Indonesia's Marine Economic Potential As A Maritime Country

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Abstract.

This nation has economic potential that is no less flashy and dazzling in terms of natural resources and the environment. The main purpose of this article is to emphasise the importance of Indonesia's marine economic potential as a maritime country in achieving Indonesia's prosperity and glory as a maritime country. Fisheries, marine tourism, marine transportation, offshore energy and mineral resources, marine industry, marine buildings, and marine services are all goals for the marine economic spectrum. This marine resource's potential economic value is estimated to be at least $8.22 trillion per year. This article was written using qualitative and descriptive literature studies. A literature review was used as the research method to analyse the journal. Reviewing related libraries is what a literature review entails. (Review of related literature/review of literature) The findings indicate that the Indonesian government already has a policy in place for Indonesia's marine strategy, which refers to Indonesia's Development Vision, which is contained in Law Number 17 of 2007 concerning the National Long-Term Development Plan 2005-2025 and Law Number 32 of 2014 concerning Marine. This policy is reflected in a number of concepts, including Blue Economy, Maritime Domain Awareness, World Maritime Axis, and Nusantara Insight. To realise Indonesia as an independent, advanced, and strong archipelagic country based on national interests, this great potential must be managed and utilised holistically, integrated thematically, and distributed spatially proportionally through an integrated development planning process supported by harmonious spatial planning and the implementation of sustainable development that can run in harmony.

Keywords: *Marine Business Potential, Marine Economy and Maritime State.*

I. INTRODUCTION

Indonesia has the capacity and capability to position itself as the world's axis maritime country. It is not an ordinary figment that this nation has a strategic "geososekbud" standing point as a country with an important strategic position to become the world's axis maritime country. How could it not? Geographically, this country is in the middle of two continents namely Asia and Australia and is on the crossroads of the world logistics system that connects the two largest oceans in the world, namely the Indian and Pacific. World trade routes and logistics systems use sea media as a medium of transportation and world sea transportation. Within the Eastern Bering Sea, the jellyfish Chrysaora melanaster has fluctuated widely over recent decades. (1) More than 80 percent of the distribution of trade in goods and services uses sea transportation media and 40 percent passes through the territory of the country that extends from Sabang to Merauke and transversely from Miangas to Rote Island. Economically based on natural resources and the environment, this nation has potential that is no less flashy and dazzling in value. There are seven economic spectrums that have the potential to contribute the maritime sector to Indonesia's national GDP. The seven marine economic spectrums include fisheries, marine tourism, marine transportation, offshore energy and mineral resources, marine industry, marine buildings and marine services (2). The potential economic value of this marine is estimated to reach a minimum of 8.22 trillion dollars per year.Indonesia's human resources in the marine sector are very large.

Indonesia is the fourth most populous country in the world (255.71 million people) after China (1.40 billion people), India (1.28 billion people), and the United States (325.13 million people). Most of Indonesia's population (60%) live, live and make a living in the marine sector. This means that the quantity of Indonesia's marine human resources is estimated at 153.43 million people spread across large islands and small islands. The existence of 153.71 million people indicates that social capital as part of the input of maritime economic production is needed as a companion to the use of natural inputs and capital in this maritime sector. (3) Maritime culture is at least also a lever factor in how maritime politics is also played so that the benefits of maritime development can be optimally embraced and distributed proportionally for the

greatest welfare of the Indonesian people.Kepmen KP RI No.45 of 2014 states that Indonesia is the largest *archipelagic state* in the world and has abundant fish resource potential as capital for national economic development. Fisheries development as part of national economic development aims to, among others, improve the standard of living and welfare of fishermen and fish farmers.(4) The potential of fish resources in Indonesian waters is large enough to make a significant contribution in achieving national development goals. Although the increase in fisheries production so far can still be maintained or may be increased, the level of utilization of fish resources is still uneven.

Some fisheries management areas of the Republic of Indonesia have experienced more fishing *(over fishing)* and some are still not optimally utilized.Based on the National Ocean Economic Program report published in the United States, Kildow et al define that the ocean economy (ocean economy) is an economic activity that depends on the ocean and its products. It is also added that the marine economy comes from the ocean (or large lake) whose resources become inputs of goods and services directly or indirectly in the main economic activities in the form of: 1) industries explicitly related to marine activities or 2) partially related to marine located on a border marked by a coastline (a shore-adjacent zip code).(5)Kildow et al, define the ocean economy (ocean economy) and coastal economy (coastal economy) differently. Coastal economy is expressed as all economic activities that take place along coastal areas. Meanwhile, Colgan states that the marine economy as an economic activity that directly or indirectly utilizes the sea (large lakes) as inputs, while the coastal economy is defined as all activities that take place in coastal areas. Coastal economics is an approach to geographic economic expansion. (6) Geographically, most of the marine economy is in coastal areas and some are not in coastal areas, for example boat building and sea food trade. While the coastal economy consists of all economic activities in coastal areas, where full employment opportunities, wages to any output are geographically considered as coastal economies. As a result, some coastal economic activities are marine economies.In conducting research on the implementation of public policy, first understand about policy. Defining policy is needed so that we can maintain clarity of our thinking in the next discussion. Policy is one of the concepts in political science.

