

# MARINE RESOURCES MANAGEMENT OF THE INDONESIAN GOVERNMENT

Muhammad Yunus<sup>1</sup>, Andi Batari Alimuddin<sup>2</sup>, Seniwati<sup>3</sup>

<sup>1</sup> Social and Political Sciences Faculty, Administration Public Department, Hasanuddin University, Makassar, South Sulawesi, Indonesia

<sup>2</sup> Communication Department, Social and Political Sciences Faculty, University of Ichsan Gorontalo, Gorontalo, Indonesia

<sup>3</sup> International Relations Department, Social and Political Sciences Faculty, University of Hasanuddin, Makassar, South Sulawesi, Indonesia

\*For correspondence; Tel. + (62) 82345269476, E-mail: [myunus59@yahoo.com](mailto:myunus59@yahoo.com), [seniwati\\_2006@yahoo.co.id](mailto:seniwati_2006@yahoo.co.id)

**ABSTRACT:** This research focuses on marine resources management of Indonesian government in supporting the fishery sector in Indonesia. Indonesian waters have the vast territory, high biodiversity, and enormous variations of marine natural resources result in the high potential for fisheries and aquaculture activities. Grouper is one of fish with the high value fish that contributes to a higher amount to the economic value. This species plays important role in coral reef ecosystem, both ecology and economy. In the coast area with high intensity of fishing, sunu grouper fish (*Plectropomus leopardus*) had become fishermen life source. This species of grouper is decreasing in numbers every year because overfishing and as a consequence sunu grouper is often heavily exploited. Information about the role of government in fishery sector is an important in the resource management to sustain its population. This research aimed to identify the role of Indonesian government in fishery sector. The research was conducted in February 2016 – May 2016. Data collection was conducted through the following steps: (1) Observation, (2) Interview and (3) Study library. In supporting the fishery sector, in early October 2013, there were more than 35 fish farmers, fish feed producers, and government representatives from Indonesia, Malaysia, the Philippines, and Vietnam to discuss about the process of developing fish farming Standards for grouper, snapper, and Asian sea bass or barramundi. Moreover, in enhancing Indonesian aquaculture, Indonesia Fisheries Report and Information reported from 2007 to 2011, numerous foreign-funded sector made activities and trainings programmes. Then, the Indonesia Ministry of Marine Affairs and Fisheries has collaborated with the Dutch aquaculture ministry to develop sustainable fisheries in Indonesia. For the conclusion, the data of cooperation above shows the Indonesian government especially the Ministry of Marine Affairs and Fisheries has responsibility in agriculture as well fisheries, aquaculture technology transfer has been functioning with priority focus.

**Keywords:** Grouper, Overfishing, Marine Resources Management, The fishery sector

## 1. INTRODUCTION

Indonesia has more than 17,000 islands extending 5,120 km from East to West and 1,760 km from North to South. Indonesia is the largest archipelago country in the world, located between two Oceans, the Pacific and Indian Ocean. Maritime areas of Indonesia are approximately 5,800,000 km<sup>2</sup>, consisting of archipelagic waters, territorial seas, and exclusive economic zones. The length of its coastline is almost 81,000 km, and covers approximately 75% of the total areas [10]. Indonesia is known as the centre of the coral triangle or the “amazon of the seas”, encompassing more than 86,700 km<sup>2</sup> of coral reefs, 24,300 km<sup>2</sup> of mangrove areas, 18,000 km<sup>2</sup> of sea grass areas and 2000 species of reef fish [1,7,10]. Based on the above condition shows the vast territory, high biodiversity, and enormous variations of marine natural resources result in the high potential for fisheries and aquaculture activities in Indonesian waters.

The Food and Agriculture Organization reported that after China, Indonesia is the highest marine fish producer [5]. In 2012, the total production of the marine capture fisheries was 5.44 million tonnes [9]. Between 2008 and 2013, the annual growth rate of the fish production from marine capture fisheries was 3.05% [8]. FAO classifies the marine commodities from marine capture fisheries into (1) large pelagics (e.g. skipjack, other tunas, billfish, oceanic sharks, and small tuna); (2) small pelagics (e.g. scads, mackerels, sardines, trevallies, engraulids, anchovies); (3) demersal and reef fish (e.g. groupers, snappers, rabbit fishes, slipmouth); and (4) prawn, shrimp, other crustaceans [5]. Grouper is one of fish with the high value fish that contributes to a higher amount to the economic value.

