster, small pelagic fish for an alternative live fish bite for tuna fisheries, and supported by aquaculture (EAA), RZP3K (MSP), and MCS program
- Ongoing and planned support of the local government on this EAFM program and sites in the provinces
- Capacity and interest of the local government in adopting EAFM and EAA approach and program for local communities and fishers as well as related stakeholders
- Existing and planning supports of partners, e.g., NGOs, international agencies in this pilot sites.

For each candidate of priority sites in the provinces that resulted from the Desk Study, the sites were to be visited for detailed assessment (Figure 1) as well as to analyse and draft the integrated intervention on EAFM, EAA, MSP, and MCS in the sites. Detailed method of assessment followed is presented in **Figure 2**.



**Figure 2.** Detail approach of this study

## 2.2 Data collection

Table 2 shows data types, parameters, and method of collection.

Table 2. Data collection system

No	Data domain	Indicator	Type of data	Data collection techniques
1	Institutional analysis	Mapping institution/stakeholders and existing program	National (RPJMN, Strategic planning/ Renstra KKP, annual report) Province (RPJMD, Renstra DKP, annual report)	Secondary
		Existing policy and regulatory	Law and regulation	Secondary
		Assessments capacity and performance	Relevance Effectiveness Efficiency Sustainability	Primary/Secondary
2	Integrated model	description of the marine/coastal environmental and socio-economic issues	Type data of social, economic, and environment	Primary/Secondary
		Recommendations	Type data of social, economic, and environment	Primary/Secondary

## 2.3 Data analysis

Data are analysed through the following methods:

### a) Stakeholders analysis

Stakeholder analysis is one of the tools or techniques resulting in a list of stakeholders that will be contributing in implementing the program. This analysis begins with the identification of all stakeholders, potential impacts or support, and assesses how stakeholders respond or react (Grimble and Wellard 1997).

### b) Juridical analysis

This study is using normative juridical approach, completed with empirical juridical and comparative approach. Normative juridical approach means that this study emphasizes on legal science and focuses on secondary data collection which is material of primary, secondary and tertiary data.

### c) Descriptive analysis

Descriptive Analysis is aimed to identify issues and obstacles of commodity based fisheries management related programs implementation.

### d) Analysis of OPA

Organization Performance Assessment (OPA) is a model that can be implemented to describe, analyse and evaluate the organization. This analysis was developed by Universalia/IDR C (Lusthaus *et al.* 2002).

The OPA analysis is conducted towards three kinds of parameter to become three analysis pillars (Figure 3), namely: organizational motivation, organizational capacity, and organizational capacity.



**Figure 3.** OPA Structure

12. OPA structure related with priority location study is adjusted based on fisheries. Thus, the three OPA pillars with its strategic parameters and indicators are presented (Table 3).

**Table 3.** OPA Index, strategic parameters and indicators for fisheries

No	Index	Strategic parameters (SP)	Indicators	Score		
1	Organizational motivation	1.1 Legal foundation of organization arrangement	Present	3		
			Arrangement process	2		
			Absent	1		
				1.2 Clarity in planning document (strategic plan)	Present	3
					Arrangement process	2
					Absent	1
				1.3 Legality (regulation)	Present	3
					Arrangement process	2
					Absent	1
2	Organizational capacity	2.1 Human resources support	According to the needs	3		
			Sufficient	2		
			Defficient	1		
				2.2 Finance support/funding	Exceding the needs	3
					Sufficient	2
					Defficient	1
				2.3 Organization structure support	Present	3
					Under discussion	2
					Absent	1
3	External environment	3.1 Regional autonomy implementation (political)	Present	3		
			Arrangement process	2		
			Absent	1		
				3.2 Partnership support (stakeholders)	Present	3
					Under exploration	2
					Absent	1
				3.3 Society support (Local values)	Present	3
					Under discussion	2
					Absent	1
Total						

**e) AWOT analysis**

This method is used in order to define policy priority of commodity based fisheries management at pilot site. AWOT Analysis is a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis that are integrated into the AHP (Analytical Hierarchy Process). The IFAS (Internal Factors Analysis Summary) and EFAS (External Factors Analysis Summary) is previously input to result management strategy by optimizing internal and external factors.

**f) Algorithm analysis**

An algorithm is a set of instructions explicitly followed by a computer to solve a problem. When an algorithm is assigned to a problem and specified correctly, the next step is to determine the number of resources, such as time and space, required by the algorithm.

### **3. Result and discussion**

#### **3.1 Institutional analysis**

13. The project themed "Enabling Transboundary Cooperation for Sustainable Management of the Indonesian Seas" or also called ISLME Project is a collaboration of the Government of Indonesia (KKP), Timor-Leste, and GEF/FAO which began to be implemented in 2019 in Indonesia. This, National Capacity Needs Assessment of Relevant Needs for Fisheries and Coastal Natural Resources Management in Pilot Areas is an important part of this ISLME project of the component 2. After ISLME national workshop on 5–6 March 2019, there were several developments in fisheries management activities related to EAFM implementation, especially in the ISLME project area (FMANRI 712, 713, 714, 715 and 573) related to these activities, including:

- a. There was a development of the initial pilot project with issues and problems formulated in ISLME project document, namely: (1) Anticipation of MMAF Decree No. 2 of 2015 which was later refined by MMAF Decree No. 71/2016 concerning fishing zone and placement of fishing gear in FMANRI, (2) MMAF Decree No. 1 of 2015 concerning legal size for lobster, blue swimming crab and mangrove crab fisheries.

The focus of 712 FMANRI was initiated in the project document was in anticipation of the banning of fishing gear 'cantrang' (Danish seine) and trawl, which focused on various capacity-building programs related to fisheries, awareness of fishers and alternative fishing gear replacement (cantrang). The pilot project site for FMANRI 712 was originally in Central Java Province, namely Demak Regency (development of crab fisheries and mangrove conservation), Pemalang Regency (integration of mangroves and mangrove crabs or silvo-fishery programs) or Rembang District (alternative fishing gears replacement program of the 'cantrang').

In ISLME project document, the focus in the Province of East Kalimantan was on the program of spatial harmonization and coastal zoning, where there was a high conflict of spatial use between fisheries and other economic activities. Through MMAF Decree No. 1/2015, integrated management of mangrove crab fisheries with aquaculture activities (EAA), Spatial Planning (MSP), and law enforcement related to IUU Fishing (MCS) were programmed. Balikpapan was a focus area under the project document. As a later development, ISLME project support will be provided in enhancing the capacity of local governments and fisheries actors, including support in the formulation

and implementation of Integrated Coastal Area Zoning plan (RZWP3K) in East Kalimantan Province which is currently being formulated.

The issue of lobster juvenile exploitation in East Lombok and Central Lombok, NTB Province conflicts with MMAF Decree No. 1/2015 which is the main issue focused in the ISLME project document in addition to conflicts over the use of coastal area in NTB Province. At present, Monitoring, Controlling and Surveillance (MCS) of lobster juvenile (seeds) catching activities are the main thing carried out by tasks of KKP and related parties. Awareness of fishers catching lobster juvenile creating alternative livelihoods, for example through marine aquaculture (mariculture) activities and coastal tourism, involving coastal communities at those locations need support including the ISLME Project. At present, Local Government Regulation (Perda) No. 12/2017 is concerned with NTB Province RZWP3K (marine spatial planning). So, this project is expected to support the implementation of the regulation, particularly through the integration of fisheries management (EAFM), EAA Seaweed or Grouper, and MCS for IUU Fishing.

In the province of East Nusa Tenggara (NTT), ISLME project is focusing on supporting the sustainability of tuna fisheries through the continued availability of bait. One of them is through the management of small pelagic fisheries as a source of bait and the development of milkfish aquaculture.

- b. The process of preparing the document on the first phase of the harvest strategy of snapper and grouper fisheries focusing on FMANRI 713.
- c. The process of compiling the Blue swimming crabs harvest strategy in the first stage is focused on FMANRI 712.
- d. The process of preparing a harvest strategy for reef fisheries and small pelagic fisheries in FMANRI 715.
- e. The activity of formulating and determining the allocation of fisheries utilization between the center and the regions as well as between provincial regions contained in each FMANRI.
- f. Institutional strengthening of the FMANRI Fisheries Management Council (LPP) which is in the process of legalization through the Minister of Marine Affairs and Fisheries Regulation. This LPP–FMANRI has a very strategic role in the process of fisheries management, particularly the formulation of fisheries management measures by involving fisheries stakeholders in an integrated manner.
- g. Strengthening the fisheries data collection system, including the e-logbook system and one data system.
- h. The process of evaluating the implementation of the FMANRI Fisheries Management Plan (RPP) especially in the ISLME project working area, and the RPP of blue swimming crab fisheries where some of the action plans are closely related to the ISLME project activities.
- i. The development of various national strategic issues, including the anticipation of the development of the Province of East Kalimantan as a candidate for the capital city of the Republic of Indonesia which is one of the project pilot site candidates. Besides, the development of national politics which will soon emerge a new cabinet government with different priorities.
- j. The development of the political situation and local government policy, especially in the location of prospective project sites which would be further examined during the field study.

14. Some developments in national and regional policy conditions are further analyzed in the formulation of integrated fisheries management (EAFM) programs or activities with EAA, MSP, and MCS at the project site to be implemented.

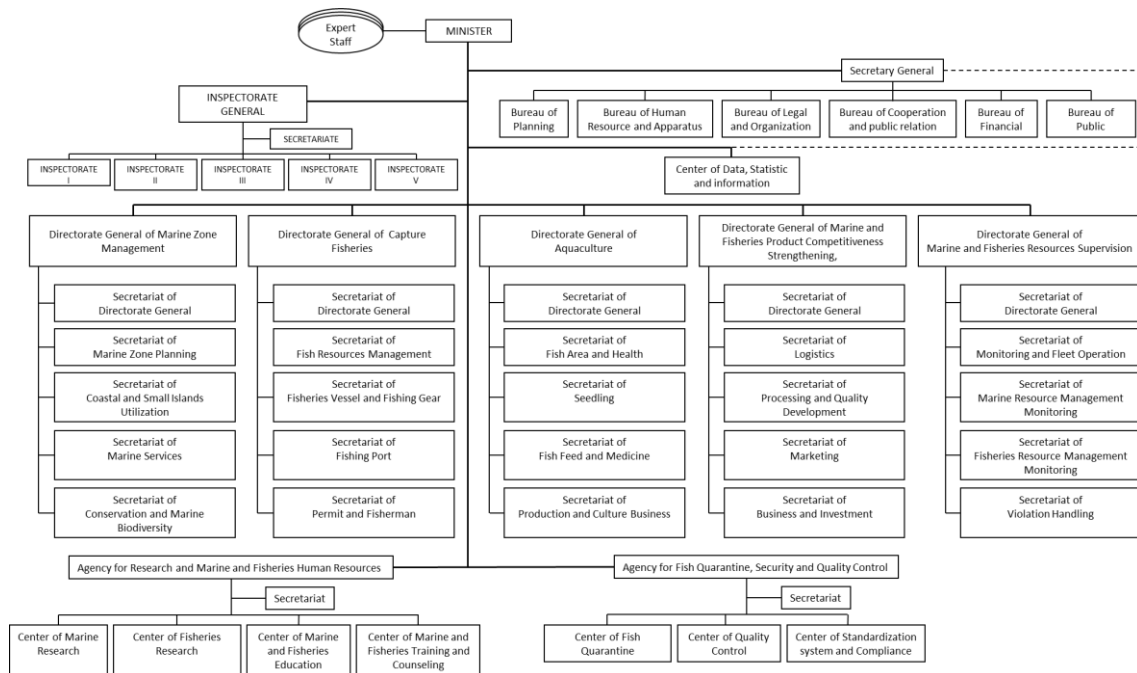
### **3.1.1 Structure of government organization**

#### **Ministry of Marine Affairs and Fisheries (MoMAF)**

15. According to Regulation of Marine Affairs and Fisheries No. 6/PERMEN-KP/2017 on Organization and Working Procedure of MoMAF, MoMAF is determined to perform governmental deals on marine and fisheries sectors in order to assist President of Republic of Indonesia in the field of marine and fisheries. The MoMAF structure is as follows:

- a. Secretariat General, that covers:
  - i. Planning Bureau
  - ii. Apparatus Human Resources Bureau
  - iii. Legal and Organization Bureau
  - iv. Cooperation and Public Relation Bureau
  - v. Financial Bureau
  - vi. General Bureau
- b. Directorate General of Marine Zone Management, that covers:
  - i. Directorate of Marine Zone Planning
  - ii. Directorate of Coastal and Small Islands Utilization
  - iii. Directorate of Marine Services
  - iv. Directorate of Conservation and Marine Biodiversity
- c. Directorate General of Capture Fisheries, that covers:
  - i. Directorate of Fish Resources Management
  - ii. Directorate of Fisheries Vessel and Fishing Gear
  - iii. Directorate of Fisheries Port
  - iv. Directorate of Permit and Fisherman
- d. Directorate of Culture Fisheries, that covers:
  - i. Directorate of Fish Area and Health
  - ii. Directorate of Seedling
  - iii. Directorate of Fish Feed and Medicine
  - iv. Directorate of Production and Culture Business
- e. Directorate of Marine and Fisheries Product Competitiveness Strengthening, that covers:
  - i. Directorate of Logistics
  - ii. Directorate of Processing and Quality Development
  - iii. Directorate of Marketing
  - iv. Directorate of Business and Investment
- f. Directorate General of Marine and Fisheries Resources Supervision, that covers:
  - i. Directorate of Monitoring and Fleet Operation Direktorat
  - ii. Directorate of Marine Resource Management
  - iii. Directorate of Fisheries Resource Management Monitoring
  - iv. Directorate of Violation Handling





**Figure 4. MoMAF Organization Structure**

### **Directorate General of Marine Zone Management**

16. Directorate General of Marine Zone Management is in charge of performing policy, arranging and implementing at marine zone management, conservation and biodiversity management, coastal and small islands management. As for its function are:

- a. Policy arrangement at performance sector of national sea spatial, bay, strait, coastal and small islands zonation, arrangement and utilization of conservation area, biodiversity protection, integrated coastal management, rehabilitation, reclamation, coastal and small islands disaster mitigation, and marine services
- b. Policy implementation at performance sector of national sea spatial, bay, strait, coastal and small islands zonation, arrangement and utilization of conservation area, biodiversity protection, integrated coastal management, rehabilitation, reclamation, coastal and small islands disaster mitigation, and marine services
- c. Arrangement of norm, standardization, procedure and criteria at performance sector of national sea spatial, bay, strait, coastal and small islands zonation, arrangement and utilization of conservation area, biodiversity protection, integrated coastal management, rehabilitation, reclamation, coastal and small islands disaster mitigation, and marine services
- d. Technical consultation and supervision of coastal and small islands zonation plan arrangement, arrangement and utilization of conservation area, biodiversity protection, integrated coastal management, rehabilitation, reclamation, coastal and small islands disaster mitigation, and marine services
- e. Implementation of evaluation and reporting at performance sector of national sea spatial, bay, strait, coastal and small islands zonation, arrangement and utilization of conservation area, biodiversity protection, integrated coastal management, rehabilitation, reclamation, coastal and small islands disaster mitigation, and marine services
- f. Administration implementation of Directorate General of Marine Zone Management, and
- g. Other function mandated by minister.

### **Directorate General of Capture Fisheries**

17. Directorate General of Capture Fisheries is in charge of performing policy arranging and implementing at capture fisheries management. As for its function are:
- a. Policy arrangement of fish resource management sector, fishing vessel and fishing gear standardization, fishing vessel crew certification, fishing port management, fishing business improvement and fisherman
  - b. Arrangement of norm, standardization, procedure and criteria of fish resource management sector, fishing vessel and fishing gear standardization, fishing vessel crew certification, fishing port management, fishing business improvement and fisherman
  - c. Technical consultation and supervision of fish resource management sector, fishing vessel and fishing gear standardization, fishing vessel crew certification, fishing port management, fishing business improvement and fisherman
  - d. Implementation of evaluation and reporting of fish resource management sector, fishing vessel and fishing gear standardization, fishing vessel crew certification, fishing port management, fishing business improvement and fisherman
  - e. Administration implementation of Directorate General of Capture Fisheries, and
  - f. Other functions mandated by the minister.

### **Directorate of Culture Fisheries**

18. Directorate of Culture Fisheries is in charge of implementing policy arranging and implementing at culture fisheries management. As for its function are:
- a. Policy arrangement of culture fisheries infrastructure capacity and quality improvement, broodstock quality and superior seed improvement and also other fish seeds, culture fisheries technology implementation, environmental and fish health management, fish feed availability and also culture business improvement
  - b. Policy implementation of culture fisheries infrastructure capacity and quality improvement, broodstock quality and superior seed improvement and also other fish seeds, culture fisheries technology implementation, environmental and fish health management, fish feed availability and also culture business improvement
  - c. Arrangement of norm, standardization, procedure and criteria of culture fisheries infrastructure capacity and quality improvement, broodstock quality and superior seed improvement and also other fish seeds, culture fisheries technology implementation, environmental and fish health management, fish feed availability and also culture business improvement
  - d. Technical consultation and supervision of culture fisheries infrastructure capacity and quality improvement, broodstock quality and superior seed improvement and also other fish seeds, culture fisheries technology implementation, environmental and fish health management, fish feed availability and also culture business improvement
  - e. Implementation of evaluation and reporting of culture fisheries infrastructure capacity and quality improvement, broodstock quality and superior seed improvement and also other fish seeds, culture fisheries technology implementation, environmental and fish health management, fish feed availability and also culture business improvement
  - f. Administration implementation of Directorate of Culture Fisheries, and
  - g. Other functions mandated by the minister.

### **Directorate of Marine and Fisheries Product Competitiveness Strengthening**

19. Directorate of Marine and Fisheries Product Competitiveness Strengthening is in charge of performing policy arranging and implementing at marine and fisheries product logistic system and competitiveness strengthening, as well as marine and fisheries business sustainability improvement. As for its function are:

- a) Policy arrangement of product diversification and quality coaching, marine and fisheries product promotion strengthening, marine and fisheries logistic system improvement, as well as marine and fisheries business sustainability improvement
- b) Policy implementation of product diversification and quality coaching, marine and fisheries product promotion strengthening, marine and fisheries logistic system improvement, as well as marine and fisheries business sustainability improvement
- c) Arrangement of norm, standardization, procedure and criteria of product diversification and quality coaching, marine and fisheries product promotion strengthening, marine and fisheries logistic system improvement, as well as marine and fisheries business sustainability improvement
- d) Technical consultation and supervision of product diversification and quality coaching, marine and fisheries product promotion strengthening, marine and fisheries logistic system improvement, as well as marine and fisheries business sustainability improvement
- e) Implementation of evaluation and reporting of product diversification and quality coaching, marine and fisheries product promotion strengthening, marine and fisheries logistic system improvement, as well as marine and fisheries business sustainability improvement
- f) Administration implementation of Directorate of Marine and Fisheries Product Competitiveness Strengthening, and
- g) Other functions mandated by minister.

### **Directorate General of Marine and Fisheries Resources Supervision**

20. Directorate General of Marine and Fisheries Resources Supervision is in charge performing policy arranging and implementing at marine and fisheries resources management supervision. As for its function are:

- a) Policy arrangement of fishing supervision implementation, culture business supervision, marine and fisheries product logistic system and competitiveness strengthening supervision, sea zonation management supervision, surveillance vessel operation implementation, monitoring and marine and fisheries resources infrastructure improvement, as well as marine and fisheries criminal act handling
- b) Policy implementation of fishing supervision implementation, culture business supervision, marine and fisheries product logistic system and competitiveness strengthening supervision, sea zonation management supervision, surveillance vessel operation implementation, monitoring and marine and fisheries resources infrastructure improvement, as well as marine and fisheries criminal act handling
- c) Arrangement of norm, standardization, procedure and criteria of fishing supervision implementation, culture business supervision, marine and fisheries product logistic system and competitiveness strengthening supervision, sea zonation management supervision, surveillance vessel operation implementation, monitoring and marine and fisheries resources infrastructure improvement, as well as marine and fisheries criminal act handling

- d) Technical consultation and supervision of fishing supervision implementation, culture business supervision, marine and fisheries product logistic system and competitiveness strengthening supervision, sea zonation management supervision, surveillance vessel operation implementation, monitoring and marine and fisheries resources infrastructure improvement, as well as marine and fisheries criminal act handling;
- e) Implementation of evaluation and reporting of fishing supervision implementation, culture business supervision, marine and fisheries product logistic system and competitiveness strengthening supervision, sea zonation management supervision, surveillance vessel operation implementation, monitoring and marine and fisheries resources infrastructure improvement, as well as marine and fisheries criminal act handling
- f) Administration implementation of Directorate General of Marine and Fisheries Resources Supervision, and
- g) Other functions mandated by the minister.

## 1. Banten Province

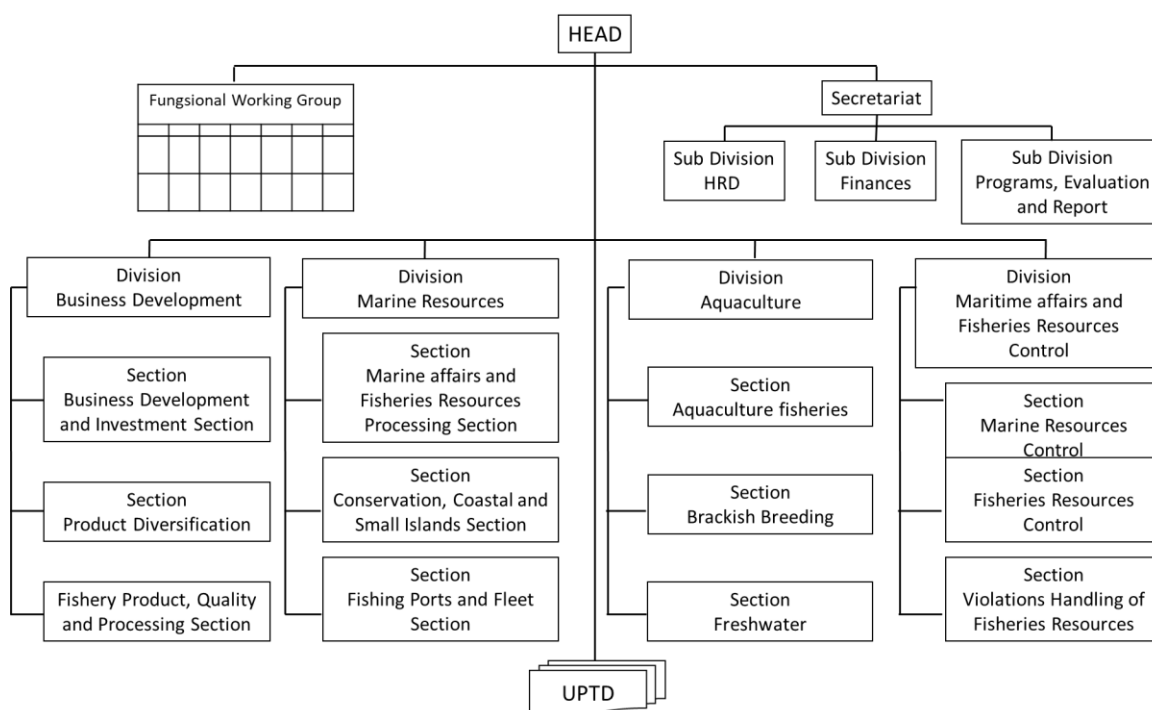
21. Law No.9/2016 of Banten Governor Regulations describes about the position, main task, function, type, organizational structure and operational procedure of Banten Provincial Region. The Marine Affairs and Fisheries Office which shall assist governor in implementing government duties in Marine Affairs and Fisheries and Assistance assigned to Provincial Region. Its functions and authorities are:

- a) Management of marine spatial up to 12 miles other than oil and gas
- b) Recommendation issuance of license and utilization of marine spatial under 12 miles outside oil and gas
- c) Empowerment of coastal and small islands society
- d) Management of fishing activities in marine area up to 12 miles
- e) Recommendation of issuance of fishery business license for fishing vessels with vessel capacity above 5 GT up to 30 GT
- f) The arrangement of development location and management of the provincial fishing port
- g) Recommendation of Issuance for procurement of fishing vessels and transportation with size above 5 GT up to 30 GT
- h) Registration of fishing vessels above 5 GT up to 30 GT
- i) Issuance of fishery business license in cultivation whose business is crossing regential/municipal region in 1 (one) provincial region
- j) Monitoring marine and fisheries resources up to 12 miles
- k) Recommendation issuance of cross-border regential/municipal fishery marketing and manufacture business license in 1 (one) provincial region; and
- l) The implementation of other functions given by the governor in relation to their duties and functions.

MoMAF structure consists of:

- a. Business Development, including:
  - (1) Business Development and Investment Section
  - (2) Product Diversification Section
  - (3) Fishery Product Quality and Processing Section.

- b. Marine affairs Resources, includes:
- (1) Marine affairs and Fisheries Resources Processing Section
  - (2) Conservation, Coastal and Small Islands Section
  - (3) Fishing Ports and Fleet Section.
- c. Aquaculture, includes:
- (1) Aquaculture fisheries Section
  - (2) Brackish Breeding Section
  - (3) Freshwater Section.
- d. Maritime affairs and Fisheries Resources Control sector, includes:
- (1) Marine Resources Control Section
  - (2) Fisheries Resources Control Section
  - (3) Violations handling of Fisheries Resources.



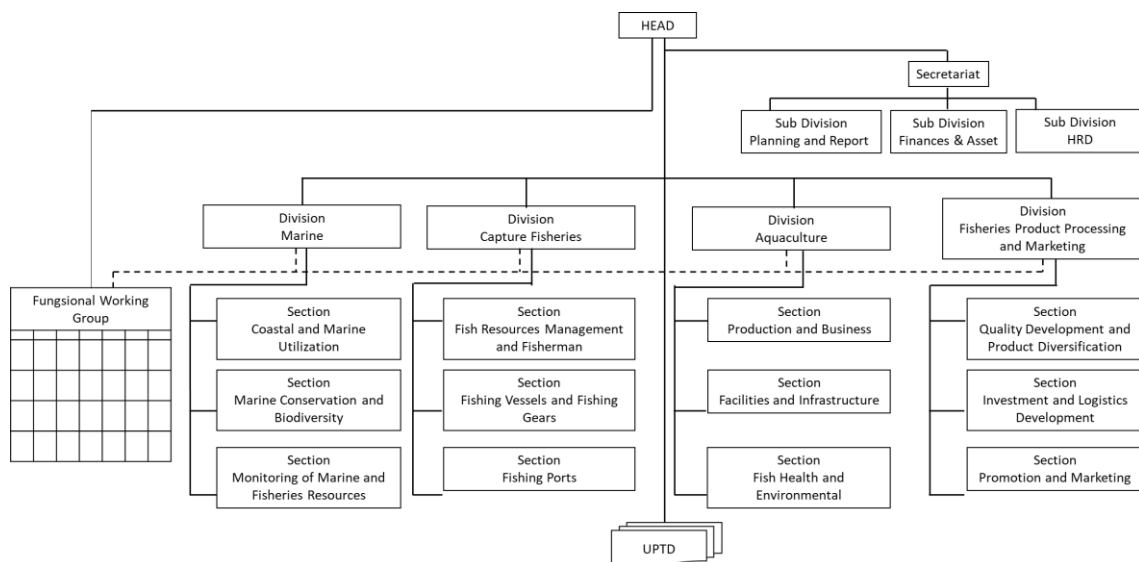
No	Field	Task
1	Business Development	<ul style="list-style-type: none"> <li>Implementing the development, coordination, evaluation, and formulation of operational technical policy in business development and investment, product diversification, and the quality and processing of fishery products.</li> </ul>
2	Marine Resources	<ul style="list-style-type: none"> <li>Implementing the development, coordination, evaluation and formulation of operational technical policy in marine affairs resources.</li> </ul>
3	Aquaculture	<ul style="list-style-type: none"> <li>Implementing the development, coordination, evaluation and formulation of operational technical policy in aquaculture.</li> </ul>
4	Marine and fishery resources control	<ul style="list-style-type: none"> <li>Implementing the development, coordination, evaluation and formulation of operational technical policy in marine and fishery affairs control.</li> </ul>

## 2. West Java Province

22. Law No.45/2016 on West Java Governor Regulations describes about the position and organizational structure of West Java Provincial Region. The Marine Affairs and Fisheries Office shall assist governor in implementing the government duty in Marine Affairs and Fisheries and Assistance assigned to provincial region.

