

The eradication of IUU fishing in Indonesia for fisheries resources sustainability by the Task Force 115

by Agus Suherman

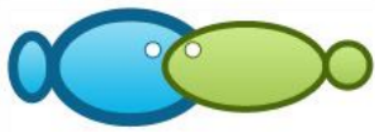
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Abstract. The Indonesia Government through Presidential Regulation No. 115 of 2015 established a task force to eradicate illegal fishing (known as Task Force 115). Task Force 115 was formed with a special mandate to carry out law enforcement operations to tackle illegal fishing. The purpose of the study is to explain the role of the Task Force 115 in eradicating of illegal, unreported, unregulated (IUU) fishing activities that occur in the jurisdictional waters of the Republic of Indonesia in terms of the ecosystem aspects for fisheries resources sustainability. This research used descriptive-quantitative methods to analyze the case study of eradicating IUU fishing in Indonesia by the Task Force 115. Statistical tests were performed using the Mann-Whitney test. This study also aims to analyze the impact of the Task Force 115 performance on fisheries productivity and the conservation of fisheries resources. The results showed that Task Force 115 has a positive impact on the sustainability of Indonesia's fisheries resources. The Indonesian government's efforts to eradicate IUU fishing for approximately 4 years have had a positive impact that can be enjoyed by the people of Indonesia. In the last years since 2013 to 2017, Indonesian fish stocks continued to increase from 7.31 million tons (2013) to 12.54 million tons (2017). Task Force 115 has proven to gradually reduce overfishing, fishing ground distance and fishing time, which positively contribute to productivity and the welfare of coastal communities.

Key Words: IUU fishing, MSY, productivity, The Task Force 115.

Introduction. Illegal, unreported, unregulated (IUU) fishing covers all of fishing activities conducted illegal, unreported and unregulated. IUU fishing practices can occur in all aspects of fisheries, both on the high seas and in national jurisdictions. IUU fishing is not limited to fishing activities, but covers all stages (Figure 1-3), up to the utilization of fish, and can be related to transnational crime (FAO 2020; Ma 2020). Various activities included in the IUU fishing according to International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing or IPOA-IUU are as follows (FAO 2020):

1. Illegal fishing:
 - a. fishing both by domestic and foreign vessels in the waters of a country's jurisdiction without permission or contrary to the regulations in that country;
 - b. fishing by vessels using national flags that are members of regional fisheries management organizations, but they violate conservation and rules set by the organization, relevant countries or international law;
 - c. fishing that violates national laws or international obligations, including those conducted by fishermen from countries that work with regional fisheries management organizations.

2. Unreported fishing:
 - a. fishing that (i) has not been reported, (ii) has been reported to the relevant national authorities but there are errors in reporting, (iii) contrary to national laws and regulations;
 - b. fishing that: (i) has not been reported to the relevant regional fisheries management organizations, (ii) has been reported incorrectly, (iii) contrary to the reporting procedures of the organization.
3. Unregulated fishing:
 - a. fishing by: (i) vessels without citizenship, (ii) vessels using state flags that are not members of the organization, (iii) by fishing entities in ways that are contrary to the conservation and management of the organization.
 - b. fishing in areas that have not regulate conservation yet or fishing with an amount not regulated yet. Unregulated fishing can occur in fishing activities that are carried out inconsistently with the responsibility of the state in conserving marine resources in accordance with international law.

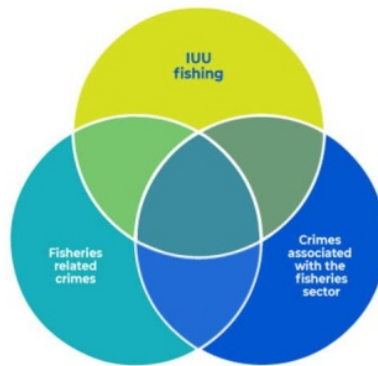


Figure 1. Types of crime related to the fisheries sector (Source: FAO 2020).

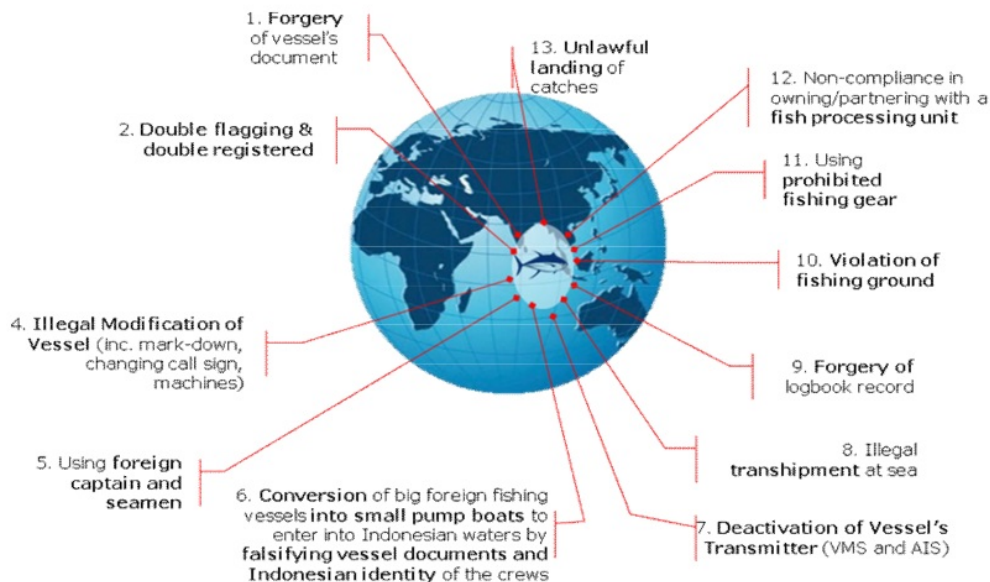


Figure 2. Modus operandi of illegal, unreported and unregulated fishing (Source: Santosa 2019).



