

# Strengthening the Roles of Sustainable Maritime Economy in East Java, Indonesia

*by Arman Arman*

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# Strengthening the Roles of Sustainable Maritime Economy in East Java, Indonesia

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**Abstract** – East Java is one of the strategic areas in strengthening the maritime economy in Indonesia. This study aims to (1) observe the roles of the maritime sector on the economic development in East Java, Indonesia; especially in the period of 2010-2015, and (2) to analyze the government's efforts in regulating the maritime sector in order to strengthen the strategies and safeguard and protect maritime users on an ongoing basis. The method used is input output (IO) method using data of IO year 2010 and 2015 East Java. The analysis shows that the maritime industry sector is a strategic sector in boosting regional economic performance. Some indications that cause the sector to be strategic are (1) the output of the maritime sector has been much processed before it reaches the final demand, (2) market consumption more in the processed industry, (3) the fishery product is processed before it is exported (4) Widespread market run (5) possess a wider range of investments and (6) stronger sector linkages. Furthermore, the government regulations through ministerial laws help the maritime industry be more strategic and promote environmentally-sound maritime development.

*Key words; maritime economy, role, strengthening, sustainable*

## I. INTRODUCTION

Currently, the Government of Indonesia is very concerned about the maritime conditions and its sovereignty, after a long period of development more directed in the mainland. The government and the public believe that the wealth of Indonesia is sourced from the sea. Government under the control of the ministry of marine and fisheries (KKP) reform the bureaucracy by changing the Ministerial Regulation No.2/MEN/2011 becomes the Ministerial Regulation No. 42/PERMEN-KP/2014 [1]. The CTF is moving quickly to prevent and resolve illegal fishing problems, unregistered vessels and unregulated vessels, called IUU fishing. Ministerial Regulation shall remain based on Law Number 45 Year 2009 concerning fisheries [2].

The Maritime Economy in this study takes into account the sectors/commodities of capture fisheries, aquaculture, fish processing and preservation, and marine transportation. This study aims to determine the roles of the maritime sector on the economic development in East Java, Indonesia, especially in the period of 2010-2015. Second, it aims to gain a closer understanding of the government's efforts in regulating the

maritime sector to play a role in strengthening the strategic sector which is environmentally-sound and sustainable.

East Java is one of the areas in Indonesia, which produces a large amount of fisheries and marine, fish processing industry and salt industry. East Java is classified as the third cluster for the production of capture fisheries, which is a group of areas capable of producing average capture fisheries between 220-400 thousand tons per year [3]. It is the third largest production of capture fishery after North Maluku and North Sumatera which made 352,779 tons in 2010, 375,827 tons in 2011 and 399,371 tons in 2014. Average production of aquaculture is classified as cluster 2; Cultivation fisheries amounted to 490 thousand-1 million tons. Throughout 2010-2014 the average production of aquaculture is 863,593 tons, representing the fourth largest average production after South Sulawesi, Central Sulawesi and East Nusa Tenggara.

Aquaculture continues to show its role in the fisheries and marine sector, which is shown by the increasing amount of production compared to capture fisheries. This situation also occurs in South Korea where the role and production of the aquaculture sector far surpasses capture fisheries [4].

However, the growth and development of the terrestrial fisheries sector has environmental impacts, such as the threat of mangrove damage, excessive use of chemical fertilizers and pollution. Environmental problems also occur in the marine fishery sector (capture fisheries) due to overfishing, bombing, toxic use and coral-shell damaged by fishing gear and social conflicts. This is a threat to maritime economic development in East Java and Indonesia.

One of the efforts to maintain maritime sustainability is the existence of Marine Protected Area (MPAs). MPAs not only protect the threat of environmental damage but can also provide economic benefits for fishermen. The objectives of MPAs are (1) increasing tourism production and recreation opportunities; (2) conserving critical ecosystems; and (3) sustainable coastal resource use [5]. MPAs can protect critical habitats, cultural heritage sites and conserve biodiversity [6]. Thus, Hanna asserted that the economic dimension creates a fit between economic incentives and ecosystem goals [7].