23. The ministry of marine affairs and fisheries structure consists of:

- A. Marine Affairs, includes:
  - (1) Coastal and Marine Utilization Section
  - (2) Marine Conservation and Biodiversity Section
  - (3) Monitoring of Marine affairs and Fisheries Resources.
- B. Capture Fishery Sector, includes:
  - (1) Fish Resources Management and Fishers Section
  - (2) Fishing Vessels and Fishing Gears Section
  - (3) Fisheries ports Section.
- C. Aquaculture, includes:
  - (1) Production and Business Section
  - (2) Facilities and Infrastructure Section
  - (3) Fish and Environmental Health Section.
- D. Fisheries Product Processing and Marketing, including:
  - (1) Quality Development and Product Diversification Section;
  - (2) Investment and Logistics Development Section; and
  - (3) Promotion and Marketing Section.



No	Field	Task
1	Marine affairs	☐ planning, implementing, evaluate and coordinate the development, management of marine affairs, coastal and small islands and monitoring the resources of marine affairs and fishery.
2	Capture fishery	☐ planning, implementing, evaluation and coordination of the development of capture fishery.
3	Aquaculture	☐ planning, implementing, evaluating and coordinating the development of aquaculture.
4	Processing and marketing of fishery products	☐ planning, implementing, evaluating and coordinating the development of processing and marketing of marine and fishery products.

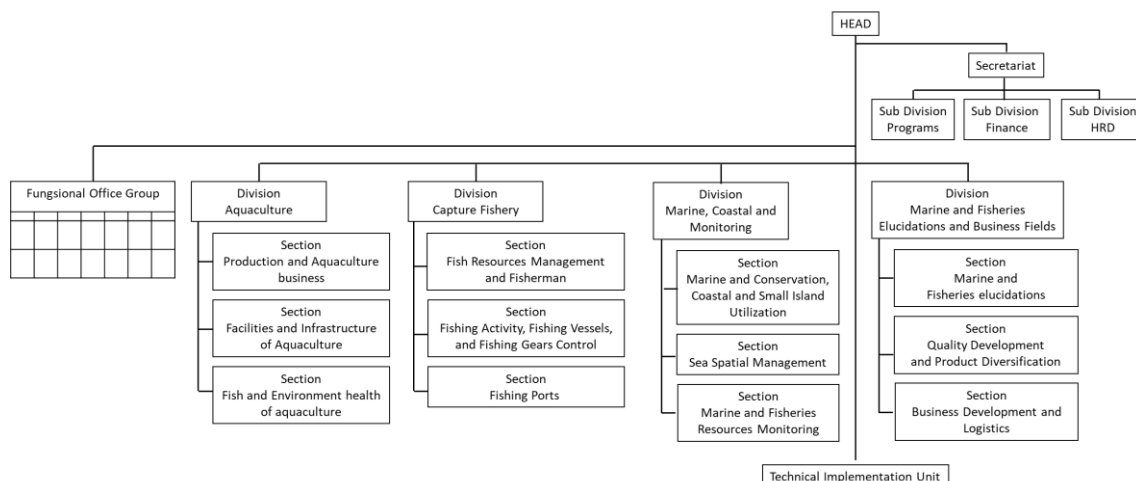
### 3. Central Java Province

24. Law No.75/2016 on Central Java Governor Regulations describes about the organizational and operational procedure of Central Java Provincial Region Marine Affairs and Fisheries Office. Its task is to assist governor in implementing the government duty in marine affairs and fisheries and assistance assigned to provincial region. The functions and authorities are:

- a) Formulation of policy in the field of aquaculture, capture fishery, coastal marine and monitoring, business marine affairs and fisheries of business and elucidations
- b) Implementation of policy in the field of aquaculture, capture fishery, coastal marine and monitoring, business marine affairs and fisheries of business and elucidations
- c) Conducting the evaluation and report in the fields of aquaculture, capture fishery, coastal marine and monitoring, business marine affairs and fisheries of business and elucidations
- d) Implementing and developing administration to all work units in The Office, and
- e) Implementation of other functions permitted by the governor related to their duties and functions.

25. The Ministry of Marine Affairs and Fisheries structure consists of:

- a. Aquaculture Section, includes:
  - 1) Production and Aquaculture business section
  - 2) Facilities and Infrastructure of Aquaculture Section, and
  - 3) Fish and Environment Health of Aquaculture Section.
- b. Capture Fishery Sector, includes:
  - 1) Fish Resources Management and Fishers Section
  - 2) Section of Fishing Activity, Fishing Vessels, and fishing gears control, and
  - 3) Fishing Ports Section.
- c. Marine Coastal and Monitoring Sector, includes:
  - 1) Conservation, Coastal and Small Island Utilization Section
  - 2) Section of Sea Spatial Management
  - 3) Section of Marine Affairs and Fisheries Resources Monitoring.
- d. Marine affairs and Fisheries Elucidations and Business Fields, includes:
  - 1) Section of Marine and Fisheries Elucidations
  - 2) Quality Development and Product Diversification Section, and
  - 3) Business Development and Logistics Section.



No	Field	Task
1	Aquaculture	<ul style="list-style-type: none"> <li>Implementing the preparation of formulation policy, coordinating, monitoring, evaluating and reporting the aquaculture production, aquaculture facilities and infrastructure and health of fish and aquaculture environment.</li> </ul>
2	Capture fishery	<ul style="list-style-type: none"> <li>Implementing the preparation of formulation policy, coordinating, monitoring, evaluating and reporting in the field the fish resources management and fishers, controlling the fishing activity, fishing vessel and fishing gear and fishing port.</li> </ul>
3	Marine, coastal and monitoring	<ul style="list-style-type: none"> <li>Implementing the preparation of formulation policy, coordinating, monitoring, evaluating and reporting in the field of conservation, utilization of coastal and small islands, management of sea spatial, and monitoring of marine fisheries resources.</li> </ul>
4	Marine affairs and fishery business and elucidations	<ul style="list-style-type: none"> <li>Implementing the preparation of formulation policy, coordinating, monitoring, evaluating and reporting in the field of marine affairs and fisheries elucidations; quality development and product diversification; and business development and logistics.</li> </ul>

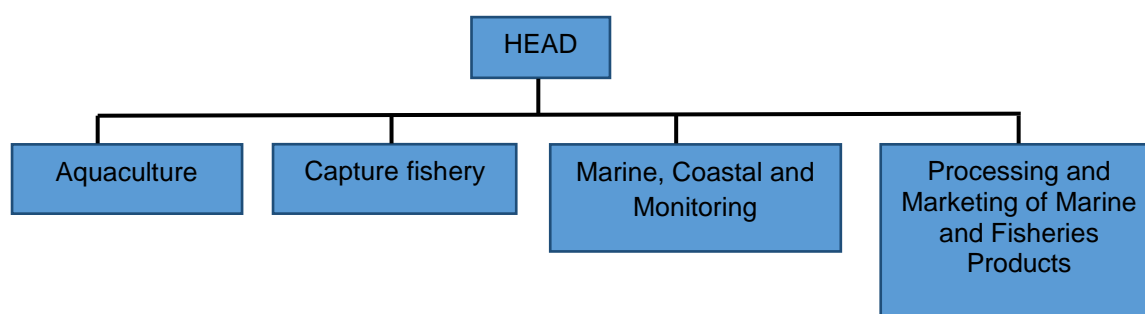
#### 4. East Java Province

26. Law No.112/2018 on East Java Governor Regulations is about the position, organizational structure, description of duty and function, and operational procedure of East Java Provincial Region Marine Affairs and Fisheries Office. Its task shall assist governor on implementing the government duty in marine affairs and fisheries and assistance assigned to provincial region. The functions are:

- Formulation of policies in the field of marine affairs and fisheries
- Implementation of policy in the field of marine affairs and fisheries
- Conducting the evaluation and report in the field of marine affairs and fisheries
- Implementation of office administration in the field of marine affairs and fisheries, and
- The implementation of other functions permitted by the Governor related their duties and functions.



27. The ministry of marine affairs and fisheries structure consists of:
- a. Aquaculture Section, includes:
    - 4) Production and Aquaculture business section;
    - 5) Facilities and Infrastructure of Aquaculture Section; and
    - 6) Fish and Environment Health of Aquaculture Section.
  - b. Capture Fishery Sector, includes:
    - 1) Fish Resources Management Section;
    - 2) Fishing Ports Section; and
    - 3) Fishers Section.
  - c. Marine Coastal and Monitoring Sector, includes:
    - 1) Marine Spatial Management Section;
    - 2) Coastal and Small Islands Utilization Section; and
    - 3) Monitoring of Marine Affairs and Fisheries Resources Section.
  - d. Processing and Marketing of Marine Affairs and Fishery Products , includes:
    - 1) Market Access, Promotion and Logistics Section;
    - 2) Quality Development and Product Diversification Section; and
    - 3) Business and Investment Section.



No	Field	Task
1	Aquaculture	planning, implementing, evaluating and coordinating the development of aquaculture.
2	Capture fishery	planning, implementing, evaluating and coordinating the development of capture fishery.
3	Marine, coastal and monitoring	planning, implementing, evaluating and coordinating the development, management of marine, coastal and small islands and monitoring the resources of marine affairs and fishery.
4	Processing and marketing of marine and fisheries products	planning, implementing, evaluating and coordinating the development of processing and marketing of marine and fishery products.

## 5. West Nusa Tenggara Province

28. Marine Affairs and Fisheries Office of West Nusa Tenggara Province was formed and have its main tasks and functions based on Law No.7/2008 of regional regulations concerning the organization and operational procedure of provincial region offices of West Nusa Tenggara Province. The position of Marine Affairs and Fisheries Office of West Nusa Tenggara Province pursuant to article 38 of regional regulation No.7/2008 are:

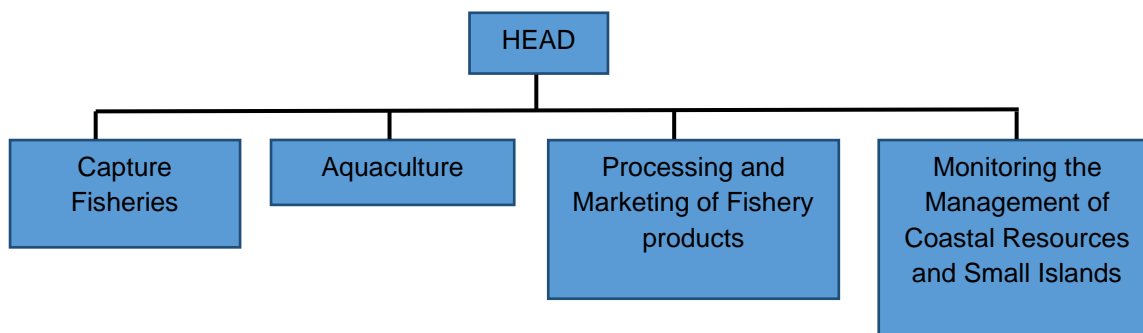
1. The Office of Marine Affairs and Fisheries are the implementing constituent of the Regional Government under and responsible to the Governor through the Regional Secretary;
2. The Office of Marine Affairs and Fisheries is led by the Head of Service;
3. The Office of Marine Affairs and Fisheries on implementing their duties and functions is administratively coordinated by the Assistant for Economy and Development.

29. Whereas its main tasks and functions pursuant to the regional regulations laid down in article 39 No.7/2008:

1. The Office of Marine Affairs and Fisheries assisting the governor in charge of implementing the Regional Government in the field of marine affairs and fisheries based on the principles of autonomy, assistance, and deconcentration.
2. In the framework of implementation of main tasks, in accordance with paragraph 1 The Office of Marine Affairs and Fisheries shall arrange the following functions:
  - a. Formulation of technical policy in the field of marine affairs and fisheries
  - b. Program planning and activity in the field of marine affairs and fisheries
  - c. The Office shall arrange the duty of government and public services in the field of marine affairs and fisheries
  - d. Coordinating and developing the duty in the field of marine affairs and fisheries
  - e. Controlling and evaluating the implementation of the duty in the field of marine affairs and fisheries, and
  - f. Implementing other duties permitted by the governor related to their duties and functions.

30. The ministry of marine affairs and fisheries structure consists of:

- a. Aquaculture Sector, includes:
  - 1) Production Fishery Section;
  - 2) Breeding and Environmental Health Section; and
  - 3) Business of Aquaculture Section.
- b. Capture Fishery Sector, includes:
  - 1) Fishing Ports Section;
  - 2) Fishing Vessels and Fishing Gears Section; and
  - 3) Fish Resources Management and Fishing Industry Section.
- c. Processing and marketing of fishery products section, includes:
  - 1) Quality Management and Development Section;
  - 2) Business and Marketing Section; and
  - 3) Non-Consumption and Institutional Product Development Section.
- d. Monitoring and Management of Coastal Resources and Small Islands, includes:
  - 1) Spatial and Coastal Management of Small Islands;
  - 2) Conservation of Marine Affairs and Fisheries Section; and
  - 3) Monitor and Control Section.



No	Field	Task
1	Capture fishery	<input type="checkbox"/> Implementing some of the office tasks in the field of management and development of fishing port; implementing some of the tasks in the field of fish resources and management and development of fishery business.
2	Aquaculture	<input type="checkbox"/> Implementing some of the office tasks and assist the head office on formulating policy in the field of aquaculture which includes aquaculture business, production development, facilities and infrastructures, breeding, and environmental health.
3	Processing and marketing of fishery products	<input type="checkbox"/> Implementing some of the tasks in the field of Processing and the quality of fishery products; Implementing some of the tasks in the field of business and marketing of fishery products; Implementing some of the tasks in development of marine and fishery non-consumption products and institutional.
4	Monitoring the management of Coastal resources and small islands	<input type="checkbox"/> Implementing some of the tasks in the field of monitoring and controlling of marine affairs and fisheries; Implementing some of the tasks in the field of sea spatial management, coastal and small islands; Implementing some of The Office tasks in the field of marine affairs and fisheries.

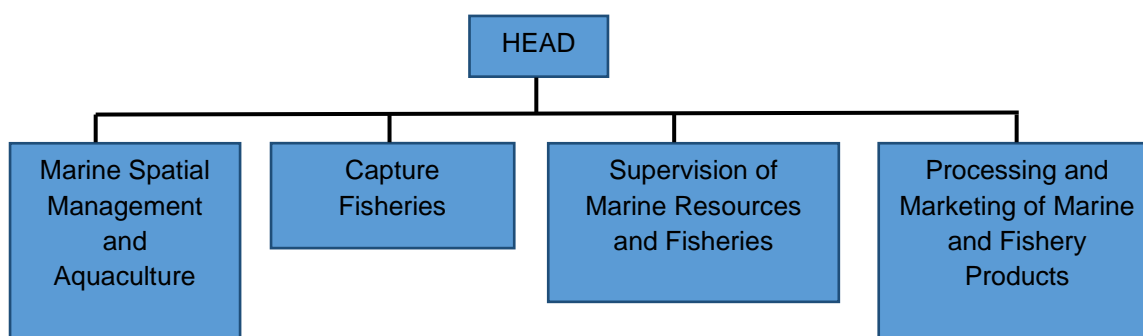
## 6. East Nusa Tenggara Province

31. Law No.75/2016 on East Nusa Tenggara Governor Regulations about the position, organizational structure, duty and function, and operational procedure of East Nusa Tenggara Provincial Region Marine Affairs and Fisheries Office, its task shall assist governor in implementing the government duty in Marine Affairs and Fisheries and Assistance assigned to provincial region. The functions are:

- a. Formulation of policy in the field of marine affairs and fisheries
- b. Implementation the policy in the field of marine affairs and fisheries
- c. Conducting the evaluation and report in the field of marine affairs and fisheries
- d. Implementation of office administrative in the field of marine affairs and fisheries, and
- e. Implementation of other functions permitted by the Governor related to their duties and functions.

32. The Ministry of Marine Affairs and Fisheries structure consists of:

- a. Sea Spatial Management and Aquaculture Sector, includes:
  1. Conservation and Utilization Section of Coastal Region and Small Islands;
  2. Marine Spatial Management and Regulation Section; and
  3. Aquaculture Section.
- b. Capture Fishery Sector, includes:
  1. Management of Fishing Activity and Fishers Section;
  2. Fishing Activity Control Section; and
  3. Facilities and Infrastructures of Capture Fishery Section.
- c. Monitoring of Marine Affairs and Fisheries Resources, includes:
  1. Management of Marine Affairs Resources Monitoring Section
  2. Management of Fisheries Resources Monitoring Section, and
  3. Law Enforcement Section.
- d. Processing and Marketing of Marine Affairs and Fishery Products, includes:
  1. Marketing and Promotion Section
  2. Strengthening the Competitiveness Section of Marine Affairs and Fishery Products
  3. Business and Investment Section.



No	Field	Task
1	Marine spatial management and aquaculture	Planning, implementing, evaluating and coordinating in the field of marine spatial management and aquaculture.
2	Capture fishery	Planning, implementing, evaluating and coordinating the development of capture fishery.
3	Supervision of marine resources and fisheries	Planning, implementing, evaluating and coordinating monitoring of marine affairs and fisheries resources.
4	Processing and marketing of marine and fishery Products.	Planning, implementing, evaluating and coordinating the development of processing and marketing of marine and fishery products.

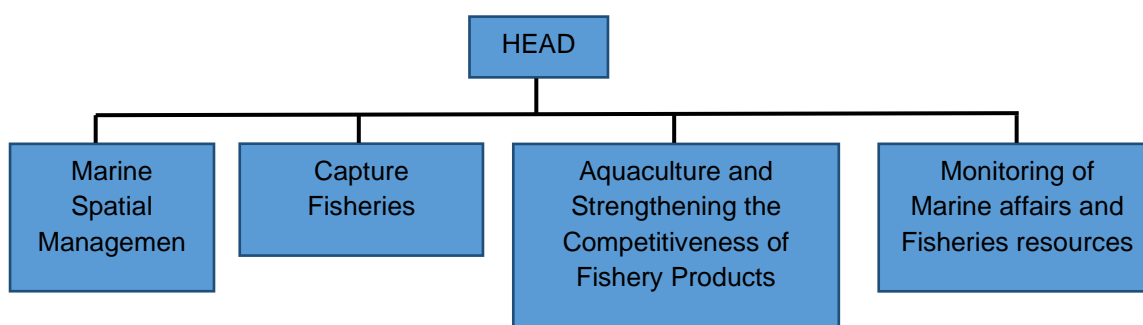
## 7. East Kalimantan Province

33. According to the Law No.9/2016 on East Kalimantan Governor Regulations about the establishment and the structure of East Kalimantan Provincial Region, Marine Affairs and Fisheries Office shall assist governor in implementing the government duty in Marine Affairs and Fisheries and Assistance assigned to provincial region. The functions are:

- a. Formulation of policy in the field of marine affairs and fisheries
- b. Implementation of policy in the field of marine affairs and fisheries
- c. Conducting the evaluation and report in the field of marine affairs and fisheries
- d. Implementation of office administrative in the field of marine affairs and fisheries, and
- e. Implementation of other functions permitted by the governor related to their duties and functions.

34. The Ministry of Marine Affairs and Fisheries structure consists of:

- a. Management of Sea Spatial Sector, includes:
  - 1) Sea, Coastal and Small Islands Utilization Section
  - 2) Reclamation and Marine Services Section, and
  - 3) Marine Affairs and Fisheries Conservation Section.
- b. Capture Fisheries Sector, includes:
  - 1) Fishing Activity and Fishers Management Section
  - 2) Control of Fishing Activity Section, and
  - 3) Fisheries Port Management Section.
- c. Aquaculture and Strengthening the Competitiveness of Fishery products , includes:
  - 1) Aquaculture Section
  - 2) Fishery business of Aquaculture section, and
  - 3) Fisheries Product Processing and Marketing Section.
- d. Sector of Monitoring of Marine affairs and Fisheries resources, includes:
  - 1) Monitoring of Coastal Region, Small Islands and Fishing activity section;
  - 2) Monitoring of Aquaculture, Processing and Marketing of Fishery Product section; and
  - 3) Violations handling of marine affairs and fisheries section.



Field	Task
<b>Marine spatial Management</b>	Planning, implementing, evaluating and coordinating in the field of marine spatial management.
<b>Capture fishery</b>	Planning, implementing, evaluating and coordinating the development of capture fishery.

<b>Aquaculture and strengthening the competitiveness of fishery products</b>	Planning, implementing, evaluating and coordinating in the field of aquaculture and in strengthening the competitiveness of fishery products.
<b>Monitoring of Marine affairs and Fisheries resources.</b>	Planning, implementing, evaluating and coordinating the development, and management of marine affairs and fisheries resources.

### 3.1.2 Policy support

#### 1. Banten Province

35. RPJPD Banten Province of 2005–2025 is focusing on policy guideline to optimize the value of local products.

No.	Document	Policy content related to this project
1	RPJPD	<b>Policy Direction 2005–2025:</b> 1. Product Optimization 2. Diversification, quality improvement and market development of agribusiness products
2	RPJMD	<b>Policy Direction:</b> The increase in production and productivity of fisheries catch and aquaculture, as well as the results of processed fishery
3	DKP strategic plan	<input type="checkbox"/> Increase the production, productivity of the fishery, the availability of seeds and the distribution of seeds/broodstock that quality , facilities and infrastructure of fisheries, the development of port fishery <input type="checkbox"/> Increasing the capacity of marine and fisheries production centers commodities <input type="checkbox"/> Realizing the waters northwest province of Banten free of Illegal, Unreported and Unregulated (IUU) fishing and activities that damage the resources of marine and fisheries
4	RZWP3K	<input type="checkbox"/> Not regulate yet
5	Management	<input type="checkbox"/> Banten Province Regional Regulation No. 6 of 2004 concerning Fisheries Business Licenses

#### 2. West Java Province

No	Document	Policy content related to this project
1	RPJPD	<b>Policy Direction 2005–2025:</b> Increased production of fisheries are sustainable, so as to increase the income of farmers fish and fishing, with still maintaining the sustainability of the habitat of fish through the conservation of the mangrove ecosystem, the preservation of coral reefs, and banning on using the fishing gears environment unfriendly
2	RPJMD	<b>Strategy 2018–2023</b> Developing innovations to increase production / productivity and value-added results of agricultural and marine and fisheries
3	DKP strategic plan	<input type="checkbox"/> Policy Direction 2018–2023
4	RZWP3K	<input type="checkbox"/> Bylaw No. 5/2019 on Zoning Plan of Coastal Area and Small Island Management, Province of West Java Year 2019–2039
5	Management	<input type="checkbox"/> Regional Regulation of West Java Province No.7 of 2011 concerning Fisheries Management

### 3. Central Java Province

No	Document	Policy content related to this project
1	RPJPD	<b>Policy Direction 2005–2025:</b> 1. Development of cultivation technology and production organizations that can increase fish productivity optimally 2. Development of supporting systems to regulate and technical guide the marine business.
2	RPJMD	<input type="checkbox"/> <b>Strategy 2018–2023</b>
3	DKP strategic plan	<b>Strategy 2018–2023:</b> 1. The increase in production and productivity of fishermen through supported by integrated technology information and development of facilities and infrastructure supporting fishery 2. Improved quality of products and guarantee the security of food businesses processing and marketing of traditional as well as encourage businesses processing and marketing modern for the oriented exports 3. Increased production of salt quality by integrated technology apply; 4. Management of marine resources and fisheries guided on the RZWP3K and improvement efforts of rehabilitation and conservation of critical habitats in coastal and marine area 5. Increasing the role of society in the monitoring and control of the marine resources and fisheries, increase awareness on fishing license and the prevention of conflict.
4	RZWP3K	<input type="checkbox"/> Bylaw No. 13/2018 on Zoning Plan of Coastal Area and Small Island Management of Central Java Province, Years 2018–2038
5	Management	<input type="checkbox"/> Provincial Regulation of Central Java No.3 of 2005 concerning Fisheries Business Licensing <input type="checkbox"/> Governor of Central Java No. 33/2017 on Management of lobster, blue swimming crab, and mud crab in the province of Java Central <input type="checkbox"/> Governor of Central Java No. 15/2018 concerning Licensing of Capture Fisheries business in Central Java Province

### 4. East Java Province

No	Document	Policy content related to this project
1	RPJPD	<b>Policy Direction 2005–2025:</b> 1. Development of Marine Resources Potency, directed at the sustainable development by ecosystem management, which cover human resources and institution, economy, environment, social culture, and technology
2	RPJMD	2014–2019 policy Direction 1. Optimizing and empowering farmer and fishers institutions to improve access of farmers and fishers production component, technology, marketing information, and capital 2. Development infrastructures and capacity of fishermen, as well as the business productive economic of coastal and small island communities.
3	DKP strategic plan	Policy 1. Increasing the capacity of the marine and fisheries community 2. Development of aquaculture 3. capture fisheries development 4. Processing and marketing of fisheries products 5. Empowerment of farmers salt business 6. Marine and coastal management and controlling 7. Bureaucratic reform and public services.
4	RZWP3K	<input type="checkbox"/> Bylaw No. 1/2018 about Integrated Zoning Plan of Coastal Area and Small Island Management of East Java Province, Year 2018–2038
5	Management	<input type="checkbox"/> East Java Governor Regulation Number 53 year 2016 concerning guidelines for license in field of maritime affairs and fisheries in East Java

## 5. West Nusa Tenggara Province

No	Document	Policy content related to this project
1	RPJPD	<p><b>Policy Direction</b> Developing Marine Resource Potential, directed to:</p> <ol style="list-style-type: none"> <li>Improve utilization through approach to multi-sectoral, integrate, and comprehensive in order to minimize conflict and still maintain its sustainability.</li> <li>Guarantee the sustainability use of marine, coastal and small island resources through integrated management among sectors of the oceans and terrestrial.</li> </ol>
2	RPJMD	<p><b>Policy Direction 2013–2018</b> Extensification, intensification and diversification of product aquaculture fishery and marine are focusing on exports commodities of seaweed, shrimp and groupers in the priority area for fisheries in the Region Strategic province.</p>
3	DKP strategic plan	<p>Strategic Targets 2018–2023</p> <ol style="list-style-type: none"> <li>Increased contribution of the marine and fisheries sector to the financial capacity of the region</li> <li>Increased marine and fisheries production</li> <li>Realization of the welfare of fishers and coastal communities</li> <li>The increasing number of fish consumption and value added fisheries products</li> <li>The realization of participatory SDKP supervision</li> <li>The increase in the extent of marine conservation area</li> <li>Increasing the quality of recommendation are given in the area of coastal and small island.</li> </ol>
4	RZWP3K	<p>□ Bylaw province of West Nusa Tenggara No. 12/2017 on Integrated Zoning Plan of Coastal and Small Island in the Province of West Nusa Tenggara Year 2017–2037</p>
5	Management	<p>□ West Nusa Tenggara Province Regional Regulation No. 2 of 2008 concerning Management of Coastal Areas and Small Islands</p>

## 6. East Nusa Tenggara Province

No	Document	Policy content related to this project
1	RPJPD	<p><b>Policy Direction</b> <b>Optimization Benefits Resources Coastal and Marine:</b></p> <ol style="list-style-type: none"> <li>Manage and utilize the marine, coastal and small island resources in sustainable manners</li> <li>Increasing fisheries production and marine products</li> <li>Increase income of coastal communities coast and economic related actors</li> <li>Improving raw material for marine industrial processing</li> <li>Development, improvement and modernization of facilities and infrastructure for marine and fisheries</li> <li>Improved technology and fishing management</li> <li>Diversification and development of business economics community in coastal area</li> <li>The development model of marine industry results sea-based society</li> <li>Increase the involvement of the community, partnership and cooperation in the use, maintenance and management of sources of power marine , coastal , and islands small</li> <li>Development of facilities and infrastructure for fisheries and marine businesses. Modernize fishing facilities and infrastructure for fishing, improvement of technology and management of fishing</li> <li>Development of marine security facilities and infrastructure personnel capacity building</li> <li>Strengthening of security systems and regulations for the use of marine resources</li> </ol>