Figure 3. Other crimes related to IUU fishing operations (Source: Santosa 2019).

IUU fishing practice has become a global problem (Kasim & Widagdo 2019). The losses incurred are not only financial costs but also social. IUU fishing activities cause damage on natural resources and ecosystem, which results to depletion of fish resources, and also can lead to other criminal acts. The impacts of IUU fishing can occur both in the short term and long term. Based on an environmental perspective, IUU fishing activities include fishing without permission, capturing protected species, using prohibited fishing gear and exceeding the fishing quota. ¹⁶ rade estimates indicate that IUU fishing activity in the world was at the level of 11 to 26 million tons of fish per year, with an estimated value of USD 10 to 23 billion (FAO 2014). It is estimated that Indonesia experience loss of USD 2 billion per year due to IUUF (West et al 2012). ⁴ undant fish resources with weak patrol surveillance have caused Indonesia to become one of the countries with the highest rate of IUU fishing activities in the world (Petrossian 2015). IUU fishing practices are still the biggest threat in sustainable fisheries management, both nationally and regionally. IUU fishing practices threaten the conservation of marine biodiversity. IUU fishing also harms and discriminates fishermen who act responsibly and comply with the regulations. The IUU fishing practice also targets rare marine biota, making it difficult to restore stock. Scarcity of biodiversity can threaten food availability for the community and damage the livelihoods of local communities (Poling & Cronin 2017).

Task Force on combating illegal fishing. Breakthroughs need to be done to eradicate IUU fishing which has been going on for decades. The Government of Indonesia has established a set of policies to eradicate the IUU fishing, including forming ² task force as a first step and quick win. Along with the establishment of the Task Force, the Minister of Maritime Affairs ⁵ s and Fisheries at that time imposed several other policies. The first one was issuing Regulation of the Minister of Maritime Affairs and Fisheries Number 56 / PERMEN-KP / 2014 on Moratorium of Fisheries Business Licensing in the Fisheries Management Region of the Republic of Indonesia ⁵ hich applies from 3 November 2014 to 31 October 2105, and then extended through Regulation of the Minister of Maritime Affairs and Fisheries Number 10 / PERMEN-KP / 2015. This regulation aims to stop the exploitation of fish resources by fishing vessels made abroad ('ex-foreign vessels') with sizes of 150 to 400 GT. These vessels generally use fishing gear and methods that damage the marine ecosystem. According to Sari et al (2019), the moratorium policy, together with policy that stops trawl vessels, can improve fish biomass, but it needs to be combined with other policies that aim to increase social and economic benefits. ⁵

The Indonesian government also made a ban on at-sea transhipment (Regulation of the Minister of Maritime Affairs and Fisheries Number 57 / PERMEN-KP / 2014). This is due to the increase in unreported fishing activities by 'ex-foreign fishing vessels' that

conduct transshipment with 'foreign transport vessels' whose task is to transport fish catches at sea and immediately brought abroad.

In the enforcement side, the President of Indonesia formed a task force to make a breakthrough in law enforcement against IUU fishing. IUU fishing is an extraordinary crime that requires extraordinary efforts from the government to overcome it. The handling of IUU fishing needs a collaborative approach from all stakeholders (Kasim & Widagdo 2019). Task Force 115 was signed to develop and carry out law enforcement operations in combating illegal fishing effectively and efficiently. Task Force 115 activities are carried out by optimizing the utilization of operation² personnel and equipment (including ships, aircraft and other technologies) owned by the Ministry of Maritime Affairs and Fisheries, the Navy, Police, Attorney General's Office, and other related institutions. Some of the authorities of Task Force 115 are as follows:

1. determine the target of law enforcement operations in the context of combating illegal fishing;
2. coordinate in collection of data and inform² on needed as part of law enforcement efforts. Coordination is carried out with the Ministry of Maritime Affairs and Fisheries, the Ministry of Finance, the Ministry of For²gn Affairs, the Ministry of Transportation, the National Navy, the National Police, the Attorney General's Office of the Republic of Indonesia, the Maritime Security Agency, the Financial Transaction Reports and Analysis Center, the State Intelligence Agency and ot²⁵ related institutions;
3. instruct institutions included in the Task Force to carry out law enforcement operations in the context of combating illegal fishing in the area determined by the Task Force;
4. carry out command and control of resources, including ships¹³ aircraft and other technologies from the National Navy, the National Police, the Ministry of Maritime Affairs and Fisheries, and the Marine Security Agency that is already inside the Task Force.

