

## ANALYSIS OF THE IMPLEMENTATION OF TOTAL ALLOWABLE CATCHES (TACS) REGULATION IN ENSURING THE SUSTAINABILITY OF INDONESIAN FISHERIES RESOURCES

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### ABSTRACT

*Total Allowable Catches (TACs) is an instrument established to ensure the fishery resources sustainability. The issues that will be examined in this article are, First, the effectiveness of the TACs regulation to ensure the sustainability of fishery resources in Indonesia. Second, legal remedies that can be taken to ensure the fishery resources sustainability in Indonesia. The research method used is normative research with a statute and conceptual approach. This study found that the determination and application of TACs in Indonesia is not effective to guarantee the sustainability of fishery resources in Indonesia. There are still species with over-exploited status in each Fishing Management Area of Indonesia. Indonesia requires new legal remedies such as determining the maximum number of catches by each fisherman and regulations prohibiting fish catches discards back into the sea.*

Keywords: Estimated potential; sustainable; total allowable catches.

### INTRODUCTION

Indonesia is a state with the second longest coastline in the world. Indonesia is also an archipelagic state that can not only exercise its sovereignty in its territorial sea and inland waters but also archipelagic waters. Looking at the breadth of Indonesian waters, it is appropriate that Indonesia has the potential of abundant fisheries resources.

Indonesia as an archipelagic state with high potential fishery resources, has a great opportunity to make the marine and fisheries sector the foundation of the national economy. President Joko Widodo declared Indonesia as the world's maritime axis through his speech during the 9th East Asia Summit meeting on November 13, 2014. The meaning of Indonesia as a maritime axis is realizing Indonesia's development based on maritime activities in various aspects of life. The plan to realize Indonesia as the world's maritime axis is actually not an easy thing to realize because the various conditions that exist in Indonesia are still far from the characteristics of a maritime country (Ariadno, 2019).

There are five pillars that are used as an effort to realize Indonesia as the world's maritime axis, namely First, rebuilding maritime culture in Indonesia. Second, managing marine resources focusing on seafood sovereignty through development in the fishing industry sector, by making fishermen the main pillar. Third, the development of maritime infrastructure and connectivity through the construction of sea highways, deep seaports, logistics, shipping industry, and maritime tourism. Fourth, develop maritime diplomacy by jointly eliminating disputes between countries at sea. Fifth, build a maritime defense force (Indonesia, 2019).

One of the pillars in realizing Indonesia as the world's maritime axis is by realizing marine resource management by focusing on seafood sovereignty and making fishermen the main pillar. This step is carried out by developing the fishing industry in Indonesia. The fishing industry can be developed only if the sustainability of fisheries resources in Indonesia is maintained. The importance of ensuring the sustainability of fishery resources makes policies on fisheries management to be made with this aim in mind.

Fisheries management in Indonesia is carried out based on Law No. 31 of 2004 concerning Fisheries (hereinafter referred as Law No. 31 of 2004) which was amended by Law no. 45 of 2009 concerning Amendments to Law Number 31 of 2004 concerning Fisheries (hereinafter referred as Law No. 45 of 2009). Based on Law no. 31 of 2004, the Minister of Maritime Affairs and Fisheries has the authority to determine the Total Allowable Catches (TACs). TACs are the maximum limit for the number of fish resources that can be caught by all fishermen or fishing vessels. TACs are determined by taking into account scientific data on the estimated potential of fishery resources and the Maximum Sustainable Yield (MSY) level of these fish resources.

TACs are used as legal instruments to ensure the sustainability and sustainability of fishery resources. Indonesia has established TACs several times, namely in 1985, 1999, 2011, 2016, and 2017. It is interesting to examine whether by establishing and implementing TACs can ensure the sustainability of fishery resources and prevent over-exploited status of fishery resources in Indonesia. Through this research, it will be known whether in order to ensure the sustainability of fishery resources in Indonesia, it is only sufficient to establish TACs or require additional instruments.