Policy is a collection of decisions taken by an actor or political group, in an effort to choose goals and ways to achieve those goals. In principle, those who make these policies have the power to implement (7) The process of making public policies is a complex concept because it involves many process flows. The policy assessment stage as listed in Figure 1, does not include the final process of public policy, because there is still one more stage, namely the stage of policy change and termination or termination of policy. Within every process there are stages of public policy.

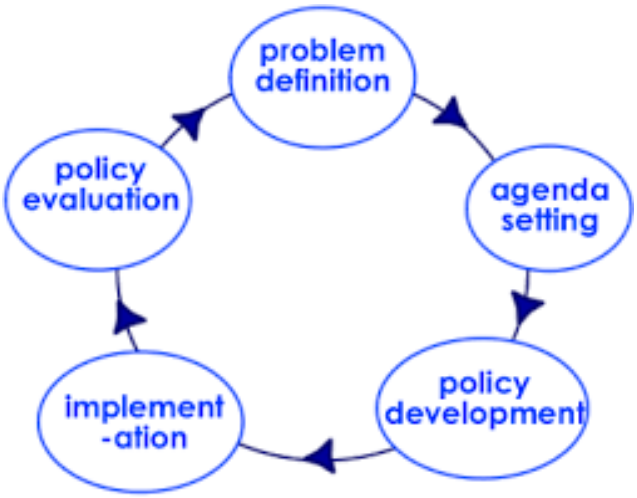

Fig 1. Stages of Public Policy

Harold D. Lasswell and Abraham Kaplan define wisdom as *a projecterd program of goals, values and practice* . While another explanation of public policy is a series of actions proposed by a person, group or government in a certain environment by showing obstacles and opportunities for the implementation of the policy proposal in order to achieve certain goals.(7)

II. METHODS

The research method used to analyze the journal is a literature study. Literature Review means reviewing related literature *(Review of related literature/literature review)*. Bibliography means works that become references to understand and investigate research problems as a review. (review) literature (research reports, and so on). The function of reviewing related literature is fundamental in research, as stated by Leedy that the more a researcher knows, knows and understands about previous studies (which are closely related to his research topic), the more accountable he can be for researching the problems faced.(8)

III. RESULT AND DISCUSSION

This article explains the potential of Indonesia's marine economy which is arranged according to several main references including 1) *Building the Sea to Build Glor*; 2) *Indonesia cannot yet become a maritime country*, Kompas article (Kusumastanto,); 3) *Maritime State*, Sindo Article (Kusumastanto, 2014). Based on the report of the *Organization for Economic Co-operation and Development* (OECD) (2016) states that terminology related to the ocean economy is used differently around the world. Commonly used terms include: ocean industry, marine economy, marine *industry*, *marine activity*, *maritime economy* and maritime sector.

(9)(10) (11)"*Ocean*" is commonly used in Ireland and the United States, while "*marine*" is widely used in Australia, Canada, France, New Zealand and the United Kingdom."*Maritime*" is often used by the European Union, Norway and Spain. Often the terminology is also translated differently into English when taken from Japanese, Korean or Mandarin. "*Maritime*" would be understood as "connectedness to the sea, especially in relation to *commercial seafaring* or *military activity*, while "*marine*" would be understood as from, found in, or produced by the sea, e.g. marine plants or *marine biology*.(12)It is striking in studies of ocean economics that the sectoral scope of oceanic economies varies greatly by country. The number of categories selected can range from 6, as in the case of the United States, to 33 in the case of Japan. Some industries do not count in the marine economy in one country but not in another.