Task Force 115 was formed based on Presidential Regulation 115/2015¹² on the Task Force on Combating Illegal Fishing, which was signed by President Joko Widodo ('Jokowi') on 20 October 2015. It started operat⁶ since the end of 2015. This study explains the role of the Task Force in eradicating IUU fishing activities that occur in the jurisdictional waters of the Republic of Indonesia in terms of the ecosystem aspects for fisheries resources sustainability. This study aims to analyze how the existence and performance of Task Force 115 has affected the sustainability aspects of fisheries resources in Indonesia.

Material and Method. We use descriptive-quantitative methods to analyze data on the condition of fisheries resources and correlate it with Task Force 115 activities, which include progress in handling IUU fishing cases, fisheries production, and also conditions of coral reefs, seagrasses, and mang⁷roves. Some other researchers also used this research method, including: Handayani et al (2016), Syamsuddin et al (2016), Daris et al (2019), and Kasim & Widagdo (2019). Statistical tests were performed using the Mann-Whitney test.

Results and Discussion

The progress of IUUF case handling. The vulnerability data of illegal fishing can be seen in Table 1 and 2 and Figure 4. One of the policies enacted at that time, which is considered as a breakthrough, is the vessel sinking policy as an optimum penalty to create a strong deterrent. As of October 2019, there are 556 vessels sunk for committing illegal fishing with the below elaboration (Table 1).

The data shows that the most vulnerable area for illegal fishing cases is in FMA (fisheries management area) 711, namely in the North Natuna Sea (Table 2). Cases of illegal fishing in the North Natuna Sea were dominated by foreign fishing vessels from Vietnam.

Table 1

Number of vessels sunk for committing illegal fishing

No.	Flag State	Total (vessels)
1	Vietnam	321
2	Philippines	91
3	Thailand	24
4	Malaysia	87
5	Indonesia	26
6	Papua New Guinea	2
7	China	3
8	Belize	1
9	Stateless	1
Total (Oct 2014-Oct 2019)		556

Source: Ditjen PSDKP (2020).

Table 2

Number of cases of illegal fishing

FMA	Years									Total	Ranking
	2012	2013	2014	2015	2016	2017	2018	2019			
571	12	15	1	15	18	8	10	20	99	3	
572	0	0	0	0	3	0	2	1	6	10	
573	0	1	0	0	0	1	8	1	11	8	
711	59	26	18	51	94	75	33	28	384	1	
712	4	0	3	9	1	20	33	26	96	4	
713	6	2	0	2	9	0	4	4	27	6	
714	3	2	0	0	0	2	0	0	7	9	
715	8	8	10	15	1	18	4	8	72	5	
716	17	13	4	14	32	7	14	17	118	2	
717	3	1	0	2	5	1	1	0	13	7	
718	0	0	2	0	0	0	0	2	4	11	

Source: Ditjen PSDKP (2013 to 2020).

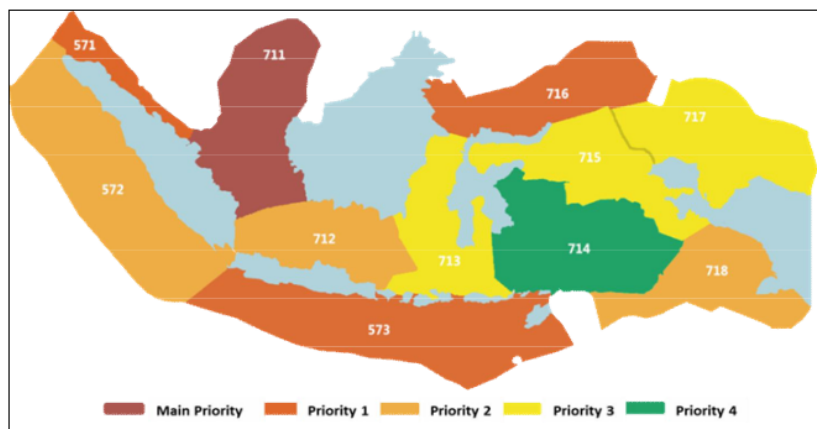


Figure 4. The map of illegal fishing handling priority (Source: Ditjen PSDKP 2020).

IUU fishing problem is more complex around the border area of Indonesia. IUU fishing triggers conflict between local and foreign fishermen. In terms of this, IUU fishing can reduce the productivity of local fishermen. Aside from IUU fishing practices, in areas near the borders, Indonesia is also facing problems in catch marketing, handling poverty of coastal community and maintaining the sustainability of the environment (Solihin et al 2016).

The intensity map of destructive fishing cases can be seen in Figure 5. There were 631 cases of destructive fishing with the highest number of cases in South Sulawesi (470 cases), and the lowest in Bali (see Figure 6).



Figure 5. Map of vulnerable destructive fishing in Indonesia (Source: Ditjen PSDKP 2020).