Based on the background described above, there are two problems that will be studied, namely First, the effectiveness of the regulation on the determination of TACs in an effort to ensure the sustainability of fishery resources in Indonesia. Second, legal remedies that can be taken to ensure the sustainability of fishery resources in Indonesia. The aim of this study is to find the effectivity of TACs determined in Indonesia, This study is focused on fishery management policy in Indonesia because the Indonesia is an archipelagic state that have high potential of fishery resources. So that the policy made by Indonesia can be emulated by other state.

## RESEARCH METHOD

This article is the result of research conducted in 2021 with internal research funds from Wijaya Kusuma University Surabaya. This research is legal research with normative research methods. Legal research is doctrinal research because it is prescriptive. The prescriptive meaning is to provide instructions about what should be done or required by law (Muhaimin, 2020). This research will produce findings regarding the effectiveness of the regulation of TACs in ensuring the sustainability of fishery resources in Indonesia. This study also provides a prescription regarding legal remedies that Indonesia can take to ensure the sustainability of fishery resources.

This research was also conducted using a statutory approach. Some of the legal regulations studied, such as Law no. 45 of 2009 and several Regulations of the Minister of Marine Affairs and Fisheries which stipulate potential estimates and TACs. The results of the study of some of the legal rules above are used as arguments in answering the problem formulation that has been determined.

## DISCUSSION

### 1. Determination of Total Allowable Catches (TACs) by the Government of Indonesia

The main task of a states's fisheries management is how through fisheries management, fishing activities do not exceed the limits of the ability of fishery resources to survive and do not threaten or damage the sustainability and productivity of the fish being managed (Supriadi and Alimudin, 2011). Fishery resources that are not managed properly will lead to over-fishing. The existence of excessive fishing is caused by human thinking that fishery resources are the common property of mankind which then leads to open access to these resources (Monintja, 2005). TACs are expected to be a fishery management system that can prevent over-fishing and if there are already over-exploited species, TACs are expected to improve the sustainability status of these species.

TACs are the limit or maximum number of fish resources that can be caught by all fishermen. TACs are usually specified in terms of weight of fish resources. In Indonesia, TACs are set by the Minister. Several times TACs have been set by the Minister as an effort to ensure that there is no over-exploit of fishery resources in Indonesia.

Based on Article 4 paragraph 1 of Government Regulation Number 15 of 1984 concerning Management of Living Natural Resources in the Exclusive Economic Zone (hereinafter referred as GR No. 15 of 1984), the Minister of Agriculture is given the authority to determine TACs according to the type or group of types of living natural resources in part or all of Exclusive economic zone. Based on Article 4 point 3 of Law Number 9 of 1985 concerning Fisheries (hereinafter referred as Law No. 9 of 1985) the Minister in charge of fisheries (currently the Minister of Marine Affairs and Fisheries) is given the authority to determine TACs in WPPNRI. The authority of the Minister in determining TACs is reaffirmed in Article 7 paragraph 1 letter c of Law no. 31 of 2004 which later in letter b also added the authority to determine the estimation of fish resource potential in WPPNRI. The same authority is still given to the Minister based on Article 7 paragraph 1 letter b and c of Law No. 45 of 2009.

TACs are the number of fish resources that can be caught in Fisheries Management Area of Indonesia (FMAI) while still paying attention to their sustainability so that accurate data and information are needed about the availability of fish resources that can be accounted for, both scientifically and factually for each fishing area. The implementation of TACs must take into account international obligations in the field of fisheries. In other words, TACs are the number of allowable catches of a certain species, in a certain area, and within a certain period of time. Within a certain period of time TACs will be reviewed and then new TACs will be determined.

In 1985, the Minister of Agriculture established TACs in the Indonesian EEZ through the Decree of the Minister of Agriculture Number 473a/Kpts/IK.250/6/1985 concerning Determination of the Amount of Allowed Catch in the Indonesian Exclusive Economic Zone (hereinafter referred as Agriculture Ministerial Decree No. 473a of 1985). The Minister determines TACs for pelagic fish species, tuna, skipjack, and demersal fish in Indonesia's EEZ. Agriculture Ministerial Decree No. 473a of 1985 cannot be applied to fish resources in marine zones other than the EEZ, so that there is a legal vacuum for the protection of fish resources in inland waters, archipelagic waters, territorial seas, and additional zones. In 1999 the Minister of Agriculture issued Decree of the Minister of Agriculture No. 995/Kpts/IK210/9/99 (hereinafter referred as Agriculture Ministerial Decree No. 995/1999) concerning Potential Fish Resources and Amount of Allowed Catch in Indonesian Waters. The Minister determines TACs for the same species as those in the Minister of Agriculture Decree No. 473a Year 1985.