Groupers are the most popular commodity for mariculture in Indonesia besides barramundi, Asian seabass, snappers and milkfish [2]. There are two types of grouper fisheries in Indonesia based on the purpose of trading namely the live reef fish trade (LRFT) and local trade. LRFT is grouper fisheries for high economic value and consist of groupers such as squaretail coral grouper (*Plectropomus areolatus*), camouflage grouper (*Epinephelus polyphkadion*), and brown-marbled grouper (*Epinephelus Fuscoguttatus*) which are caught alive [12]. Moreover, Sunu grouper fish (*Plectropomus leopardus/leopard coral grouper*) is one of the important fishery resources in the water of Indonesia. This species plays important role in coral reef ecosystem, both ecology and economy. Live coral grouper is export commodity and popular in the international market.

## 2. PROBLEM OF STATEMENT

In the coast area with high intensity of fishing, sunu grouper fish (*Plectropomus leopardus*) had become fishermen life source. An increase in the international trade of high value of sunu grouper, caused the demand of this species increased, made grouper experienced high pressure and in some areas had been overfished [12]. Sadovy *et.al.* said that fishermen increases their fishing to catch grouper because it has the high economic value, therefore this species will be heavily exploited [12]. Moreover, he said that high fishing effort to catch grouper is exerted by fishermen even though the groupers are already heavily exploited due to high grouper demand [12]. This species of grouper is decreasing in numbers every year because overfishing and as a consequence sunu grouper is often heavily exploited. Information about the role of government in fishery sector is

an important in the resource management to sustain its population

**3. AIM OF RESEARCH**

This research aimed to identify the role of Indonesian government in fishery sector.

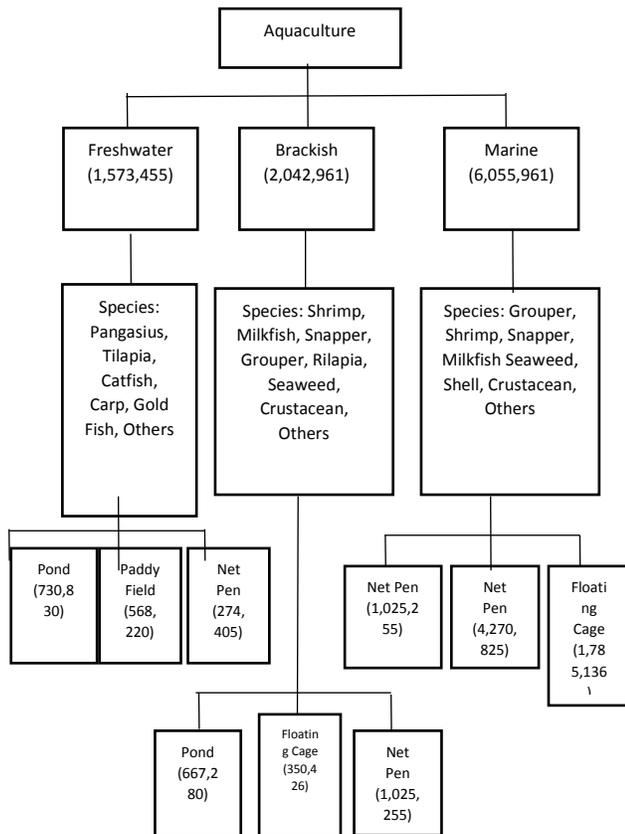
**4. METHOD OF RESEARCH**

The research was conducted in February 2016 – May 2016. Data collection was conducted through the following steps: (1) Observation, (2) Interview is a method to get information more clearly in relation to the research problem. This interview has been developed by the questions prepared to ask the respondents are considered to have knowledge of the substance under study with the help of a questionnaire, (3) Study Library is intake data obtained by reading the literature or research results that are relevant to the research theme.