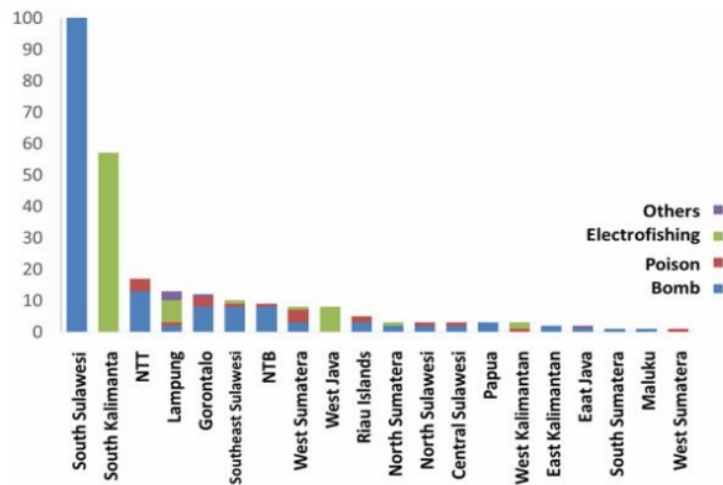


Figure 6. Findings and handling of destructive fishing cases in Indonesia 2013 to 2018 (Source: Ditjen PSDKP (2013 to 2019)).

In general, the composition of marine resources in Indonesian waters is dominated by small pelagic fish (36%) and large pelagic fish (25%). The potential of marine resources in Indonesian waters was 9,931 million ¹⁹ tons per year (in 2015) with the highest potential in FMA 718 (Arafura Sea; 20%), FMA 715 (Indian Ocean on west of Sumatra and the Sunda Strait; 12%) and FMA 711 (Karimata Strait, Natuna Sea and South China Sea; 12%). Meanwhile, the highest rate of overfishing was the commodity group of penaeid shrimp, lobster, and crab, which reached 63% (Suman et al 2016). Therefore, handling of IUU fishing of penaeid shrimp, lobster, and crab is one of the priorities of Task Force 115.

During 2012 to 2018, FMA 711 (North Natuna Sea) had the highest rate of IUU fishing. The potential of pelagic fish in Natuna Regency reached 327,976 tons per year, with the allowable catch amount of 262,380.8 tons per year. In 2014, the level of pelagic fish utilization in the Natuna Sea was 99,037 tons or 37.8% of the total allowable catch. Demersal fish potential in Natuna Regency was 159,700 tons per year while the utilization rate in 2014 was 40,491 tons (25.4% of sustainable potential). Other types of resources in Natuna Regency that have high rate of potential are groupers, cobs, anchovies, mackerel, yellow tails, yellowstripe scad, bloated, white shrimp, tiger prawns, blue swimming crabs, squid and cuttlefish. The fishing ground of traditional fishermen in Natuna waters are around the waters of Bunguran Island, Natuna Besar, coastal area of Natuna Island, Midai, Serasan Island, Tambelan, and the South China Sea. Whereas the fishing grounds of large vessels are areas beyond 4 miles of the Natuna Sea and South China Sea (Task Force 115 2019).

The progress of fisheries production. Performance of Task Force 115 directly and indirectly affects to Indonesian fisheries production. Enforcement of regulations creates deterrence effect to IUU fishing actors. The anti-IUU fishing policy has resulted in a reduction of at least 25% in fishing effort with Indonesian exclusive economic zone (EEZ), based on vessel monitoring system (VMS) data together with automatic identification system (AIS) and night light satellite imaging data (Cabral et al 2018). As a result, it contributes to the improvement of recovery of fish resources and increase of productivity of local fishermen, especially small-scale fishermen. Equal opportunities and fair rules are the key to facilitating the prosperity of the people (Acemoglu & Robinson 2012). The data of fisheries production can be seen on Figure 7.

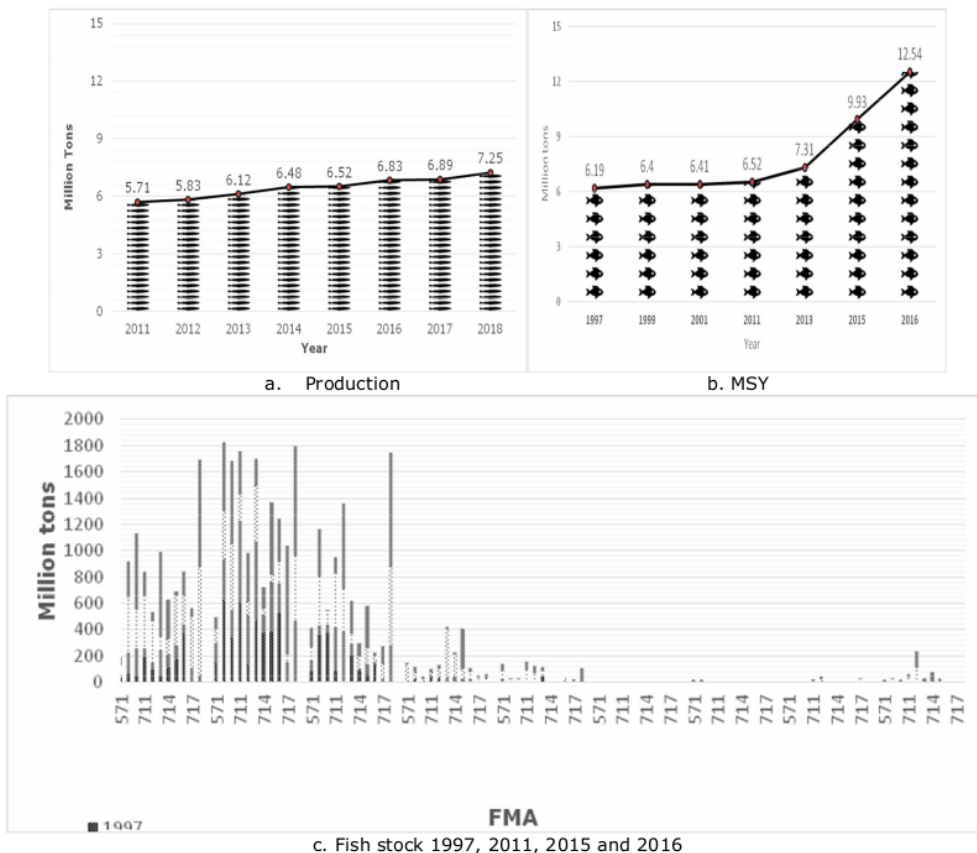


Figure 7. Fisheries production in 2011 to 2016 and fish stock 1997-2016 (Source: MMFA (2019)).