		<ul style="list-style-type: none"> <li>n. Maintaining the security of the marine area as a multifunctional territory</li> <li>o. Maintaining marine resources as a sustainable wealth from all disturbances and threats that come from within and from outside;</li> <li>p. Reducing the activity of theft in the sea area;</li> <li>q. Law enforcement for offenders and vandal source southwest coast, curved and islands small</li> <li>r. Improved safety, reduction of natural disasters of the sea, and marine climate forecasts.</li> </ul>
2	RPJMD	<p><b>Policy Direction 2013–2018</b></p> <ul style="list-style-type: none"> <li>1. Increased performance of industry and trade in the regional economy, one of which is through fisheries</li> <li>2. Increasing the quality of neighborhood life, through the preservation of forest and environment coastal.</li> </ul>
3	DKP strategic plan	<input type="checkbox"/> Strategic targets
4	RZWP3K	<input type="checkbox"/> By law province of Nusa Tenggara East No. 4/2017 on integrated management of zoning plan on coastal area and small islands province of Nusa Tenggara East middle years 2017–2037
5	Management	<input type="checkbox"/> Local Government Regulation (Perda) No. 4/2007 on management of regional coastal and marine <input type="checkbox"/> Perda No. 8/2009 concerning fishery business licenses

## 7. East Kalimantan Province

No	Document	Policy content related to this project
1	RPJPD	<input type="checkbox"/> <b>Policy Direction 2005–2025</b> The realization of the integrated development and harmonious with the regional development on economic and ecological basis
2	RPJMD	<input type="checkbox"/> <b>Policy Direction 2013–2018</b> Increased Food Production
3	DKP strategic plan	<input type="checkbox"/> 2013–2018 Strategic Targets <ul style="list-style-type: none"> <li>1. Increasing the capacity of marine and fisheries production centers that have superior commodities</li> <li>2. Developing facilities, infrastructure and supporting infrastructure for marine and fisheries development;</li> <li>3. Increase the acceleration of revitalization and optimization of capture fisheries and aquaculture in an efficient and sustainable manner</li> <li>4. Creating opportunities employment for the community in the coastal area through the diversification of business types</li> <li>5. Improve the management and maintenance of the resources of marine and fisheries in an integrated and sustainable ways</li> <li>6. Improve the control and surveillance of the marine and fisheries resources</li> <li>7. Improving the welfare group of fishermen, fish farmers and coastal communities.</li> </ul>
4	RZWP3K	<input type="checkbox"/> Not regulated yet
5	Management	<input type="checkbox"/> By local government law (PERDA) province of East Kalimantan Province No. 7 of 2009 concerning management of coastal area, marine and small island resources

### 3.1.3 Organization performance assesment (OPA)

#### 1. Banten Province

36. OPA of Banten Province is moderate, with score of 2.12. It means support to the programs is still not optimal.

No	Index	Strategic Parameter (PS)	Score
1	Organizational motivation	1.1 Legal foundation of organization establishment	3
		1.2 Clarity in planning document (strategic plan)	2
		1.3 Legality (regulation)	2
2	Organizational capacity	2.1 Human resources support	2
		2.2 Money support/funding	2
		2.3 Organization structure support	3
3	External environment	3.1 Regional autonomy implementation (political)	3
		3.2 Partnership support (stakeholders)	1
		3.3 Society support (local wisdom)	2
<b>Total</b>			<b>2.12</b>

No	Index	Score	Status
1	Organizational motivation	2.29	Moderate
2	Organizational capacity	2.29	Moderate
3	External environment	1.82	Moderate
<b>Score</b>		<b>2.12</b>	<b>Moderate</b>

#### 2. West Java Province

37. OPA of West Java Province is moderate, with score of 1.96. It means support to the programs is still not optimal.

No	Index	Strategic Parameter (PS)	Score
1	Organizational motivation	1.1 Legal foundation of organization establishment	2
		1.2 Clarity in planning document (strategic plan)	1
		1.3 Legality (regulation)	2
2	Organizational capacity	2.1 Human resources support	2
		2.2 Money support/funding	1
		2.3 Organization structure support	3
3	External environment	3.1 Regional autonomy implementation (political)	2
		3.2 Partnership support (stakeholders)	3
		3.3 Society support (local wisdom)	3
<b>Total</b>			<b>1.96</b>

No	Index	Score	Status
1	Organizational motivation	2.29	Moderate
2	Organizational capacity	2.29	Moderate
3	External environment	1.44	Moderate
	<b>Score</b>	<b>1.96</b>	<b>Moderate</b>

### 3. Central Java Province

38. OPA of Central Java Province is good, with score of 2.74. It means support to the program is already good and optimal.

No	Index	Strategic Parameter (PS)	Score
1	Organizational motivation	1.1 Legal foundation of organization establishment	3
		1.2 Clarity in planning document (strategic plan)	2
		1.3 Legality (regulation)	3
2	Organizational capacity	2.1 Human resources support	2
		2.2 Money support/funding	3
		2.3 Organization structure support	3
3	External environment	3.1 Regional autonomy implementation (political)	3
		3.2 Partnership support (stakeholders)	3
		3.3 Society support (local wisdom)	3
		<b>Total</b>	<b>2.74</b>

No	Index	Score	Status
1	Organizational motivation	2.62	Good
2	Organizational capacity	2.62	Good
3	External environment	3.00	Good
	<b>Score</b>	<b>2.74</b>	<b>Good</b>

### 4. East Java Province

39. OPA of East Java Province is good, with score of 2.29. It means support to the program is already good and optimal.

No	Index	Strategic Parameter (PS)	Score
1	Organizational motivation	1.1 Legal foundation of organization establishment	3
		1.2 Clarity in planning document (strategic plan)	2
		1.3 Legality (regulation)	2
2	Organizational capacity	2.1 Human resources support	2
		2.2 Money support/funding	2
		2.3 Organization structure support	3
3	External environment	3.1 Regional autonomy implementation (political)	3
		3.2 Partnership support (stakeholders)	2
		3.3 Society support (local wisdom)	2
		<b>Total</b>	<b>2.29</b>

No	Index	Score	Status
1	Organizational motivation	2.29	Moderate
2	Organizational capacity	2.29	Moderate
3	External environment	2.29	Moderate
	<b>Score</b>	<b>2.29</b>	<b>Moderate</b>

## 5. West Nusa Tenggara Province

40. OPA of West Nusa Tenggara Province is good, with score of 2.39. It means support to the program is already good and optimal.

No	Index	Strategic Parameter (PS)	Score
1	Organizational motivation	1.1 Legal foundation of organization establishment	3
		1.2 Clarity in planning document (strategic plan)	2
		1.3 Legality (regulation)	2
2	Organizational capacity	2.1 Human resources support	2
		2.2 Money support/funding	2
		2.3 Organization structure support	3
3	External environment	3.1 Regional autonomy implementation (political)	3
		3.2 Partnership support (stakeholders)	3
		3.3 Society support (local wisdom)	2
		<b>Total</b>	<b>2.39</b>

No	Index	Score	Status
1	Organizational motivation	2.29	Moderate
2	Organizational capacity	2.29	Moderate
3	External environment	2.62	Good
	<b>Score</b>	<b>2.39</b>	<b>Good</b>

## 6. East Nusa Tenggara Province

41. OPA of East Nusa Tenggara Timur is good, with score of 2.29. It means support to the program is already good and optimal

No	Index	Strategic Parameter (PS)	Score
1	Organizational motivation	1.1 Legal foundation of organization establishment	3
		1.2 Clarity in planning document (strategic plan)	2
		1.3 Legality (regulation)	2
2	Organizational capacity	2.1 Human resources support	2
		2.2 Money support/funding	2
		2.3 Organization structure support	3
3	External environment	3.1 Regional autonomy implementation (political)	3
		3.2 Partnership support (stakeholders)	2
		3.3 Society support (local wisdom)	2
		<b>Total</b>	<b>2.29</b>

No	Index	Score	Status
1	Organizational motivation	2.29	Moderate
2	Organizational capacity	2.29	Moderate
3	External environment	2.29	Moderate
	<b>Score</b>	<b>2.29</b>	<b>Moderate</b>

## 7. East Kalimantan Province

42. OPA of East Kalimantan Province is good with score of 2,51. It means support to the program is very good and already optimal.

No	Indeks	Strategic Parameter (PS)	Skor
1	Organizational motivation	1.1 Legal foundation of organization establishment	3
		1.2 Clarity in planning document (strategic plan)	2
		1.3 Legality (regulation)	3
2	Organizational capacity	2.1 Human resources support	2
		2.2 Money support/funding	2
		2.3 Organization structure support	3
3	External environment	3.1 Regional autonomy implementation (political)	3
		3.2 Partnership support (stakeholders)	3
		3.3 Society support (local wisdom)	2
		<b>Total</b>	<b>2.51</b>

No	Index	Score	Status
1	Organizational motivation	2.62	Good
2	Organizational capacity	2.29	Moderate
3	External environment	2.62	Good
	<b>Score</b>	<b>2.51</b>	<b>Good</b>

## 3.2 Fisheries condition development at pilot project location

### 3.2.1 Banten Province

43. The Java Sea borders the northern part of Banten Province, DKI Jakarta Province borders the eastern part, the Indian Ocean borders the southern part, and the Sunda Strait borders the western part. Thus, Banten is surrounded by three large seas, namely the Java Sea in the north, the Sunda Strait Sea in the west, and the Indian Seas in the south. The regencies/cities in Banten Province are as follows: Pandeglang Regency, Lebak Regency, Serang Regency, Serang City, Cilegon City, Tangerang City, Tangerang Regency, and South Tangerang City.

44. The coastal and marine areas of Banten Province has a total area of 11 134.22 km<sup>2</sup>, with a coastline of 509 km, and 55 small islands. Outer islands have considerable fishery potential. In 2017, BPS recorded that capture fisheries production was 109.52 thousand tonnes, of which 109.79 thousand tonnes or 99.25 percent was generated from marine fisheries (**Table 4**). Meanwhile, the production of aquaculture activities reached 142.86 thousand tonnes (

45. **Table 5**).

**Table 4.** Capture fisheries production in Banten Province

Regency/City	Volume (tonne)	Value (IDR )
1. Pandeglang Regency	13 814	
2. Lebak Regency	2 361	
3. Tangerang Regency	87 026	
4. Serang Regency	3 449	
5. Tangerang Regency	-	
6. Cilegon Regency	7.49	
7. Serang Regency	2 124	
8. Tangerang Selatan Regency	-	
<b>Total</b>	<b>109 522</b>	<b>3 220 091 231</b>

**Table 5.** Aquaculture production in Banten Province (tonne)

Regency/City	Marine water floating net	Freshwater floating net	Net cage	Running water ponds	Normal water ponds	Others
1. Pandeglang Regency	102	96	-	-	5,072	-
2. Lebak Regency	-	909	57	-	19 225	-
3. Tangerang Regency	-	13	-	-	19 225	78
4. Serang Regency	8	-	-	-	2 125	5 003
5. Tangerang Regency	-	-	-	-	251	-
6. Cilegon Regency	-	-	-	-	46	6
7. Serang Regency	-	96	-	-	821	826
8. South Tangerang Regency	-	-	-	-	5 046	-
<b>Total</b>	<b>111</b>	<b>1 114</b>	<b>57</b>	<b>-</b>	<b>42 283</b>	<b>5 907</b>

**Table 6.** Aquaculture production in Banten Province (continued)

Regency/City	Brackish water ponds					Total
	Ricepond	Seaweed	Intensive	Moderate	Semi-intensive	
1. Pandeglang	-	14 944	-	-	606	20 820
2. Lebak	-	-	-	-	65	20 257
3. Tangerang	-	-	-	6 106	15 951	31 844
4. Serang	-	40 703	-	2 293	8 620	58 753
5. Tangerang City	-	-	-	-	-	251
6. Cilegon City	-	-	-	-	-	46
7. Serang City	-	2 562	-	132	1 408	5 845
8. South Tangerang City	-	-	-	-	-	5 046
<b>Total</b>	<b>-</b>	<b>58 208</b>	<b>-</b>	<b>8 531</b>	<b>26 650</b>	<b>142 861</b>

### 3.2.2 West Java Province

46. West Java Province directly borders with 2 territorial waters, namely the Java Sea waters in the north which are often referred to as the North Coast (Pantura) of West Java sea waters and the Indian Ocean in the south which is often referred to as the South Coast sea waters (Pansela) of West Java. The West Java Pantura region covers 5 regencies and 1 city, namely: Bekasi Regency, Karawang Regency, Subang Regency, Indramayu Regency, Cirebon Regency, and Cirebon City. While the West Java Pansela region covers 5 districts namely: Sukabumi Regency, Garut Regency, Tasikmalaya Regency, and Ciamis Regency. The length of the coastline of West Java reaches 805 km which consists of the southern coast and 428 km and the north coast 377 km. The sea area of West Java

Province reaches 289 800 km<sup>2</sup> with an estimated sustainable potential of fishery resources reaching 240 000 tonnes/year.

47. Fishing activities in the province of West Java are quite dominant by the number of fishers reaching 88 975 people. This shows that fishing activities in the province of West Java become one of the main livelihoods in the province of West Java. The number of fishers in West Java Province is presented in **Table 7**. The dominant fishing gear is gill net with 11 252 units operating in West Java waters (Table 8).

**Table 7.** Number of fishers in West Java Province

No	Regency/City	Number of Fishers
1	Sukabumi Regency	88 975
2	Cianjur Regency	12 665
3	Garut Regency	985
4	Tasikmalaya Regency	3 853
5	Ciamis Regency	3 826
6	Cirebon Regency	16 599
7	Indramayu Regency	35 561
8	Subang Regency	5 890
9	Karawang Regency	5 341
10	Bekasi Regency	2 161
11	Kota Cirebon Regency	1 589
<b>TOTAL</b>		<b>88 975</b>

Source: West Java marine profile at a glance 2012

**Table 8.** Type and number of fishing gears

No	Type of fishing gears	Total (unit)
1	Trawl	622
2	Seine nets	5 591
3	Purse seine	199
4	Gill net	11 252
5	Liftnet	1 377
6	Fishing line	2 741
7	Traps	3 117
8	Gathering and fishing gears	284
9	Etc.	67
<b>TOTAL</b>		<b>25 250</b>

Source: a glance at the marine profile in West Java 2012

48. The production of marine capture fisheries reached 180 402.14 tonnes with a value of IDR 2 086 404 223. This figure shows the enormous potential of fish in the waters of West Java. The types of fish caught and the volume is presented in Table 9.

**Table 9.** Types and fish production

No	Types of fish	Volume (Tonne)	Value (IDR )
1	Yellow tails	69.13	1 183 822
2	Giant trevally	2 980.48	24 912 689
3	Pomfret fish	6 052.05	160 602 791
4	Mackerel ( <i>bentong</i> )	7.20	72 000
5	Grouper	6 051.8	175 696 422
6	Sardinella ( <i>tembang</i> )	14 422.5	79 078 961
7	Sardinella ( <i>lemuru</i> )	2 806.03	14 446 440
8	Cob	22,147	240 140 028
9	Skipjack	1 173.60	9 655 906
10	Long jewed mackerel	7 201.29	60 124 206
11	Mackerel ( <i>banyar</i> )	204.35	1 546 823
12	Mackerel ( <i>kembung</i> )	4 827.21	152 376 840
13	Tuna	2 727.94	314 080 331
14	Groupers	266.91	6 095 975
15	Rabbitfish ( <i>baronang</i> )	38.82	542 320
16	Sword fish	3 792.14	25 890 875
17	Ray	3 979.71	65 090 968
18	Shrimp	4 140.4	33 646 954
19	Squid	8 912.36	223 095 983
20	Bivalve	3 487.7	95 363 120
21	Others	41 737.65	402 790 769
<b>TOTAL</b>		<b>180 402.14</b>	<b>2 086 404 223</b>

Source : a glance at the sea profile in West Java 2012

49. This area of West Java is still dominated by traditional fishing vessels. Outboard motors were dominant fishing vessels in West Java with total number 9 994 units. Capture fisheries production in West Java amounted to 276 303 tonnes, an increase of about 1.95 percent of production in 2015 but only about 13.35 percent of the potential of capture fisheries in the two fisheries management areas. The number of fishing fleets is still dominated by small size, even from 18 231 units of fishing vessels as many as 16 827 units or 92.2 percent of them are small in size.

### 3.2.2.1 Cirebon

50. Cirebon Regency has 40 districts, 12 sub-districts, and 412 villages. Cirebon has a coastline of 54 km and the town of Cirebon along 7 km. Sandy beaches almost entirely dominate West Java north coast.

51. The fishing fleet in Cirebon City consists of outboard motors and motorboats. The number of fishing fleets in the city of Cirebon has fluctuated, from 2008 to 2012. The largest number of fleets was in 2008, 2011 and 2012, which were 238 units, while in 2009 the number of fleets was 214 units and in 2010 there were 232 units. Cirebon City has 743 fishermen. The species of fish caught include jenaha fish (*Lutjanus russelli*), red snapper fish (*Lutjanus sanguineus*) and tiger grouper fish (*Epinephelus fuscoguttatus*). Several fish caught and prices at the auction are presented in **Table 10**.



**Table 10.** Name of fish species and auction prices

Fish species	Average price /kg
Barracuda	IDR 7 000
Needle fish (Acang-acang/Cendro)	IDR 9 000
Black pomfret (Bawal hitam)	IDR 22 000
Blue swimming crab	IDR 40 000
Bud/sea cork	IDR 7 000
Small squid	IDR 25 000
Big squid	IDR 30 000
Dorab wolf herring (Golok-golok)	IDR 10 000
Rainbow sardine (Japuh)	IDR 6 000
Red snapper	IDR 40 000
Mackerel (Kembung)	IDR 12 000
Grouper	IDR 35 000
Giant trevally (Kuwe)	IDR 15 000
Mackerel (Layang)	IDR 6 000
Sword fish (Layur)	IDR 13 000
Sardinella (Lemuru)	IDR 7 000
Cat fish (Manyung)	IDR 12 000
Mackerel (Selar)	IDR 3 000
Moonfish (Semar)	IDR 11 000
Queenfish (Talang)	IDR 20 000
Sardinella (Tembang/tanjan)	ID R3 500
Big mackerel	IDR 25 000
Small mackerel	IDR 20 000
Anchovy (Teri)	IDR 8 000
Anchovy (Teri nasi)	IDR 15 000
Giant trevally (Tetengek)	IDR 8 000
Tuna (Tongkol abu-abu)	IDR 12 000
Tuna (Tongkol besar)	IDR 12 000
Ray (Pari kembang)	
PB	IDR 8 500
PK	IDR 5 000
Sting ray (Pari kodok/klapa)	IDR 5 000
Eagle ray (Pari burung)	IDR 5 000
Ray fish (Pari kekeh/junjungan)	IDR 80 000
Ray fish (Pari sekop/onde)	IDR 5 000
Baby shark (Cucut jenggot/depo)	IDR 15 000
Hammer shark (Cucut martil)	IDR 15 000
Baby shark (Cucut botol)	IDR 15 000
Baby shark (Cucut lanyam)	IDR 15 000
Pepet	IDR 125 000

Source: Marine and fisheries agency of Cirebon Regency 2015

52. MSY Potential is one of the biological standards used in the management and conservation of sustainable fisheries resources. Based on the analysis obtained information that the ideal conditions to be able to utilize the resources of red snapper optimally in the waters of northern Cirebon using standard efforts (fishing) as many as 67 units with a projected catch of 287.76 tons/year.

53. One of the fish catch commodities in Cirebon Regency is Blue swimming crabs. Cirebon Regency is one of the BS crab producing areas in West Java. Noted in West Java, the number of BS crabs is more than 3 000 tonnes/year with a value of more than IDR 100 000 000.

### 3.2.2.2 Indramayu Regency

54. Indramayu is a fish-producing regency in West Java Province. Fresh sea fish production during 2017 reached 139 713 39 tons. Its production value has increased from IDR 2 413 781 346.31, in 2016 to IDR 2 375 299 996.36, in 2017.

55. The number of fishers in Indramayu Regency in 2017 was 40 655 people. Some types of fishing gear used by fishers include seine nets, *dogol* (mini trawl), beach trawl, trawl ring, gill net, encircling nets, *kelitik* gillnets, traps, fishing rods, traps (*sero*), and other tools. The full profile of the fisheries sector in Indramayu Regency can be seen in **Table 11**.

**Table 11.** Profile of the fisheries sector in Indramayu Regency

No.	DESCRIPTION	2014	2015	2016
1	<b>Fisheries development</b>			
	Boats (unit)	6 057	6 059	6 059
	Fishing gear (unit)	9 130	9 117	9 602
	Pond area (ha)	22 514.07	22 514.07	22 514.07
	Freshwater pond (ha)	533.87	533.87	560.87
	Mariculture (unit)	182.00		
	Area of inland water (ha)	966.00	966.00	966.00
	Ricepond area (ha)			
	Salt pond (ha)	2 714	2 714	2 714.46
2	<b>Fisheries production (tonnes)</b>			
	Marine capture fisheries	126 782.92	136 091.48	139 048.57
	Pond	180 821.05	163 133.37	178 143.53
	Freshwater	70 641.45	78 308.34	82 866.65
	Inland water	7 568.02	7 584.05	9 815.51
	Mariculture			
	Seaweed culture	18 080.45	22 008.35	23 804.73
	Ricepond			
3	<b>Processed fish production (tonnes)</b>	35 360	40 181	42 344
4	<b>Value of processed fish production (thousands IDR)</b>	621 995 000	932 125 000	1 028 955 707
	Volume of salt production (tonne)	<b>311 505</b>	<b>317 122.36</b>	<b>1510.09</b>
	Value of salt production (IDR)	187 426 390	149 047 509.2	418 138
5	<b>Fish production value (thousands IDR)</b>	<b>7 977 375 386</b>	<b>8 665 729 635</b>	
	Marine capture fisheries	2 139 360 710	2 463 664 322	2 413 781 346
	Pond	4 636 245 329	4 871 512 235	3 529 998 586
	Freshwater	1 047 477 943	1 176 032 206	1 026 441 767
	Inland water	119 464 104	119 396 222	158 330 124
	Mariculture			
	Cultivation of seaweed	34 827 300	35 124 650	55 931 610
	Ricepond			

6	<b>Gross income of cultivators / fishermen (IDR/year)</b>	75 592 667	112 499 573	85.48,947
7	<b>Gross revenue of processor for fisheries and marine products (IDR/year)</b>	<b>99 374 794</b>	<b>119 441 953</b>	<b>155 807.51</b>
8	<b>Salt farmer gross income (IDR/year)</b>	4 321 769	11 061 040	31 031
9	<b>Fish consumption (kg / capita/ year )</b>	44.39	45.06	46.04
10	<b>Employment (people)</b>			
	Fishermen	40 545	40 655	40 655
	Fish farmers in ponds	17 754	17 754	17 754
	Fish farmer (freshwater pond)	12 000	12 007	12 007
	Fish farmer (mariculture)	98		
	Fishers in inland fisheries	6 613	6 613	6 613
	Fish product processors	6 604	6 604	6 604
	Fish trader/fish collector	1 200	1 200	2 546
	Salt producers	13 370	13 475	13 475
11	<b>Government income of fisheries sector (thousand IDR)</b>	9 017 613.78	10 884 416.95	10 481 461 529
12	<b>Number of fish auction (unit)</b>	14	14	14
13	<b>Fish seed production (number)</b>	11 937 000	2 675 516 000	3 064 128 000
14	<b>Analysis in the laboratory of water quality and fish health (samples)</b>	877	820	893
15	<b>Fish export (tonne/years )</b>	<b>13.35</b>	<b>47 208.00</b>	<b>63 438.42</b>
16	<b>Value of fish export (thousand IDR)</b>	<b>430 143 816</b>	<b>519 288 000</b>	<b>697 822 620</b>
17	<b>Value of investment in the fisheries and maritime sectors ( thousand IDR/year)</b>	<b>28 613 043 941</b>	<b>28 613 043 941</b>	<b>28 613 043 941</b>

56. One group of the species caught in Indramayu Regency is a Blue Swimming crab. Indramayu Regency is the third largest producer of BS crab after Cirebon Regency and Karawang Regency in West Java Province (KKP, 2013). In addition to blue swimming crabs, snapper and grouper are also produced in this Regency. Based on data from MMAF (2019), snapper production in 2016 reached 8 116 tonnes, while grouper production declined by only 58 tonnes in 2016. Data on snapper and grouper production in FMA 712 is presented in **Table 12**.

**Table 12.** Snapper and grouper production in FMA 712 in 2005–2016

Fish	Year											
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
White snapper	889	961	6 414	1 397	2 234	1 752	1 361	6 286	2 701	667	2 361	1 398
Red snapper	2 741	2 526	3 325	3 699	3 734	4 151	4 951	5 591	3 859	6 329	6 701	6 718
Groupers	185	800	127	24	436	135	160	984	1,196	133	166	58
Humpback grouper	-	69	53	143	59	67	668	878	-	-	-	-
Mud grouper	-	-	89	-	-	-	2	-	-	-	1	-
Red grouper	-	-	-	-	-	28	-	-	-	1	-	-
Other grouper	-	-	-	-	-	-	23	-	-	-	-	-

Source: KKP, 2019 (not published)

### 3.2.3 Central Java Province

57. Central Java has coastal areas to the north and south. The total length of the coastline of Central Java Province is 828.82 km which consists of 540.27 is the length of the northern coastline and 288.55 km the length of the southern coastline, with a coastal area of 122 739.79 ha. The condition of the sloping north coast of Central Java and relatively calm waters makes the north coast of Central Java an area that has quite a number of fisheries centers both small and medium scale.

58. The proportion of marine fisheries production in Central Java Province is dominated by Pekalongan City, Rembang Regency, Pati Regency, Tegal City and Batang Regency. In the case of marketing the production of marine fishing results, a Fish Auction facility is provided where the management is based on Central Java Regional Regulation No. 10 of 2003.

59. There were 81 fish landings in Central Java, of which 65 are on the north coast, and 16 are on the south coast, 3 TPI includes the Technical Implementation Unit of DJCF (UPT KKP), namely PPNP (Pekalongan), PPNC (Cilacap) and Karimunjawa Fishing port. Two TPIs which were the main producers of marine fisheries production in Central Java were PPNP (Pekalongan) and PPI Bajo Mulyo Pati Regency. The most widely distributed TPI was in the Districts of Cilacap, Rembang and Jepara.

60. Capture fisheries production based on landing data in Central Java Province consists of pelagic fish groups, demersal fish groups, and non-fish groups (shrimp, crustaceans and molluscs). Important economical fish production in the pelagic fish group is dominated by 7 species of fish, namely: yellow-tail, anchovies, sardine, indian mackerel, mackerel tuna, pony fish, scad. While demersal fish is dominated by demersal fish, such as snapper, silver biddy fish, and goatfish. Furthermore, for non-fish groups that are economically important, their production is dominated by shrimp, crustaceans, squid and marine molluscs.

61. Fisheries production in Central Java in 2015 was 214 498 721 kg with a production value of IDR 1 857 231 727. Judging from the percentage, fish production in Central Java is dominated by Rembang, Batang, Pemalang, Pekalongan and Tegal Regencies.

**Table 13.** Mainstay commodities of capture fisheries in Central Java Province

No.	Commodity	Production (tonne)					Average annual increase (%)
		2006	2007	2008	2009	2010	
1	Snapper	505.8	733.2	642.1	783,6	1,432.2	34.34
2	Grouper	231.0	222.2	171.1	102.0	349.8	43.94
3	Pomfret	2 903.0	2 681.5	2 903.7	3 855.2	2 913.0	2.25
4	Scad	35 498.3	31 811.1	37 315.4	44 915.3	49 155.5	9.18
5	Indian mackerel	11 603.9	10 212.9	1 068	10 303.0	9 928.8	-3.68
6	Jellyfish	29.1	398.6	70.7	859.9	5.3	551.09
7	Spanish mackerel	3 072.9	3 184.1	3 120.6	3 366.8	3 078.6	.24
8	Mackerel tuna	11 075.2	8 986.0	10 218.3	12 187.4	9 038,8	-2.93
9	Lobster	22.1	39.5	28.6	29.8	11.5	-1.52
10	White shrimp	603.5	272.5	545.4	770.1	344.8	6.54
11	Tiger prawns	1.4	0	0	222.0	0.6	-49.93
12	Squid	2 012.7	2 005.3	2 065.s9	2 675.6	3 431.2	15.10
13	Crab	22.8	90.2	145.1	908.2	167.9	200.22
14	Skipjack	4 539.5	2 758.2	2 283.5	1 692.0	368.1	-40.15
15	Tuna	4 657.7	5 690.3	1 381.3	1 493.3	153.1	-33.80

Source: Maritime and fisheries profile of Central Java Province 2013

62. The number of fishing fleets at sea in Central Java based on data from the MMAF has decreased from 2015 to 2017. Fishing fleets such as motorboats have decreased where in 2015 as many as 3 483 to 898 in 2017. The decline also occurred in the motor fleet outboard where in 2015 of 20 187 decreased to 2 233 units in 2017. The number of fishing fleets in Central Java in 2015-2017 is presented in the following table.

