

Policies of Indonesia for Sustainable Tuna Fisheries Management: Issues and Concerns

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Indonesia is an archipelagic country rich in fishery resources. Since the country's reform era in 1999, the Indonesian Government has given more attention towards developing its fishery resources through the Ministry of Marine Affairs and Fisheries (MMAF), as well as exploiting and utilizing such resources to enhance the country's economy. Tunas, which form part of the country's fishery resources, have been playing an essential role in the economic development of Indonesia in view of the rising tuna production which increased at an average annual rate of about 8.4% during the past decade. Indonesia has been leading the Southeast Asian countries in tuna production not only in terms of volume but also in value. In 2013, its tuna production accounted for about 6.4% of the country's total fishery production and 21.5% of its production from marine capture fisheries. The tuna species caught in the territorial waters of Indonesia comprises the oceanic tunas such as skipjack, yellowfin, big-eye, albacore, and southern bluefin; and other tunas such as longtail, kawakawa, bullet, and frigate tunas. Considering the significant contribution of tuna resources to the country's economy, the Government of Indonesia has developed policies for the sustainable management of the country's tuna fisheries. However, the implementation of such policies has been encountering various challenges as explained in this article.

contributed by aquaculture, 37.8% by marine capture, and 3.2% by inland capture fisheries. The country's fisheries sector contributed about Indonesian Rupiah (IDR) 255 billion (equivalent to USD 247,350,000) to the country's GDP (MMAF, 2013) in 2013. Moreover, the country's tuna production reached 1.2 million MT in 2013 valued at USD 1.7 billion, where production had increased at an annual rate of 6.0% (Table 1).

Furthermore, MMAF (2013) also reported that the country's export volume of tuna in 2013 was about 201.2 thousand MT or an increase of more than 41.5% from that of 2012, valued at USD 745.0 million increasing by 33.5% from that of 2012. Such volume of tuna export represented about 16.4% of the country's total volume of exported fishery products. To date, Indonesia continues to be the primary country exporting tuna to the global market. In 2013, the main importers of its tuna products were Japan (19.2%), the EU (13.8%), USA (7.2%), and other countries (59.8%). As reported by MMAF (2012e), tuna products exported by Indonesia are of three main types, namely: tuna frozen (37.7%), fresh or chilled (19.3%), and prepared or preserved (43.0%).

In 2013, the total fishery production of Indonesia reached 19.4 million metric tons (MT) valued at USD 23.7 billion (MMAF, 2013a). In terms of volume, production from aquaculture accounted for 68.5% while marine capture fisheries shared about 29.5%, and the remaining by inland capture fisheries at about 2.0%. Meanwhile, more than one-half of the fishery production value or about 59.0% was

Considering therefore the importance of tunas to the country's economy, the Government of Indonesia has promulgated some policies to underpin the sustainable management of tuna fisheries. Nevertheless, the main challenge in its tuna fisheries management is the effectiveness in dealing with complex resource problems such as the multi-actors involved and implementation of regulations and requirements prescribed by international

Table 1. Tuna production trend of Indonesia from 2009 to 2013 (volume in 1000 MT and value in million USD)

Country: Indonesia	2009		2010		2011		2012		2013	
	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value
Total Tuna Production	943.0	312.1	905.3	1,077.0	1,028.2	1,260.3	1,134.3	972.4	1,225.9	1,708.5
Oceanic Tuna	519.6	129.0	515.1	733.1	613.6	817.5	704.8	692.5	786.4	1,186.7
Other Tunas	423.4	183.1	390.2	343.9	414.6	442.8	429.5	279.9	449.5	521.8
Total Production from Marine Capture Fisheries	4,789.4	1,687.0	5,039.4	6,558.1	5,328.6	7,099.9	5,401.0	4,863.3	5,738.9	8,946.4
Total Fisheries Production	10,064.1	7,493.1	11,662.3	14,086.0	13,626.1	14,955.0	18,763.9	13,292.2	19,429.7	23,673.4

Sources: SEAFDEC (2014), SEAFDEC (2013), SEAFDEC (2012), SEAFDEC (2011), MMAF (2014)

Note: The average of conversion rate of IDR to USD was 0.000097 (2009); 0.000110 (2010); 0.000114 (2011); 0.000107 (2012); 0.00097 (2013) (www.x-rate.com/average/?from=IDR&to=USD&amount=1.00&year=)

tuna management bodies at the national and local government levels.