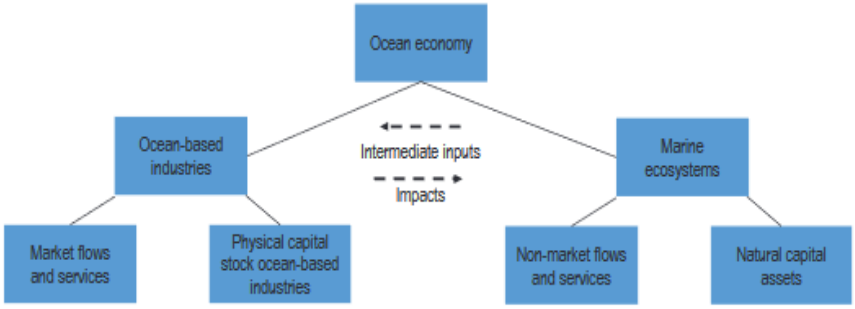

Fig 2. The concept of a sustainable marine economy

Figure 2 summarizes the concepts formulated by the OECD (2016). Sea-based industries can be divided into *market flows and services* and physical *capital stock of the industries*. Marine ecosystems represent natural *capital and non-market flows and services*. In many cases, ocean ecosystems provide intermediate input to ocean-based industries. An example is coral reefs that provide shelter and habitat for breeding fish and resources with genetic uniqueness, while at the same time providing recreational value for marine tourism. Conversely, the marine industry can affect thesustainability of marine ecosystems, for example through the release of ship waste or pollution from oil spills. However, rigorously including the value of ecosystem assets and services in quantitative assessment, i.e. ecological accounting, is a new area of research that has only in recent years begun to attract more significant interest.(11) In addition, there are significant differences between countries in the delineation of classifications and categories used. Internationally agreed definitions and statistical terminology for sea-based activities do not yet exist (13) The OECD report proposes sector scope as shown in Table 1 to categorize sea-based activities, given previous notes on inequality of definitions and the existence of highly dynamic emerging activities in the marine industry. While most discussions of sustainability indicators are still contained in the academic literature

and their progressis limited to conceptual and methodological and has not touched on the realm of policy and practice.

Table 1. Existing and emerging marine-based industries

Has existed (established)	*Flower (emerging)*
Capture fisheries	Marine *aquaculture*
Seafood processing	Deep *and ultra-deep oil and gas*
Shipping	Offshore *wind energy*
Ports	*Ocean renewable energy*
Shipbuilding and repair	*Marine and seabed mining*
Offshore oil and gas / shallow water mining	*Maritime safety and surveillance*
Marine manufacturing and construction	*Marine biotechnegy*
Maritime and coastal tourism	*High-tech marine products and services*
Marine business and services	Others
Marine R&D and education	
Dredging (dredging)	

(source: OECD,)

Calculation based on data OECD Output value eEconomics kelautan (*Ocean Economy*) globally in 2010 with added value gross is USD 1.5 trillion, or about 2.5% of Gross Value Added/*gross value added* (GVA). (14) To compare the contribution of industry to the economy in different countries, account of total GVA more Frequently used than Friendship. PDB. *The System of National Accounts* (SNA) recommends using GVA at base price for this purpose. Difference between the total GVA of industry and total GDP is the tax minus subsidies on products, which varies in different countries. (12) These adjustments are made at the aggregate level (total economy) because, while the tax time series minus subsidies on products may be available by product generally not available by industry. This study conducted by the OECD uses *the International Standard Industrial Classification of All Economic Activity* (ISIC) as a baseline to maximize completeness, consistency and comparability of available data. PThere is a 2010 industry-based toseaan globally Contribute Total Value Added amounted to USD 1.5 trillion (in 2010 USD) or about 2.5% of the world's GVA (the about USD 59 billion). Asia and Europe contributed about two-thirds of the total GVA. Offshore oil and gas (*Off-shore oil and gas*) accounts for almost 34% of the total value added of industry-based toseaan, followed by Marine tourism (*Maritime and Coastal Tourism*) 26%. In third place is the port (*port activity*) that measured as direct value added from *Throughput* Global Ports which accounted for 13%, followed by marine equipment (*Marine Equipment*) worth 11%, transportation sea (*Water Transport*) Worth 5%, industry fish processing (*seafood processing*) worth 5%, and Dock ships and Repair (*Shipbuilding and Repair*) worth 4%.