**5. ANALYSIS AND DISCUSSION**

The aquaculture and fisheries are important sectors in the Indonesian economy. Based on Indonesian Investment Coordinating Board or BKPM reported in 2011, the fishery sector gave benefit to fishery production growth namely per annum reached 7%. This condition gave contribution around 15% to the agricultural gross domestic product (GDP) so that in Southeast Asia, Indonesia is the largest producer of fishery products [3].

This figure below shows the third rank of Indonesia after China and Peru as the highest production of captured fisheries in the world.



**Figure 1. Production volume of fisheries in Indonesia in 2012 (tons) Source: Eikum, Ole Schanke [3]. Value Chain Analysis of Marine Fish Aquaculture in Indonesia.**

The figure above shows the three main aquaculture domains namely freshwater, brackish-water and marine. The activities of these domains categorized by different farm types or systems namely ponds, paddy fields, net pens, or floating cages.

In supporting the fishery sector, in early October 2013, there were more than 35 fish farmers, fish feed producers, and government representatives from Indonesia, Malaysia, the Philippines, and Vietnam to discuss about the process of developing fish farming Standards for grouper, snapper, and Asian sea bass or barramundi [14]. This is the first dialogue in what will be a series of regional dialogues was hosted by WWF-Malaysia with funding and technical support provided by the WWF Coral Triangle Program through the Asia Pacific Sustainable Seafood and Trade Network (APSSTN). This first meeting develops performance-based, measureable Standards and the first Standards for these species.

Moreover, in enhancing Indonesian aquaculture, Indonesia Fisheries Report and Information reported from 2007 to 2011, numerous foreign-funded sector made activities and trainings programmes. The example of programmes such as the six-day NACA/World Bank training programme in joining with the Ministry of Marine Affairs and Fisheries in Surabaya [3]. The aim of this training is to promote of aquaculture food safety and proper supply chain management.

The Fisheries Master Plan is set by Indonesia’s domestic and international fisheries policy every 5 years. The Master plan has a goal to increase by 0.5 per cent per year. Hence, the plan would increase production from 5.38 million tonnes in 2010 to 5.5 million tonnes in 2014 [13]. In 2011, the plan got 5.7 million tonnes of catch. The promotion of growth in aquaculture and exports is focused by this plan. There are some objectives for fisheries management as contained in the Fisheries Master Plan namely:

1. Strengthening an integrated marine and fisheries’ human resources and institutions.
2. Keeping sustainably manage marine and fisheries resources.
3. Increasing scientific based productivity and competitiveness.
4. Extending the access of the domestic and international market.

The Indonesia Ministry of Marine Affairs and Fisheries has collaborated with the Dutch aquaculture ministry to develop sustainable fisheries in Indonesia. This collaboration hopes some goals such as 1) for capture fisheries, there is trimming postharvest losses, 2) broader adoption is encouraged of good aquaculture practices, 3) the business is stimulated from the marketing and distribution side [3]. Through this collaboration, the government can achieve their objective to protect fishery resources from unsustainable and destructive practices. These activities increase efforts of governments in improving community awareness of fishing regulations and support for new industries.

The Indonesia government also cooperates under G2G partnership programme and various B2B engagements such as PT Aquafarm Nusantara Company, one of the prominent Swiss ventures have a vertically integrated complex that

house several parallel efforts from fingerling grow-out to cultivation. Then in 2010, WorldFish launched an initiative to assist deter illegal fishing, attract buy-in from financial entities and spur research into feasible aquaculture investment strategies [3]. The other programme from this funding programme such as sustainable livelihoods and sustainable farms.

The Australian government also give fund for fish farmers in Indonesia namely for floating cage project and credit facility programmes. USAID also give fund to promote adoption of appropriate aquaculture technology in Indonesia [3]. This programmes create closer ties between both government, aquaculture-research institutions and commercial players.

In talking about law, regulatory framework and standard, the Ministry of Marine Affairs and Fisheries serves as the principal governing body for marine sector planning and management. Then, the Marine and Fisheries Service of each of the relevant provinces is in-charge at the local level or district and sub-district. The establishment of the Technical Implementation Units (Units Pengembangan Teknologi or "UPT") applies supervision and support. These units serve a function similar to that of the "extension" programmes of the U.S.Department of Agriculture (USDA). Appropriate technology is introduced by tis unit directly to farmers.