Figure 7a shows that total national fisheries capture production tends to increase. Capture Fisheries in 2014 to 2018 experienced an increase with an average increase of 2.82% per year. The total production of capture fisheries was 6.5 million tons (IDR 108 trillion) in 2014, up to 7.2 million tons (IDR 140 trillion) in 2018. Capture fisheries production achievements are achieved by 100% of domestic vessels. There is still the potential of 40% unreported of the reported fisheries production, so the total production of capture fisheries is estimated at more than 10 million tons (MMFA 2020).

Minimum sustainable yield (MSY) of Indonesian fisheries has increased significantly since 2015 when Task Force 115 started its operations. MSY progress data can be seen in Figure 7 (b). The Indonesian government's efforts to eradicate IUU fishing results in positive impacts. The results of statistical analysis (Mann-Whitney test) have proven that MSY increased significantly after 2015.

In 2013 to 2017, Indonesian fish stocks continued to increase from 7.31 million tons in 2013 to 12.54 million tons in 2017 (Table 3). In strategic plan of Di PDSPKP 2020-2024, Indonesian fish consumption grew in 2014-2019 period from 38.14 kg/capita/year to 54.49 kg/capita/year. The Indonesian income from fisheries industry also increased and reached the highest record in 2017 (Kasim & Widagdo 2019).

Table 3

The estimation of fish resources potential in Indonesia

Year of assessment	Estimation of fish resource potential	Sources or basis
1997	6.190 million tons per year	The Book of Potential and Rate of Utilization of Fish Resources in Indonesia in 1997 (Center of Research and Development of Fisheries – Agriculture Agency of Research and Development), Decree of Minister of Agriculture No. 995/Kpts/IK 210/9/99.
2001	6.409 million tons per year	White Paper of the Final Report of Fish Stock Assessment in Indonesian Waters (Research and Exploration Project of Marine Resources of BKPP – DKP & Oceanology Center of Research and Development of LIPI in 2001).
2005	Assessment of several commodities in 2002 to 2005 (9 Fisheries Management Areas)	Book of Fish Stock Assessment in 2005 (Center of Research for Capture Fisheries, BRKP – DKP).
2011	6.520 million tons per year	Decree of Minister of Marine and Fisheries Affairs No. KEP. 45/MEN/2011 on the Estimation of Potentials of Fish Resources in Indonesia's Fisheries Management Areas.
2013	7.305 million tons per year	Potentials and Rate of Utilization of Fish Resources in Indonesia's Fisheries Management Areas – Book of Fish Stock Assessment of the Office of Marine Fisheries Research in 2014.
2015	9.931 million tons per year	Decree of Minister of Marine and Fisheries Affairs No. 47/MEN/2016 on the Estimation of Potentials of Fish Resources in Indonesia's Fisheries Management Areas.
2016	12.54 million tons per year	Decree of Minister of Marine and Fisheries Affairs No. 50/KEPMEN-KP/2017 on the Estimation of Potentials of Fish Resources in Indonesia's Fisheries Management Areas.

The increase on potentials estimation of fish resources in 2017 was generally contributed by reforms in management in the forms of methodological, input control, improvement in process, output control (such as moratorium), which subsequently provided the space and opportunity for fish stocks to recover and breed in several fisheries management areas.

Another positive impact is on the health of the ecosystem and habitats within the Indonesian waters. Putting the on ban the use of trawls and strengthening enforcement

against the practice prevented depletion of stocks and the increase of by-catches of discards from the use of trawls. Habibi (2015) stated that trawls can cause loss of 18-40% of catches that are consumable and have economic values, and 60-82% of by-catches. Therefore, most of the catches would be dead and thrown back at sea. Those losses, which are not documented, screws up fisheries data and stock assessment. Last but not least, trawls also causes dredging, which destroys coral reefs and marine biota spawning sites.

Along with the above policies, the Minister of **Maritime Affairs and Fisheries** also enacted a **regulation of size limit of catches**. This policy can positively affect biomass by letting small fishes remain in the waters to develop. The combination of size limit policy and ban on trawls can save small crabs resources to 6.5% from the total biomass (MMFA-UCSB 2016).

The progress of marine fisheries production by region can be seen in Figure 8. Before 2015, Indonesian waters became a heaven for IUU fishing. The Arafura Sea, for example, was a hotspot for illegal shrimp trawlers and fish netters. This resulted in declining populations of shrimps, hair tails, snappers and groupers, as well as the average size of the catches. Similar problems were being seen in **the South China Sea and Java Sea** (Widjaja et al 2019). A report conducted by using a **joint analysis of VMS-AIS and VDS** shows that **non-cooperative fishing vessels represent between 42 and 47% of the total number of fishing vessels in the Arafura Sea** during October 2014 to March 2015 (Longépé et al 2018). However, the **share of illegal fishing activities in that particular area became lower when analyzed in January 2016**.