Furthermore, a comprehensive formula is needed to encourage the marine sector as the national flagship sector [8]. Therefore, coastal zones require an integrated management between land and sea [9]. Indeed, development should not separate local wisdom and local economics in the dimensions of maritime development. Lampe stated that there are at least four cultural insights of maritime archipelago and local wisdom: (1) insight about the environment; (2) insights about the sea and its contents as open-closed space; (3) insights on marine ethnic diversity and Maritime culture; and (4) the concept of unity of the homeland and maritime nation of the archipelago [10].

Moreover, maritime policy in a political and sustainable way should pay attention to traditional ecologi<sup>3</sup> knowledge and ecosystems. He divided into five things: (1) there is rice in the field and fish in the waters; (2) where there is water there are fish; (3) the sea begins in the mountains; (4) the wealth of the sea <sup>3</sup>ongs to the dead, the living and those yet to be born; and (5) our struggle is for the future: ours and that of the fish. Thus the maritime development policies should be based on local wisdom, culture, economy and ecosystem [11].

The Government has established sustainable development plans to achieve Sustainable Development Goals (SDGs) on marine resource midwives (1) to prevent and significantly reduce all types of marine pollution; (2) to manage and sustainably protect marine and coastal ecosystems in order to avoid excessive adverse impacts; and (3) to regulate non-excessive harvesting, illegal fishing and destructive fishing practices [12].

Currently, the production of the fisheries sector is not as good as the terrestrial fisheries in East Java. Therefore, inter-sectorial linkages are necessary in order to encourage investments and strengthen the economic base [13]. Supported by a good port infrastructure will make it more strategic. The port sector strongly supports the maritime industry both in import and export economy. This is reflected in the forward linkage value that tends to be greater than the backward linkage value [14].

The novelty in this study is to assess the roles of the maritime economy by juxtaposing the roles of government in strengthening the maritime sector through regulation of laws and governmental affairs.

**II. RESEARCH METHOD**

**A. Data**

The data used in this research is Input-Output (IO) data in 2010 and 2015. The data is obtained directly from the Central Statistics Agency (BPS) of East Java. Other data used to support this research are the laws and government regulations relating to fisheries and the management of fisheries resources in a sustainable way. Legislation data is used to compare with IO estimations.

**B. Method**

This research uses Input-Output (IO) analysis to assess and evaluate the roles of maritime economy in East Java-Indonesia. IO has 3 basic assumptions: (1) homogeneity; (2)

proportionality; and (3) additives [15,16]. The advantages of the IO method are its ability to assess changes in final demand in the event of economic changes and the ability to tune the economic performance in the short and medium terms. In general the equation can be formulated as follows:

**7**

$$\begin{aligned} x_{11} + x_{12} + x_{13} + F_1 &= X_1 + M_1 \\ x_{21} + x_{22} + x_{23} + F_2 &= X_2 + M_2 \end{aligned} \tag{1}$$

Equation (1) shows the number of inter-request added to the final-request equals to the amount of output plus the import. Equation (1) can be simplified as:

$$X_i = \sum_{j=1} x_{ij} + F_i - M_i \tag{2}$$

If the equation is based on a column, then it can be written as:

$$\begin{aligned} x_{11} + x_{21} + x_{31} + V_1 &= X_1 \\ x_{12} + x_{22} + x_{32} + V_2 &= X_2 \end{aligned} \tag{3}$$

Equation (3) can be simplified as:

$$\sum_{j=1} x_{ij} + V_j = X_j \tag{4}$$

- $x_{ij}$  : The number of i-sector outputs used as the j sector input
- $F_i$  : Final demand for sector i
- $X_i$  : Total output of sector i
- $M_i$  : Import production i
- $V_j$  : Primer input sector j
- $X_j$  : Total input sector j