**Table 14.** Number of fishing vessels by category of fishing vessels and province, 2015–2017

Types of vessels	2015	2016	2017
<b>Boat without motors</b>	308	14 713	-
<b>Outboard boats</b>	20 187	6 371	2 233
<b>Motorized vessels</b>	3 483	3 452	898

Source: KKP Data

### 3.2.4 East Java Province

63. In general, the area of East Java province is divided into 2 major parts, namely East Java mainland and Madura Island. East Java covers 90 percent of the total area of East Java, while Madura Island is only about 10 percent.

64. Fisheries sector activities in East Java are quite dominant. This can be seen from the fisheries production both capture fisheries and aquaculture. Capture fisheries production in East Java continues to increase every year from 2010 as many as 338 915 tonnes increased to 414 644 tonnes in 2017. Complete fisheries production in East Java in 2010–2017 is presented in **Table 15**.

**Table 15.** Fisheries production in East Java

Commodity	2010	2011	2012	2013	2014	2016	2017
Capture fisheries							
<b>1. Marine</b>	338 915	362 622	367 921	381 574	385 879	390, 269	414 644
<b>2. Inland water</b>	13 859	13 202	13 882	13 473	13 494	17 545	12 814
Aquaculture							
<b>1. Mariculture</b>	516 586	549 311	563 087	580 683	601 413	640 819	540 922
<b>2. Brackish ponds</b>	118 651	132 402	170 434	177 063	191 611	214 025	311 666
<b>3. Freshwater ponds</b>	65 125	90 843	110 269	124 621	192 566	229 401	272 730
<b>4. Cages</b>	189	677	428	346	592	61 770	1 881
<b>6. Nets</b>	2 557	9 346	11 700	12 726	11 695	11 555	10 888
<b>7. Rice ponds</b>	57 508	60 496	73 255	100 509	46 011	61 770	62 874

Source: East Java Province fisheries service 2018

### 3.2.4.1 Pamekasan Regency

65. Fishing activities in Pamekasan Regency are divided into two regions, namely the southern coastal region (Tlanakan District, Pademawu, Galis, and Larangan District) and the northern coastal region (Pasean and Batumarmar Districts). Tamberu Fish Landing Base (PPI) is one of the PPI located in the northern coastal region, precisely located in Tamberu Village, Batumarmar District, Pamekasan Regency. Based on the Regional Regulation of Pamekasan Regency No. 16 of 2012 concerning the Regional Spatial Planning of Pamekasan Regency 2012–2032 states that in Tamberu village, Batumarmar Sub-district has been designated as a capture fisheries area in the northern coastal area of Pamekasan Regency and will be built fisheries infrastructure such as Fish Auction (TPI) and Fish Landing Port (PPI).

66. Fishermen in Sumenep Regency are divided into full fishermen, main part-time fishermen and additional part-time fishermen. Based on data from the province fisheries agency (DKP) of East Java Province, the number of fishermen in Sumenep Regency in 2016 was 11 587 peoples with full time fishermen of 8 392, main fishers were 2 352 and additional fishers were of 718 peoples.

67. The marine fishing fleet in Pamekasan Regency according to the DKP East Java Province in 2016 of 1 794 unit. In PPI Tamberu, in general the fishing fleet consists of outboard motors and motor boats. The motorboat used is generally sized 5–30 GT. The average fishing fleet between 5–30 miles.

68. The types of fishing gear identified in PPI Tamberu namely mini purse seine, gill net, trammel net, seine net, fishing line and traps. The dominant fishing gears were in PPI Tamberu, namely gill net, fishing line, and seine net. Mini purse seine used by fishermen in PPI Tamberu is operated by light fishing technique. Seine net is the main target to catch tuna and mackerel fishes. Whereas the traps only operates in the month of April to August. The development of the number of fishing gear in PPI Tamberu from 2005 to 2014 presented in Table 15. The species group of fish landed in Pamekasan Regency mostly pelagic fish group. The dominant catches were tuna, skipjack, flying, anchovy, and other

pelagic fish. This is because the most dominant type of fishing gear used were mini purse seine and seine net. While some demersal fish such as pomfret, goatfish, trevally, and other demersal fish were also recorded, because fishermen in Pamekasan regency used also mini trawl and gill net. The detail fishing gears in Pamekasan Regency is presented in **Table 16**.

69. The dominant fish species landed in Pamekasan Regency were the pelagic fish group. the dominant fish recorded were tuna, skipjack, sardine, scad, anchovy, and other pelagic fish. This was because the most dominant type of fishing gear used is mini purse seine and seine net. While some demersal fish such as pomfret, threadfin, giant trevally, and other demersal fish are also recorded. Detailed data on the number of fish caught in Pamekasan Regency presented in **Table 17**.

**Table 16.** Number of fishing gear by type in 2005-2014 (unit)

Years	Batunarmar						Pasean					
	Purse seine	Seine net	Gill net	Trammel net	Hook and line	Traps	Purse seine	Seine net	Gill net	Trammel net	Hook and line	Trap
2005	0	49	67	61	0	0	34	137	3	0	160	30
2006	0	91	61	95	0	0	33	139	0	0	246	10
2007	0	59	156	77	0	140	34	138	3	0	197	39
2008	0	57	156	77	125	26	31	116	25	0	194	30
2009	0	62	160	84	239	28	34	137	3	0	160	30
2010	0	62	163	84	129	28	34	137	3	0	160	30
2011	7	62	163	84	129	28	34	137	3	0	160	30
2012	7	62	163	84	129	28	34	137	3	0	160	30
2013	7	64	163	84	129	28	36	137	3	0	160	30
2014	7	64	163	84	129	28	36	137	3	0	160	30

Source: DKP, Pamekasan Regency (2005-2014)

**Table 17** The production of fish group landed in Pamekasan Regency in 2014–2016

Fish type	2014		2015		2016	
	Volume (tonne)	Percentage (%)	Volume (tonne)	Percentage (%)	Volume (tonne)	Percentage (%)
<i>Pelagic</i>						
<b>Tuna</b>	1 446.50	6.42	4 367.60	16,80	0.00	0.00
<b>Other tuna</b>	0.00	0.00	4 278.80	16.46	1 869.50	8.06
<b>Skipjack</b>	3 718,40	16.51	3 025.10	11.63	683.00	2.95
<b>Anchovies</b>	0.00	0.00	2 243.70	8.63	2 152.50	9.28
<b>Indian mackerel</b>	2 789.80	12,39	2 082.10	8.01	1 778.50	7.67
<b>Mackarel tuna</b>	0.00	0.00	0.00	0.00	1 218.40	5.25
<b>Rainbow sardine</b>	0.00	0.00	0.00	0.00	911.70	3.93
<b>Garfish</b>	0.00	0.00	0.00	0.00	153.60	0.66
<b>Scad mackerel</b>	0.00	0.00	0.00	0.00	74.30	0.32
<b>Finny scad</b>	0.00	0.00	0.00	0.00	67.50	0.29
<b>Mackerel</b>	0.00	0.00	642.50	2.47	1 749.40	7.54
<b>Scombroid mackerels</b>	1 381.70	6.13	622.10	2.39	1 370.90	5.91
<b>Yellow-tail</b>	321.30	1.43	531.00	2.04	0.00	0.00
<b>Anchovy</b>	1 549.50	6.88	337.20	1.30	2 014.00	8.68
<b>Sardinella</b>	2 055.30	9,13	265.40	1.02	0.00	0.00
<b>Other Mackerel</b>	1 231.50	5.47	181.10	0.70	196.00	0.85
<b>Sardine</b>	168.30	0.75	133.90	0.51	1 442.30	6.22
<b>Other pelagic fish</b>	2 202.00	9.78	1,641.60	6.31	4 994.20	21.54
<i>Demersal</i>						
<b>Sword fish</b>	605.20	2.69	75.00	0.29	115.90	0.50
<b>White pomfret</b>	399.90	1.78	112.60	0.43	0.00	0.00
<b>Red Snapper</b>	78.70	0.35	57.20	.22	14.30	0.06
<b>Emperor fish</b>	157.50	0.70	25.90	.10	0.00	0.00
<b>Mullet</b>	50.50	.22	23.30	0.09	110.50	0.48
<b>Black pomfret</b>	1 109.60	4.93	1 768.00	6.80	1 151.90	4.97
<b>Threadfin</b>	493.80	2.19	678.80	2.61	212.10	.91
<b>Ponyfish</b>	504.30	2.24	628.00	2.42	201.40	.87
<b>Giant trevally</b>	1 137.30	5.05	612.20	2.35	220.60	0.95
<b>Ocean sunfish</b>	536.50	2.38	603.00	2.32	118.40	0.51
<b>Goatfish</b>	49.50	0.22	10.50	0.04	0.00	0.00
<b>Rejung</b>	142.30	0.63	9,60	0.04	0.00	0.00
<b>White snapper</b>	5.50	0.02	5.30	0.02	0.00	0.00
<b>Other demersal fish</b>	0.00	0.00	150.30	0.58	174.70	0.75
<i>Coral</i>						
<b>Coral grouper</b>	37.90	.17	27.30	.10	11.40	0.05
<b>Yellow tail</b>	90.50	0.40	95.00	.37	0.00	0.00
<b>Other reef fish</b>	0.00	0.00	1.20	0.01	0.00	0.00
<b>Squid</b>	109.50	0.49	556.50	2.14	86.20	.37
<b>Crab</b>	3.20	0.01	2.80	0.01	4.50	0.02



<b>Mud crab</b>	7.30	0.03	14.90	0.06	12.30	0.05
<b>Banana shrimp</b>	138.70	0.62	0.00	0.00	25.60	.11
<b>Tiger shrimp</b>	0.00	0.00	0.00	0.00	13.10	0.06
<b>Other shrimp</b>	0.00	0.00	192,20	.74	41.50	.18
<b>Total</b>	<b>22 522.00</b>	<b>100.00</b>	<b>26 001,70</b>	<b>100.00</b>	<b>23 190.20</b>	<b>100.00</b>

Source: DKP, Pamekasan Regency (2016)

### 3.2.4.2 Lamongan Regency

70. Lamongan Regency has 5 PPI and PPN. One of the active fish landing bases (PPI) on the east coast of Lamongan Regency is in the Kranji PPI, Kranji Village, Paciran District. The infrastructure in the Kranji PPI is very good, there is a dock or mooring anchored ship, a fish warehouse and a fish auction site (TPI). Many fishermen land and sell their catches to collectors/collectors around the Kranji PPI.

71. The average number of fishermen in Lamongan Regency has decreased from 2012 to 2016. During the 3 years the number of fishermen in Lamongan Regency has not changed, and in the fourth year it has decreased. This decrease was seen after data validation from the Department of Fisheries and Maritime Affairs of Lamongan Regency which always validated the data every 3 years. In detail the number of fishermen in Lamongan Regency from 2012 to 2016 can be seen in **Table 18**.

**Table 18.** The number of fishers in Lamongan Regency based on PPI and PPN (the year 2012-2016)

No	Locations	Address	Number of fishers per year				
			2012	2013	2014	2015	2016*
1	PPN Brondong	Kel. Brondong	12 946	12 946	12 946	1 939	1 939
2	PPI Weru	Desa Weru	2 870	2 870	2 870	1 056	1 056
3	PPI Kranji	Desa Kranji	2 798	2 798	2 798	1 161	1 161
4	PPI Labuhan	Desa Labuhan	4 252	4 252	4 252	1 344	1 344
5	PPI Lohgung	Desa Lohgung	5 288	5 288	5 288	1 220	1 220
<b>Total</b>			<b>28 154</b>	<b>28 154</b>	<b>28 154</b>	<b>6 720</b>	<b>6 720</b>

Note: \* = Data validated by DKP Lamongan Regency

Source: Fisheries and Maritime Agency, Lamongan Regency (2015-2016)

72. The type of fishing fleet that lands fish in PPI Kranji includes motorboat and outboard motor. The most dominant type of fishing fleet used by fishers is outboard motorboat, generally a motorized boat size of 10–30 GT. The average fishing fleet trip used by fishermen in PPI Kranji travels between 20–30 miles.

73. The types of fishing gear found in Kranji PPI include mini purse seine, gill net, *dogol*, and *bubu*. The dominant type of fishing gear from 2012 to 2013 was 906 and 911 units of gill net, but in 2014 the number of traps was more than 869 units of gill net. Overall the number of fishing equipment in PPI Kranji has decreased. Data on the number of fishing equipment in PPI Kranji can be seen in **Table 19**.

**Table 19.** The number of fishing gear in the Kranji PPI by type in 2012-2016 (unit)

No	Type of fishing gears	Years				
		2012	2013	2014	2015	2016
1.	<i>Mini Purse seine</i>	45	45	15	34	34
2.	Danish seine	55	55	55	n.a	tad
3.	<i>Gill net</i>	906	911	475	104	104
4.	Traps	869	869	869	tad	tad
Total		<b>1 875</b>	<b>1 880</b>	<b>1 414</b>	<b>138</b>	<b>138</b>

Note: tad = there is no data

Source: Fisheries and Maritime Agency, Lamongan Regency (2015-2016)

74. The most types of fish landed at the port in Lamongan Regency are small pelagic fish groups such as Scads, lemuru, mackerel. The data from the Marine Fisheries Agency of Lamongan Regency (2016) states that the types of fish landed every month in the Kranji PPI in 2016 are peperek, black pomfret, mackerel, layur, and small crab. The types of fish are small pelagic and demersal, this is because the majority of the types of fishing gear used are mini purse seine and mini trawl whose target catches are small pelagic fish and demersal fish. Detailed data on the number of fishes landed at Kranji PPI by type of fish in 2016 can be seen in **Table 20**.

**Table 20** The production volume of fish landed in Kranji PPI and Lamongan Regency according to fish species in 2014–2016

No	Fish Type	2014 *		2015 *		2016	
		Volume (tonne)	Percentage (%)	Volume (ton)	Percentage (%)	Volume (tonne)	Percentage (%)
<i>Pelagic</i>							
1	Sardinella	5 966.40	10.57	2 839.72	4.88	428.40	15.48
2	Other sardinella	15.90	0.03	105.30	.18	200.50	7.25
3	Indian mackerel	401.80	0.71	134.10	0.23	78.90	2.85
4	Mackerel	315.50	0.56	160.60	0.28	86.90	3.14
5	Cob	2 664.40	4.72	1 865.40	3.21	579.80	20.96
6	Mackarel tuna	49.60	0.09	13.60	0.02	16,40	0.59
7	Scad	4 094.38	7.25	2 349.00	4.04	16.30	0.59
8	F inny scad	7.80	0.01	4.60	0.01	23.60	0.85
9	Other mackerel	85.44	0.15	112.10	0.19	0.10	0.00
10	Queen fish	218.80	0.39	298.30	0.51	0.40	0.01
<i>Demersal</i>							
11	Ponyfish	1 594.55	2.82	2 400.30	4.13	69.70	2.52
12	Cat fish	434.05	0.77	700.50	1.20	29.70	1.07
13	Sword fish	244,20	0.43	425.80	0.73	194.70	7.04
14	Red snapper	705.44	1.25	707.20	1.22	0.50	0.02
15	Big eyes snapper	18 424.18	32.64	16 338.60	28.10	25.20	0.91
16	Black pomfret	92.18	0.16	58.70	0.10	36.40	1.32
17	Barracuda	844.12	1.50	749.20	1.29	10,70	0.39
18	Trevally	1 482.46	2.63	1 000.10	1.72	1.30	0.05
19	Gulamah / tigawaja	40.80	0.07	879.40	1.51	13.40	0.48
20	Herring	2.40	0.00	9.70	0.02	23.20	0.84

21	Stingray / tiger	900.60	1.60	806.20	1.39	0.40	0.01
22	Threadfin	3 827.24	6.78	12 131.40	20.86	0.00	0.00
23	Goby	1 305.52	2.31	1 040.90	1.79	0.00	0.00
24	Kapasan	7 253.40	12.85	5 832.10	10.03	0.00	0.00
							<i>Coral</i>
25	Berang ditris	202.45	.36	342.60	0.59	6.00	0.22
26	<b>Other fish</b>	2 367.00	4.19	3 061.80	5.27	290.10	10.49
<i>Other fisheries resources</i>							
27	Crab	481.80	0.85	774.80	1.33	590.60	21.35
28	Squid	1 434.50	2.54	1 989.40	3.42	32.60	1.18
29	White shrimp	990.50	1.75	1 018.40	1.75	10.90	0.39
Amount		5 6447.3	100	5 814.98	100	2 766.7	100

Note: \* = data based on Kabupaten Lamongan

Source: Processed from catch data of the regency, Department of Fisheries and Maritime Affairs, Lamongan Regency (2013–2016)

### 3.2.5 East Kalimantan Province

75. East Kalimantan capture fisheries production in 2008 amounted to 126 862 tonnes and in 2012 amounted to 148 331 tonnes an increase of 14.47 percent, aquaculture production in 2008 amounted to 60 360 tonnes and in 2012 amounted to 291 117 tonnes an increase of 79.26 percent due to a surge seaweed production, volume achievement and export value in 2008 amounted to 18 942 107 kg with a value of US\$147 102 000 and volume and export value in 2012 amounted to 12 830 181 kg with a value of US\$124 302 557 the decline in exports caused by lack of raw materials fisheries, especially tiger shrimp which are the mainstay of East Kalimantan and competition for the acquisition of tiger shrimp raw materials between local entrepreneurs and entrepreneurs from Java, per capita fish consumption tends to always increase in 2008 consumption/capita (kg/cap/year) by 46.30 and in 2012 it reached 58.28 consumption/capita (kg/cap/year) the consumption patterns of people who like fish both freshwater fish and seawater fish are one indicator of the high fish food consumption patterns in East Kalimantan.

76. The fisheries business carried out in East Kalimantan is a capture fisheries business (marine water and inland waters), aquaculture business (brackish water, marine water and freshwater). The above fishery business activities are in development and development are carried out with intensive, semi-intensive, traditional to traditional plus business patterns and extensification activities. Commodities produced from ± 56 types of marine fishing activities, consisting of demersal fish and pelagic fish. As for the commodities of the business of capture fisheries of inland waters and the cultivation of freshwater, brackish water and mariculture are about 12 species of fish. The development of fisheries production in East Kalimantan from 2008 to 2012 can be seen in the **Table 21**.

**Table 21.** Fisheries Production by fisheries sub-sector in regency/city in 2013

Regency/City	Capture fishery		Aquaculture				Total
	Marine	Inland	BW pond	FW pond	Cage	Others	
1. Paser	9 935.9	183	9 463.7	36.1	6.5	-	19 625.2
2. West Kutai	-	1 171.3	-	174.4	586.8	-	1 932.5
3. KutaiKartanegara	32 192.9	32 859.8	24 573.0	453.5	30 885.1	19.7	120 984.0
4. East Kutai	5 211.0	1 028.1	684.1	573.4	353.0	35.9	7,885.5
5. Berau	15 886.2	1 232.4	590.5	196.9	107	146.7	18 159.7
6. North Penajam Paser	4 340.3	287.7	7 236.8	535.6	-	-	12 400.4
7. Mahakam Hulu	-	-	-	-	-	-	-
8. Samarinda	7 779.5	5 440.2	-	467.1	204.1	-	13,890.9
9. Balikpapan	5 289.3	-	261.0	71.8	-	-	5,622.1
10. Bontang	14 043.9	-	15.6	39.3	13.2	38.8	14 150.8
Total 2013	<b>94 679.0</b>	<b>42 202.5</b>	<b>42 824.7</b>	<b>2 548.1</b>	<b>32 155.7</b>	<b>241.1</b>	<b>214 651.1</b>

77. The Fish Landing Base (PPI) in East Kalimantan has tremendous potential. The loading and unloading of fish activities at 8 PPI scattered in East Kalimantan when the accumulated number reaches 70 to 80 tonnes per day. Production per day alone reaches 70 to 80 tonnes, especially if it is accumulated for a month or a year, this potential must certainly be utilized optimally in meeting the needs of fish consumption in East Kalimantan. The participation of PPI helps accelerate the distribution of fish per day to all fish markets in East Kalimantan. For example, in PPI Selili Samarinda, the potential reaches 40 tonnes per day. This PPI has a role in fulfilling the availability of fish in 10 Samarinda fish markets. 20 percent of them are distributed to the areas of the Districts of Kutai Kartanegara, West Kutai, and Mahakam Ulu. There are around 800 retailers in PPI Selili using motorcycles with activities reaching 40 tonnes per day and reaching 1 200 tonnes per month. It consists of 44 types of fish consisting of 7 types of hard skin and 33 types of soft skin for marine waters. The other 25 fish species consist of 3 hard-skinned and 22 soft-skinned for the mainland waters.

78. Fish production will certainly be disrupted if PPI does not function properly. Marine fisheries production has continued to increase over the past three years. If in 2013 the production was 380 thousand tonnes, it increased to 441 thousand tonnes in 2014 and continued to increase to 480 thousand tonnes in 2015.

**Table 22.** Number of fishing vessels in East Kalimantan Province

Regency/City	Without motor	Outboard motor	Motorized vessels	Total
1. Paser	104	306	-	410
2. West Kutai	1 760	19	-	1 779
3. Kutai Kartanegara	550	1 056	-	1 606
4. East Kutai	513	55	-	568
5. Berau	59	188	-	247
6. North Penajam Paser	79	48	-	127
7. Mahakam Hulu	-	-	-	-
8. Samarinda	1 076	260	-	1 336
9. Balikpapan	-	-	-	-
10. Bontang	-	-	-	-
Total 2015	4 141	1 932	-	6 073

79. The potential of fisheries in East Kalimantan Province which is very good to date is only 30 percent or 102.3 thousand tonnes of the total potential production reaching 341 thousand tonnes so that East Kalimantan is an area that has prospective marine and fisheries potential. For the potential of pond production and freshwater and marine fisheries to reach 341 thousand tonnes with utilization rates reaching 30 percent. The potential of marine waters that can be cultivated sustainably every year is 140 thousand tonnes, ponds 122 thousand tonnes, and freshwater fisheries 79 thousand tonnes. East Kalimantan's fisheries and marine potentials are spread across 14 regencies and cities, especially in coastal areas such as the districts of Bulungan, Berau, East Kutai, Bontang, Balikpapan, Tarakan, North Penajam Paser, and Nunukan. East Kalimantan is an exclusive economic zone in the Sulawesi Sea, or northeast of Nunukan Regency with an area of 2.75 million hectares and the potential for catching tuna is quite large. Demersal fishery products (seabed) include snapper, pomfret, *baronang*, cone or shark, stingray, *kuro*, red snapper, red snappers, shrimp, lobster, tiger shrimp and *dogol* shrimp.

80. Areas supporting the development of aquaculture, especially ponds, are directed at the coastal area of Tanah Grogot District, Paser Regency. In addition, the Balikpapan Bay area for fishing activities up to 12 miles, environmental management (watersheds, prevention of industrial pollution and services), coral fisheries cultivation, fishpond cultivation, and the development of fishing ports in Manggar, Balikpapan. Brackish water cultivation or special types of shrimp ponds can be carried out in Berau, Bulungan, Bontang, Tarakan, Kutai Kartanegara Districts, and North Penajam Paser. In addition, shrimp hatcheries in Balikpapan, Bontang, Berau, Tarakan, West Kutai, and Paser. Fish processing will be in Paser, Balikpapan, East Kutai, Nunukan, and Berau, while fish canning in Balikpapan, Kutai Kartanegara, Tarakan, Berau, East Kutai, Bontang, Paser, Nunukan, and Bulungan. Fisheries development for the Mahakam delta area can be done through aquaculture ponds, post-harvest processing centers including marketing, and environmental management.

**Table 23.** Number of fisheries households in East Kalimantan Province

Regency/City	Without boat	Without motor	Outboard motor	Vessel	Total	
1. Paser	-	20	88	2 543	2 654	
2. West Kutai	-	-	-	-	-	
3. Kutai Kartanegara	-	38	490	5 898	6 426	
4. Esat Kutai	-	1 420	810	1 894	4 124	
5. Berau	-	17	685	1 891	2 593	
6. North Penajam Paser	-	144	563	2 984	2 984	
7. Mahakam Hulu	-	-	-	-	-	
8. Samarinda	-	-	-	-	-	
9. Balikpapan	-	-	32	1 221	1 253	
10. Bontang	-	69	650	561	1 280	
<b>Total</b>						
	<b>2015</b>	-	1 708	3 318	16 992	22 018
	<b>2014</b>	520	2 021	2 790	16 982	22 313
	<b>2013</b>	527	1 779	2 731	16 538	21 575
	<b>2012</b>	594	1 902	6 059	18 000	26 555
	<b>2011</b>	798	3 051	4 999	18 856	27 704
	<b>2010</b>	537	2 313	6 425	17 076	26 351

81. Potential prospective fisheries and marine resources consist of the ZEEI (Indonesian Exclusive Economic Zone) along the Sulawesi Sea with an area of 2 750 813 ha. The fishing area on the coast is 12 million ha. The area of aquaculture ponds reaches 38 650 ha, pond cultivation covering 1 511 ha, and marine/beach cultivation covering 67 564 ha. Efforts to increase fisheries production are supported by a number of capture fisheries totaling 28 732 units with inland water fleets in the year totaling 26 080 units. East Kalimantan Province consists of 13 regencies/cities, 10 of which have marine waters with geographical location from land to sea. Potential fish resource production in East Kalimantan includes:

- Marine waters: 139 200 tonnes utilized around 40.94 percent
- Inland waters: 69 348 tonnes utilized around 20.40 percent
- Brackish water cultivation: 122 450 tonnes utilized around 36.02 percent
- Freshwater cultivation: 9 000 tonnes utilized around 2.64 percent

82. In general, the prominent prospective commodities to be developed in the fisheries sector are brackish water shrimp and grouper culture, the EEZ water has the potential of tuna fish and other darmasal fisheries. Potential demersal fisheries types are snapper, grouper, pomfret, side, tongue, *beronang*, *cucut*/shark, stingray, *kuro*, red snapper, lobster, tiger shrimp, banana shrimp. There are several types of pelagic fish: such as scad, sardine, mackerel, trevally, squid, and cuttlefish. Other potential fish are sea cucumber, jellyfish, blue swimming crab.

83. East Kalimantan is the province with the second largest average mangrove crab production in Indonesia after North Sumatra, amounting to 2 882 tonnes in the period 2000–2016. Mangrove crab producing areas in the Mahakam River Estuary include: Marangkayu, Muara Badak, Anggana, Muara Jawa and Samboja (Aisyah *et al.*, 2016). Mangrove crabs have been an important fishery commodity in Indonesia since the 1980s (Wijaya *et al.*, 2010). The range of production in 1980–1999 was 8 thousand tonnes (Cholik, 1999). Meanwhile, the range of production in 2000–2016 reached 42 thousand

tonnes (DJPT, 2016). If seen from these conditions, it can be said that there has been an increase in the rate of exploitation of mangrove crabs by four compared to the previous period year.