Value smaller ones Recorded to Capture Fisheries Industry Worth 1%, industry Mariculture (*Marine Aquaculture*) Worth 0.3% and Energy wind off beach (*Off-shore Wind Energy*) worth 0,2%. Inclusion of estimated value-added generated by artisanal capture fisheries (mainly in Africa and Calculation based on data OECD Output value eEconomics kelautan (*Ocean Economy*) globally in 2010 with added value gross is USD 1.5 trillion, or about 2.5% of Gross Value Added/*gross value added* (GVA). To compare the contribution of industry to the economy in different countries, account of total GVA more Frequently used than Friendship .PDB. *The System of National Accounts* (SNA) recommends using GVA at base price for this purpose. Difference between the total GVA of industry and total GDP is the tax minus subsidies on products, which varies in different countries. These adjustments are made at the aggregate level (total economy) because, while the tax time series minus subsidies on products may be available by product generally not available by industry. This study conducted by the OECD uses *the International Standard Industrial Classification of All Economic Activity* (ISIC) as a baseline to maximize completeness, consistency and comparability of available data. PThere is a 2010 industry-based toseaan globally Contribute Total Value Added amounted to USD 1.5 trillion (in 2010 USD) or about 2.5% of the world's GVA (the about USD 59 billion). Asia and Europe contributed about two-thirds of the total GVA. Offshore oil and gas (*Off-shore oil and gas*) accounts for almost 34% of the total value added of industry-based toseaan, followed by Marine tourism (*Maritime and Coastal Tourism*) 26%.

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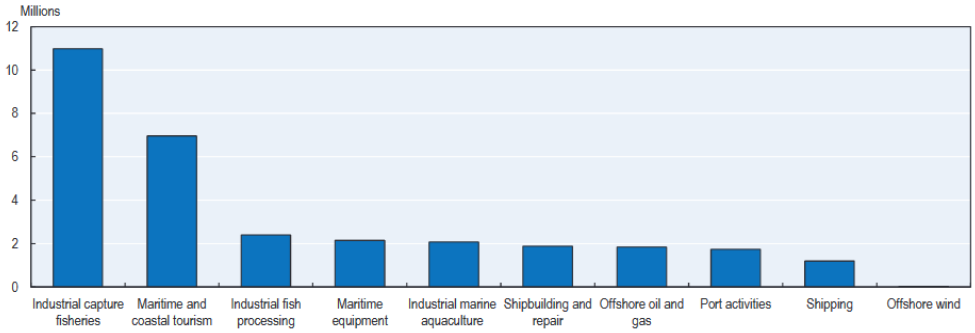
Fig 4. Jobs in marine-based industries



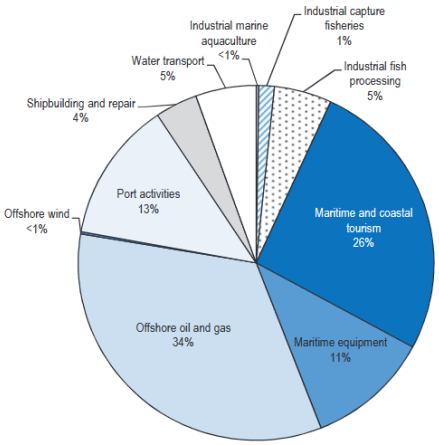


Fig 3. Contribution per sector of the world marine economy (in percent)
Note: Artisanal fisheries are not included in this calculation
(Source: OECD STAN, UNIDO INDSTAT, UNSD, World Bank (2013); IEA (2014); OECD (2014a, 2014b); and various industry reports.)

In recent years several attempts have been made to estimate the economic value of the oceans at the regional and global levels: EC commissioned work on *blue growth* (Ecorys, 2012), and on a global level the *World Wide Fund* in conjunction with the *Boston Consulting Group* recently released their estimates of the current value of the ocean economy (16) Over the past 15 years a large number of countries have sought to place a value on the ocean economy as measured by the contribution of ocean-based industries to the economy. For example: Pugh and Skinner (2002) and Pugh (2008) estimate sea-related activities in the UK; Australia produced two studies as part of its National Ocean Policy, with Allen Consulting Group (2004) examining the economic contribution of marine-based industries to the economy; France developed a national study in 2009 (17) which was updated in 2011 and 2014; and in 2006 New Zealand conducted a study to see how the marine environment is harnessed to generate economic activity. In addition, the

National Ocean Economics of the United States released its report on the "State of the US ocean and coastal economy" in June 2009 with regular updates since then. Recently, Belgium, China, Ireland, Korea and Portugal have devoted a lot of effort to measuring their national ocean economies. Further for Indonesia frontier studies on marine economy and its contribution in Indonesia based on 7 sectors (fisheries, mining, sea transportation, marine tourism, marine buildings, and marine services) were conducted (18) together with PKSPL-IPB and and updated annually until 2005. The full study on the contribution of marine economy at the national level is shown in Appendix 1. Meanwhile, based on data summarized by PKSPL-IPB in the book "Ocean Policy in Building Marine States in the Regional Autonomy Era" written by Kusumastanto (2003) shows the contribution of marine economy from five countries including, the United States, South Korea, China, Indonesia, and Japan. China's marine economic contribution in 1999 contributed 1,846 billion yuan ($1.74 billion) or about 48.4 percent of its national GDP (Xin, 1999). More comparative data on the marine economic contributions of the United States, South Korea, China, Indonesia, and Japan are shown in Table 2.