Using the algebraic equation, combining equation 4 is obtained by a new equation ie.:

$$\sum_{i=1} F_i - \sum_{i=1} M_i = \sum_{i=1} V_j \tag{5}$$

**C. Leontif Matrix**

Furthermore, the identity matrix is reduced by the coefficient value through the inverse matrix. Leontif, an economist, discovered this astonishing matrix concept which was later named as Leontif Matrix. It can be written as:

$$B = (I - A)^{-1} \tag{6}$$

**III. RESULT AND DISCUSSION**

This research studies about the influences and roles of maritime sector on the performance of economic development in East Java, Indonesia, especially in the period of 2010-2015. Furthermore, It takes a closer look at the government's efforts in regulating the maritime sector which plays a role in strengthening the strategic sector in the East Java region of Indonesia, which is environmentally and sustainably minded. There are four sectors related to the maritime economy in the input-output table (IO) of 2010 and 2015: those are the marine fish sector and marine fishery products, the terrestrial fish sector and the fishery products, the processing and preservation of fish and marine biota, and the sea transportation sector. The results of maritime sector role analysis during the period of 2010-2015 are seen from the sides of backward linkage (BL) and forward linkage (FL) as presented in Table 1.



**Table 1. The Maritime Sectors in 2010 and 2015 in East Java**

Sector	2010				2015			
	BL	Rank	FL	Rank	BL	Rank	FL	Rank
1	1.27	73	1.22	50	1.25	94	1.24	58
2	1.54	28	1.40	33	1.36	75	1.72	27
3	1.84	5	1.07	75	1.92	17	1.79	21
4	1.34	59	1.37	36	2.17	2	1.47	38

Source: Data IO BPS, 2010 and 2015, processed  
 (1) Sea Fish and Sea Fishery Products, (2) Land Fish and Fishery Products, (3) Processing and Preservation of Fish and Biota; and (4) Sea Transportation.

Table 1 shows the value changes of BL and FL in 2010 and 2015 for each maritime sector. These changes had implications for the rankings of each maritime sector in boosting regional economic performance. The land fishery sector showed a good change from the forward linkage side but decreased significantly from the backward linkage side. The rank and value of the terrestrial fishery sector declined significantly from 28<sup>th</sup> in 2010 to 75<sup>th</sup> place in 2015, where there was a change in the value of BL from 1.54 to 1.36.

Different from that, fisheries products showed an increase of FL value from 1.40 in 2010 to 1.72 in 2015. This also resulted the ranking of the sector increased from 33<sup>rd</sup> rank in 2010 to 27<sup>th</sup> in 2015. This indicates that the increase of production from 634,279 tons in 2010 to 1,043,866 tons in year 2014 influenced the performance drivers of the region. This positive change indicates that the government's regulating the maritime sector on land fisheries affects the production increase.

The government seeks to increase the production of terrestrial fisheries by taking into account environmental and sustainability factors, especially those related to the extension of terrestrial aquaculture that potentially damages mangrove crops. Furthermore, the government advocates the use of environmentally friendly feed sources in order to reduce coastal pollution. Local and central government also increase the budget allocation in order to help the business of aquaculture through the provision of superior seeds, business assistance and empowerment of fishing communities.

The development of the fisheries sector is not as good as the sea fisheries sector. Marine fishery sector has not given significant changes to the economic performance in East Java. Overall, this sector shows relatively stagnant influence. This sector tends to decrease its ranking from the 73<sup>rd</sup> in 2010 to the 94<sup>th</sup> in 2015, based on backward linkage (BL).

Furthermore, the ranking of marine fish sector and marine fishery products based on forward linkage (FL) decreased (ranked 50<sup>th</sup> in year 2010 to rank 58<sup>th</sup> in year 2015). Although the value of forward linkage increased on the vulnerable of the year (1.22 in year 2010 to 1.24 in year 2015), but supply-side performance decreased when compared to other sectors. This is because other sectors produce relatively higher outputs at vulnerable years 2010-2015. But forward linkage changes are better than backward linkage where the forward linkage value is greater than backward linkage value. This shows that the production of marine fish sector and marine fishery products is relatively increasing (although small) in the time frame of 2010-2015. There are several indications causing it: (1) the marine fishery products shows an increasing trend in the vulnerable

year 2010-2015, (2) East Java Province is the largest contributor to the export value of fishery products nationally in 2014, where Tuna, Albacore and Skipjack (TAS) made US \$212 million, (3) the ministry of fisheries and maritime policy gave influences through the Regulation No.42/PERMEN-KP/2014 and Law No. 31/2006 on fisheries.