84. East Kalimantan waters include FMA 713 and FMA 716. FMA 713 covers the northern waters of the Tarakan and Nunukan waters up to the southernmost part which is located in the western waters of South Sulawesi in the Makassar Strait to the waters of the Flores Sea. Lately fish resources in the Makassar Strait have experienced fishing pressure (BRKP, 2008). The exploitation of demersal fish and shrimps tends to increase with the massive trawl of mini-trawlers of sizes below 30 GT. The number of fleets with a capacity of <30 GT has reached 25 300 units (2008), many of which are based in East Kalimantan. Catching demersal fish with this fishing gear spreads throughout East Kalimantan waters. While small pelagic fishing is getting popular in the southern part of the Makassar Strait. Arrest in this area has been going on for a long time, since the 1980s. This condition is further aggravated by the foreign ships that are rampant in this FMA. To dispel and counter the widespread use of fish resources by foreign fishermen, the government has reintroduced the limited use of trawl in the territorial waters of East Kalimantan as previously banned. Through Ministerial Regulation No.06/MEN/2008 regarding the use of trawler in the waters of North East Kalimantan, fish resources are expected to be utilized by local/Indonesian fishermen. The granting of licenses caused controversy because it triggered the operation of trawl in other places with the reason to dispel/counter the rise of foreign fishermen.

85. Pressure on fishery resources, in addition to an increase in fleet capacity, is also marked by the rise of fish bombing activities in the Flores Sea. This activity threatens the condition of coral reefs and reduces fisheries production. This is indicated by the declining catches of fishermen in the area. The status of demersal and shrimp fisheries in this region has reached over exploited status. In addition to the utilization of fish and shrimp trawl which is suspected to have low selectivity, the level of exploitation is also getting higher. Mini trawl fleet (mini trawling) is increasing every year especially after granting permission to use trawlers. Meanwhile, the status of small pelagic fisheries is still in the moderate stage except for scad fish whose exploitation status has reached the fully exploited stage. The types of large pelagic fish catches are very volatile so that the level of exploitation is still undetermined.

86. FMA 716 covers the Sulawesi Sea and the northern part of Halmahera Island which is covered by the administration of 5 provinces. The five provinces are East Kalimantan, Gorontalo, North Sulawesi, Central Sulawesi and North Maluku. The habitat conditions in FMA 716 are in the good category. Almost all habitat indicators show moderate to good conditions. The waters of North Sulawesi and Gorontalo are one of the most important tuna and skipjack fishing areas in Eastern Indonesia (BRKP, 2008). The development of tuna fisheries can be seen from the many tuna fishing companies in this region with the dominant fishing gear used is Huhate. The use of *huhate* until 2008 reached 581 units. The potential of tuna fisheries is characterized by the widespread use of fishing gear such as stretching, trolling and other fishing. The number of marine fishing fleets in these waters is quite fluctuating from year to year. There was a decrease in fisheries scale of 100 GT and below. The dominant fleet is <5 GT with the number in 2008 reaching 6 490 units. The increase occurred in the fleet at the size of 100–200 GT and > 300 GT. Even the fleet with a size > 1000 GT increased from one unit to two units. The status of demersal and small pelagic

fish exploitation cannot be determined considering that the available data and information are inadequate for analysis (BRKP, 2007) (<http://eafm-indonesia.net>).

87. The management of fisheries resources has been carried out intensively by the government of East Kalimantan Province through the Department of Maritime Affairs and Fisheries of East Kalimantan Province. Various fisheries development programs in the framework of fisheries resource management have been implemented. Efforts to realize sustainable fisheries resources continue to be pursued through fisheries resource management. But this is not an easy thing, large geographical areas and also the location of fisheries resource use areas that are spread in several areas cause these efforts are not optimal. In addition, the concentration of fisheries resource utilization that is concentrated in watershed and coastal areas makes it vulnerable to various interests which are certainly very complex.

88. Also so far the management of marine and fisheries resources has not yet fully complied with all applicable methods and provisions, thus causing damage and losses to fish resources and marine ecosystems. Various illegal fishing and destructive behaviors that can be detrimental such as IUU Fishing, fishing with bombs and poisons as well as the taking of coral reefs, illegal mining of sand in the sea. Another behavior is the destruction of mangroves, B3 waste disposal is still ongoing, so more intensive and integrated supervision is needed with related agencies so that the level of damage and losses can be minimized. Some of the obstacles identified as potential obstacles in the management of marine fisheries resources are:

- a. Problems with the biophysical condition of the coastal and marine waters which have not received much attention as a major factor in the development of the marine fisheries sector
- b. Problems with social and economic conditions of the community in coastal and marine areas still receiving less attention, especially from the local government
- c. The formal government institutions that is still sectoral and human resources in the field of fisheries that are not yet optimal in performing their functions and duties as a result of the limited skills and facilities of the field infrastructure
- d. Regional physical resources (infrastructure) which are still lacking
- e. Lack of infrastructure support in supporting business improvement through the application of fisheries production science and technology
- f. The partnership system between capital owners and financial institutions has not yet been developed with the management of marine fisheries resources (local communities).

89. Given that, with the large potential of marine and fisheries resources owned, since a few years ago the Provincial Government of East Kalimantan through the Provincial and District/City Fisheries Office in East Kalimantan has developed a monitoring concept known as a monitoring, control and surveillance system. They have formed several supervisory groups, or a community-based supervision system (*Siswasmas*), supervision by patrol boats and other surveillance equipment.



**Table 24.** Number of fishing gears in East Kalimantan Province (Province DKP)

Regency/City	Trawl	Danish seine	Purse seine	Gill nets	Lift net	Fishing line	Trap	Collecting tools	Total
<b>1. Paser</b>	1 299.2	-	1 528.8	2 559	-	311.1	1 426.1	530	7 654.2
<b>2. West Kutai</b>	-	-	-	-	-	-	-	-	-
<b>3. Kutai Kartanegara</b>	1 529.1	-	90	5 150	-	2 219.1	5 940.2	645	15 573.4
<b>4. East Kutai</b>	1 174	-	-	1 374	-	1 540.0	598.6	721	5 407.6
<b>5. Berau</b>	1 616.2	-	49	1 233	-	2 054.4	968.2	491.7	6 412.5
<b>6. North Penajam Paser</b>	357.7	-	50	2 202	-	276.1	689.1	473.5	4 048.6
<b>7. Mahakam Hulu</b>	-	-	-	-	-	-	-	-	-
<b>8. Samarinda</b>	-	-	-	-	-	-	-	-	-
<b>9. Balikpapan</b>	741.9	-	12	1 073	-	487.6	1 273.0	1 530.0	5 117.5
<b>10. Bontang</b>	-	-	23	486	-	2 824.1	1 287.0	1 247.0	5 867.1
<b>Total 2015</b>	<b>6 718.1</b>	<b>-</b>	<b>1 752.8</b>	<b>14 077.0</b>	<b>-</b>	<b>9 712.6</b>	<b>12 182.2</b>	<b>5 638.2</b>	<b>50 080.9</b>
2014	255	2 219.0	247	13 562.0	1 671.0	7 782.0	4 666.0	253.5	33 403.0
2013	255	2 220.0	240	13 429.0	1 709.0	8 789.0	5 855.0	256.9	41 535.0
2012	255	255	247	16 170.0	2 457.0	9 353.0	6 307.0	303.4	41 366.0
2011	255	255	297	15 771.0	2 604.0	9 199.0	6 183.0	275.7	41 751.0
2010	209	209	241	19 327.0	3 712.0	13 584.0	20 777.0	-	65 143.0

### 3.2.5.1 Balikpapan

90. Marine fisheries production in the city of Balikpapan is 3 831 tonnes. From this production, marine fisheries provide a production value of IDR 108.88 billion. Meanwhile, inland fisheries (aquaculture ponds, ponds, etc.) provided production of 411.76 tonnes and the production value reached IDR 9.60 billion. Soft-shelled crabs (*Scylla spp*) weighing less than 150 grams accumulate in many coolers of traders and collectors in Balikpapan, East Kalimantan. Soft-shelled crab collectors were forced to pile up the commodity up to seven tonnes with a value of around IDR 1 billion. Traders buy soft-shelled crabs from dozens of farmers. After the issuance of the Minister of Maritime Affairs and Fisheries Regulation No. 1/PERMEN-KP/2015 (MMAF Decree No. 1/2015) concerning catching lobster (*Panulirus spp*), crabs (*Scylla spp*), and crab (*Portunus pelagicus spp*), traders do not send small size soft-shelled crabs outside Balikpapan. When the Circular Letter No. 18/MEN-KP/I/2015 was issued regarding the enactment of the MMAF Decree No. 1/2015, it was also felt that it had not provided a way out. Traders hope the government will give the opportunity to spend this existing one. Or the weight requirement is reduced to 80 grams to spend the existing stock. Many collectors of soft-shelled crabs already collect soft-shelled crabs from farmers of below standard size. When this MMAF decree 1 is published and follows a Men-KP circular, it is impossible to return the crabs that have been purchased so that they are forced to be stored in refrigerated storage so that they are not damaged while hoping for a way out. Sultan Aji Muhammad Sulaiman Sepinggan Airport in Balikpapan is the exit for this type of crab. Soka crabs have markets in Jakarta, Surabaya, Semarang and overseas, such as Singapore and Hong Kong. Substandard soka crab buildup is estimated at up to 63 tonnes. The MMAF Decree No. 1/2015 regulates crabs that can be caught have carapace more than 15 centimeters. Following that, the circular gave the opportunity for soft-shelled crabs to be caught with a size of more than 150 grams. This circular was only valid throughout 2015. High demand for soft-shelled crabs makes the production of pond farmers also high. Fish farmers, who plunge into the soft-shelled crab pond business, mostly use traditional technology which in general still uses bamboo. Traditional farmers harvest only 50-60 grams. Only one farmer in Balikpapan has better and more advanced technology. Moreover, this small size is preferred by the market. The MMAF Decree No.1/2015 forbids the capture of mangrove crabs with carapace widths that have not reached 15 centimeters, crabs below 10 centimeters, and lobster shrimp with shells of less than 8 centimeters. Permen also prohibits the capture of this type of animal that is laying eggs. The Minister of KP later issued his circular based on weight as a transition before Permen The MMAF Decree No. 1/2015 took full effect. However, even though the Decree No. Permen 1/2015 and a circular were issued, efforts to send crabs, lobsters, and crabs that were not yet in size were still ongoing. Not surprisingly, the Fish Quarantine Quality and Safety Control Fish Quarantine Agency in Balikpapan is still repeatedly thwarting the shipment, which is classified as forbidden. The quarantine agency noted, there were 14 failures of a number of collectors who still sent shipments in the 23–27 January 2015. Basically entrepreneurs, collectors, and farmers also knew because there had been socialization before the MMAF Decree No. 1/2015 came out.

### 3.2.5.2 Bontang City

91. Utilization of the potential fish resources in coastal and marine waters in 2011 reached a total production of 10 234.90 tonnes with a production value of IDR 447 883 006 000. Important economical fish species produced from capture fisheries in the same year were skipjack (728.4 tonnes), tuna (1,181.8 tonnes), bloating (585.4 tonnes) and shrimp, crab and sea cucumbers (597 tonnes). Capture fisheries production centers are in the area of Tanjung Laut Indah, Berbas Pantai, Tanjung Limau and Loktuan. The production of marine aquaculture (floating and floating karamba) and inland/public waters (ponds) including grouper, snapper, rabbits fish, jacks trevellers, goldfish, tilapia and catfish reached 7 962.2 tonnes (50.32 percent of the total aquaculture production) and seaweed production of 7 860.8 tonnes of wet weight (49.68 percent). Aquaculture production centers are located in the Bontang Kuala region, Tanjung Laut Indah, Berbas Pantai, Mount Elai, Loktuan, Sekaming, Guntung and Canaan.

92. The amount of capture fisheries and aquaculture production has not been able to meet the demand for consumption in Bontang City, although the total amount of fishery production in 2012 tended to increase from the previous two years, namely 2010. In 2012 the amount of fishery production (excluding seaweed) reached 26 057.9 tonnes (consisting of 10 234.9 tonnes from capture fisheries and 15 823 tonnes from aquaculture consisting of 7 962.2 tonnes of fish, shrimp, molluscs and 7 860.8 tonnes of seaweed commodities), while in 2010, total fishery production reached 11 386.6 tonnes (consisting of 8 384.6 tonnes from capture fisheries and 3 002 tonnes from aquaculture). The amount of increase in fishery production including seaweed commodities during the period of 2010–2012 amounted to 14 671.3 tonnes. This increase in production has not been able to offset the increase in fish consumption in the Bontang City region, which increased by 46.43 percent (from 103.6 to 193.40 kg per capita) during the period 2006–2010.

93. In 2017, the number of capture fisheries households in Bontang City reached 3 181 households, all of which are marine fisheries households. This number has increased compared to the previous year which amounted to 3 174 marine fisheries households. Capture fisheries production for the marine fisheries subsector also experienced an increase in 2017 which was 20.77 thousand tonnes, this value increased by 3.09 percent compared to the previous year. The Bontang City area which is located on the coast is South Bontang and North Bontang so that capture fisheries production is concentrated in these two regions with relatively similar distribution levels. Based on the type of biota in marine fisheries, rabbit fish (Lingkis) is the type of marine biota that has the most amount of production in the City of Bontang in 2017, amounting to 3.21 thousand tonnes. This value has increased compared to the previous year which was 2.42 thousand tonnes. Next in the next sequence are the Karai and Skipjack Tuna with a total production of 1.62 thousand tonnes and 1.49 thousand tonnes, respectively.

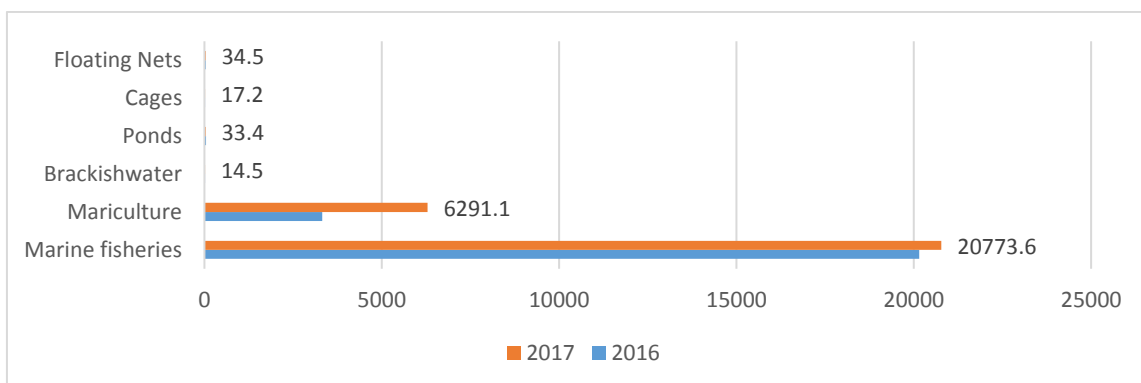
94. The aquaculture sector also contributed a significant amount of income to the economic improvement in Bontang City. The number of households involved in aquaculture in 2017 is 652 households. This number is relatively lower compared to the previous year which reached 1 059 households. Marine culture still dominates with 269 households, followed by pond and floating net cultivation of 156 and 105 households respectively. The number of aquaculture farm households according to the large

category of business where in 2017 in general households cultivated less than 5 ha. The number of households seeking fishpond aquaculture with a category of less than 2 ha is 41 households spread across North Bontang and South Bontang Districts. Whereas those working in the 2–5 ha category are 4 households whose value has decreased compared to the previous year of 9 households.

95. The number of pond aquaculture households according to their large business category in 2017 in general households are grouped into four business categories namely <0.1 ha, 0.1–0.3 ha, 0.4–0.5 ha, and >0.5 ha. The largest number of households that seek pond aquaculture with a category of less than 0.1 ha is 117 households spread across North Bontang, West Bontang and South Bontang Districts. While the smallest households that endeavor with a category of more than 0.5 ha are as many as 5 households. Its value has decreased compared to the previous year by 44 households.

96. Aquaculture production in 2017 increased compared to the previous year which was 6.4 million tonnes. Its production is dominated by marine culture of 6.2 million tonnes, this means that more than 90 percent of aquaculture production comes from marine aquaculture. This type of marine culture which is the biggest contributor to overall production is seaweed commodity. Meanwhile, the contribution from other types of cultivation was less than 10 percent. The production of aquaculture ponds that contributed 14.5 tonnes in 2017 came from the contribution of milkfish commodities by 6.1 tonnes, White shrimp 4.5 tonnes and also tiger shrimp by 3.9 tonnes. This production value relatively decreased compared to the previous year which was 14.7 tonnes.

97. Pond aquaculture production which accounted for 33.4 tonnes in 2017 came from the contribution of carp commodities amounting to 1.4 tonnes, 2.2 tonnes of tilapia, 1.4 tonnes of gourami, 27.6 tonnes of catfish and other fishes 0.8 tonnes. This production value relatively decreased compared to the previous year which was 41.70 tonnes. Cage aquaculture production which contributed 17.2 tonnes in 2017 came from the contribution of 0.6 tonnes of tilapia, 15.8 tonnes of catfish and 0.8 tonnes of other fish. This production value relatively increased compared to the previous year which was 13.7 tonnes. Production of floating net aquaculture which contributed 34.5 tonnes in 2017 came from grouper commodity contributions of 16.6 tonnes, catfish by 8.9 tonnes, Pompano by 8.1 tonnes and other fish by 0.9 tonnes. This production value relatively increased compared to the previous year which was 39.07 tonnes.



**Figure 5.** Fisheries production (tonnes) according to subsector in Bontang City in 2016 2017

98. Supporting facilities for fishing business can be seen from two indicators, namely the number of boats and also the number of fishing gear in Bontang City. Boat/ship are distinguished according to its type are boats without motor, outboard motorboats and motor boats. In 2017 the number of non-motorized boats was 117, outboard motorboats were 944 and 487 motorboats. While the distribution of the number of boats/ships is proportional to the location of the coastal area of a district, in this case in the City of Bontang, District of South Bontang and North Bontang.

99. The number of fishing equipment in Bontang City in 2017 was 2 534 units, where the number is spread in South Bontang by 1 341 units and North Bontang by 1 193 units. Types of fishing gear in Bontang City include ring trawl, gill nets, angkat nets, fishing rods, traps, clam collecting tools, sea cucumber collectors, and others. The largest number of fishing gear is traps, in 2017 the number was 1 067 units this number increased when compared to the previous year which was 1 051 units. While the lifting net is a fishing gear of 14 units is the smallest number owned by the fishing community in the City of Bontang.

### **3.2.5.3 Kutai Kartanegara Regency**

100. The area of Kutai Kartanegara Regency (Kukar), East Kalimantan (East Kalimantan) is quite large, namely 27 263.10 km<sup>2</sup> with a water area of approximately 4 097 km<sup>2</sup> which is divided into 18 districts. Each of these districts has tremendous potential, one of them is in Muara Badak Subdistrict which is between the Makassar Strait and Muara Berau. The sub-district is also one of the largest and most promising marine biota producing regions, such as the abundance of fisheries to the Red and Black Mangrove Crabs.

101. One of the four crab collectors on Jl. Kapitan RT 11 Muara Badak Ilir, it appears that the crab fishermen were alternately waiting for a queue of weighing catches made by the main collectors. After weighing the crabs, the parent collectors make payment transactions, and the results are extraordinary, reaching millions of rupiah. The crabs are directly sorted or separated which small and large size crabs fit the classification of market demand by the employees. After the separation process takes place, followed by the binding of crabs and then packed into cardboard ready to be exported to Jakarta to Batam City.

102. The crab collector group runs a business that has been going on since 2001 and started as a crab pond fisherman. At present there are 20 collectors groups whose average catch is taken from ponds. In one day managed to collect 1 ton of crabs, even more when the harvest season arrives to reach 2.5 tonnes per day. In the harvest season traders can accommodate 2.5 tonnes and the lowest 0.5 tonnes. Traders must spend a significant amount of money to buy the catch of fishers. In the harvest season, traders spend up to IDR 250 million, but if there are less, around IDR 50 million to buy crabs from fishermen. There is still market potential in local areas such as Balikpapan, Samarinda, Tenggarong and Muara Badak itself. The marketing of new crab exports touched Jakarta and Batam City. The marketing of crabs in the local area reaches 700 kg, while demand out of cities such as Jakarta and Batam with sizes ranging from 0.2 kg to 0.7 kg sent via airplane cargo. As for the prices that are set outside the city areas vary greatly according to market demand, even now the price of crabs has dropped to IDR 55 thousand/kg, the size of 0.2 kg/fishhead. While the size of 0.7 - 1.0 kg/fish reaches IDR 190 thousand/kg. The crab catches obtained are quite abundant, but still

encounter obstacles in the form of venture capital difficulties to purchase crab fishing gear.

### 3.2.6 West Nusa Tenggara Province

103. West Nusa Tenggara Province (NTB) consists of two large islands namely Lombok and Sumbawa. NTB has an ocean area of 29 159.04 km<sup>2</sup> with a coastline of ± 2 332.80 km. Biophysically, NTB Province has a high potential of coastal and marine resources. NTB Province has coral waters around 3 601 km<sup>2</sup> and has a coastal area of 326 villages.

104. The number of fishermen in NTB in 2017 was 65 690 people. This number increased when compared to 2013 which was only 64 045 people. The number of boats/ships has also increased where in 2016 there were 23 722 units. In terms of fisheries production, it has fluctuated from year to year and in 2017 it was 179 138 tonnes. The complete development of the number of fishermen, boats/fisheries and fisheries production in NTB is presented in **Table 25**.

**Table 25.** Development of the number of fishermen, number of boats/ships and capture fisheries production in NTB Province in 2013–2017

No.	Year	Fishers (person)	Boat/vessel (unit)	Production (tonnes)
1	2013	64 045	22 976	142 187
2	2014	64 631	23 222	227 084
3	2015	65 778	23 863	208 332
4	2016	65 690	23 722	170 166
5	2017	65 690	23 722	179 138

Source: NTB Province marine and fisheries profile book in 2018

105. Data on the potential of capture fisheries in NTB for FMA 573 is dominated by large pelagic fish, small pelagic fish and demersal fish. Meanwhile, FMA 713 is dominated by large pelagic fish, reef fish and small pelagic fish. For lobster fishing potential it also looks quite large where in FMA 573 has a potential of 844 tons/year while in FMA 713 has a potential of 1,020 tonnes/year (**Table 26**).

**Table 26.** Potential data and level of utilization of fish resources in FMA 573 and FMA 713

Type of fish	FMA 573		FMA 713	
	Potential (tonne/year)	Utilization rate (%)	Potential (tonne/year)	Utilization rate (%)
<b>Small pelagic</b>	294 092	0.91	104 546	0.61
<b>Big pelagic</b>	505 942	0.78	419 342	0.86
<b>Demersal fish</b>	103 501	0.96	77 238	1.04
<b>Reef fish</b>	8 778	1.36	365 420	0.34
<b>Penaeide shrimp</b>	6 854	1.36	37 268	1.70
<b>Lobster</b>	844	0.54	1 020	1.40
<b>Crab</b>	465	1.05	5 016	1.59
<b>BS crabs</b>	659	0.64	6 740	1.52
<b>Squid</b>	6 556	1.40	10 010	1.70
<b>Total</b>	<b>929 330</b>		<b>1 026 599</b>	

**3.2.6.1 Central Lombok Regency**

106. Geographically, Central Lombok Regency is flanked by West Lombok Regency and East Lombok Regency. The number of villages in the Central Lombok Regency is 139 villages with 12 sub-districts where 4 sub-districts are coastal sub-districts (33.3 percent) with 11 coastal villages (7.9 percent).

107. The fisheries sector is one sector that supports regional development, where the Central Lombok Regency has a sea area of 975 km<sup>2</sup>. Gerupuk area, Pujut sub-district is an area in developing superior potential of the fisheries sector which is included in the minapolitan development zone in Central Lombok.

108. The number of fishermen in Central Lombok Regency in 2014–2017 was 9 875 people. The fishing fleet used in general is outboard motors. Data from the agency noted that in this Regency there were 97 fishing vessels in the form of motorized boats, 1 320 outboard motors and 30 units of motor boats (**Table 27**). Fishery production has fluctuated but in 2017 it increased compared to previous years. In 2017 fishery production reached 2 370.15 tonnes (**Table 28**).

**Table 27.** Data on the number of fishers and fishing fleets in Central Lombok District in 2014–2017

Year	Total fishers	Fishing gears		
		Boat without motors	Outboard motor	Motorized boats
<b>2014–2017</b>	9 875	97	1 320	30

Source: NTB Province Marine and fisheries potential profile, 2018

**Table 28.** Total marine fishing production in Central Lombok Regency 2013 – 2017

Total production (Tonnes)				
2013	2014	2015	2016	2017
<b>1 748.80</b>	1 377.90	1 648.80	1 662	2 370.15

Source: NTB Province Marine and fisheries potential profile, 2018

**3.2.6.2 East Lombok Regency**

109. East Lombok has an area of 2 679.88 km<sup>2</sup> with land area of 1 605 km<sup>2</sup> and sea area of 1 047 km<sup>2</sup>. East Lombok Regency has quite diverse fisheries potential. Some areas are areas for pears mussel cultivation. This area is also a producer of quite a lot of fish and seaweed cultivation is managed by people in the coastal area.

110. The number of fishermen in East Lombok Regency in 2014–2017 totaled 16 415 people. The fishing fleets used is motorboats, outboard motors and non-motorized boats. Based on data from the department, there are 429 units of motorized boats, 3 119 outboard motors and 347 motorboats (**Table 29**). From this data it appears that fishermen in East Lombok Regency generally use outboard motors as a fishing fleet.

**Table 29.** Data on the number of fishermen and fishing fleets in East Lombok Regency, 2014–2017

Year	Total fishers	Fishing gears		
		Boat without motor	Outboard Motor	Motorised boats
<b>2014–2017</b>	<b>16 415</b>	<b>429</b>	<b>3 119</b>	<b>347</b>

Source: NTB Province Marine and fisheries potential profile, 2018

111. Fisheries production in East Lombok Regency is quite large. The data shows that fisheries production has increased from year to year. In 2013 the number of fishing production was 10 543.90 tonnes and increased to 15 640.27 tonnes in 2017 (**Table 30**). Based on the commodity, the largest amount of fisheries sector production is from the cultivation of seaweed. It can be seen in **Table 31** that seaweed production is quite high compared to other commodities such as fish. Seaweed production in 2014 was 65 082 tonnes and in 2017 it was 44 689 tonnes. Based on data from the Ministry of Maritime Affairs and Fisheries (2019), seaweed production in NTB generally experienced an increase seen from 2005 to 2016. In 2016, seaweed production in NTB reached 40 601 tonnes/year.

**Table 30.** Total marine fishing production in East Lombok Regency, 2013–2017

Total production (tonnes)				
2013	2014	2015	2016	2017
<b>10 543.90</b>	13 633.9	14 331.10	14 316	15 640.27

Source: NTB Province Marine and fisheries potential profile, 2018

**Table 31.** Capture fisheries production by type of commodity in East Lombok Regency, 2014–2017

Year	Total production (tonnes)					
	Seaweeds	Jellyfish	Scad	Indian mackarel	Mackerel	Sardine
<b>2014</b>	65 082	31 330	9 714	8 337	6 272	6 567
<b>2015</b>	47 698	33 545	9 736	8 421	6 427	6 880
<b>2016</b>	40 601	8 591	10 358	7 648	6 666	7 026
<b>2017</b>	44 689	10 432	11 417.63	8 409	7 216	7 473

Source: NTB Province Marine and fisheries potential profile, 2018

**Table 32.** Seaweed production in NTB Province, 2005–2016

Fisheries Management Areas	Year											
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Sub total	<b>491</b>	<b>367</b>	<b>1 043</b>	<b>889</b>	<b>48</b>	<b>17</b>	<b>799</b>	<b>2 649</b>	<b>7 878</b>	<b>65 082</b>	<b>47 698</b>	<b>40 601</b>
<b>FMA-RI 573</b>	240	15	100	20	48	16	402	1 351	4 018	33 192	24 326	20 707
<b>FMA-RI 713</b>	251	352	943	869	-	1	397	1 298	3 860	31 890	23 372	19 894

Source: KKP, 2019 (non publish)



### 3.2.7 East Nusa Tenggara Province

112. East Nusa Tenggara Province has a coastline of  $\pm 7\,500$  km and sea area reaches 15 141 773.10 ha. This potential is also supported by mangrove forests of  $\pm 51\,854.83$  ha (11 species) and coral reefs of  $\pm 160$  species and 17 families. This makes NTT Province having a very high fishery potential. Fisheries households registered in NTT in 2013 were 42 685 with a total of 194 684 fishermen ( $\pm 9.9$  percent of the total population of coastal villages). Based on data from the Department of Maritime Affairs and Fisheries, in 2015 there were 53 967.0 fishermen consisting of full fishermen, main part-time fishermen and additional part-time fishermen. The highest number of fishermen is in East Flores Regency.