In 2013, the table below shows the various classes of hatcheries and labs with over 600 individual units.

**Table 1. Type of Technical Implementation Units (UPT)**

No.	Types of Institution	Number of Units	Status
1	Central Hatchery	30	Local Government UPT
2	Coastal Hatchery	23	Local Government UPT
3	Local Hatchery	422	Local Government UPT
4	Penaeid Shrimp Hatchery	25	Local Government UPT
5	Freshwater Prawn Hatchery	7	Local Government UPT
6	Fish Health Laboratories	109	Districts and Sub-District

Source Eikum, Ole Schanke [3]. *Value Chain Analysis of Marine Fish Aquaculture in Indonesia*

The various classes of hatcheries and labs above can create a conducive business environment, establish rules and regulations for the Standardization of Aquaculture activities and fisheries products, set management of fish and environmental health and conduct capacity of building aquaculture segment especially for fish farmer.

There is some legislation that determines the exact role of the ministry but law number 32 of 2004 is a most concern fishery. This law gives definition for the first time about fishery management and sets out the requirement for fishery management areas and fishery management plans. This law states the responsibility of the Minister in allocating catches based not only on fisheries potential, but also on conservation and sustainability. Moreover, the role of local government in managing marine resources was significantly strengthened by law 22 of 1999, and further clarified by law 32 of 2004 regarding regional administration. Specifically these laws refer to the administration of near shore areas by provinces

and districts (to 12 and 4 miles respectively) and state the responsibility for conservation, as well as the utilization of resources. This law also talks about sharing between regional and national government for revenues from these resources. The Ministry of Marine Affairs and Fisheries coordinates with the Ministry of forestry's directorate of forest protection and nature conservation to cover responsibility into coastal areas where human impacts have a significant impact on natural ecosystems, and where humans are strongly dependent on marine and coastal resources.

**Actual role of provincial and district governments.**

1.Local legislation (*Peraturan Daerah-Perda*)

The law 22 of 1999 regarding regional governance states that every district had to develop local regulations governing resource management and exploitation. Some districts formulated such regulations prior to 1999 and had instituted local regulations through interpretation of earlier legislation related to spatial planning. Controlling of marine resources to districts and provinces had been occurred over the years which gradually.

Some districts cooperate with other countries in managing their area such as North Sulawesi, Lampung, and East Kalimantan have collaborated with the USAID coastal resources management project, the ADB marine and coastal resources management project provided assistance to some districts. This local regulation creates at both the provincial and district level.

2.Local management/ traditional management/ fishery management plans.

There are some traditional management systems in parts of Indonesia in managing fishery plans such Sasi in Maluku and Irian, and *Awiq-awiq* in West Nusatenggara and Bali. Indonesian government gives an opportunity for traditional system to form a part of community based fishery management plans.

3. Marine protected areas and their relation to fishery management

Government improved management of coastal areas with special emphasis on marine protected areas, including national parks in coral reef areas. Some projects of community based resource management supported these efforts. Moreover, these efforts get successful because some reasons such as large amounts of external funding, and the appropriateness of the community-based approach for what are largely place-based resources. These efforts could improved management of marine protected areas.

Some organizations assists to manage this sector namely:

1.National commission on stock assessment (*Komisi Nasional Pengkajian Sumberdaya Ikan KOMNAS KAJSKAN*).

This commission discusses results of stock assessment and related research annually.

2.National coordination council for fishery resources management and utilization (*Forum koordinasi pengelolaan dan pemanfaatan sumberdaya ikan*).

This council works out details of fishery management as determined by stock assessments and other information annually. Each fishery management areas held sub-national

coordination meetings to several issues such as conflicts between fishermen from different areas, allocation of fish catch, and discussion of the need for licensing restrictions.

3. National Commission on Marine Conservation (*Komisi Nasional Konservasi Laut KOMNAS KOLAUT*).

The Director General of Coastal Areas and Small Islands includes representatives from the Ministry of Marine Affairs and Fisheries, the Ministry of Forestry as well as members from a number of non-governmental organizations established this conservation in October 2004.