The Implementation of the ministerial law and regulations is an effort of the government to protect the sea to stay sustainable and prevent it from marine resource utilization that is not in accordance with environmental rules. The regulation restricts and prohibits the use of tank equipment that can damage the marine environment and regulate fishing lanes in every Fisheries Management Territory of the Republic of Indonesia (WPPNRI). Some points in which the government focuses are illegal, unregulated and unregistered (IUU) fishing. Besides, it also governs the sinking of vessels not in accordance with procedures. The regulation has not made a big change in terms of demand, although from the production side it shows a relatively small change. The marine fisheries sector shows an increase in production from 352,779 tons in 2010 to 399,371 tons in 2014. Meanwhile, the government regulation made a big change in the fish processing and preservation industry.

The fish processing industry sector has a strategic value because it can increase the added value and attract various other economic activities to grow faster. The fish processing and preservation sector was experiencing a vulnerable development in 2010-2015. The values of backward linkage and forward linkage on the vulnerable years increased; although its ranking decreased from the backward linkage side. The downgrade of this sector does not mean that the outputs and spreads on other sectors go down; but other sectors may produce output or increase faster. This shows that other sectors are more able to accelerate and attract investment.

Moreover, the fish preservation and processing industry increased from the production or supply side quite well. This is reflected on the increase of forward linkage value, from 1.07 in 2010 to 1.79 in 2015. The increase causes the fish processing industry ranked 21<sup>st</sup> in 2015, which was originally in the 75<sup>th</sup> position in 2010. This indicates that the fish processing industry in East Java was experiencing tremendous positive developments.

The processing and preservation of fish and biota performed well in terms of demand and production during the period of 2010-2015. One thing encouraging this sector to grow is the government's commitment to support small and large-scale industrial sectors. In addition, the government supports through the instruction of the President of the Republic of Indonesia Number 7 of 2016 on the Acceleration of Development of National Fishery Industry. This regulation is to limit the export of fish raw materials by prioritizing the export of finished or semi-finished materials. East Java benefited from a strategic position as an agglomeration area, which encouraged the demand for processed fish to increase as well as triggered the fish processing industry to grow.

The development of the maritime sector is strongly supported and influenced by sea transportation. East Java benefits from the port and as a national and international hub.

Marine transportation industry plays an important role in accelerating the flow of goods between domestic regions and international areas. Marine transportation has been developing rapidly in supporting the economy in East Java. This sector impacts greatly on other sectors and encourages investment and development of various sectors in East Java. This is reflected in the substantial increase of BL value in which was 1,345 in 2010 to 2,178 in 2015. However, the performance is not accompanied by inventories and increase in sea transport. This can be seen in the value of FL, which increased in a relatively small amount from 1.37 in 2010 to 1.47 in 2015. Development planning in sea transportation is needed to strengthen the maritime sector. Technological development and innovation is to realize in order to build marine transportation industry as a strategic sector.

#### A. Strategic Maritime Sector

The analysis shows that the strategic maritime sector in East Java in 2015 was the manufacturing sector. Previously, the strategic sectors in 2010 were land fisheries and marine transportation sectors. These changes indicate that the manufacturing sector began to develop; while the decline of the land fishery sector as a strategic sector is influenced by the investment power and the relation on the sector which does not change. Meanwhile, the decline in the marine transportation sector is influenced by the decline of sea transport facilities. This is reflected in the BL index and FL index in Table 2.

Table 2. The Values of BL and FL Indexes of Maritime Sectors in East Java.

Sector	2010		2015	
	BL Index	FL Index	BL Index	FL Index
1	0.97	0.93	0.80	0.79
2	1.18	1.07	0.87	1.10
3	1.41	0.81	1.23	1.15
4	1.34	1.37	1.39	0.94

Source: Data IO BPS, 2010 and 2015, processed

(1) Sea Fish and Sea Fishery Products, (2) Land Fish and Fishery Products, (3) Processing and Preservation of Fish and Biota; and (4) Sea Transportation.