**Table 33.** Fishers data in the Province of East Nusa Tenggara, 2015.

Regency/City	Total	Fisherman type		
		Fulltime fishers	Major part time fishers	Minor part time fisher
Total	<b>53 967.0</b>	<b>22 681.0</b>	<b>16 438.0</b>	<b>14 848.0</b>
West Sumba Regency	1 550.0	422.0	496.0	632.0
East Sumba Regency	2 502.0	1 234.0	751.0	517.0
Kupang Regency	2 447.0	1 009.0	940.0	498.0
South Central Timor Regency	1 154.0	949.0	121.0	84.0
North Central Timor Regency	678.0	171.0	262.0	245.0
Belu Regency	545.0	323.0	106.0	116.0
Alor Regency	4 818.0	1 833.0	1 947.0	1 038.0
Lembata Regency	3 521.0	1 115.0	784.0	1 622.0
East Flores Regency	7 688.0	4 830.0	1 881.0	977.0
Sikka Regency	4 637.0	2 364.0	843.0	1 430.0
Ende Regency	5 590.0	2 139.0	2 261.0	1 190.0
Ngada Regency	1 476.0	910.0	277.0	289.0
Manggarai Regency	3 277.0	983.0	1 509.0	785.0
Rote Ndao Regency	2 555.0	650.0	775.0	1 130.0
West Manggarai Regency	1 067.0	449.0	240.0	378.0
Kupang City	3 206.0	1 226.0	1 094.0	886.0
Central Sumba Regency	547.0	134.0	122.0	291.0
Nagekeo Regency	857.0	473.0	299.0	85.0
East Manggarai Regency	997.0	235.0	421.0	341.0
Sabu Raijua Regency	2 046.0	327.0	786.0	933.0
West Sumba Daya Regency	1 966.0	640.0	496.0	830.0
Malaka Regency	843.0	265.0	27.0	551.0

Source: Data processed from the NTT Provincial Fisheries and Maritime Affairs Office, 2015.

113. The potential of capture fisheries has a sustainable potential (MSY) of 388.7 tonnes/year. Some economically important types of fish are pelagic fish (tuna, skipjack, mackerel, laying, *lemuru*, bloated); demersal fish (grouper, yellow tail, snapper, red snappers, etc.); and other commodities (lobster, squid, blood collar, etc.).

114. In addition to fisheries potential, NTT also has seaweed farming potential. Regencies that have developed marine culture are Kupang, Sabu Raijua, Rote Ndao, Alor, Lembata, East Flores, Sikka, East Sumba and West Manggarai Regencies. The superior seaweed community is *Eucheuma Cottonii*, *Eucheuma* Sp. and red algae. The potential land area for seaweed cultivation is 250 000 tonnes dry/year.

115. The fishing fleet consists of motorboats, outboard motors and non-motorized boats. Based on data from the agency, there are 30 902 fishing fleets in NTT consisting of 15 770 boats without motor, 6 752 outboard motors and 8 380 motor boats.

116. The fishing gear used is also quite diverse ranging from trawlers, gill nets, lift nets and fishing rods. The most widely used nets are drift gill nets and stretch fishing lines.

117. Judging from the potential of fisheries, the greatest potential in NTT Province in 2015 was skipjack with production values reaching 14 289.40 tonnes, tembang fish 11 294.97 tonnes and laying fish of 10 244.12 tonnes. The rest are in the figure below 10 000 tonnes including the production of anchovy and lemuru only amounting to 2 950.28 tonnes and 2 755.51 tonnes. The amount per quarter reached 118 827.3 tonnes as shown in **Table 34**.

**Table 34.** NTT Province fisheries production per quarter in 2015

Regency/City	Total	Quarters			
		Quarter I	Quarter II	Quarter III	Quarter IV
<b>Total</b>	<b>118 827.3</b>	<b>21 867.9</b>	<b>29 190.8</b>	<b>34 921.4</b>	<b>32 847.2</b>
<b>West Sumba Regency</b>	<b>1 200.7</b>	222.4	412.6	408.6	157.1
<b>East Sumba Regency</b>	<b>12 679.9</b>	1 946.4	2 707.6	3 816.9	4,209.0
<b>Kupang regency</b>	<b>7 475.6</b>	1 443.3	2 039.3	2 235.0	1,758.0
<b>South Central Timor</b>	<b>200.7</b>	56.3	16.1	32.2	96.1
<b>North Central Timor Regency</b>	<b>191.5</b>	41.9	44.5	55.9	49.2
<b>Belu Regency</b>	<b>1 842.5</b>	314.7	425.8	513.4	588.6
<b>Alor Regency</b>	<b>23 015.7</b>	5 439.7	5 896.9	5 997.9	5 681.2
<b>Lembata Regency</b>	<b>6 075.0</b>	1 439.6	1 570.6	1 559.0	1 505.8
<b>East Flores Regency</b>	<b>14 169.2</b>	2 607.2	3 676.1	4 993.7	2 892.2
<b>Sikka Regency</b>	<b>14 696.7</b>	1 250.8	3 379.3	4 947.3	5 119.4
<b>Ende Regency</b>	<b>8 749.2</b>	1 810.2	1 992.6	2 184.0	2 762.4
<b>Ngada Regency</b>	<b>1 189.0</b>	190.7	264.3	373.9	360.0
<b>Manggarai Regency</b>	<b>6 735.5</b>	1 054.2	2 048.5	2 163.3	1 469.6
<b>Rote Ndao Regency</b>	<b>2 933.0</b>	526.9	569.9	749.2	1 086.9
<b>West Manggarai Regency</b>	<b>1 337.4</b>	302.9	311.9	409.0	313.7
<b>Kupang City</b>	<b>8 810.6</b>	1 966.8	1 837.1	1 751.2	3 255.5
<b>Central Sumba Regency</b>	<b>1 981.5</b>	325.3	597.4	607.7	451.1
<b>Nagekeo Regency</b>	<b>1 128.4</b>	192.7	246.7	490.7	198.4
<b>East Manggarai Regency</b>	<b>2 766.2</b>	434.6	714.3	1 129.7	487.5
<b>Sabu Raijua Regency</b>	<b>461.9</b>	70.9	157.6	153.2	80.2
<b>West Sumba Daya Regency</b>	<b>832.9</b>	178.2	211.5	225.6	217.7
<b>Malaka Regency</b>	<b>354.2</b>	52.2	70.3	124.2	107.4

Source: Data processed by the NTT Provincial Fisheries and Maritime Affairs Office, 2015.

#### **4. Priority location of the project pilot sites (Analysis result of pilot project determination according to desk study)**

118. The result of analysis for selecting priority location of pilot project sites according to fish type is presented at the following Table 4.1.1. There are four criterias used for prioritizing selected sites, these are: (a) management strategic value for fish type of it priority, supported by various government program relaed to aquaculture (EAA), RZWP3K (MSP), and Monitoring Program (MCS); (b) support from existing regional government as well as regional development plan; (c) Capacity and regional government expectation in adopting the approach and EAFM/EAA programs for local community and fisherman as well as related stakeholders; (d) support from partner at present time as well as for program plan at the location.

#### 4.1.1 Pilot project location priority analysis for blue-swimming crab fisheries

Province	Production volume	Program/regional government support	Program/central government support	Stakeholder support	Policy support
WEST JAVA					<ul style="list-style-type: none"> <li>□ <b>MSP:</b> RZWP3K Regional Regulation No. 5/2019 of West Java Province</li> <li>□ Regional Regulation of West Java Province No.7/ 2011 on Fisheries Management</li> </ul>
CIREBON	<ul style="list-style-type: none"> <li>• Production volume at 2017 as many as 5 691.04 tonnes</li> <li>• Production volume at 2019 semester I as many as 1 168.99 tonnes</li> <li>• Product price (boiled) IDR 75 000–80 000/kg</li> <li>• Processed price: Jumbo : IDR 350 000/kg Body : 150 000/kg Leg : 100 000/kg</li> </ul>	<ol style="list-style-type: none"> <li>1. There is big Joint Business Group (KUBE) in Cirebon</li> <li>2. The establishment of small team the establishment of preparation team of Sustainable Blue-swimming crab Fisheries Management at Marine and Fisheries Agent West Java Province</li> <li>3. Facilitating program at marine</li> </ol>	<p><b>MCS (PSDPK) :</b> Supervisory and socialization program of IUU Fishing</p> <p><b>EAFM (PSDI):</b> It is included the location of strategy harvest arrangement of blue-swimming crab</p> <p><b>MSP (KKHL):</b> Review of Management and Zonation Plan of conservation area</p>	There is initiation of partnership activity (characterization, identification of stakeholders), management capacity empowerment, action plan arrangement, implementation of action plan, institutional empowerment) by APRI	Head of Regency Regulation No. 2/2016 on Coast Border at Regency of Cirebon

		<p>and fisheries agent business group</p> <p>4. Mangrove rehabilitation in 2017 as many as 25 000 trees</p> <p>5. There is Coastal Community Economical Empowerment Program, Coastal Community Facilitating Program, Facilitating Program on Marine and Fisheries Business Group.</p> <p>6. There is Trader-Processor Group (POKLAHSAR) which is a group of fisheries product processor and trader</p> <p>7. There is inspector society group (POKMASWAS) which is a community that conduct supervisory, management and</p>			
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		utilization of marine and fisheries resources			
CENTRAL JAVA					<ol style="list-style-type: none"> <li>1. RZWP3K Regional Regulation No. 13/2018 of Central Java Province</li> <li>2. Central Java Province Regional Regulation No.3/2005 on Fisheries Business Permit</li> <li>3. Central Java Governor No. 15/2018 on Catch Fisheries Business Permit in Central Java Province</li> <li>4. Central Java Governor No. 33/2017 on Fisheries Management of Lobster, Crab and Blue-</li> </ol>

					swimming crab at Central Java Province
DEMAK	Production Volume: 3,270 kg/day Price IDR 70,000-85,000/kg	<ol style="list-style-type: none"> <li>1. Pilot village of blue-swimming crab fisheries management has been developed (at Betahwalang)</li> <li>2. Initiation of blue-swimming crab protected area at di Betahwalang (Village Head Decree)</li> <li>3. Implementation of Action Plan of Blue-swimming Crab Fisheries Management</li> <li>4. LP2RL has conducted training on data recording for collectors, in collaboration with Marine and Fisheries Agent, RARE and Diponegoro University UNDIP)</li> <li>5. Provincial Marine and Fisheries Agent has provided fish trap gear as many as 5 000 units</li> </ol>	<p><b>MCS (PSDKP):</b> Supervising and socialization of IUU Fishing</p> <p><b>EAFM (PSDI):</b> It is included the location of Strategy Harvest Arrangement of blue-swimming crab</p> <p><b>MSP (KKHL):</b> Review of Management and Zonation Plan of conservation area</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> APRI has been conducting MSC pre-assessment program at this location</li> <li><input type="checkbox"/> Mangrove rehabilitation conducted by PMI</li> <li><input type="checkbox"/> RARE</li> <li><input type="checkbox"/> UNDIP</li> <li><input type="checkbox"/> PMI</li> <li><input type="checkbox"/> Netherland (mangrove rehabilitation)</li> </ul>	<ol style="list-style-type: none"> <li>1. Betahwalang Village Regulation No: 06/2013 on Blue-swimming crab Fisheries Management of Betahwalang Village</li> <li>2. There is Sustainable Blue-swimming crab Fisheries Management Institution (LP2RL)</li> </ol>

		6. Fisheries Agent of Demak has conducted study of mini plant at Betahwalang Village			
EAST JAVA					<p><b>MSP:</b> RZWP3K Regional Regulation No. 1/2018 of East Java Province.</p> <p>Guideline of Marine and Fisheries Sector Permit Grant in East Java.</p> <p>Ratification process of Governor Regulation on Integrated Underwater Development (IUD), that covers: resource rehabilitation, andon, environmental friendly API, fishing port, fisherman land certification, etc.</p> <p>East Java Governor Regulation No. 53/2016 on Guideline of Marine and</p>



					Fisheries Sector Permit Grant in East Java.
PAMEKASAN	Production Volume: 234.4 tonnes Production Value: IDR 11 923,204 000	<ol style="list-style-type: none"> <li>1. Community based blue-swimming crab fisheries resources management (training)</li> <li>2. Implementation of Blue-swimming crab Fisheries Management Action Plan (included in RPJMD)</li> </ol>	<p><b>MCS (PSDKP):</b> Socialization of Ministry of Marine and Fisheries Regulation 56/2016</p> <p><b>EAFM (PSDI):</b> It is included the location of Harvest strategy arrangement of blue-swimming crab</p> <p><b>MSP (KKHL):</b> Review of Management and Zonation Plan of conservation area (Sumenep), seven conservation area (Sumenep, Sidoarjo, Probolinggo, Banyuwangi, Lamongan.</p> <p><b>DJPB :</b> blue-swimming crab seed stocking under local demand</p>	<p><b>APRI</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Pre-Assessment MSC</li> <li><input type="checkbox"/> Creating crab apartment.</li> <li><input type="checkbox"/> Restocking</li> </ul> <p><b>UNDP</b></p>	

#### 4.1.2 Pilot project location priority analysis for snapper and grouper fisheries

Province	Production volume	Program/regional government support	Program/central government support	Stakeholder support	Policy support
EAST JAVA					<p><b>MSP:</b> RZWP3K Regional Regulation No. 1/2018 of East Java Province.</p> <p>East Java Governor Regulation No. 53/2016 on Marine and Fisheries Sector Permit Grant in East Java.</p>
LAMONGAN	<p>Production Volume: 234.4 ton</p> <p>Production Value: IDR 11 923 204 000</p>	<p>Production infrastructure support for snapper and grouper culture, e.g. pond and net cage</p>	<p><b>MCS (PSDKP) :</b> Supervisory and socialization</p> <p><b>MSP (KKHL) :</b> Review of Management and Zonation Plan of conservation area</p>	<p>The Nature Conservancy (TNC) supports program : Snapper and Grouper MSC Pre-Assessment, data collection</p> <p>SFP conducts fisheries data collection for snapper and grouper</p>	

#### 4.1.3 Pilot project location priority analysis for lobster fisheries

Province	Production volume	Program/regional government support	Program/central government support	Stakeholder support	Policy support
West Nusa Tenggara	<p>2013 = 168 tonnes 2014 = 56 tonnes 2015 = 31 tonnes 2016 = 12 tonnes 2017 = -</p> <p>Seed production : 2013 = 0.237 tonnes 2014 = 0.452 tonnes 2015 = 0.237 tonnes 2016 = - 2017 = -</p>				<p><b>EAA:</b> Policy of West Nusa Tenggara Governor in supporting the prohibition of lobster seed trading outside the province and the development of lobster culture in West Nusa Tenggara.</p> <p><b>MSP:</b> RZWP3K Regional Regulation No 12/2017. West Nusa Tenggara Province. Regional Regulation of West Nusa Tenggara Province No. 2/2008 on Coastal Area and Small Islands Management</p>
EAST LOMBOK			<p><b>EAA:</b> Program support from DJPB MoMAF for job changing from lobster seed catch into seaweed, snubnose pompano and grouper culture, equals to 22 billions in 2017,</p>	<p><b>EAA:</b> Support from Disaster Management National Bureau (BNPB) (in relation with Lombok earthquake) such as floating net package to support lobster culture activities</p>	<p><b>MSP:</b> East Lombok is a conservation area in West Nusa Tenggara RZWP3K</p>

			showing inadequate result. The obstacles were grouper juveniles (seeds) and the market price for pompano and seaweed were very low		
CENTRAL LOMBOK			<p><b>EAFM:</b> Budget allocation for legal sized lobster catch and other fish species using environmental friendly fishing gear. Objective: fisherman avoids taking lobster seeds</p> <p><b>EAA:</b> Support from DJPB to changing activity from lobster seed catch to seaweed and grouper culture in 2017</p>		<p><b>MSP:</b> Establishment of lobster spawning ground protection location in RZWP3K of West Nusa Tenggara Province</p>

#### 4.1.4 Pilot project location priority analysis for seaweed culture

Province	Production volume	Program/regional government support	Program/central government support	Stakeholder support	Policy support
West Nusa Tenggara		<ul style="list-style-type: none"> <li>☐ <b>MSP:</b> RZWP3K Regional Regulation No 12/2017. West Nusa Tenggara Province</li> <li>☐ Regional Regulation of West Nusa Tenggara Province No. 2/2008 on Coastal and Small Islands Area Management</li> </ul>			
<b>EAST LOMBOK</b>		<ol style="list-style-type: none"> <li>1. Regional Government Program for seaweed processing factory in 2015 and mid 2018 has been operating</li> <li>2. Lombok is one of national seaweed center in seaweed roadmap under President Decree</li> </ol>	<ol style="list-style-type: none"> <li>1. Directorate of Seedling develops seed nursery using tissue culture method in order to support on site programs</li> <li>2. Carrying capacity analysis has been conducted at Sarewe and Gerupuk Bay and so that both area can be pilot area for other location (FAO–Blue Economy Project with DJPB).</li> <li>3. Appropriate with output activity at point 2.4.1 on</li> </ol>		

			<p>Pilot Inovative Seaweed and multi tropic aquaculture (DGCF Aquaculture)</p> <p>4. Related with Fisheries Management Area (FMA) strengthening, appropriate with output at point 2.2.1 (Implementation of FMA Committee) (SDI, DGCF)</p> <p>5. Directorate of Seedling develops seed nursery using tissue culture method in order to support on-site programs</p>		
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#### 4.1.5 Pilot project location priority analysis for mangrove crab

Province	Production volume	Program/regional government support	Program/central government support	Stakeholder support	Policy support
<b>EAST KALIMANTAN</b>					Regional Regulation of East Kalimantan Province No. 7/2009 on Coastal, Marine and Small Islands Resources Management
<b>Bontang</b>	441 tonnes/year	Member of PEMSEA during SDS-SEA implementation	Mangrove rehabilitation by Ministry of Environment and Forestry (KLHK)	CSR support from PT. Badak LNG, PT Pupuk Kaltim,	
<b>Kutai Kertanegara</b>	2,561 tonnes (catch) 800 tonnes (culture) in 2018  Value of 57 billions/year	<input type="checkbox"/> Mangrove Crab culture <input type="checkbox"/> Releasing egged crab by Provincial Marine and Fisheries Agent <input type="checkbox"/> 25 000 ha mangrove planting by Provincial Marine and Fisheries Agent <input type="checkbox"/> Surveillance function has been running well	Mangrove rehabilitation by MoMAF	CSR support from Total EP.	
<b>Balikpapan</b>	Volume : 53 tonnes/year (2018) Value : 0.576 billions/year (2018)	Mangrove forest conservation and rehabilitation		CSR support from Pertamina	

#### 4.1.6 Pilot project location priority analysis for small pelagic fisheries (milkfish, anchovies, sardinella)

Province	Production volume	Program/regional government support	Program/central government support	Stakeholder support	Policy support
EAST NUSA TENGGARA		<ul style="list-style-type: none"> <li><input type="checkbox"/> Regional Regulation No. 4/2007 on Coastal and Marine Area Management</li> <li><input type="checkbox"/> Regional Regulation No. 8/2009 on Retribution of Fisheries Business Permit</li> <li><input type="checkbox"/> East Nusa Tenggara Province Regional Regulation No. 4/2017 on Zonation Plan of Coastal and Small Islands at East-Central Nusa Tenggara Province 2017-2037</li> </ul>			
Alor			Initiation of area improvement of local marine conservaton to be Water Sanctuary (Suaka Alam Perairan - SAP)	Mangrove rehabilitation by Indonesian Redcross (PMI)	
East Flores			Initiation of area improvement of local marine conservaton to be		



			Water Sanctuary (Suaka Alam Perairan - SAP)		
Lembatta			Initiation of area improvement of local marine conservation to be Water Sanctuary (Suaka Alam Perairan - SAP)		

#### 4.1.7 Priority location analysis according to commodity

Province	Up to date condition of priority fisheries (volume)	Program/regional government support	Program/central government support	Stakeholder support	Regulation support	Total value
Snapper and grouper						
A. Banten						
<b>1. Serang Regency</b>	30	25	20	10	15	100
B. West Java						
<b>2. Indramayu Regency</b>	30	25	20	10	30	115
<b>3. Karawang Regency</b>	30	25	20	10	30	115
C. Centra Java						
<b>1. Pemalang Regency</b>	30	25	20	10	15	100
D. East Java						
<b>1. Situbondo Regency</b>	30	25	20	10	15	100
<b>2. Lamongan Regency</b>	90	75	60	30	45	300
E. East Kalimantan						
<b>1. City of Bontang</b>	60	50	20	10	30	170
<b>2. City of Balikpapan</b>	30	25	20	20	30	125
Blue-swimming crab						
A. Banten						
<b>2. City of Serang</b>	30	25	20	10	15	100
B. Jabar						
<b>1. Indramayu Regency</b>	30	25	20	10	30	115
<b>2. Cirebon Regency</b>	60	25	40	20	30	175
C. Central Java						

<b>1. Pematang Regency</b>	30	25	20	10	15	100
<b>2. Demak Regency</b>	90	75	60	30	45	300
D. East Java						
<b>1. Pamekasan Regency</b>	60	75	60	20	30	245
Lobster						
E. West Nusa Tenggara						
<b>1. Central Lombok Regency</b>	90	25	20	10	30	175
<b>2. East Lombok Regency</b>	60	75	60	30	30	255
Small pelagic						
F. East Nusa Tenggara						
<b>1. Alor Regency</b>	60	50	20	20	30	180
<b>2. East Flores Regency</b>	90	50	40	10	30	220
<b>3. Lembata Regency</b>	30	50	40	10	30	160
Mangrove crab						
G. East Kalimantan						
<b>1. City of Bontang</b>	30	25	20	20	30	125
<b>2. Kutai Kartanegara Regency</b>	90	50	40	20	30	230
<b>3. City of Balikpapan</b>	30	50	20	20	30	150

## 5. Program indication at selected priority site

### 5.1 Blue-swimming crab commodity of Demak Regency

119. Based on desk study analysis result as well as sites visited, information of four elements on strength, weakness, opportunity and threat was defined. The result is then categorized as presented in **Table 35** below.

**Table 35.**SWOT elements of blue-swimming crab at Demak Regency

Strength	Weakness
<input type="checkbox"/> <b>Catch blue-swimming crab is available during the year</b> <input type="checkbox"/> <b>There is crab catch fisherman</b> <input type="checkbox"/> <b>There is local manager institution (LPPRL)</b> <input type="checkbox"/> <b>Partnership support is strong (association and NGOs)</b> <input type="checkbox"/> <b>Local policy support (Local Regulation/Village Regulation)</b>	<input type="checkbox"/> The decrease of catch (size and volume) <input type="checkbox"/> Blue-swimming crab handling is low/weak <input type="checkbox"/> Mini plant is not available <input type="checkbox"/> No processing employment <input type="checkbox"/> Low awareness from fisherman of blue-swimming crab sustainability <input type="checkbox"/> Blue-swimming crab fisherman does not land catches at fish auction market (TPI)
Opportunities	Threat
<input type="checkbox"/> <b>There is Blue-swimming Crab Mini Plant DED study</b> <input type="checkbox"/> <b>Access and local market need and export</b> <input type="checkbox"/> <b>Program support from both central and regional Government</b> <input type="checkbox"/> <b>Research support from local universities</b>	<input type="checkbox"/> The utilization of arad (Danish seine) <input type="checkbox"/> Discretion of regional government policy <input type="checkbox"/> Buyers disobey regulation

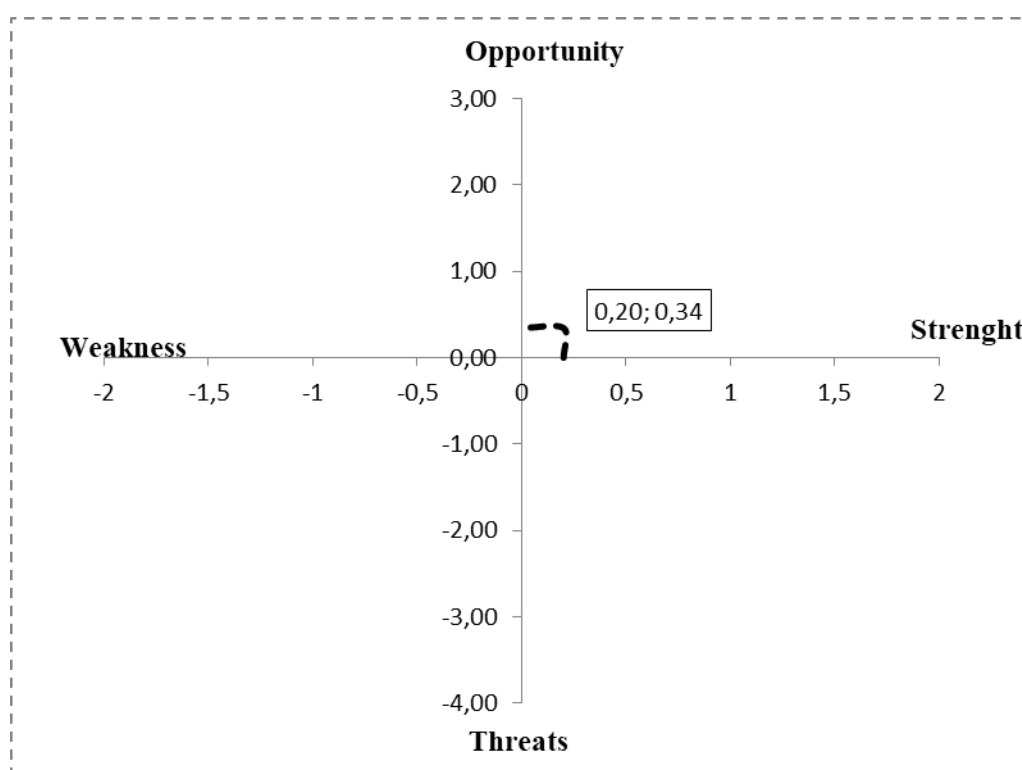
**Table 36.** Blue-swimming crab IFAS (internal factors analysis summary) of Demak Regency

No	Strength	Weight	Scale	Score
1	Catch blue-swimming crab is available during the year	0.06	4.00	0.24
2	There is crab catch fisherman	0.05	3.67	0.20
3	There is local manager institution	0.06	4.00	0.24
4	Local policy support	0.06	4.00	0.24
5	Local policy support	0.05	3.67	0.20
	<b>Total</b>	<b>0.17</b>		<b>1.11</b>
Weakness		Weight	Scale	Score
1	The decrease of catch	0.05	4.00	-0.20
2	Blue-swimming crab handling is low/weak	0.05	3.67	-0.17
3	Mini plant is not available	0.04	3.33	-0.14
4	No processing employment	0.04	3.33	-0.14
5	Low awareness of fisherman of blue-swimming crab sustainability	0.04	3.33	-0.14
6	Blue-swimming crab fisherman does not land catch at Fish Auction Market (TPI)	0.04	3.33	-0.14
	<b>Total</b>	<b>0.18</b>		<b>-0.92</b>

**Table 37.** Blue-swimming crab EFAS (external factors analysis summary) of Demak Regency

No	Opportunities	Weight	Scale	Score
1	Program support from both central and regional government	0.12	3.33	0.40
2	Research support from local universities	0.12	3.33	0.40
3	Program support from both central and regional government	0.14	3.67	0.50
4	Research support from local universities	0.15	4.00	0.62
	<b>Total</b>	<b>0.24</b>		<b>1.92</b>
No	Threat	Weight	Scale	Score
1	The utilization of arad	0.13	2.67	-0.35
2	Discretion of regional government policy	0.16	3.33	-0.54
3	Buyers disobey regulation	0.19	3.67	-0.70
	<b>Total</b>	<b>0.29</b>		<b>-1.58</b>

120. Based on IFAS and EFAS analysis result, selected strategy can be defined in order to implement blue-swimming crab fisheries in Demak Regency, which is SO (Strength-Opportunity), Figure 6. It means this strategy is used to catch and utilize the opportunity of existing blue-swimming crab fisheries by maximizing internal strength of blue-swimming crab fisheries.