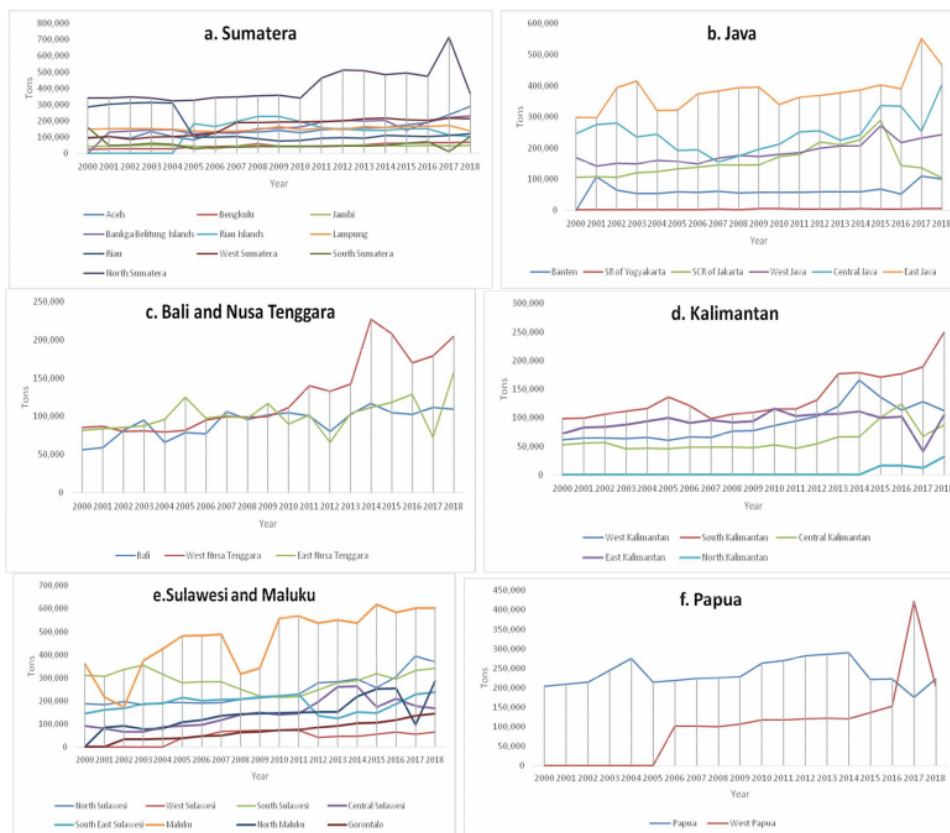


Figure 8. Marine fisheries production by region 2000-2018 (Source: BPS-Statistics Indonesia (2001 to 2019)).

In general, marine fisheries production in Indonesia has fluctuated and tends to increase. In the Sumatra region, production tends to be stable, except in North Sumatra which has experienced a significant increase in marine fisheries production. In the Java region, marine fisheries production tends to increase, except for Yogyakarta which is stable. Marine fisheries production in the Bali and Nusa Tenggara regions also tends to increase. In the Kalimantan, Sulawesi and Papua regions, marine fisheries production also tends to increase. This shows that positive impacts of the eradication of IUU fishing affects the stock of fish resources and subsequently affects the productivity of capture fisheries. According to Krisnafi et al (2017), since 2000s, IUU fishing in Indonesia causes loss about US\$ 7 million per year. IUU fishing also causes a decrease in fishing income, increased damage to the environment and complicates the livelihoods of coastal communities (Chapsos et al 2019).

Task Force 115 is also able to suppress the practice of IUU fishing for specific commodity groups, such as penaeid shrimp. As a result, the production of penaeid shrimp commodities experienced a relatively significant increase (Figure 9). In 2014 to 2018, MMAF has succeeded in preventing the entry and exit of illegal fish resources consisting of lobsters, crabs, fishery products, live or ornamental fish and other commodities. Its values equivalent to IDR 1.365 trillion (Table 4).