In 2011, the Minister of Maritime Affairs and Fisheries determined the estimation of fish resource potential in each FMAI by issuing the Decree of the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia Number KEP.45/MEN/2011 concerning Estimates Potential Fish Resources in the Fisheries Management Area of the Republic of Indonesia (hereinafter referred as MAF Ministerial Decree No. KEP.45/MEN/2011). The contents of that ministerial decree determined not only the estimated potential but also the level of exploitation of fish resources. The exploitation level shows the status of each species in each FMAI indicating the status of each fish species in each FMAI is moderate, moderate to fully-exploited, fully-exploited, or over-exploited. MAF Decree No. KEP.45/MEN/2011 does not determine TACs although the Minister is given the authority to determine TACs based on Article 7 paragraph 1 of Law no. 45 of 2009. Based on the Decree of the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia Number KEP.45/MEN/2011, it is known that there are still very many fish species that are over-exploited. For example, prawns were over-exploited in eight FMAI, demersal fish were over-exploited in two FMAI, and small pelagic fish were over-exploited in four FMAI.

In 2016, the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia established TACs for certain fish species throughout FMAI by issuing the Decree of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia Number 47 / Kepmen-KP / 2016 concerning Potential Estimation, Permitted Catch Amount, and Level of Resource Utilization Fish in the FMAI (hereinafter referred as MAF Ministerial Decree No. 47 of 2016). Based on the Third Dictum of MAF Ministerial Decree No. KP. 47 of 2016, TACs will be reviewed annually by taking into account the results of the study by the National Commission for the Assessment of Fish Resources. In MAF Ministerial Decree No. 47 of 2016, the minister has set TACs in each

WPPNRI for certain fish species, namely small pelagic fish, large pelagic fish (non skipjack tuna), demersal fish, reef fish, penaeid shrimp, lobster, crab, small crab, and squid.

MAF Ministerial Decree No. 47 of 2016 also stipulates the utilization rate for each fish species in each FMAI. The utilization rate shows the status of each fish species in each FMAI moderate, fully-exploited, or over-exploited. The level of utilization in MAF Ministerial Decree No. 47 of 2016 has the same meaning as the level of exploitation in MAF Ministerial Decree No. KEP.45/MEN/2011. The difference is that the species group is regulated in MAF Ministerial Decree No. KEP.45/MEN/2011 further explained what species are included in the group, while the MAF Ministerial Decree No. 47 of 2016 does not explain this.

In 2017, the Minister of Marine Affairs and Fisheries determined the Decree of the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia Number 50/Kepmen-KP/2017 concerning Potential Estimation, Amount of Allowed Catch and Level of Utilization of Fish Resources in the State Fisheries Management Area of the Republic of Indonesia (hereinafter referred as MAF Ministerial Decree No. 50 of 2017). In MAF Ministerial Decree No. 50 of 2017 also regulates TACs for the same types of fish as those in MAF Ministerial Decree No. 47 of 2016. MAF Ministerial Decree No. 50 of 2017 also determines the level of utilization for each fish species so that it is known whether there are still over-exploited fish species.

That Ministerial decree stipulates TACs for all FMAI and each FMAI. From the number of TACs in each WPPNRI that has been determined, it is divided back into the Fish Resources Quota. The fish resource quota is determined by the Director General of Catch Fisheries at the Ministry of Marine Affairs and Fisheries (MMAF Director General of Catch Fisheries) through a decree. The fish resource quota set by the MMAF Director General of Catch Fisheries is the division of the maximum limit for the number of fishery resources that can be managed between the Central Government and the Regional Government in each FMAI. Fishery resources under the authority of the Regional Government will be re-divided in the amount for each province whose territory is included in the FMAI section.