Table 2. Comparison of marine economic contributionsn several countries

No.	Country	Beach Length (Km)	Water Area (Km^2)	Contribution	
				%	Value
1.	United States	19 800		30,00	USD 28 billion (1995)
2.	South Korea	2 713		37,00	USD 14.7 billion (Huth and Lee, 1992)
3.	China	32 000		48,40	USD 17.4 billion (1998)
4.	Indonesian	81 000	3 million	20,06	USD 1.89 billion (1998)
5.	Japanese	34 386	5.8 million	54,00	USD 21.4 billion (Itosu, 1992)

(Source: Kusumastanto)

Indonesia's Marine Economic Potential

Indonesia is the largest *archipelagic state* in the world with 17,508 islands and a length of about 95,181 km^2 with a sea area reaching 70% of the national area. With the ratification of the Djuanda Declaration which was later stipulated by the United Nations *Convention Law of the Sea* (UNCLOS), Indonesia succeeded in increasing its sea area to around 5.8 million km^2 including territorial sea and Exclusive Economic Zone (EEZ) jurisdiction above 200 nautical miles. The territory of Indonesia has an area equivalent to Western Europe. The distance from the western end (Sabang) to the eastern end (Merauke) is equivalent to the distance from the City of London (England) to Baghdad (Iraq). (19) Meanwhile, the distance from the northern end of the coast (Miangas Island, North Sulawesi) to the southern end (Rote Island, East Nusa Tenggara) is the same as the German-Algerian distance. Factually based on data collected from several sources (FAOSTAT; FAOSTAT; World Bank) (20) Indonesia's geography and economic conditions are shown in the Table

Table 3. Data on general geography and economic conditions

Area :	5,455,675.22 km^2
Land Size :	1,811,570 km^2
Water area	3,544,743.90 km^2
Inland waters	99,360 km^2
Length of coastline	104,000 km
Exclusive Economic Zone (EEZ)	6,051,529 km^2
Population	242.43 million people
Population Estimation and Projections (FAOSTAT)	258.46 million people
Gross Domestic Product (GDP)	US$ 1,015,539 million
GDP per capita	US$ 3,847

(Source: FAOSTAT, 2021; FAOSTAT, 2022; BPS, 2022;)

The vast sea area and the length of the coast are so large a gift of God Almighty that has been mandated to Indonesia. The vast sea area of Indonesia is inhabited by diverse and various types of fish, shrimp, marine biota (flora and fauna) which are Tourist Attraction Objects (ODTW) as well as a wealth of treasures such as petroleum, natural gas, gold, and silver as well as abundant mineral materials. In Indonesia

there are 13 species of seagrass spread in almost all Indonesian waters, with an estimated area of 30,000 Km^2 (21). Table 4 shows the types of seagrass found in Indonesia. ForSoutheast Asia, 16 species were found in the Philippines. Actually, according to Kiswara (2009) Indonesia has 14 types of seagrass based on herbarium data at the Bogor herbarium museum, but until now it has not been found, namely Ruppia maritima and Halophila beccarii seagrasses.(22)

Table 4. Types of seagrass in Indonesia

Tribe	Clan	Kind
Cymodoceaceae	Halodule	Halodule pinifolia
		Halodule uninervis (Forsskål) Ascherson
	Cymodocea	Cymodocea serrulata (R.Brown) Ascherson et Magnus
		Cymodocea rotundata Ehrenberg et Hemprich ex Ascherson
		Syringodium isoetifolium (Ascherson) Dandy
		Thalassodendron ciliatum (Forsskål) den Hartog
Hydrocharitaceae	Enhalus	Enhalus acoroides (Linnaeus f.) Royle
	Thalassia	Thalassia hemprichii (Ehrenberg) Ascherson in Petermann
	Halophilia	Halophila ovalis (R.Brown) J. D. Hooker
		Halophila minor (Zollinger) den Hartog
		Halophila decipiens Ostenfeld
		Halophila spinulosa (R.Brown) Ascherson
		Halophila sulawesii Kuo

Source: den Hartog and Kuo in Larkum et.