Tuna Fishery Policy of Indonesia

The tuna fishery policy in Indonesia is composed of several aspects, namely: issuance of licenses (for capture fisheries), implementation of fishery observer’s program, assessment of fish stocks, use of fish aggregating devices (FADs), fishing gear used, transshipment practices, and IUU fishing activities. Licenses for capture fishing activities in the fisheries management areas (FMAs) as shown in Fig. 1, comprise: business licence (SIUP), fishing licence (SIPI),

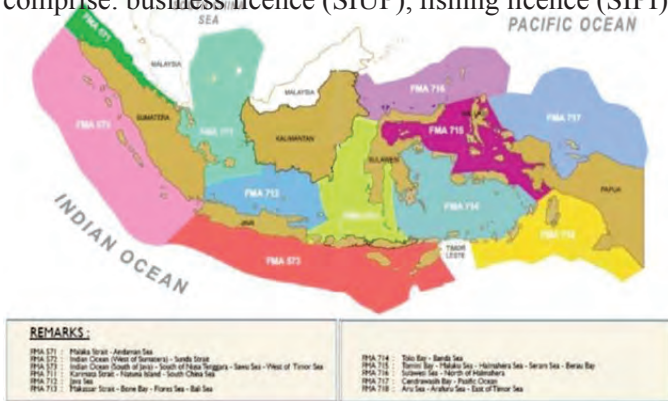


Fig. 1. Fisheries Management Areas (FMAs) of Indonesia (MMAF, 2009)

transporting licence (SIKPI), and investment allocation (APIMP).

All fishing activities carried out by fishers, companies, and integrated fishing investments must have SIUP, SIPI, and SIKPI, where the SIUP is issued only once and remains valid as long as concerned stakeholders are active to carry out fishing activities. SIPI is issued to fishing boats more than 5 GT, while SIKPI is specifically issued to carrier boats. Valid for only one year, SIPI and SIKPI could be extended as necessary. APIMP is particularly issued to fishing companies that have plans to integrally invest in fishing business.

The country’s Ministry of Marine Affairs and Fisheries through the Directorate General of Capture Fisheries had been tasked to issue SIUP, SIPI, and SIKPI for fishing boats having sizes of not more than 30 GT. After the decentralization however, MMAF delegated its authority of issuing SIUP, SIPI, and SIKPI to local government units. Henceforth, Governors have the authority to issue SIUP, SIPI, and SIKPI for fishing boats between 10 GT and 30 GT, and these boats should operate in the territorial waters and EEZ of the country. In order to accelerate the licensing process, MMAF has also recently transferred its tasks of issuing SIPI and SIKPI for fishing boats having sizes

between 30 GT and 60 GT to Governors (MMAF, 2010). Furthermore, the *Bupati* or *Walikota*, a leader in regency, has also the authority to issue SIUP, SIPI, and SIKPI for fishing boats between 5 GT and 10 GT. Nevertheless, issuance of APIMP is the responsibility of the central government through the Board for Coordinating National Investments (BKPM).

Issues and Concerns

Regulations on licensing a fishing activity in Indonesia had been confronted with problems related to transparency and evaluation of SIUP, SIPI, and SIKPI at the national or local levels. Firstly, the purpose of issuing SIUP, SIPI, SIKPI, and APIMP is for the government to obtain revenue from the various activities in the fisheries sector. In order to be issued either SIUP or SIPI or SIKPI or APIMP, boat owners must pay certain fees divided into three kinds of fishing taxes, namely: fishing effort (PPP), fish catch (PHP), and fishing in foreign waters (PPA). However, information related to the actual number of SIUP, SIPI, SIKPI, and APIMP issued and the total revenues collected by either the national or local government units has not been well managed and reported.

It should be reckoned based on the data compiled by the government that the number of fishing licences issued in 2012 to at least 2,396 fishing companies was 4,584, while the number of fishing licenses issued in 2013 published by MMAF was 2,405, 4,298, and 545 for SIUP, SIPI, and SIKPI, respectively. Some discrepancies could however be observed in this data since the total number of fishing boats that should have been issued the corresponding licences was 410,907 units indicating that only about 1.8% of the fishing boats have the necessary licenses to fish, while the MMAF has no information about compliance of fishing boat operators to the regulation on the need to obtain fishing licences nor information about the total revenues that the government has obtained from such licensing regulation.