In simple terms, what is determined by the MMAF Director General of Catch Fisheries are TACs that are included in the management of the Central and Regional Government orders of each province whose territory is included in a FMAI. This figure is used as the basis for the issuance of a Fishing Permit which is the respective authority of both the Central Government and the Regional Government. The last fish resource quota was set by the MMAF Director General of Catch Fisheries in 2020.

## 2. Effectiveness of Determining Total Allowable Catches (TACs) in Ensuring the Sustainability of Fishery Resources

Differences in stock of fish resources from time to time are not only related to the level of utilization but also to the total amount of potential. In 2016, the number of potential fish in Indonesia based on the MAF Ministerial Decree No. 47 of 2016 was 9,931,920 tons, while in 2017, the number of potential fish in Indonesia based on MAF Ministerial Decree No. KP. 50 of 2017 is 12,541,438 tons. In fact, in 2011 the Government of Indonesia has determined the number of potential estimates through a Ministerial Decree. The estimated number of potential fish resources in MAF Ministerial Decree No. KEP.45/MEN/2011 cannot be used as a material for comparison of the overall estimation of fish resource potential because the number of species groups included in the scope of the ministerial decree is different from that in MAF Ministerial Decree No. 47 of 2016 and MAF Ministerial Decree No. 50 of 2017.

There was an increase of estimated potential from 2016 to 2017. The parameter of the success or failure of a fisheries management policy in ensuring the sustainability of fishery resources is the minimum or absence of species with over-exploited status. Looking at the MAF Ministerial Decree KP No. 47 of 2016 and MAF Ministerial Decree No. 50 of 2017, there are still over-exploited fishery resources. There are several differences in utilization rates between 2016 and 2017 as shown in Table 2.

Tabel 2.

Species / Species Group	Utilization Rate in 2016	Utilization Rate in 2017
Small pelagic fish species	Over-exploited in 3 FMAI	Over-exploited in 3 FMAI
Big pelagic fish species	Over-exploited in 3 FMAI	Over-exploited in 3 FMAI
Demersal fish	Over-exploited in 3 FMAI	Over-exploited in 0 FMAI
reef fish	Over-exploited in 2 FMAI	Over-exploited in 6 FMAI
Penaeid Shrimp	Over-exploited in 8 FMAI	Over-exploited in 4 FMAI
Lobster	Over-exploited in 9 FMAI	Over-exploited in 6 FMAI
Crab	Over-exploited in 7 FMAI	Over-exploited in 4 FMAI
Small Crab	Over-exploited in 7 FMAI	Over-exploited in 2 FMAI
Squid	Over-exploited in 6 FMAI	Over-exploited in 9 FMAI

Based on the table above, which is sourced from the MAF Ministerial Decree No. 50 of 2017, it is known that until 2017 there are still species with over-exploited status. Still based on MAF Ministerial Decree No. 50 of 2017, it is also known that in each FMAI there are still fish species with over-exploited status. The existence of species with over-exploited status shows that several times TACs have been established and implemented, namely in 1985, 1999, 2011, 2016, and 2017 are not effective enough to guarantee fisheries resources in Indonesia.

The determination of TACs is also carried out by several other states as an effort to prevent over-fishing of their fishery resources, such as state that are members of the European Union (EU). The EU manages its fisheries through the Common Fisheries Policy (CFP) which includes the determination of TACs. TACs are determined annually based on the results of negotiations at the Council of Ministers Meeting which is held every December. TACs were determined taking into account the recommendations of the Advisory Committee (ACOM) of the International Council for the Exploration of the Sea (ICES) and The Scientific, Technical and Economic Committee for Fisheries (STECF). EU member states will then divide the predetermined TACs into several national quotas (Princen et al, 2021). The national quota will be distributed to each fisherman by each EU member state. The EU member

state will be responsible for implementing the catch quota that has been given so that over-fishing does not occur (Kane et al, 2022). EU member states must stop fishing when their fishing quotas have been met.

Another state that also implements TACS is Japan. The Japanese people are the largest consumers of processed marine products in the world so that fishery policy is an important thing in Japan. In 2018, Japan succeeded in producing 4.2 million tons of fish resources. Between 2008 and 2018, Japan's fishery production fell by 25%. One of the causes is the occurrence of over-fishing in Japanese waters so that the stock of fishery resources there is much reduced (OECD, 2021). In order to end over-fishing in Japan, the Japanese government established TACs (Tanoue, 2015).