4. Indonesia's Fisheries Society (*Masyarakat Perikanan Nusantara*).

President of the Republic of Indonesia established this organization to solve fisheries issues on 31 May 1996. This organization collaborates with other actors in managing fishery sector such as a) making partnerships among stakeholders and government, b) involving fisheries communities/stakeholders participation in fisheries development, c) giving contribution in policy formulation for fisheries development, and d) doing identification and monitor recent progress in fisheries management and development.

5. Indonesia's National Maritime Council (*Dewan Maritim Nasional*).

This council gives solution on marine conflicts because overlapping jurisdictions and misunderstanding among central and local governments. In December 1999, this council was established. The Minister of Marine Affairs and Fisheries is as a leader and eleven ministries as members.

6. Council for the Assessment of National Fishery Development (*Dewan Pertimbangan Pembangunan Perikanan Nasional*).

The Indonesian waters have nine fishery management areas such as Malacca Straits, South China Sea, Java Sea, Flores Sea and Makassar Straits, Banda Sea, Arafura Sea, Maluku Sea, Sulawesi Sea and Pacific Ocean and Indian Ocean.

There are some international agreements between Indonesia and other countries such as Indonesia ratified the United Nations Convention on the Law of the Sea in 1986 and the Agreement relating to the implementation of Part XI of the Convention in 2000 (UNCLOS 1982). Indonesia also ratified the UN Fish Stocks Agreement (UNFSA) in 2010 and was one of the first countries to sign up to the Port State Measures Agreement (2009).

Indonesia becomes active as a member of the following regional fisheries management organizations/ agreements, namely:

- ❖ Commission for the Conservation of Southern Bluefin Tuna (CCSBT)
- ❖ Indian Ocean Tuna Commission (IOTC)
- ❖ Western and Central Pacific Fisheries Commission (WCPFC)
- ❖ Brunei, Indonesia, Malaysia, Philippines- East Asia Growth Area (BIMP-EAGA)
- ❖ Indian Ocean Marine Affairs Cooperation (IOMAC)
- ❖ Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI)
- ❖ Arafura and Timor Sea EA (ATSEA)

Indonesia's main federal fisheries scientific organization is the Marine and Fisheries Research Institute (BRKP). This

organization coordinates a number of sub-institutes including the Marine, Open Waters, Conservation and stock enhancement (BPRL), Fisheries Technology and Research Centre for Social Economic. It has 70 staff and an annual budget of US\$8.5 million. BPRL joins with IOTC and WCPFC in two donor supported programmes linked to observer deployment and data collection.

The United Nations Food and Agriculture Organisation (FAO) gave definition EAFM (Ecosystem Approach to Fisheries Management) in 2003 as an approach to fisheries management and development that strives to balance diverse societal objectives, by taking into account the knowledge and uncertainties about biotic, abiotic, and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries [4]. This organization keep the importance of the human dimensions to fisheries management and views coastal communities and fisheries as critical parts of the ecosystem with food security, livelihood, and economic development interests linked to effective fisheries management.

In managing fisheries in Indonesia using the EAFM approach, is called through Law No.31/2004 on Fisheries; Law No.27/2007 on Coastal Management; and Government Regulation No.60/2007 on Fish Resources Conservation. For several cases, this organization requires that existing laws and policies, and the practices of other sectors that interact with fisheries, need to be reconsidered and adjustments made where necessary.

## 6. CONCLUSION

The data of cooperation above shows the Indonesian government especially the Ministry of Marine Affairs and Fisheries has responsibility in agriculture as well fisheries, aquaculture technology transfer has been functioning with priority focus. The government distributes funding from other countries for bigger-scale to Indonesian farmers.

The Ministry of Marine Affairs and Fisheries has good management for non-fishery resources especially non-living resources. Moreover, the Ministry covers undersea mineral exploration, marine tourism, or marine transport. The ministry of marine affairs and fisheries manages living marine and coastal resources such as mangroves, coral reefs and associated flora and fauna. Two important 2004 laws, law 31 concerning fisheries and law 32 regarding regional administration clarified central shared control of natural resources. A suite of indicators was established in consultation with key stakeholders in fisheries management in monitoring and evaluating progress of EAFM in Indonesia.

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