Secondly, it is imperative for the government to periodically estimate the status of the tuna resources including total allowable catch (TAC), as such information are necessary for issuing a fishing licence. It is sad to note however that the government has insufficient information on how much tuna resource stock is accurately available. Although Indonesia has established the National Commission for Stock Assessment of the country’s fishery resources, and the National Tuna Commission, assessment of the level of stock of the tuna resources has not been conducted regularly. As a result, there has been no transparent and accountable data to predict the level of stock of the tuna resources leading to difficulties in obtaining a credibly



Fig. 2. Samples of tunas caught by fishing boat (KM. MEGA 807) as noted by an observer assigned by the Directorate of Fish Resource (SDI) onboard the fishing boat, in Bitung, North Sulawesi (Clockwise from upper left corner: skipjack ($l = 30\text{ cm}$, $w = 0.7\text{ kg}$), skipjack ($l = 41\text{ cm}$, $w = 1.0\text{ kg}$), big-eye ($l = 47\text{ cm}$, $w = 1.0\text{ kg}$), yellowfin ($l = 40\text{ cm}$, $w = 0.9\text{ kg}$))

scientific data. Some samples of tunas caught in Bitung, North Sulawesi are shown in **Fig. 2**.

As indicated in **Fig. 2**, collection of scientific information on tunas caught by fishing boats has been carried out by the government but the concerned institutions involved in analyzing the data had not been integrally designated, thus, there are possible overlapping roles in managing the information on tunas. At the central level, MMAF has two institutions that take charge of managing the country's observer onboard program (MMAF, 2013b), *i.e.* the Directorate of Fish Resource (SDI) and the Centre for Research, Fisheries Management and Conservation of Fish Resource (P4KSI). At the local level, information on tunas are being compiled and managed by local government units in the provinces and regency (*kabupaten/kota*). The absence of an integrated management of tuna information led to the insufficiency of accurate and accountable data that could be easily provided to the public by the government.

Lastly, even if the central government has regulations about assessment of the fishery resources, strategic plans to manage data collection of harvested and landed tuna in some parts of the FMAs have not been established, making it difficult for the government to manage the tuna fisheries. So far, no scientific research had been carried out to determine the compliance of fishing companies to the country's licensing regulation, and to evaluate the transparency and accountability of the government in managing the issuance of the necessary fishing licences. Although MMAF has already declared a moratorium on issuance of fishing licenses in the FMAs from 3 November 2014 to 30 April 2015 (MMAF, 2014), still it has not been effective in preventing the continued reduction of government income due to IUU fishing. Nonetheless, the Government of Indonesia is consistently and seriously implementing its Tuna Fishery Policy and is also undoubtedly executing law enforcements to fishing companies that do not comply with such regulation.

Unreliability of Information

Recently, the MMAF predicted that the maximum sustainable yield (MSY) for all kinds of fish is 6.5 million MT per year. It should be noted however, that this MSY is almost the same as what the government has estimated in 1974, which was 6.2 million MT. Meanwhile, the MSY level of large pelagic fish including tuna was estimated to be more than 1.1 million MT, and 3.6 million MT for small pelagic fish. Based on the government's estimates, the moderate stock level of skipjack tuna implies that it is not fully exploited nor is it overexploited, especially in FMA 571-573 and FMA 713-717. Yellowfin tuna on the other hand, has been fully exploited in FMA 572-573 and FMA 714-716, whereas in FMA 713 and 717 the yellowfin had been overexploited. Big-eye tuna has been overexploited in all FMAs and fully exploited in FMA 713, while albacore