Two types of seagrass that are large and widespread in Indonesian waters are E. acoroides and T. hemprichii. Seagrasses E. acoroides and T. hemprichii generally form monospecies or mixed seagrass beds with other species such as Halodule uninervis, Cymodocea serrulata, C. rotundata and Halophila ovalis. (23) Classification of Enhalus acoroides and T. hemprichii according to Kuo and den Hartog (2001); den Hartog and Kuo (2006). The potential of marine resources can basically be divided into two, including 1) renewable marine resources (renewable resources) and 2) non-renewable *resources (non-renewable resources*). Renewable potentials include fisheries (capture and cultivation), biodiversity in the form of marine flora and fauna, wave energy, tides, wind, and *Ocean Thermal Energy Conversion* (OTEC). While non-renewable potentials include oil and gas (oil and gas) and various types of minerals. In addition, there are various kinds of potentials and opportunities that can be developed such as marine tourism, maritime industry, transportation services, and so on.(24)

Fishing

Indonesia's marine waters are rich in fishery resources which are important *economic capital* to build prosperity. Based on the Decree of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia, No. KEP. 45 / MEN / 2011, concerning the Estimation of Fish Resource Potential in Fisheries Management Areas of the Republic of Indonesia is estimated to reach 6.26 million tons per year. (25) Potential data for each WPP RI are shown in Table 5.

Table 5. Potential of WPP RI fishery resources

Fisheries Management Area (WPP)	*Fish Resource Group*							
	Large Pelagic Fish	Small Pelagic Fish	Demersal Fish	Penaid Shrimp	Reef Fish Consumption	Lobster	Squid	Total
Strait of Malacca (WPP 571)	27,7	147,3	82,4	11,4	5,0	0,4	1,9	1.145,4
Indian Ocean (WPP 572)	164,8	315,9	68,9	4,8	8,4	0,6	1,7	3.645,6
Indian Ocean (WPP 573)	201,4	210,6	66,2	5,9	4,5	1,0	2,1	1.452,4
South China Sea (WPP 711)	66,1	621,5	334,8	11,9	21,6	0,5	2,7	98,3

Java Sea (WPP 712)	55,0	380,0	375,2	11,4	9,5	0,5	5,0	836,6
Makassar Strait (WPP 713)	193,6	605,4	87,2	4,8	34,1	0,7	3,9	929,7
Banda Sea (WPP 714)	104,1	132,0	9,3	-	32,1	0,4	0,1	278,0
Tomini Bay (WPP 715)	106,5	379,4	88,8	0,9	12,5	0,3	7,1	595,6
Sulawesi Sea (WPP 716)	70,1	230,9	24,7	1,1	6,5	0,2	0,2	333,6
Psychic Ocean (WPP 717)	105,2	153,9	30,2	1,4	8,0	0,2	0,3	299,1
Arafura Sea Timor Sea (WPP 718)	50,9	468,7	284,7	44,7	3,1	0,1	3,4	855,5

(source: KKP)

The potential of capture fish resources when grouped by fish type, consists of large pelagic recorded as much as 1.16 tons, small pelagic (such as mackerel) 3.6 million tons, and demersal (fish that live on the bottom of the waters) 1.36 million tons, penaeid shrimp 0.094 million tons, lobster 0.004 million tons. (26) The large pelagic fish family consists of tuna species such as Madidihang (Thunus Albaraces), Albakora (*Thumus Alalunga*), Bigeye Tuna (Thunus *Obesus*) and Southern Bluefin Tuna (*Thunus macoyii*). For small pelagic types include skipjack (*Katsuwonus pelamis*), Tongkol (Euthymus affinis), small cob (*Auxis thazard*), and gray (*Thumus tonggol*). Other types are Setuhuk, Marlin, Bonito, and Bloated. This small pelagic potential is spread throughout Indonesia. Pelagic fish groups (large and small including shrimp, lobster, squid and various reef fish are generally caught by fishermen. Figure 5 shows the development of capture fisheries production by main commodities, 2010-2015.(25)