China is a state that is highly dependent on marine resources. Marine resources are a major source of China's food production, jobs, and economic activity. China, as the largest fish-producing state in the world for the past two decades, has also had problems with fisheries management. More than 50% of China's fish stocks are reported to be over-exploited. In March 2016, the Chinese Government made The National 13th Five Years Plan for 2016-2020 which is a policy of the Chinese Government in its socio-economic development efforts. China's 13th Five Years Plan reduces TACs in Chinese waters to less than 10 million tonnes in 2020, compared to 13 million tonnes in 2015 (Chasis, 2017).

Other states that also use TACs as their national fisheries management system are the United States, Australia (AFMA, 2019), the Philippines, and several other states. In Indonesia, the implementation of the TACs system has resulted in an increase in the number of potential fish, but on the other hand, in 2017 there were still over-exploited species and several species among over-exploited in more FMAI than in 2016. In line with what happened in Indonesia, the ineffectiveness of implementing the TACs system is also a concern of OCEANA. OCEANA is a Non-Government Organization (NGO) that concentrates on protecting the world's oceans, including fish resources. OCEANA considers that the TACs implemented by several states in the world are ineffective and do not provide the expected results. This is due to the lack of supervision over the implementation of the TACs system. Another reason is that countries ignore the scientific advice given in setting TACs so that the implementation of TACs becomes ineffective. The ineffective implementation of TACs causes over-fishing to occur and the sustainability of fish resources is disrupted (OCEANA).

### **3. Legal Efforts to Ensure the Sustainability of Fishery Resources**

One of the causes of the failure of TACs in ensuring the sustainability of fishery resources is the lack of attention to scientific advice in their stipulation. In preventing over-fishing, states must pay attention to scientific advice in determining TACs so that the determined TACs are adjusted to the actual condition of fish stocks. The state also really needs to supervise the implementation of the TACs system. Lack of supervision causes the parties involved in the fishing business to not comply with the TACs determined by the state. The fishermen will continue to catch fish even though the TACs have been met. This action will certainly make the initial goal of determining TACS not be fulfilled.

Another action that must be taken by the state so that TACs can truly prevent over-fishing is to make the catches of fish that are dumped back into the sea into the number of catches that can meet TACs. Another way that can be done is to make rules that prohibit the disposal of fish catches. Throwing away the catch is not a problem when the fish that are returned to the sea are alive and will still be able to survive. The act of throwing away the catch becomes a problem when the fish returned to the sea are dead. It must be acknowledged that the implementation of the ban on the disposal of fish catches is not easy to implement because it requires extra supervision to ensure that fishermen do not throw away fish catches. Extra supervision is also related to the human resources that carry out the supervision as well as the supervisory mechanism. On the other hand, if the state is able to actually carry out supervision over this matter, it will have a good impact on the sustainability of fish resources in its waters.

Some fishermen still dispose of their fish catches. FAO noted several reasons that make fishermen throw away their catches, including fish that are not the target species for catch, fish of inappropriate size, fish in damaged condition, fish of the wrong sex, poisonous or inedible fish, lack of space on board the ship so that fish with high economic value will be prioritized. Fish with low economic value will be dumped back into the sea (Clucas, 1997). The prohibition on the disposal of caught fish is an important issue because quite a number of fishermen do this. FAO estimates that in the period from 1999 to 2001 from the total catch of 83,805,355 tons, 6,824,186 tons were discarded (Kelleher, 2005). In some cases, shrimp farmers throw away 90% of their unwanted catch. Meanwhile, the ability of fishermen and fishing gear is not possible to avoid inappropriate catch.

Some developed states, such as the member states of the European Union (EU) already have Fish Discards Ban regulations that are enforced in all European waters and all ships that fly the flag of an EU member states. Disposal of catches back into the sea by European fishing vessels cannot be ignored. Efforts to reduce it are an ecological, social and economic imperative (Sarda et al, 2015). The EU Commission has adopted the EU Landing Obligation which contains the obligation to land caught fish. In other words, the regulation prohibits the disposal of regulated species (Maynou et al, 2018). In preventing the disposal of fish catches, the EU makes regulations on Fish Discards Ban for several species such as some demersal fish in North Western Waters, South Western Waters, North Sea, Union Waters of ICES Division IIa, and Mediterranean Sea; some pelagic fish in South Western Waters, North Western Waters, and North Sea; salmon in the Baltic Sea; and deep sea fish in North Western waters.