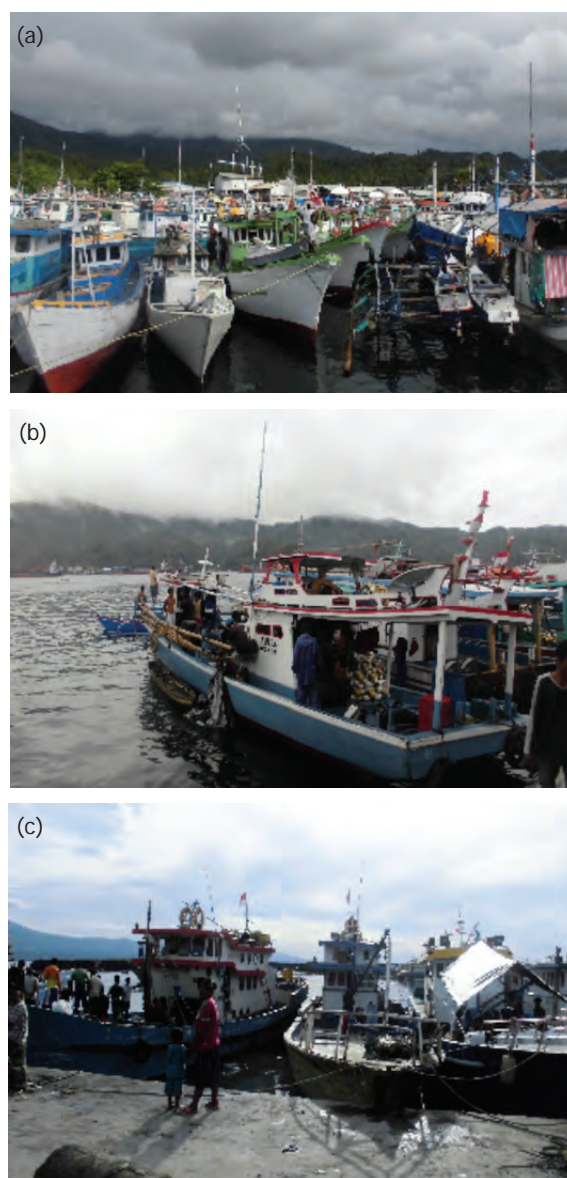


Fig. 3. Fishing boats using hand-line (a), mini purse seine (b), and purse seine (c) operating in Bitung (a, b), and Manado (c), North Sulawesi, Indonesia

and southern bluefin tuna had been fully exploited in FMA 573.

Although a status of tuna stock could be fully exploited and overexploited for all species in some areas except skipjack, the number of fishing gears used to harvest tunas followed an upward trend. These fishing gears consist mainly of long line, hand-line, pole and line, and purse seines (Fig. 3). It has been reported that the number of long line, and pole and line operating in some areas of FMA had increased by 21.8% and 26.2%, respectively, during the period between

2001 and 2011. Also during such time, the country's tuna production from long line, and pole and line had increased by 3.9% and 4.6%, respectively.

Estimating either the resource stock or number of fishing gears or the production of tuna has not been supported by transparent and accountable data in some FMAs, for although in some areas of the FMAs, fishing ports had been constructed by the government to serve as tuna landing centers, but the MMAF still need to improve its information collection system in order to come up with

Box 1. Possible reasons that could lead to the unsustainable tuna fishery resource of Indonesia

First, the *minapolitan* intends to enhance the utilization level of the country's fishery resources to increase fisheries production, fishers productivity, and quality of fisheries products; enhance fisher's income; and develop fisheries production centers in some coastal areas of the country. All these are for the pursuit of improved economic development growth of the fisheries sector. In order to increase the contribution of the fisheries sector to the country's economy, MMAF developed a strategy aimed at upgrading the minimum limit of national fisheries production from 5.47 million MT to 5.50 million MT in 2014, by adding 570 units of fishing boats comprising 130 units with sizes between 10 GT and 30 GT, and more than 440 units of 30 GT, as well as increasing the number of fishing gears comprising several types, by 4481 units (MMAF, 2012c). The private sector had also been encouraged to develop integrated business in fisheries, develop more fish processing units, and make use of more fishing and carrier boats with cumulative sizes of up to 2,000 GT. Moreover, private sector operating fishing boats with cumulative sizes between 200 and 2,000 GT are required to cooperate and provide raw materials for the fish processing units and are also allowed to increase the number of their fishing boats through private procurement system approved by the government. Procurement of fishing boats of sizes more than 30 GT could also be made by the central government through its import mechanism for fishing boats up to 1000 GT in size. Meanwhile, the local government units have been given the authority to procure fishing boats between 10 GT and 30 GT; and less than 10 GT. Such policies led to the rising numbers of fishing boats and gears every year surely threatening the sustainability of the tuna fishery resource.

Second, the number of FADs in some areas of the FMAs had been increasing without any control in sight. The national or local government has the authority to issue FAD licences while the MMAF does not have a strategic plan for management of the FADs. Although the use of FADs had been regulated through Ministerial Decree Number 30 of 2004 (MMAF, 2004), such regulation has not been revised by MMAF. In spite of the regulation's directive on the locations for installing FADs, the distribution of FADs in some areas of the FMAs has not been properly managed and controlled by the government.