**Figure 6.** SWOT diagram of blue-swimming crab fisheries

**Table 38.** Strategy of blue-swimming crab fisheries at Demak Regency

	Strength	Weakness
	<p>S1. Catch blue-swimming crab is available during the year</p> <p>S2. There is crab catch fisherman</p> <p>S3. There is local manager institution (LPPRL)</p> <p>S4. Partnership support is strong (association and NGO)</p> <p>S5. Local policy support (Local Regulation/Village Regulation)</p>	<p>W1. The decrease of catch number (size and number)</p> <p>W2. Blue-swimming crab handling is low/weak</p> <p>W3. Mini plant is not available</p> <p>W4. No processing employment</p> <p>W5. Low awareness from fisherman of blue-swimming crab sustainability</p> <p>W6. Blue-swimming crab fisherman does not land fishes at Fish Auction Maket (TPI)</p>
<p>Opportunities</p> <p><b>O1. There is Blue-swimming Crab Mini Plant DED study</b></p> <p><b>O2. Access and local market absorption and export</b></p> <p><b>O3 Program support from both Central and Regional Government</b></p> <p><b>O4. Research support from local universities</b></p>	<p>SO1. Role empowerment of LPPRL</p> <p>SO2. Collaboration empowerment of Government-Private Sector-University</p> <p>SO3. Synergism of blue-swimming crab fisheries program between central government and local government</p>	<p>WO1. Blue-swimming crab fisheries management through input limitation</p> <p>WO2. Human resources capacity building in blue-swimming crab processing</p> <p>WO3. Mini plant development of blue-swimming crab processing</p> <p>WO4. Facilitating program in order to improve bargaining effort from collectors to processors or exporters</p>
<p>Threat</p> <p><b>T1. The utilization of arad</b></p> <p><b>T2. Discretion of regional government policy</b></p> <p><b>T3. Buyers disobey regulation</b></p>	<p>ST1. Consistence of law enforcement in relation with Arad fishing gear</p> <p>Synergism between LPPRL and blue-swimming crab association (APRI)</p>	<p>WT1. Conservation and rehabilitation of blue-swimming crab habitat</p> <p>WT2. Supervision towards collectors and exporters in order not to collect small sized and egged blue-swimming crab</p>

## 5.2 Lobster commodity of East Lombok Regency

121. Based on desk study analysis result as well as site visit, information of four elements on strength, weakness, opportunity and threat was defined. The result is then categorized as presented in **Table 39** below.

**Table 39.** SWOT elements of lobster at East Lombok Regency

Strength	Weakness
<ul style="list-style-type: none"> <li><input type="checkbox"/> The availability of lobster resource</li> <li><input type="checkbox"/> The availability of lobster seed</li> <li><input type="checkbox"/> Fisherman is capable in catching lobster</li> <li><input type="checkbox"/> Fisherman is aware of Ministry Regulation No. 56/Permen-KP/2016</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> The decrease of catch lobster stock (number and size)</li> <li><input type="checkbox"/> Low awareness of fisherman in implementing the rules</li> <li><input type="checkbox"/> Government program related to alternative livelihood for lobster fisherman is not effective</li> </ul>
Opportunities	Threat
<ul style="list-style-type: none"> <li><input type="checkbox"/> There are seaweed and grouper culture</li> <li><input type="checkbox"/> There is lobster growout activity using floating net</li> <li><input type="checkbox"/> Local and export market for lobster is available</li> <li><input type="checkbox"/> Development of marine tourism at Lombok Island</li> <li><input type="checkbox"/> Research institution support</li> <li><input type="checkbox"/> Conservation area determination of Awang Bay</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Regional government support in lobster culture using wild seed (inappropriate with Ministry Regulation)</li> <li><input type="checkbox"/> High demand of lobster seed from overseas</li> <li><input type="checkbox"/> There is unscrupulous person (<i>oknum</i>) in "protecting" lobster seed trading</li> <li><input type="checkbox"/> Buyers disobey regulation (collectors and consumers)</li> </ul>

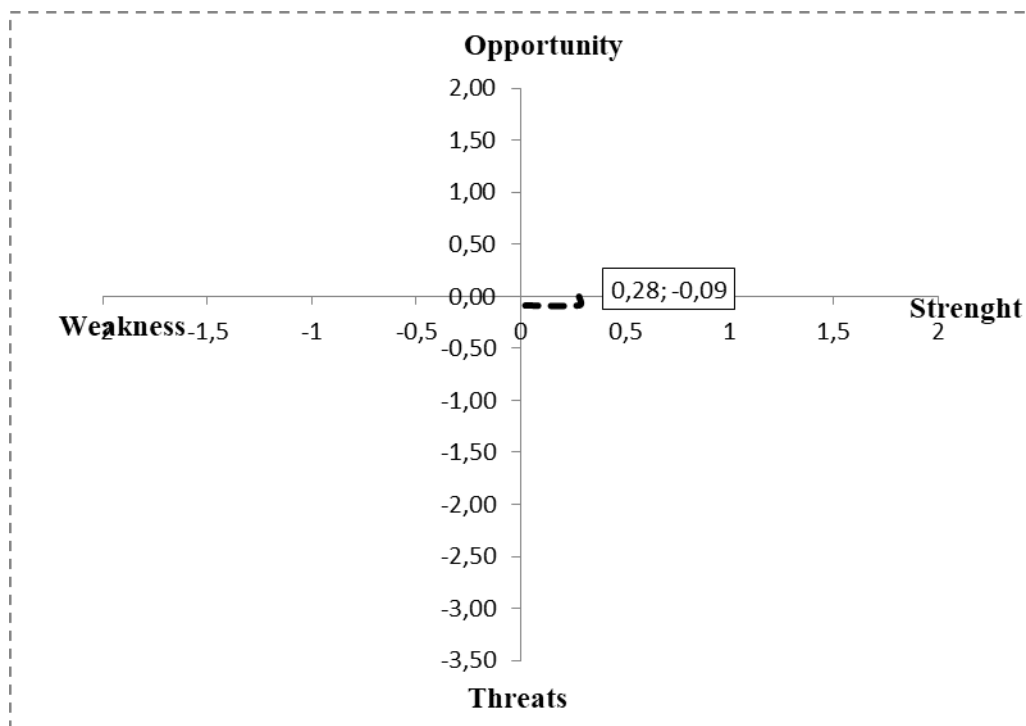
**Table 40.** Lobster IFAS of East Lombok Regency

No	Strength	Weight	Scale	Score
1	The availability of catch lobster resource	0.11	4.00	0.44
2	The availability of lobster seed	0.11	4.00	0.44
3	Fisherman is capable in catching lobster	0.11	4.00	0.44
4	Fisherman is aware of Ministry Regulation No. 56/Permen-KP/2016	0.11	4.00	0.44
	<b>Total</b>	<b>0.33</b>		<b>1.78</b>
No	Weakness	Weight	Scale	Score
1	The decrease of catch lobster stock	0.14	3.67	-0.50
2	Low awareness of fisherman in implementing the rules	0.12	3.33	-0.41
3	Government program related to alternative livelihood for lobster fisherman is not effective	0.15	4.00	-0.59
	<b>Total</b>	<b>0.41</b>		<b>-1.50</b>

**Table 41.** Lobster EFAS of East Lombok Regency

N2o	Opportunity	Weight	Scale	Score
1	There are seaweed and grouper culture	0.07	4.00	0.28
2	There is lobster growout activity using floating net	0.06	3.67	0.23
3	Local and export market for lobster is available	0.06	3.33	0.19
4	Development of marine tourism at Lombok Island	0.06	3.67	0.23
5	Research institution support	0.07	4.00	0.28
6	Conservation area determination of Awang Bay	0.06	3.67	0.24
	<b>Total</b>	<b>0.13</b>		<b>1.45</b>
No	Threat	Weight	Scale	Score
1	Regional government support in lobster culture using wild seed	0.08	3.33	-0.28
2	High demand of lobster seed from overseas	0.08	3.33	-0.28
3	There is unscrupulous person ( <i>oknum</i> ) in "protecting" lobster seed trading	0.11	4.00	-0.42
4	Buyers disobey regulation	0.11	4.00	-0.42
	<b>Total</b>	<b>0.17</b>		<b>-1.40</b>

122. Based on IFAS and EFAS analysis result, selected strategy can be defined in order to implement lobster fisheries at East Lombok Regency, which is ST (Strength-Threat), see Figure 7. It means this strategy is aimed to reduce or minimize the threat of lobster fisheries by using internal strength of lobster fisheries.



**Figure 7.**SWOT diagram of lobster fisheries



**Table 42.** Lobster fisheries strategy at East Lombok Regency

	Strength	Weakness
	<p>S1. The availability of catch lobster resource</p> <p>S2. The availability of lobster seed</p> <p>S3. Fisherman is capable in catching lobster</p> <p>S4. Fisherman is aware of Ministry Regulation No. 56/Permen-KP/2016</p>	<p>W1. The decrease of catch lobster stock (number and size)</p> <p>W2. Low awareness of fisherman in implementing the rules</p> <p>W3. Government program related to alternative livelihood for lobster fisherman is not effective</p>
<p>Opportunities</p> <p><b>O1. There are seaweed and grouper culture</b></p> <p><b>O2. There is lobster growout activity using floating net</b></p> <p><b>O3. Local and export market for lobster is available</b></p> <p><b>O4. Development of marine tourism at Lombok Island</b></p> <p><b>O5. Research institution support</b></p> <p><b>O6. Conservation area determination of Awang Bay</b></p>	<p>□ SO1. Grouper culture development as alternative livelihood for lobster seed catch fisherman</p> <p>□ SO2. Seaweed marketing support</p> <p>□ SO3. Lobster seed technology development</p>	<p>□ WO1. Socialization and law enforcement in relation with Ministry of Marine Affairs and Fisheries Regulation No. 56/2016</p>
<p>Threat</p> <p><b>T1. Regional government support in lobster culture using wild seed</b></p> <p><b>T2. High demand of lobster seed from overseas</b></p> <p><b>T3. There is unscrupulous person (<i>oknum</i>) in “protecting” lobster seed trading</b></p> <p><b>T4. Buyers disobey regulation</b></p>	<p>□ ST1. Synergism of law enforcement among law enforcement institutions</p>	<p>□ WT1. Grouper seed support for culture fisherman group at Ekas Bay</p>

### 5.3 Mud crab commodity at Kutai Kartanegara Regency

123. Based on desk study analysis result as well as site visit, information of four elements on strength, weakness, opportunity and threat was defined. The result is then categorized as presented in **Table 43** below.

**Table 43.** SWOT elements of crab at Kutai Kartanegara Regency

Strength		Weakness	
<input type="checkbox"/> High potency of crab fisheries	<input type="checkbox"/> Area of crab habitat	<input type="checkbox"/> Culture activity at brackish-water pond	<input type="checkbox"/> Fisherman skill in catching crabs
<input type="checkbox"/> Fisherman is using fish trap (environmentally friendly)		<input type="checkbox"/> Lack of fisherman's awareness towards crab sustainability	<input type="checkbox"/> Poor data collection and reporting of crab fisheries
Opportunities		Threat	
<input type="checkbox"/> High needs of market and crabs value	<input type="checkbox"/> Support from regional government	<input type="checkbox"/> Support from stakeholders in crab habitat rehabilitation	<input type="checkbox"/> Crab market access
		<input type="checkbox"/> Crab habitat destruction	<input type="checkbox"/> Lack of trader's obedience in implementing the rules

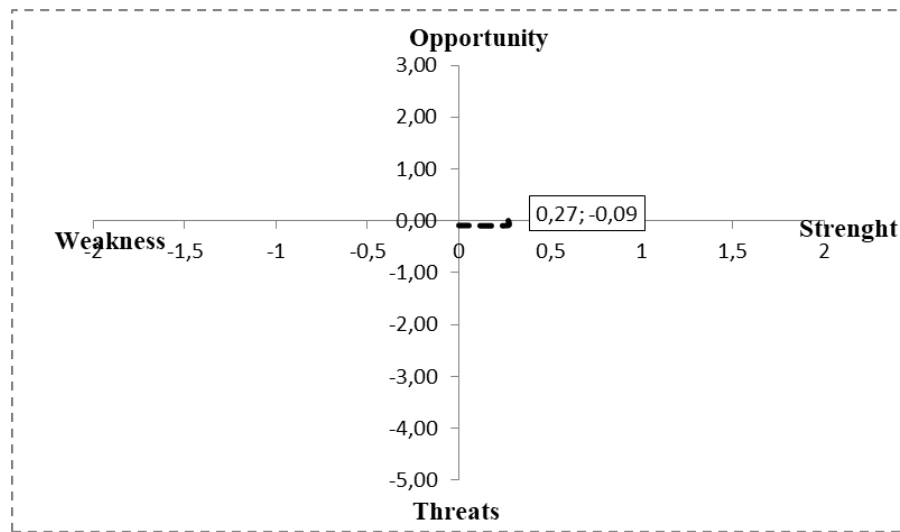
**Table 44.** Crab IFAS of Kutai Kartanegara Regency

No	Strength	Weight	Scale	Score
1	High potency of crab fisheries	0.09	4.00	0.37
2	Area of crab habitat	0.09	4.00	0.37
3	Area of culture activity at brackish-water pond	0.07	3.00	0.21
4	Fisherman skill in catching crabs	0.09	4.00	0.37
5	Fisherman is using fish trap (environmentally friendly)	0.09	4.00	0.37
	<b>Total</b>	<b>0.25</b>		<b>1.69</b>
No	Weakness	Weight	Scale	Score
1	Lack of fisherman's awareness towards crab sustainability	0.21	3.67	-0.77
2	Poor data collection and reporting of crab fisheries	0.19	3.33	-0.64
	<b>Total</b>	<b>0.40</b>		<b>-1.42</b>

**Table 45.** Crab EFAS of Kutai Kartanegara Regency

No	Opportunities	Weight	Scale	Score
1	Support from stakeholders in crab habitat rehabilitation	0.12	3.67	0.44
2	Crab market access	0.13	4.00	0.53
3	Support from stakeholders in crab habitat rehabilitation	0.13	4.00	0.53
4	Crab market access	0.11	3.33	0.36
	<b>Total</b>	<b>0.25</b>		<b>1.87</b>
No	Threat	Weight	Scale	Score
1	Crab habitat destruction	0.27	4.00	-1.06
2	Lack of trader's obedience in implementing the rules	0.24	3.67	-0.89
	<b>Total</b>	<b>0.51</b>		<b>-1.96</b>

Based on IFAS and EFAS analysis result, selected strategy can be defined in order to implement crab fisheries at Kutai Kartanegara Regency is ST (Strength-Threat) Figure 8). It means this strategy is aimed to reduce or minimize the threat of crab fisheries by using internal strength of crab fisheries.



**Figure 8.** SWOT diagram of crab fisheries

**Table 46.** Strategy of crab fisheries at Kutai Kartanegara Regency

	Strength	Weakness
	S1. Potency of crab fisheries S2. Area of crab habitat S3. Culture activity at brackish-water pond S4. Fisherman skill in catching crabs S5. Fisherman is using fish trap (environmentally friendly)	W1. Lack of fisherman's awareness towards crab sustainability W2. Poor data collection and reporting of crab fisheries
Opportunities <b>O1. High needs of market and crabs value</b> <b>O2. Support from Regional Government</b> <b>O3. Support from stakeholders in crab habitat rehabilitation</b> <b>O4. Crab market access</b>	<input type="checkbox"/> SO1. Establishment of mangrove conservation area zone <input type="checkbox"/> SO2. Mangrove conservation and rehabilitation activities <input type="checkbox"/> SO3. Conducting mangrove crab restocking program	<input type="checkbox"/> WO1. Data collection improvement of mangrove crab production <input type="checkbox"/> WO2. Conducting socialization and law enforcement towards the violation of Marine Affairs and Fisheries Minister Regulation KP No. 56/2016
Threat <b>T1. Crab habitat destruction</b> <b>T2. Lack of trader's obedience in implementing the rules</b>	<input type="checkbox"/> ST1. Controlling brackish-water pond activities which could damage crab habitat	<input type="checkbox"/> WT1. Campaign on mangrove conservation as crab habitat

#### 5.4 Snapper and grouper commodities at Lamongan Regency

124. Based on desk study analysis result as well as site visit, information of four elements on strength, weakness, opportunity and threat was defined. The result is then categorized as presented in **Table 47** below.

**Table 47.** SWOT elements of snapper and grouper at Lamongan Regency

Strength	Weakness
<ul style="list-style-type: none"> <li><input type="checkbox"/> High fisheries production</li> <li><input type="checkbox"/> There is snapper-grouper fish farmer group</li> <li><input type="checkbox"/> Snapper and grouper fisherman is using fishing rod</li> <li><input type="checkbox"/> There is Lamongan PPN in providing production infrastructure</li> <li><input type="checkbox"/> Technical skill of grouper fish farmer</li> <li><input type="checkbox"/> The availability of culture infrastructure</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> The decrease of snapper and grouper catch number</li> <li><input type="checkbox"/> Poor snapper-grouper catch data collection</li> <li><input type="checkbox"/> Poor regulation supervisory</li> <li><input type="checkbox"/> High pollution of plastic waste in the water</li> <li><input type="checkbox"/> Poor fish catch handling on the boat/vessel</li> </ul>
Opportunities	Threat
<ul style="list-style-type: none"> <li><input type="checkbox"/> Support from stakeholders in monitoring and data collecting of snapper and grouper catch</li> <li><input type="checkbox"/> High demand of local and export market</li> <li><input type="checkbox"/> Support of grouper culture zoning</li> <li><input type="checkbox"/> Support of government for grouper culture</li> <li><input type="checkbox"/> Support from central government through SLIN</li> <li><input type="checkbox"/> Location of grouper seedling is near (Sidoarjo)</li> <li><input type="checkbox"/> The availability of snapper-grouper processing facilities</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> The utilization of boat seine</li> <li><input type="checkbox"/> The existing industry activities at nearby regencies</li> </ul>

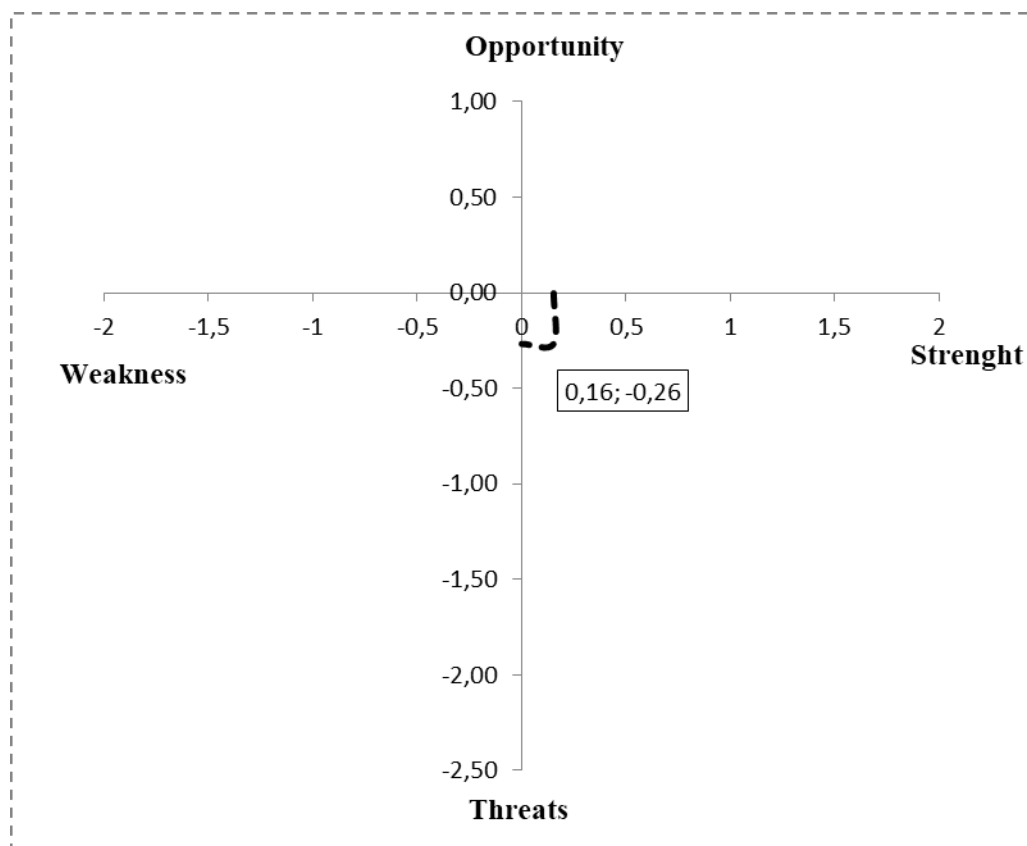
**Table 48.** Snapper and grouper IFAS of Lamongan Regency

No	Strength	Weight	Scale	Score
1	High fisheries production	0.05	4.00	0.21
2	There is snapper-grouper fish farmer group	0.04	3.33	0.14
3	Snapper and grouper fisherman is using fishing rod	0.05	4.00	0.21
4	The availability of culture infrastructure	0.05	4.00	0.21
5	Technical skill of grouper fish farmer	0.04	3.33	0.15
6	The availability of culture infrastructure	0.04	3.00	0.12
	<b>Total</b>	<b>0.15</b>		<b>1.03</b>
No	Weakness	Weight	Scale	Score
1	The decrease of snapper and grouper catch number	0.06	4.00	-0.25
2	Poor snapper-grouper catch data collection	0.05	3.00	-0.14
3	Poor regulation supervisory	0.05	3.33	-0.17
4	High pollution of plastic waste in the water	0.05	3.33	-0.17
5	Poor fish catch handling on the boat/vessel	0.05	3.00	-0.14
	<b>Total</b>	<b>0.21</b>		<b>-0.88</b>

**Table 49.** Snapper and grouper EFAS of Lamongan Regency

No	Opportunities	Weight	Scale	Score
1	Support of grouper culture zoning	0.06	4.00	0.23
2	Support of government for grouper culture	0.05	3.33	0.15
3	Support of grouper culture zoning	0.05	3.33	0.15
4	Support of government for grouper culture	0.05	3.67	0.19
5	Support from central government through SLIN	0.05	3.67	0.19
6	Location of grouper seedling is near	0.05	4.00	0.20
7	The availability of snapper-grouper processing facilities	0.04	3.00	0.13
	<b>Total</b>	<b>0.10</b>		<b>0.71</b>
No	Threat	Weight	Scale	Score
1	The utilization of boat seine	0.12	2.67	-0.33
2	The existing industry activities at nearby regencies	0.18	3.67	-0.65
	<b>Total</b>	<b>0.30</b>		<b>-0.98</b>

125. Based on IFAS and EFAS analysis result, selected strategy can be defined in order to implement snappers and grouper fisheries at Lamongan Regency is ST (Strength-Threat) (Figure 9). It means this strategy is aimed to reduce or minimize the threat towards snapper and grouper fisheries by utilize internal strength of snapper and grouper fisheries.



**Figure 9.** SWOT diagram snapper and grouper of Lamongan Regency

**Table 50.** Strategy of snapper and grouper fisheries at Lamongan Regency

	Strength	Weakness
	<p>S1. High fisheries production</p> <p>S2. There is snapper-grouper fish farmer group</p> <p>S3. Snapper and grouper fisherman is using fishing rod</p> <p>S4. There is PPN Lamongan in providing production infrastructure</p> <p>S5. Technical skill of grouper fish farmer</p> <p>S6. The availability of culture infrastructure</p>	<p>W1. The decrease of snapper and grouper catch number</p> <p>W2. Poor catch snapper-grouper data collection</p> <p>W3. Poor regulation supervisory</p> <p>W4. High pollution of plastic waste in the water</p> <p>W5. Poor fish catch handling on the boat/vessel</p>
<p>Opportunities</p> <p><b>O1. Support from stakeholders in monitoring and data collecting of snapper and grouper catch</b></p> <p><b>O2. High demand of local and export market</b></p> <p><b>O3. Support of grouper culture zoning</b></p> <p><b>O4. Support of government for grouper culture</b></p> <p><b>O5. Support from central government through SLIN</b></p> <p><b>O6. Location of grouper seedling is near</b></p> <p><b>O7. The availability of snapper-grouper processing facilities</b></p>	<p>SO1. Emporwerment and facilitating program for grouper culture business</p> <p>SO2. Institutional role empowerment of PPN Lamongan</p>	<p>WO1. Data collection improvement on catch snapper and grouper in Lamongan</p> <p>Support the arrangement of snapper and grouper fisheries harvest strategy</p>
<p>Threat</p> <p><b>T1. The utilization of boat seine</b></p> <p><b>T2. The existing industry activities at nearby regencies</b></p>	<p>□ ST1. Policy arrangement in utilizing environmentally friendly fishing gear</p>	<p>□ WT1. Database empowerment by tracking system</p>

## 5.5 Snapper and grouper commodities at the City of Bontang

126. Based on desk study analysis result as well as site visit, information of four elements on strength, weakness, opportunity and threat was defined. The result is then categorized as presented in **Table 51** below.

**Table 51.** SWOT elements of snapper and grouper at the City of Bontang

Strength	Weakness
<ul style="list-style-type: none"> <li><input type="checkbox"/> High fisheries production</li> <li><input type="checkbox"/> There are snapper-grouper fish farmer groups</li> <li><input type="checkbox"/> Snapper and grouper fisherman is using environmentally friendly fishing gear</li> <li><input type="checkbox"/> The availability of culture infrastructure</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Seedling system at BBIP is not yet optimal</li> <li><input type="checkbox"/> Limitation of snapper fish farmer technical skill</li> <li><input type="checkbox"/> The decrease of snapper and grouper catch number</li> <li><input type="checkbox"/> Poor data collection of snapper-grouper catch</li> </ul>
Opportunities	Threat
<ul style="list-style-type: none"> <li><input type="checkbox"/> Support on research of grouper seedling</li> <li><input type="checkbox"/> Support from regional government for BBIP</li> <li><input type="checkbox"/> CSR Support from stakeholders</li> <li><input type="checkbox"/> High demand for local and export market</li> <li><input type="checkbox"/> Government support for grouper culture</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Existing industrial activities</li> </ul>

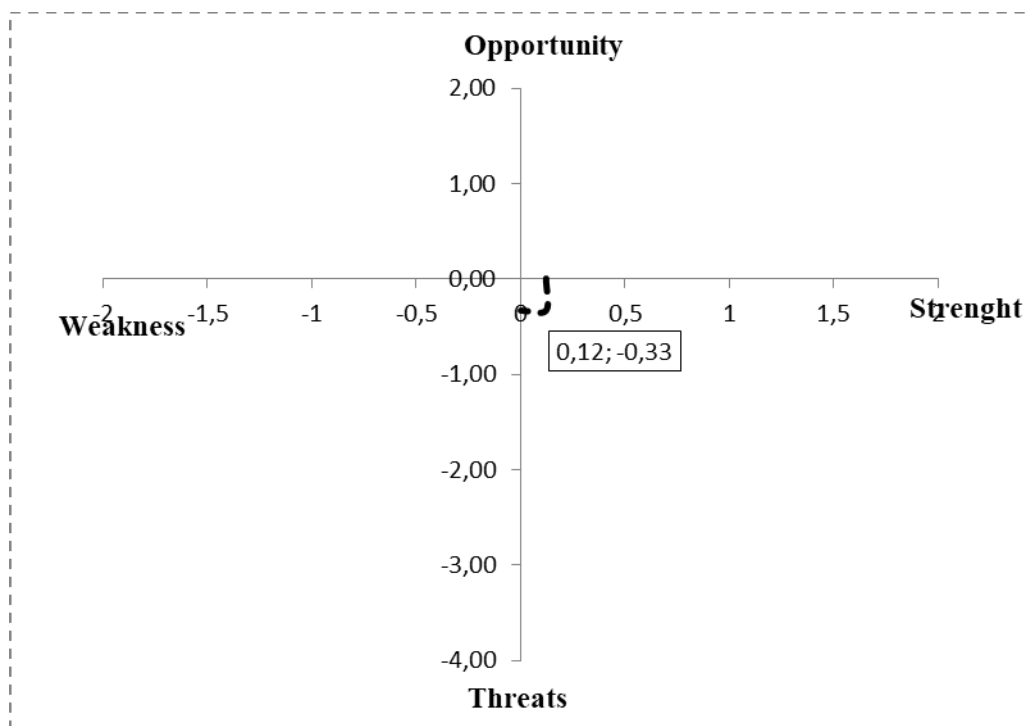
**Table 52.** Snapper and grouper IFAS of City of Bontang

No	Strength	Weight	Scale	Score
1	High fisheries production	0.09	3.33	0.29
2	There are snapper-grouper fish farmer groups	0.10	3.67	0.35
3	Snapper and grouper fisherman is using environmentally friendly fishing gear	0.11	4.00	0.42
4	The availability of culture infrastructure	0.10	3.67	0.35
	<b>Total</b>	<b>0.29</b>		<b>1.41</b>
No	Weakness	Weight	Scale	Score
1	Seedling system at BBIP is not yet optimal	0.10	3.67	-0.35
2	Limitation of snapper fish farmer technical skill	0.08	3.00	-0.24
3	The decrease of snapper and grouper catch number	0.10	3.67	-0.35
4	Poor data collection of snapper-grouper catch	0.10	3.67	-0.35
	<b>Total</b>	<b>0.37</b>		<b>-1.29</b>

**Table 53.** Snapper and grouper EFAS of City of Bontang

No	Opportunities	Weight	Scale	Score
1	CSR Support from stakeholders	0.10	3.33	0.33
2	High demand for local and export market	0.10	3.33	0.33
3	CSR Support from stakeholders	0.10	3.33	0.33
4	High demand for local and export market	0.10	3.33	0.33
5	Government support for grouper culture	0.10	3.33	0.33
	<b>Total</b>	<b>0.20</b>		<b>1.33</b>
No	Threat	Weight	Scale	Score
1	Existing industrial activities	0.50	3.33	-1.67
	<b>Total</b>	<b>0.50</b>		<b>-1.67</b>

127. Based on IFAS and EFAS analysis result, selected strategy that can be defined in order to implement snappers and groupers Fisheries in the City of Bontang is ST (Strength-Threat) (Figure 10). It means this strategy is aimed to reduce or minimize the threat towards snapper and grouper fisheries by utilize internal strength of snapper and grouper fisheries.