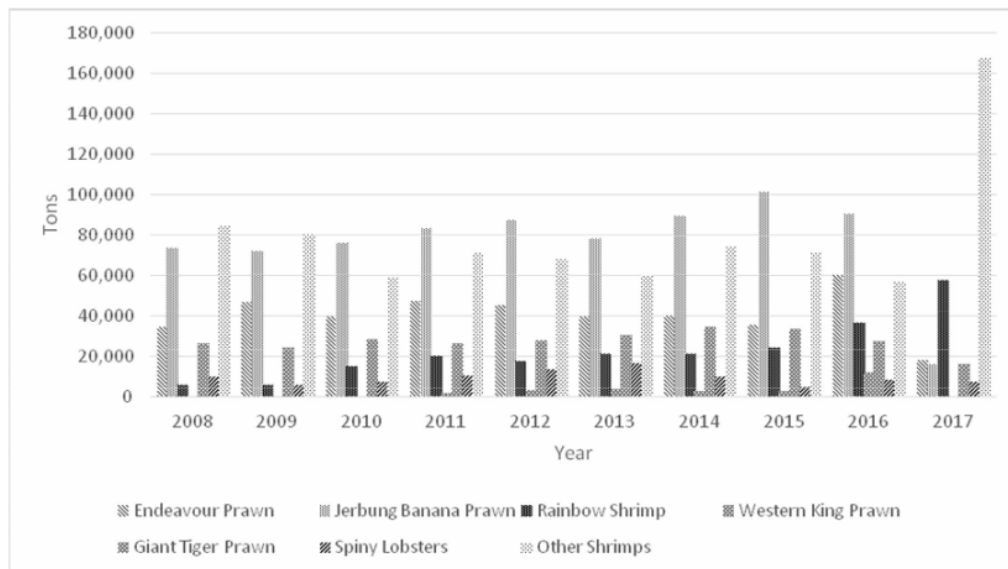


Figure 9. The production of shrimp in Indonesia, 2008-2017 (Source: BPS-Statistic Indonesia (2010 to 2019)).

Table 4

Prevention (in and out) of illegal fisheries in 2014-2018

Type	Saved resources											
	Number					Values (IDR billion)						
	2014	2015	2016	2017	2018	Total	2014	2015	2016	2017	2018	Total
Lobster (ind)	140	545,953	1,346,484	2,237,240	2,539,317	6,669,134	0.02	27.3	71.7	71.7	464.87	635.59
Crab (kg)	390	5,452	17,545	3,852	16,198	43,437	0.08	0.37	5.3	5.3	3.97	15.02
Processed fishery products (kg)	77,929	2,546	832	1,004	120,777	203,088	2.67	8.4	181.1	181.1	10.46	383.73
Live or ornamental fish (ind)	2.636.850	16.43	2.450.000	34.758	155.474	5,277,098	5.17	0.02	3.1	3.1	1.45	12.84
Others (pcs)	62,880	3,458	4,714	9,076	2,618	82,746	62.88	3.46	126	126	0.06	318.4

Source: MMFA (2019).

The sustainability of the ecosystem. The actions taken by Task Force 115 indirectly affect the condition of ecosystems and fish resources in Indonesian waters. Marine ecosystem resources in this context include coral reef ecosystems, mangrove ecosystems, and seagrass ecosystems. The effectiveness of protection to marine resources, overfishing and IUU fishing pose as major problems in Indonesia that needs to be solved simultaneously. MPA (marine protected area) can be used to reduce overfishing (Yunanto et al 2018), but IUU fishing practices hinder the effectiveness of such protection. IUU fishing also reduce the ability of the aquatic system to continue providing important ecosystem services and important food resources (Ma 2020).

Coral reefs. Coral reefs have declined in diversity starting from Kalimantan to Sumatra. The large amount of river sedimentation flowing into the Java Sea (from Java and Kalimantan) causes corals to not grow properly due to murky waters and unstable salinity. This also happened in the East Coast of Sumatra. In contrast to the West Coast of Sumatra and the South Coast of Java, extreme hydrodynamic conditions in the waters cause not all coral types to be able to grow (Giyanto et al 2017). In addition, this region is directly adjacent to the Indian Ocean which is characterized by low coral diversity. The total area of coral reefs in Indonesia is 2.5 million hectares. The area of coral reefs for each of the large islands in Indonesian waters is shown in Table 5.

Table 5

Large area of coral reef in 2017

Region	Large area (ha)
Bali	8,837
Java	67,869
Kalimantan	119,304
Maluku	439,110
Nusa Tenggara	272,123
Papua	269,402
Sulawesi	862,627
Sumatra	478,587
Total	2,517,859

Source: Giyanto et al (2017).

In 2017, the total area of marine conservation areas in Indonesia was around 19 million hectares (1067 sites). The location of marine conservation areas is spread out of the waters of western, central and eastern Indonesia. In general, the condition of coral reefs in Indonesia in 2017 experienced a slight change compared to the previous year (Figure 10). There were 386 sites (36.18%) in damaged category, 366 sites (34.4%) in moderate category, 245 sites (22.96%) in good category and 70 sites (6.56%) in very good category. When compared to the previous year, the category of good and moderate reefs experienced a decline, but conversely the category of reefs very good and bad experienced an increase. In this case, some reefs in the good category go up to very good and some go down to the damaged category, while some in moderate category go down to the bad category (Hadi et al 2018).

From the data in Figure 10, the relation between the Task Force 115 activity and the condition of coral reefs in Indonesia in general has not been clearly explained. This is because the survival indicators of coral reefs are not only dependent on fishing activities, but are related to environmental conditions and the influence of the land. According to Paulangan et al (2019), anthropogenic damage such as destructive fishing (using bomb and poison) and coastal tourism activities (such as unprofessional snorkeling and anchoring) have greatly damaged coral reefs. According to Fahlevy et al (2019), some coral degradation has strong correlation with touristic activities and environmental condition (including light intensity, turbidity, and currents). Some diseases also attack the reef, especially at crest part.