Third, there is a need for the government to control and monitor all fishing activities on the country's sea waters. Fishing activities that need extra attention by the government include transfer and loading of tuna catch from one boat to another at sea. The MMAF has recently implemented a policy that allows transshipment of tuna at sea with the condition that the volume should be reported, landed and loaded to nearest fishing ports as indicated in the SIPI and SIKPI, except fishing boats using purse seine with sizes of up to 1000 GT (MMAF, 2012a). However, the government still faces some difficulties in determining the actual volume of tuna being transferred from fishing boats to carrier boats at sea, and as a result, information about transshipments at sea could not be published by the government.

Fourth, the MMAF has established a regulation for fishing boats to install vessel monitoring system (VMS) and to use logbooks. The VMS installed on fishing boats with sizes between 30 GT and 60 GT makes use of the offline system while for 60 GT, the VMS is operated through online system. However, the government still lacks the ability to monitor and control the movement of fishing and carrier boats in spite of such VMS regulation, while fishers have been reluctant to participate in the government's effort to compile information on tuna catch through the logbook system, and are unable to comply with the relevant fisheries regulations impeding government's efforts to promote compliance with international regulations.

Fifth, in an effort to overcome the inaccuracy of data reported by fishers, MMAF adopted a regulation assigning government observers onboard fishing boats and tasked to monitor and record all activities during operations of fishing and carrier boats at sea (MMAF, 2013b). Thus, observers have joined onboard fishing and carrier boats with sizes of up to 30 GT and operating in the high seas. The costs of assigning observers onboard are borne by the central government as well as owners of fishing and carrier boats. In addition, fishing and carrier boat owners must ensure the safety of the observers and access to communications; and provide accommodation and food. Through such policy, observers would receive salaries only without incentives after working onboard for one month. Difficulties had been noted in getting appropriate information required by the government when observers are not given incentives that could have enhanced their motivation in improving the quality of data collected. Giving incentives would ensure the good performance of observers in monitoring all fishing activities at sea.

Sixth, since 2012 the Indonesian Government has been actively involved in preventing, deterring and eliminating IUU fishing, through the reformulation of its national legislation and promotion of bilateral and multilateral agreements for responding to international provisions and requirements. In this regard, the MMAF has instituted reforms of its fisheries policy that include improvement of information required by the global market. Although MMAF has already issued the relevant regulation through a fish certification system through the Ministerial Decree Number 13/2012 (MMAF, 2012b), information about the number of certificates issued by the government and the volume of tuna production recorded through such certification system has not been compiled nor reported. Furthermore, the number of cases of exported tuna rejections had not been reported, despite getting the necessary certificates from the government.

proper and accurate data that could be used by scientists and policy makers. Furthermore, fishing ports as center of activities of fishers have not been given the effective roles in providing tuna information. A total of 968 fishing ports have been established in some areas of the FMAs (MMAF, 2012d), classified into five types, namely: oceanic fishing port (6 units), archipelagic fishing port (13 units), coastal fishing port (47 units), fish landing place (900 units), and private fishing port (2 units). Although improvement of the data collection system for tuna production had been initiated since 2007 with support from the Western and Central Pacific Fisheries Commission (WCPFC), there is still a need for the government to reconcile the information collected from all the fishing ports.

Major Constraints

The MMAF developed in 2009 a directive of national policies for increasing productivity, efficiency and value-adding of fisheries products through a national strategic plan of fisheries development (MMAF, 2009). Based on such plan, some coastal areas had been established for regional development growth through the *minapolitan* that focused on strengthening human resources, improving science and technology, advocating empowerment and entrepreneurship, and promoting fisheries industrialization. Recently however, the country is confronted with problems in managing its fishery resources as certain contradiction seems to exist between the policies for upgrading the country's economic growth and conserving the tuna fishery resource. Some rationales of the inability of the government to ensure the sustainability of the tuna fishery resource due to policy obstacles are elucidated in **Box 1**.

Conclusion and Recommendations

As described in **Box 1**, the Government of Indonesia is facing some problems in tuna fisheries management, therefore, there is a need for the government to seriously and consistently implement regulations and promote compliance of the requirements of international bodies. Despite the move for accountability and transparency as urgent agenda of the government in monitoring and controlling fishing activities, there is a need to empower the fishers and encourage them to participate in any actions to be undertaken by the government, especially in fulfilling and complying with relevant regulations.

In addition, the National Tuna Commission established by MMAF should be more effective in creating alternative solutions for overcoming the unreliability of information related to tuna fisheries management. Indeed, the government should also be more active in its involvement in networks of global markets that campaign for the sustainability of tuna fishery resources.

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