**Figure 10.** SWOT diagram of snapper and grouper fisheries at the City of Bontang



**Table 54.** Strategy of snapper and grouper fisheries in City of Bontang

	Strength	Weakness
	S1. High fisheries production S2. There are snapper-grouper fish farmer groups S3. Snapper and grouper fisherman is using environmentally friendly fishing gear S4. The availability of culture infrastructure	W1. Seedling system at BBIP is not yet optimal W2. Limitation of snapper fish farmer technical skill W3. The decrease of snapper and grouper catch number W4. Poor data collection of snapper-grouper catch
Opportunities <b>O1. Support on research of grouper seedling</b> <b>O2. Support from regional government for BBIP</b> <b>O3. CSR Support from stakeholders</b> <b>O4. High demand for local and export market</b> <b>O5. Government support for grouper culture</b>	<input type="checkbox"/> SO1. Developing snapper and grouper fisheries collaboration in between stakeholders	<input type="checkbox"/> WO1. Snapper and grouper seed support for culture activities <input type="checkbox"/> WO2. Skill training of snapper and grouper culture <input type="checkbox"/> WO3. Data collection improvement of catch snapper and grouper in Lamongan
Threat <b>T1. Existing industrial activities</b>	<input type="checkbox"/> ST1. Business development of snapper and grouper culture	<input type="checkbox"/> WO1. Database empowerment through tracking system

### 5.6 Small pelagic commodity at East Flores Regency

128. Based on desk study analysis result as well as site visit, information of four elements on strength, weakness, opportunity and threat was defined. The result is then categorized as presented in **Table 55** below.

**Table 55.** SWOT elements of small pelagic at East Flores Regency

Strength	Weakness
<input type="checkbox"/> Existence of small pelagic potency <input type="checkbox"/> Fisherman's skill in catching small pelagic fishes <input type="checkbox"/> Fishing port support <input type="checkbox"/> Sufficient fishing fleet	<input type="checkbox"/> Poor catch data collection <input type="checkbox"/> Conflict potency of andon fisherman <input type="checkbox"/> Small pelagic market uncertainty <input type="checkbox"/> Poor fishing port officer service
Opportunities	Threat
<input type="checkbox"/> Existence of Sawu Sea KKP <input type="checkbox"/> NGO support <input type="checkbox"/> High demand of small pelagic fish market <input type="checkbox"/> Regional government support for fisheries	<input type="checkbox"/> High demand on pelagic fishes for TCT bait

**Table 56.** Small pelagic IFAS of East Flores Regency

No	Strength	Weight	Scale	Score
1	Existence of small pelagic potency	0.09	3.33	0.29
2	Fisherman's skill in catching small pelagic fishes	0.10	3.67	0.35
3	Fishing port support	0.11	4.00	0.42
4	Sufficient fishing fleet	0.10	3.67	0.35
	<b>Total</b>	<b>0.29</b>		<b>1.41</b>
No	Weakness	Weight	Scale	Score
1	Poor catch data collection	0.10	3.67	-0.35
2	Conflict potency of andon fisherman	0.08	3.00	-0.24
3	Small pelagic market uncertainty	0.10	3.67	-0.35
4	Poor fishing port officer service	0.10	3.67	-0.35
	<b>Total</b>	<b>0.37</b>		<b>-1.29</b>

**Table 57.** Small pelagic EFAS at East Flores Regency

No	Opportunities	Weight	Scale	Score
1	High demand of small pelagic fish market	0.15	3.67	0.56
2	Regional government support for fisheries	0.15	3.67	0.56
3	High demand of small pelagic fish market	0.15	3.67	0.56
4	Regional government support for fisheries	0.15	3.67	0.56
	<b>Total</b>	<b>0.31</b>		<b>2.25</b>
No	Threat	Weight	Scale	Score
1	High demand on pelagic fishes for TCT bait	0.54	3.33	-1.81
	<b>Total</b>	<b>0.54</b>		<b>-1.81</b>

129. Based on IFAS and EFAS analysis result, selected strategy that can be defined in order to implement Small pelagic in East Flores district is SO (Strength-Opportunity) (**Figure 11**). It means this strategy is aimed to catch and utilize the opportunities of existing small pelagic fisheries by maximizing internal strength of small pelagic fisheries.

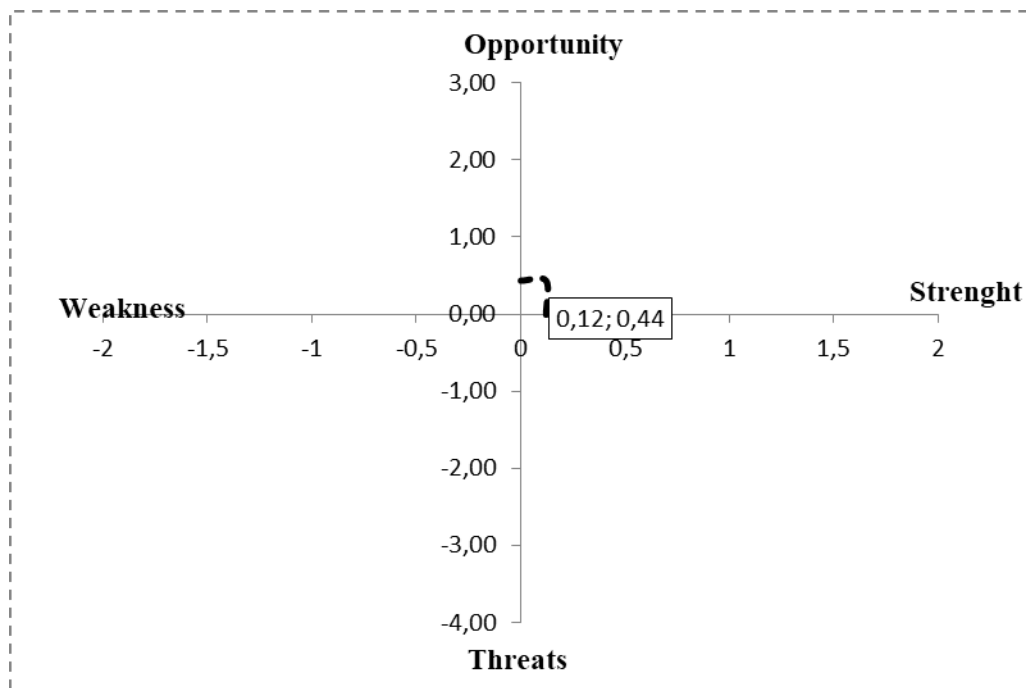


Figure 11. SWOT diagram of small pelagic fisheries in East Flores Regency

Table 58. Strategy of small pelagic fisheries in East Flores Regency

	Strength	Weakness
	S1. Existence of small pelagic potency S2. Fisherman's skill in catching small pelagic fishes S3. Fishing port support S4. Sufficient fishing fleet	W1. Poor catch data collection W2. Conflict potency of andon fisherman W3. Small pelagic market uncertainty W4. Poor fishing port officer service
<b>Opportunities</b> <b>O1. Existence of Sawu Sea KKP</b> <b>O2. NGO support</b> <b>O3. High demand of small pelagic fish market</b> <b>O4. Regional government support for fisheries</b>	<input type="checkbox"/> SO1. Developing small pelagic fisheries collaboration in between stakeholders <input type="checkbox"/> SO2. Developing tracking system of small pelagic fisheries <input type="checkbox"/> SO3. Creating harvest strategy of small pelagic fisheries	<input type="checkbox"/> WO1. Improving data collection of small pelagic fisheries <input type="checkbox"/> WO2. Developing SLIN <input type="checkbox"/> WO3. The arrangement of adaptive fishing port system towards fishing boat loading activities
<b>Threat</b> <b>T1. High demand on pelagic fishes for TCT bait</b>	<input type="checkbox"/> ST1. System arrangement of small pelagic fishes supply for TCT bait	<input type="checkbox"/> WT1. Developing communication system between fishing fisherman and fish farmers

Based on SWOT analysis done, there are indication programs in each priority location as follows:

**Recommendation of integrated programs for the priority fisheries in the project sites are:**

**A. Mangrove crab at Kutai Kartanegara District:**

1. Improvement of mangrove crab data collection
2. Establishment of mangrove conservation zonation
3. Mangrove conservation and rehabilitation activities
4. Campaign on mangrove conservation as crab habitat
5. Brackish-water pond management that reduce mangrove habitat
6. Conducting socialization and law enforcement towards violation to address violation of Marine Affairs and Fisheries Minister Regulation No. 56/2016
7. Conducting restocking program of mangrove crab.

**B. Lobster at East Lombok and Central Lombok District:**

1. Grouper culture development as alternative livelihood for lobster seed fisherman
2. Grouper seed support for fish farmers group at Ekas Bay
3. Marketing support on seaweed
4. Socialization and law enforcement in relation with of Marine Affairs and Fisheries Minister Regulation No. 56/2016
5. Development of lobster seed technology.

**C. Blue-swimming crab in Demak District:**

1. Conducting conservation and rehabilitation programs of blue-swimming crab habitat
2. The needs of mini plant for blue-swimming crab processing
3. Human resources capacity building in processing blue-swimming crab
4. Law enforcement consistency related to Arad fishing gear
5. Surveillance on collectors and exporters in order not to collect small sized and egged blue-swimming crab  
Facilitating program in order to increase collector's bargaining power to producers or exporters.

**D. Snapper and grouper in Lamongan District:**

1. Improvement of catch snapper and grouper data collection in Lamongan
2. Supporting the arrangement of snapper and grouper fisheries harvest strategy.

**E. Snapper and grouper in the City of Bontang:**

1. Snapper and grouper seed support for culture program
2. Skill training of snapper and grouper culture.

**F. Small pelagic fish in East Flores District:**

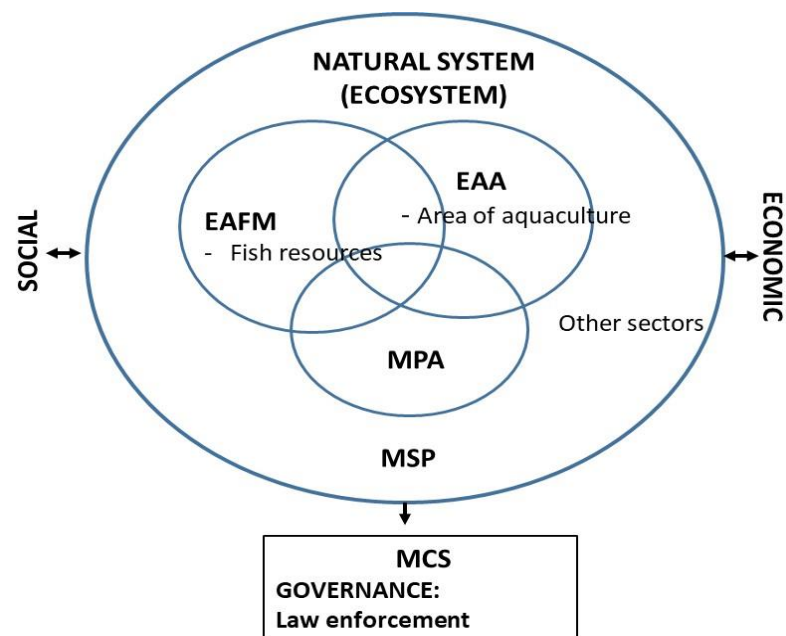
1. Improving the small pelagic fish data system,
2. Improve management of MPA,
3. Integrated management of Tuna fisheries and small pelagic as its bait fish,
4. Integrated program of MSC.

**Table 59.** Integrated program at priority locations based on consultation meeting with MoMAF dan FAO

Location	EAFM	EAA	MSP	MCS	MPA
<b>Snapper and Grouper</b>					
1. Lamongan Regency	Logbook, harvest strategy, monitoring, traceability pass kecil	Seed center, surveillance, snapper/grouper culture		Surveillance (trawl/cantrang)	Marine debris
2. City of Bontang	EAFM Assessmen, harvest strategy, data collection		RZWP3K Review		RPZ Establishment
3. City of Balikpapan					
<b>Blue-swimming crab</b>					
1. Demak Regency	EAFM assessment	Restocking (APRI)	√	Institutional Analysis RPJM and strategic plan, trawl discretion, inspector society group/Pokmas was empowerment	Conducting rehabilitation for blue-swimming crab
2. Pamekasan Regency					
3. Cirebon Regency					
<b>Lobster</b>					
1. East Lombok Regency	√	Seaweed, Snapper/grouper	√	Pokmaswas (socialization of law enforcement)	√
2. Central Lombok Regency	Lobster, lobster seed (conservation)	√	Marine tourism	√	Conservation (Bumbang Bay)
<b>Small Pelagic</b>					
1. East Flores Regency	Small pelagic EAFM, small pelagic assessment	Fish farming socialization		Fisheries surveillance	Sawu Sea RPZ and species conservation
2. Alor Regency					
3. Lembata Regency					
<b>Mangrove Crab</b>					
1. Kutai Kartanegara Regency	Data collection, EAFM indicator assessment	Environmentally friendly fish farming	RZWP3K Review	Releasing BKIPM catch to conservation area	Mangrove conservation
2. City of Balikpapan					
3. City of Bontang					RPZ arrangement

## 6. Best model for project intervention

130. The integration general model for project intervention is presented in the following Figure. The program of EAFM, EAA, and MPA management is strongly integrated in a certain marine area under Marine Spatial Planning (MSP). Those four components of the project intervention is implemented in frame of Ecosystem Approach Management which is should harmonize with others economic activities in the ecosystem.



**Figure 12.** Integrated model of EAFM (capture fisheries), EAA (Aquaculture), MPA (Conservation Area), dan MSP (Marine Spatial Planning) related on integrated management of water area (ecosystem) for fisheries, aquaculture, and marine conservation. The MCS plays an important role to keep the harmonization among sectors through monitoring and law enforcement.

As widely considered the both EAFM and EAA management have three main components and similar goals, namely: (1) ecosystem health, (2) human well being (welfare), and harmonize among the stakeholders in order to achieve sustainable use of the resources. There are strong relationships between the four project components as presented in the following matrix.

**Tabel 60.** Matrix integration model between component of EAFM, EAA, MPA, and MCS in frame of ISLME Project intervention. The number of symbol (√) shows level of integration needed through ISLME project intervention

Intervention components	EAFM (DJPT)	EAA (DJPB)	MSP/MPA (PRL)	MCS (DJPSDKP)
<b>EAFM (Capture Fisheries)</b>				
☐ <b>Fisheries resources</b>	√ √ √	√ √	√ √	-
☐ <b>Socio – economic aspect</b>	√ √ √	√	√	-
☐ <b>Governance</b>	√ √ √	√	√	√ √
<b>EAA (Aquaculture)</b>				
☐ <b>Environment (area) of aquaculture</b>	√ √	√ √ √	√ √	-
☐ <b>Socio – economic Aspect</b>	√	√ √ √	√	-
☐ <b>Governance</b>	√	√ √ √	√	√ √
<b>MSP (Marine Spatial Planning)</b>				
☐ <b>Fishing ground</b>	√ √ √	√ √	√ √ √	√ √
☐ <b>Aquaculture area</b>	√ √	√ √ √	√ √ √	√ √
☐ <b>MPA</b>	√ √	√ √	√ √ √	√ √
☐ <b>Other sectors</b>	√	√	√ √ √	-
<b>MCS (Monitoring Controlling and Surveillance)</b>	√ √ √	√ √	√ √	√ √ √

Note: **DJPT** = Ditjen Perikanan Tangkap (Directorate General of Capture Fisheries), **DJPB** = Ditjen Perikanan Budidaya (Directorate General of Aquaculture), **DJPRL** = Ditjen Pengelolaan Ruang Laut (Directorate General of Marine Spatial Management), **DJPSDKP** = Ditjen Pengawasan Sumberdaya Kelautan dan Perikanan (Directorate General of Surveillance of Marine and Fisheries Resources)

**Tabel 61.** Matrix presenting program recommendations (intervention) on each priority sites and commodity which have been formulated according to issue on each location and management needs

Comodities	Priority sites	Issues	Program indications (SWOT analysis)	Consultation meeting result with MoMAF and FAO	Priority program recommendations (core activities)	PIC
Snapper and grouper	Lamongan Regency	<p><b>Resources and water environment issues:</b></p> <ol style="list-style-type: none"> <li>1. Decrease of catch number</li> <li>2. Plastic waste pollution</li> <li>3. Mangrove degradation</li> </ol> <p><b>Socio-economic and governance:</b></p> <ol style="list-style-type: none"> <li>1. Mixed catch fish needs to be separated</li> <li>2. Fishing vessel is not equipped with freezer</li> <li>3. Fish quality decrease due to oil spill pollution from the boat</li> <li>4. Fishing fleet is still using dragged and bag net fishing gear</li> <li>5. Fish trap laying is using natural</li> </ol>	<ol style="list-style-type: none"> <li>1. Data collection improvement for catch snapper and grouper in Lamongan</li> <li>2. Arrangement support of snapper and grouper fisheries harvest strategy</li> <li>3. EAA implementation for grouper culture</li> </ol>	Logbook, harvest strategy, monitoring, traceability vessel small pass (EAFM) Seed center, snapper and grouper culture facilitation (EAA)	EAFM assessment, EAA Implementation, surveillance, Marine Conservation	DJPT, DJPB, DJPSDKP, DJPRL



		sign instead of GPS				
	Bontang	<p><b>Resources and water environment issues:</b></p> <ol style="list-style-type: none"> <li>1. Nearly 50 percent of catch crab is under legal size</li> <li>2. Large number of egged crab caught and traded due to high price</li> <li>3. Number of catch fish is decreasing</li> <li>4. Mangrove habitat destruction due brackish-water pond activities</li> <li>5. Part of crab production from traditional brackish-water pond comes from wild seed</li> </ol> <p><b>Socio-economic and governance:</b></p> <ol style="list-style-type: none"> <li>1. High demand of egged crab, especially during November – March</li> </ol>	<ol style="list-style-type: none"> <li>1. Snapper and grouper seed support for culture</li> <li>2. Skill training for snapper and grouper culture</li> <li>3. Mari-culture area arrangement</li> </ol>	<p>EAFM Assessment, harvest strategy, data collection (EAFM)  RZWP3K Review (MSP)  RPZ Establishment (MPA)</p>	<p>EAFM, EAA arrangement support (Bontang), Surveillance</p>	<p>DJPT, DJPB, PSDKP, DJPRL</p>

		<p>(Chinese New Year season) for both local and export market</p> <ol style="list-style-type: none"> <li>2. Poor surveillance at collectors and fisherman level</li> <li>3. Fisherman and crab seller's low awareness of resources sustainability</li> <li>4. Regional government program related to fisheries management is not yet available</li> <li>5. Uncontrolled development of crab, shrimp, milkfish pond and seaweed (<i>Gracilaria</i> sp.) activities using wild seed</li> </ol>				
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Blue-swimming crab	Demak Regency	<p><b>Resources and water environment issues:</b></p> <ol style="list-style-type: none"> <li>1. Catch blue-swimming crab is decreasing</li> <li>2. Abrasion and coastal flood (rob)</li> <li>3. Mangrove degradation</li> </ol> <p><b>Socio-economic and governance:</b></p> <ol style="list-style-type: none"> <li>1. All landed fish catch comes from Demak but there is no handling process on the boat</li> <li>2. There is no added value process improvement for blue-swimming crab product</li> <li>3. No mini plant</li> <li>4. Existence of blue-swimming crab fisheries management institution Lestari (LP2RL)</li> <li>5. Blue-swimming crab fisherman</li> </ol>	<ol style="list-style-type: none"> <li>1. Conducting conservation and rehabilitation of blue-swimming crab habitat</li> <li>2. The needs of mini plant for blue-swimming crab processing</li> <li>3. Human Resources capacity building improvement in processing blue-swimming crab</li> <li>4. Law enforcement consistency related to Arad gear</li> <li>5. Surveillance towards collectors and exporters in order not to collect small sized and egged blue-swimming crab</li> <li>6. Facilitating program in order to improve bargaining power from collectors to</li> </ol>	EAFM Assessment (EAFM) Restocking (EAA) RPJM Institutional Analysis and Strategic Plan, Empowerment of inspector society group/ Pokmaswas (MCS) Conducting rehabilitation program for blue-swimming crab (MPA)	EAFM Assessment, Surveillance, Catch control, conservation	DJPT, DJPSDKP, DJPB, DJPRL
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		is still using Arad gear	processors or exporters			
Lobster	East Lombok Regency	<b>Resources and water environment issues:</b> <ol style="list-style-type: none"> <li>1. Most catch lobster is under allowed size (illegal size)</li> <li>2. Catch lobster is decreasing (over exploitation)</li> <li>3. Wild lobster seed catching is still happening</li> <li>4. Grouper seed unavailability for culture needs</li> <li>5. The decrease of seaweed production is suspected due to brackish-water pond activity pollution</li> </ol>	<ol style="list-style-type: none"> <li>1. Grouper culture development as alternative livelihood of lobster seed fisherman</li> <li>2. Grouper seed provision for culture fisherman in Ekas Bay</li> <li>3. Marketing support for seaweed</li> <li>4. Socialization and law enforcement related to Marine Affairs and Fisheries Minister Regulation No. 56/2016</li> <li>5. Lobster seedling technology development</li> </ol>	EAFM Lobster Assessment (EAFM) Seaweed, Snapper/grouper (EAA) Inspector society group/Pokmaswas (socialization and law enforcement) (MCS)	EAFM Assessment, EAA Implementation (seaweed & grouper), MPA	DJPT, DJPB, DJPRL

		<p>6. Unsustainable seaweed culture during the year due to water environment condition</p> <p><b>Socio-economic and governance:</b></p> <ol style="list-style-type: none"> <li>1. High demand of lobster market</li> <li>2. Illegal lobster seed trading is still happening</li> <li>3. Poor surveillance on fisherman and seed collectors level</li> <li>4. Poor awareness from fisherman on lobster resource sustainability</li> <li>5. Low price of cultured snubnose pompano at Ekas Bay</li> <li>6. Low price of seaweed</li> <li>7. No market guarantee of cultured seaweed product</li> </ol>				
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		<p>8. Support from West Nusa Tenggara Regional Government for culture lobster using wild seed</p> <p>9. MoMAF support program Directorate General of Culture) on livelihood alternative for lobster seed fisherman in 2017 is not optimal</p>				
Small pelagic	East Flores Regency			<p>Small pelagic EAFM, EAFM small pelagic assessment (EAFM)</p> <p>Culture socialization (EAA)</p> <p>Fisheries surveillance (MCS)</p> <p>Sawu Sea RPZ and species conservation (MPA)</p>	<p>EAFM Assessment, Small pelagic data collection, MCS, MPA Laut Sawu</p>	<p>DJPT, DJPSDKP, DJPRL</p>

Mangrove crab	Kutai Kertanegara Regency	<p><b>Resources and water environment issues:</b></p> <ol style="list-style-type: none"> <li>Nearly 50 percent of catch crab is under size</li> <li>There is large number of egged crab is traded due to its high price</li> <li>Number of fisherman's catch is decreasing</li> <li>Mangrove habitat destruction from brackish-water pond activities</li> <li>Crab production from traditional brackish-water ponds comes from wild seed</li> </ol> <p><b>Socio-economic and governance:</b></p> <ol style="list-style-type: none"> <li>High demand of egged crab mainly during November – March (Chinese New Year) for both local and export market</li> </ol>	<ol style="list-style-type: none"> <li>Data collection improvement of mangrove crab production (EAFM)</li> <li>Establishment of mangrove conservation zonation (MSP)</li> <li>Conservation and rehabilitation of mangrove (MPA)</li> <li>Campaign on mangrove conservation as crab habitat (MPA)</li> <li>Brackish-water pond activity management that damage crab habitat (EAA)</li> <li>Conducting socialization and law enforcement towards violation of Marine Affairs and Fisheries Minister Regulation No. 56/2016 (MCS)</li> <li>Restocking program of</li> </ol>	<p>Data collection, EAFM indicator assessment (EAFM)  Environmentally friendly culture (EAA)  RZWP3K Review (MSP)  BKIPM catchment releasing to conservation area (MCS)  Mangrove conservation (MPA)</p>	<p>EAFM Assessment, Mangrove conservation as crab habitat, EAA Implementation, Crab habitat conservation</p>	<p>DJPT, DJPB, DJPRL</p>
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		<ol style="list-style-type: none"> <li>2. Poor surveillance on fisherman and collector's level</li> <li>3. Low awareness from fisherman and crab of resource sustainability</li> <li>4. Regional government support program related to fisheries management is not yet available</li> <li>5. Uncontrolled development of crab, shrimp, milkfish pond and seaweed (<i>Gracilaria</i> sp.) activities using wild seed</li> </ol>	mangrove crab (EAA)			
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## 7. Recommendation

131. Priority location analysis based on commodity showed that snappers and groupers fisheries can be developed in Lamongan and Bontang Regencies, blue-swimming crab fisheries can be developed in Demak Regency, lobster fisheries in East and Central Lombok, small pelagic fisheries in East Flores Regency, and mangrove crab fisheries in Kutai Kertanegara Regency. Program recommendations for those priority commodities are presented at the following Table 62.

**Table 62.** Priority program for the priority fisheries in each sites

Priority fisheries (Commodity)	Priority locations	Priority recommended programs (Umbrella/Framework programs)
<b>Snapper and Grouper</b>	Lamongan District	Implementation of EAFM Implementation of EAA Implementation of MCS Implementation of Marine Conservation
	Bontang Regency	Implementation of EAA Implementation of MCS Implementation MPA
<b>Blue-swimming crab</b>	Demak District	Implementation of EAFM Implementation of MCS Implementation conservation program
<b>Lobster</b>	East Lombok District Central Lombok District	Implementation of EAFM Implementation of EAA Implementation of MPA (marine conservation)
<b>Small pelagic</b>	East Flores District	Implementation of EAFM Implementation of MPA Implementation of MCS
<b>Mangrove crab</b>	Kutai Kertanegara District	Implementation of EAFM Implementation of MPA (mangrove conservation) Implementation of EAA Implementation of MCS

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