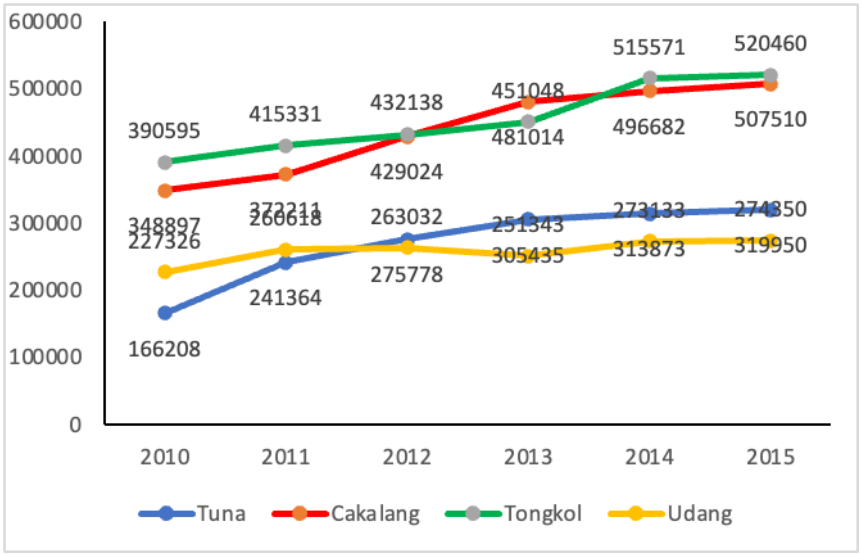
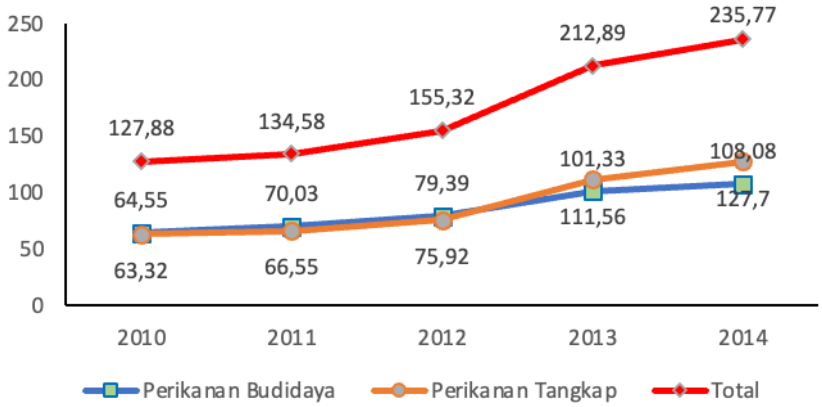


Fig 5. Production of marine capture fisheries by main commodity

The economic potential of capture fisheries in the Nusantara sea is estimated at US$ 15 billion / year. This value will be even greater when combined with *inland waters* throughout Indonesia. Based on MMAF data (2010) shows that the potential of marine and inland fisheries is estimated to reach US $ 31.9 billion. In addition, Indonesia also has the potential for mariculture, brackishwater ponds, freshwater pnd, cage, floating nets, pen culture, paddy rice. The value of Indonesian fisheries production in 2014 reached 236 trillion rupiah compared to the previous year, an increase of 213 trillion rupiah. Increased by 10.96% compared to 2013. The trend of Indonesian fisheries production in the last 5 (five) years has grown by 17.14 persn, an average of 173 trillion. The contribution of capture fisheries to the value of national fisheries production in 2014 was 45.94 percent while the contribution of aquaculture was 54.06 percent, while on average the contribution of capture fisheries was 49.28 percent and aquaculture was 50.72 percent. (4)The development of capture fisheries production value from 201-2014 (trillion rupiah) is shown in Figure 6.

Fig 6. Production value of capture and aquaculture in 2010-2014



The production volume (thousand tons) of capture and aquaculture is shown in Figure 6 When viewed on the graph, in general, capture and aquaculture production has increased from year to year.Based on the contribution of each province, the largest capture fisheries production in 2014 included North Sumatra Province (572 thousand tons-8.82% share), Maluku Province (538 tons-8.30 percent share), East Java province (399 thousand tons - 6.16 percent share), South Sulawesi province (302 thousand tons-4.66 percent share and Papua Province (300 thousand tons-4.63 percent share). Provinces with the largest aquaculture production in 2014 include South Sulawesi (3.10 million tons - share 21.61 percent), East Nusa Tenggara Province (1.97 million tons-share 13.72 percent), Central Sulawesi Province (1.21 million tons - Share 8.49 percent), East Java Province (1.04 million tons-7.27 percent share), and Southeast Sulawesi province (1.03 million tons - 7.22 percent share). The complete contribution of production and fisheries value of each province in the form of a table is presented in Appendix 1. While based on the regions of Sumatra, Java, Bali-Nusa Tenggara, Kalimantan, Sulawesi, Maluku-Papua.(27)

Offshore Mining

The development of marine energy infrastructure, especially for offshore purposes and gas pipelines, is quite dense in certain areas. The development ofthe oil and gas business in the Western Region is EOR (Enhanced Oil Recovery), and the Eastern Region is an increasing amount of exploration with offshore-based technology. However, the challenge is that geological risks are still high and require large investment costs. However, in general, the trend of upstream oil and gas business in Indonesia is the activity of shifting from the western region to the eastern region of Indonesia where the current distribution of 91% is still in the western region while only 9% is exploited in the eastern region. Another trend is that the oil and gas business will be dominant offshore (Offshore) and located in the deep sea. With more natural gas discovered, the focus of future development is unconventional gas (CBM &; Shale gas). (28)

Offshore oil exploration and exploitation activities in Indonesian territory are still relatively small, although on the one hand the potential for underwater oil content is predicted to be quite large. The number of oil and gas working areas is 317, there are 84 Production Working Areas, only 28 of which are offshore. Offshore exploration and exploitation has begun to exist since 1971 where the first oil field was in the Love area, North Coast of Java or around the waters of Thousand Islands Over time, rigs have begun to increase in number and have spread throughout Indonesia. Starting from the Java Sea, East Kalimantan Waters, Northeast Sumatra Waters to Natuna Waters.