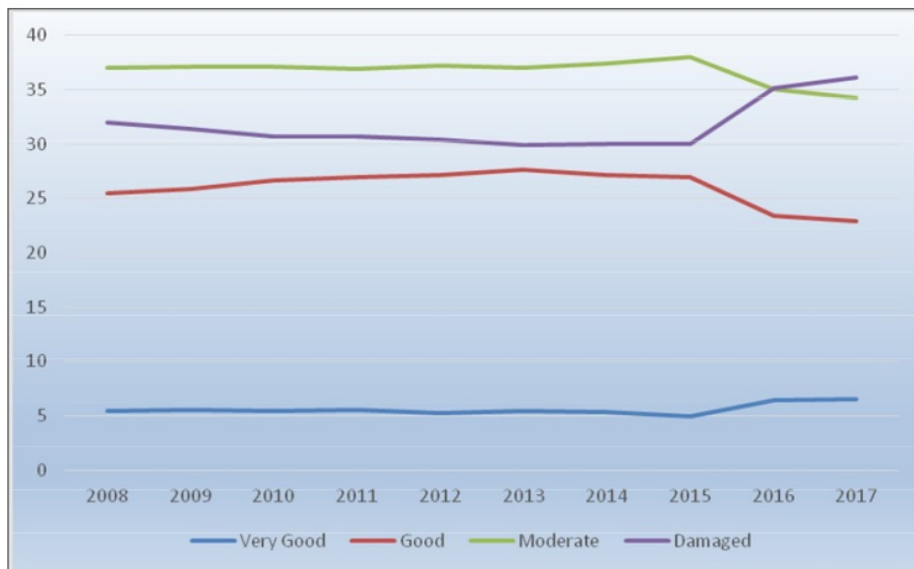


Figure 10. Percentage of coral reef condition in Indonesia 2008-2017 (Source: BPS-Statistic Indonesia (2009 to 2019)).

Seagrass. Seagrass conditions in Indonesia are divided into 3 categories, namely healthy, moderate, and bad. The condition is considered healthy if it covers more than 60% of particular area, moderate if it covers 30-59.9% of an area, and bad if it covers between 0-29.9% of an area (MEF 2004). The area of seagrass in Indonesia is 150,693.16 ha. Seagrass area in Western Indonesia is 4,409.48 ha and in Eastern Indonesia is 146,283.68 ha (Figure 11).



Figure 11. Map of seagrass in Indonesia 2017 (Source: Hernawan et al (2017)).

The results of the assessment on seagrass coverage and health conducted by LIPI and Coremap-CTI, show that the status of seagrass in Indonesia in 2017 tends to be unhealthy, and at three point shows poor or very unhealthy status. When linked to Task Force 115 activities, similar to coral reefs, the condition of seagrass ecosystems has not been enough described when linked to the influence of Task Force 115 activities. According to Tuahatu et al (2016), an increase in organic matter and polycyclic aromatic

hydrocarbons (PAHs) in waters has an impact on the degradation of the aquatic environment and biodiversity of natural resources including seagrass.

³
Mangrove. Indonesia has the most extensive mangrove ecosystem in the world and has the highest biodiversity. With a coastline length of 95.181 km², Indonesia has a mangrove area of 3,489,140.68 hectares. This amount²³ is equivalent to 23% of the world's mangrove ecosystems, from a total area of 16,830,000 hectares. From the total area of mangroves in Indonesia, it is known that 1,671,140.75 hectares are in good condition, while the remaining area of ²²17,999.93 hectares remains damaged (MEF 2017). Various efforts have been made by the Ministry of Environment and Forestry in the management of mangrove and coastal forests, such as the rehabilitation of forest and land (RFH) of mangroves and collaboration with the private sector. The RFH of mangrove that has been realized in 2010-2014 is 31,675 hectares. In 2015, the RFH of mangrove area of 430 hectares was carried out²¹. For 2016, mangrove rehabilitation has increased to an area of 497 hectares. However, based on data from the Ministry of Environment and Forestry, in the last 3 decades mangrove ecosystems in Indonesia tend to continue to suffer damages caused by several factors, such as the conversion of functions into ponds, settlements, industry and plantations. With regards to the Task Force 115 activities, as well as coral reef ecosystems and seagrass ecosystems, a significant correlation between Task Unit 115 activities and the condition of mangrove ecosystems cannot be described yet. The condition of mangroves is influenced by several factors, including physical, chemical, and biological. According to Malik et al (2019), sustainability of mangrove areas is very dependable on the existence of biodiversity. Meanwhile, cutting mangrove for firewood and house materials, and conversion mangrove area to aquaculture area still occur in Indonesia. According to Kusmana et al (2018), the highest mangrove ecosystem damage is caused by coastal community activities in mangrove forest, despite the fact that the local community actually wants a sustainable mangrove ecosystem because they still need mangrove forests around their villages.

Conclusions. The existence of Task Force 115 has proven to gradually reduce the overfishing phenomenon massively by IUU fishing actors in Indonesian waters. This has an impact on reducing the fishing ground distance and fishing time, as well as increasing the variety and quantity of fish caught. The next impact is an increase in productivity and welfare of coastal communities, especially small fishermen. However, the impacts on the protection of marine ecosystem from the existence of Task Force 115 is more indirect. The Indonesian government's efforts to eradicate IUU fishing for approximately 4 years have had a positive impact that can be enjoyed by the people of Indonesia. During the period of 2013 to 2017, Indonesian fish stocks continued to increase from 7.31 million tons (2013) to 12.54 million tons (2017).

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