The purpose of a state's fisheries management is not only to ensure the sustainability of fish resources but also to improve the economy of its people through the fishery sector. Parameters to determine the economic improvement of the people of a state through the fishery sector can be seen through the economic conditions of fishermen in the state, especially small fishermen.

Another drawback of the TACs mechanism is that TACs do not provide an allocation of fishing rights for each fisherman so that this will lead to injustice among fishermen with different vessel capacities. The implementation of TACs cannot guarantee that it will provide increased welfare for fishermen who use small fishing vessels or under 50 GT to get fish. The reason is that the maximum number of catches is not determined for each fisherman or group of fishermen. The application of TACs creates conditions where fishermen with large capacity vessels capable of catching large quantities of fish will meet TACs.

The determination and application of TACs will be able to better ensure the sustainability of fishery resources and improve fishermen's welfare if accompanied by regulation of the maximum catch by each fisherman or in the form of regulation on the allocation of fishing rights as well as rules and regulations that prohibit the discard of fish catch. No less important is the supervision of fishing activities.

#### 4. Indonesian Government Supervision in Fishing Activities

Supervision in fishing activities has an important role in the success of implementing fisheries management policies. The objectives of implementing fisheries management policies that have been determined will not be fulfilled if fishermen continue to carry out fishing activities even though they have crossed the TACs limit or the allocation of their fishing rights (Poos et al., 2009). The Indonesian government needs to work hard in supervising these regulations. Fishing activities by each fisherman must be stopped if they have fulfilled the allocation of their fishing rights. Supervision does not only concern the limit on the number of catches for each fisherman but also the prevention of any transfer or sale and purchase of allocation of fishing rights.

Indonesia already has a fishing log book system which is regulated in the Regulation of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia Number 48/PERMEN-KP/2014 concerning Fishing Log Book (MAF Ministerial Regulation No. 48 of 2014). The fishing log book is the captain's written daily report on fishery activities and daily operations of fishing vessels. The fishing log book contains data on fishing vessels, data on fishing gear, data on fishing operations, data on fish caught. Based on Article 5 of Permen KP No. 48 of 2014, every fishing vessel that has a Fishing Permit (SIPI) and carries out fishing operations must be equipped with a fishing log book and filled in on the ship.

The completed log book is handed over by the captain of the ship to the harbor master at the fishing port, the fishing log book officer for fishing ports that do not yet have a harbor master, or the fishing log book officer for ports that are not fishing ports. The log book that has been submitted to the relevant officer will be checked for the suitability of the fishing gear used with the type of fish caught and the suitability between the time period of the fishing operation and the number of catches. Filling in the log book can assist in the implementation of monitoring fishing activities. The number of fish catches that have been made by a fisherman will be known through the log book so that when the allocation of fish catches, he has been fulfilled, the person concerned cannot catch any more fish until a new catch allocation is determined.

#### CONCLUSION AND RECOMMENDATION

The conclusion of this study is that the determination and application of TACs in Indonesia ineffective to guarantee the sustainability of fishery resources in Indonesia. Until several times TACs have been established, there are still several fish species with over-exploited status in each FAMI. The determination and application of TACs will be able to better ensure the sustainability of fishery resources and improve fishermen's welfare if accompanied by regulation of the maximum catch by each fisherman or in the form of regulation on the allocation of fishing rights as well as rules and regulations that prohibit the fish discard (fish discards ban regulation). No less important is the supervision of fishing activities.

In realizing the objectives of implementing fisheries management policies in the form of TACs, allocation of fishing rights for fishermen, and discards ban regulation requires more supervision from the Indonesian government. Supervision is carried out to ensure that there is no overfishing and the act of throwing the catch back into the sea. Supervision is also carried out to prevent the transfer or sale and purchase of allocation of catch rights.

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