The estimation results in Table 2 indicate that the role of the terrestrial fishery sector is on average decreasing from 2010 to 2015. In 2010 the terrestrial fisheries sector was a strategic sector. This is reflected in the values of the BL index and the FL index that exceeded 1. However, by 2015 the BL index value of the sector no longer exceeded 1. This indicates that the terrestrial sector is no longer a strategic sector on average compared to all sectors in Java East. This shift was driven by the investment driving force and declining inter-sectorial linkages. This situation indicates that regulatory requirements may trigger related sectors to grow through increased investment. Regulations on business licensing and sector extensification are very necessary to be the government's attention.

The land fish sector is increasing its supply because the productions of terrestrial fish such as catfish, tilapia and carp and shrimp grow every year; but the investment and relations of the sector do not change significantly. Especially catfish that shows increased production and increasing export capacity to various countries. The increasing need of land fish in the larger European and Asian countries drives the East Java government

develop the upstream-downstream concept to rise the competitiveness of the terrestrial fish processing sector. However, the growth of supply side has not been followed by the increase of investment and extensification of the sector.

Furthermore, the shift of the marine transportation sector as a strategic sector is on average due to the lack of sea transportation. East Java is lack of strong marine transportation industry. The transportation industry has become the government's priority in supporting the maritime sector as a whole. This is very important in supporting the flow of goods between domestic regions and international areas.

On the other hand, the marine fishery sector averagely has not shown significant changes. This is reflected in the values of BL and FL indexes which do not reach 1. This situation indicates that the marine fishery sector has not been able to push optimally from the demand side and supply side. The sector's linkages, investment and production value are still lower than the maritime sector and all sectors in East Java. The decline in the number of fishermen, especially small fishermen, could be the cause of low average output. Withal, the transition to regulatory change has not been fully able to encourage small-scale fishermen to play an active role in strengthening production in East Java. Although the production of marine fisheries sector 2010-2015 increased, the output did not exceed the values of other sector productions in East Java. The capability of resources and venture capital, especially the small fishermen are still very low; thus, affects the output of the sector.

**10** The decrease in the average value of backward linkage indicates that the attractiveness of the land fisheries sector does not increase. The effect of the sector on other sectors has not changed much or is relatively constant. This may be due to (1) the sectors directly related to the land fisheries sector have not changed much; (2) the output of other sectors used by the land fishery sector has not changed much; and (3) the investment spending has not changed much. This situation causes the land-based fisheries sector no longer declared as a strategic sector by 2015, as it was considered as a strategic sector in 2010.

The fish processing and preservation industry shows relatively better development compared to other maritime sectors which is reflected on the scattering and sensitivity values larger than 1. This situation indicates that the fish processing industry has significant added value as well as being a strategic sector. It gives a considerable influence on other sectors and economy in East Java.

Large, medium and small industries and household industries have an important role in strengthening the fish processing industry. This will lead to increased trade in industrial products and stronger inter-sectorial linkages. Local and central governments need to pay more attention to this change so that the policies on maritime processing industry development can be more advanced. Innovation and technology programs, especially in small industries and households need to be further improved.



#### IV. CONCLUSION

The analysis shows that the maritime sector in year 2010 and 2015 changed its structure. The changes made the strategic sectors in 2010 become non-strategic in 2015. The government laws and regulations are one of the causes of those changes.

The marine fisheries sector shows the ratings from 2010 to 2015 from both the forward linkage (FL) and backward linkage (BL) sides. It reveals that the seafood sector has less average output value than other sectors, relative stagnant sector relationships, declining number of fishermen and limited market reach.

The land fishery sector is quite developed on the production side but relatively stagnant on the demand side. This is reflected in the BL value that decreased in 2015 to 133, where in 2010 amounted to 154. It signifies that sectorial linkages, investment attractiveness and economic activity expansion are still relatively stagnant. The sector is no longer a strategic sector due to the decline in the average value of BL in 2015. On the supply side, production sector showed a significant increase where the FL value rose from 1.40 in 2010 to 172 in 2015. Ranking sector also climbed from 33 to 27 in 2015.

Significant positive changes are experienced by the processing and preservation industries and marine biota. The BL and FL values of these sectors increased in 2015. Although the BL average rating decreased, the BL average value still exceeded 1. This shows the fishery processing industry sector is classified as the strategic sector on average. It denotes that the maritime industry has these characteristics: (1) the output of the maritime sector has been much processed before it reaches the final demand; (2) the community consumption is more in the processed industry; (3) the fishery product is processed prior to export; (4) Market; (5) possess a wider range of investments; and (6) stronger sector linkages. Unlike the maritime transport sector, the sector decreased in the supply side, shown by the decrease of FL value. However, the BL value increased significantly so that the sector was in the second position. The maritime sector was no longer a strategic sector in 2015 due to the declining average FL value.

Withal, the government active role is very strategic in preserving natural resources through the ministerial regulations. Ministerial Regulation and Law No. 45 2009 on fisheries plays a very big role in maintaining the utilization of sustainable marine resources. In addition, the Ministerial Regulation No. 42/PERMEN-KP/2014 plays a role in preventing the processing of marine resources that are not environmentally friendly.

This study needs to focus more on estimating the impacts of regulatory changes and government policies on marine and fisheries sector and regional development. Relevant research methods to estimate the impacts are Computable General

Equilibrium (CGI) and simultaneous regression methods using panel data and time series.

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#### REFERENCES

- [1] [PP] Peraturan Menteri Kelautan dan Perikanan Nomor 2/2015. Larangan Penggunaan Alat Penangkapan Ikan Pukat Hela (Trawls) dan Pukat Tarik (Seine Nets) di Wilayah Pengelolaan Perikanan Negara Republik Indonesia. Kementerian Kelautan dan Perikanan, 2015.
- [2] [UU] Undang-Undang. Undang-Undang Nomor 45 Tahun 2004 tentang Perikanan. Negara Republik Indonesia, 2009.
- [3] [KKP] Kementerian Kelautan dan Perikanan. Analisis Data Pokok. Pusat Data Statistik dan Informasi. Kementerian Kelautan dan Perikanan, 2015.
- [4] Lee MK, Yoo SH. The Role of the Capture Fisheries and Aquaculture Sectors in the Korean National Economy: An input-output analysis. *Marine Policy*. 2014 Feb 28;44:448-56.
- [5] Geoghegan T, Smith A, Thacker K. Characterization of Caribbean Marine Protected Areas: An analysis of ecological, organizational, and socio-economic factors. CANARI Technical Report; 2001 Jul.
- [6] Sanchirico JN, Emerson PM. Marine Protected Areas: Economic and social implications. Washington, DC: Resources for the Future; 2002 May 13.
- [7] Hanna SS. Institutions for Marine Ecosystems: Economic incentives and fishery management. *Ecological Applications*. 1998 Feb 1;8(sp1).
- [8] Kusumastanto T. Pemberdayaan Sumberdaya Kelautan, Perikanan dan Perhubungan Laut dalam Abad XXI. Pusat Kajian Sumberdaya Pesisir dan Lautan, Institut Pertanian Bogor. 2003.
- [9] Steele JH. Regime Shifts in Marine Ecosystems. *Ecological Applications*. 1998 Feb 1;8(sp1).
- [10] Lampe M. Peranan Pelaut dalam Reproduksi Wawasan Kesatuan Geo-Bio-Sosial-Budaya Maritim Nusantara: Belajar dari nelayan pengembara bugis-makassar di sulawesi selatan. *Jurnal Masyarakat dan Budaya*. 2016;18(2):77-92.
- [11] Kurién J. Traditional Ecological Knowledge and Ecosystem Sustainability: New meaning to Asian coastal proverbs. *Ecological Applications*. 1998 Feb 1;8(sp1).
- [12] [BPS] Badan Pusat Statistik. Kajian Indikator Lintas Sektor ; Potret Awal Tujuan Pembangunan Berkelanjutan (Sustainable Development Goals) di Indonesia. Badan Pusat Statistik Indonesia, 2016.
- [13] Arman, Hadi S, Achسانی NA, Fauzi A. *Keterkaitan Ekonomi Interregional; Kajian Empiris Keterkaitan Pulau Sulawesi, Jawa Timur, Dan Kalimantan Timur* (Doctoral dissertation, Bogor Agricultural University (IPB)).
- [14] Chang YT, Shin SH, Lee PT. Economic Impact of Port Sectors on South African Economy: An input-output analysis. *Transport Policy*. 2014 Sep 30;35:333-40.
- [15] Miller RE, Blair PD. *Input-output Analysis: Foundations and Extensions*. Cambridge University Press; 2009 Jul 30.
- [16] [BPS] Badan Pusat Statistik. *Kerangka Teori dan Analisis Tabel Input-Output*. Bada Pusat Statistik, 2008. Jakarta

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*Key words:* maritime economy, role, strengthening, sustainable

#### 1. INTRODUCTION

Currently, the Government of Indonesia is very concerned about the maritime conditions and its sovereignty, after a long period of development more directed in the mainland. The government and the public believe that the wealth of Indonesia is sourced from the sea. Government under the control of the ministry of marine and fisheries (KKP) reform the bureaucracy by changing the Ministerial Regulation No.2/MEN/2011 becomes the Ministerial Regulation No. 42/PERMEN-KP/2014 [1]. The CTF is moving quickly to prevent and resolve illegal fishing problems, unregistered vessels and unregulated vessels, called IUU fishing. Ministerial Regulation shall remain based on Law Number 45 Year 2009 concerning Fisheries [2].

The Maritime Economy in this study takes into account the sectors/commodities of capture fisheries, aquaculture, fish processing and preservation, and marine transportation. This study aims to determine the roles of the maritime sector on the economic development in East Java, Indonesia, especially in the period of 2010-2015. Second, it aims to gain a closer understanding of the government's efforts in regulating the maritime sector to play a role in strengthening the strategic sector which is environmentally-sound and sustainable.

East Java is one of the areas in Indonesia, which produces a large amount of fisheries and marine, fish processing industry and salt industry. East Java is classified as the third cluster for the production of capture fisheries, which is a group of areas capable of producing average capture fisheries between 220-400 thousand tons per year [3]. It is the third largest production of capture fishery after North Maluku and North Sumatera which made 352,739 tons in 2010, 375,827 tons in 2011 and 399,371 tons in 2014. Average production of aquaculture is classified as cluster 2. Cultivation fisheries amounted to 400 thousand-1 million tons. Throughout 2010-2014 the average production of aquaculture is 863,593 tons, representing the fourth largest average production after South Sulawesi, Central Sulawesi and East Nusa Tenggara.

Aquaculture continues to show its role in the fisheries and marine sector, which is shown by the increasing amount of production compared to capture fisheries. This situation also occurs in South Korea where the role and production of the aquaculture sector far surpasses capture fisheries [4].

However, the growth and development of the terrestrial fisheries sector has environmental impacts, such as the threat of mangrove damage, excessive use of chemical fertilizers and pollution. Environmental problems also occur in the marine fishery sector (capture fisheries) due to overfishing, bombing, toxic use and coral-shell damaged by fishing gear and social conflicts. This is a threat to maritime economic development in East Java and Indonesia.

One of the efforts to maintain maritime sustainability is the existence of Marine Protected Area (MPAs). MPAs not only protect the threat of environmental damage but can also provide economic benefits for fishermen. The objectives of MPAs are (1) increasing tourism production and recreation opportunities; (2) conserving critical ecosystems; and (3) sustainable coastal resource use [5]. MPAs can protect critical habitats, cultural heritage sites and conserve biodiversity [6]. Thus, Hanna asserted that the economic dimension creates a fit between economic incentives and ecosystem goals [7].

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