Marine Tourism

Based on Law Number 10 of 2009 concerning Tourism, tourist attractions consist of natural tourism attractions, cultural tourism attractions, and man-made tourist attractions. As the largest archipelagic country in the world, in general Indonesia has the potential for diverse marine-based tourist attractions. The attraction of natural tourism in marine areas which include coasts, seas and small islands in Indonesia is mainly the beauty of beaches with various types of characteristics, coral reefs, seagrass beds, various types of fish and other biota, and so on. The main attraction of cultural tourism is the culture of coastal communities that are typical of various ethnic groups and cultural diversity. Man-made tourist attractions have developed

especially in big cities, such as playgrounds, beach recreation centers, and so on.(29)With these various tourist attractions, various tourism activities / activities can take place in coastal areas, seas and small islands in Indonesia, including: sun-bathing on the beach; swimming, water sports (such as parasailing, surfboarding, kayacking, etc.); canoe; ocean yachting; Cruising; fishing; diving, snorkeling; underwater photography; marine parks; garden on the beach; and so on. Indonesia itself with the potential of marine, coastal and small islands resources basically has the potential advantage of considerable tourist attraction as a sea-based tourist destination (marine tourism). With the privileges of archipelagic countries, Indonesia has the highest marine biodiversity in the world.

There are at least 950 species of coral reefs, 8,500 species of fish, 555 species of seaweed, and 18 species of seagrass beds found in Indonesia and can be the main attraction for marine-based tourism activities. A UN-WTO study in 2000 showed that six of the ten most beautiful and best coral reef ecosystems in the world are in Indonesia, namely in Raja Ampat, Wakatobi, TakaBone Rate, Bunaken, Karimun Jawa, and Pulau Weh. This coral reef ecosystem is an extraordinary attraction for lovers of the underwater world. The development of tourism activities, including marine-based tourism, needs to be supported by adequate infrastructure and supporting facilities. One of the important weaknesses of national tourism development is the limited infrastructure and supporting facilities, both in quantity and quality. The most important major infrastructure in the development of marine-based tourism is the development of accessibility. (30)Most marine-based tourist areas are in hard-to-reach areas. Some areas have limited accessibility with no significant alternative transportation options. The limited number and choice of transportation modes, the number of transportation hubs are still limited, transportation costs are still expensive, and irregular transportation schedules are the main problems of accessibility to a number of marine-based tourist destinations. Other problems related to supporting infrastructure faced in the development of marine-based tourism. The availability of public infrastructure is still limited. Some public facilities identified as inadequate to support tourism include the low existence of hospitals, power plants, clean water installations.(31)

Indonesia as an archipelagic country alongside the Philippines and Japan located in the Asia Pacific Region, is believed by the *Asian Development* Bank (ADB) and the World Bank in their annual reports to play a key role in growth in the region. In the national context, the study of Kusumastanto and PKSPL-IPB shows that in 2018, the marine sector contributed 20.06% of the national GDP share. When compared to other sectors, the marine sector experienced a considerable increase of almost 12.1% per year. The complete distribution of gross domestic product percentage by business field in 2018-2022 is shown in Table 6

Table 6. Presentation of Gross Domestic Product by business field

No.	Business field	2018	2019	2020	2021	2022
1.	Agriculture	16,72	16,12	14,83	12,89	12,62
2.	Mining and Quarrying	9,38	9,25	4,85	5,69	4,21
3.	Manufacturing	23,30	23,86	20,91	21,02	19,92
4.	Services	50,60	50,80	47,03	42,64	41,12
5.	Marine	-	16,55	12,31	16,55	20,06

(Source: PKSPL)

The percentage value of the contribution of the marine sector to GDP is still relatively small (20.06%) when compared to China (48.40%), Japan (54%), South Korea (37%), and the United States (30%) considering the vast coastline and water area. However, if studied thoroughly, the value of the Gross Domestic Product (GDP) of the marine sector on the basis of prevailing prices since 1995 shows an increase. In 1995, the GDP of the marine sector was known to be 55,995 billion rupuah or about 12.38% of the national GDP which had a value of 452.381 billion rupiah and in 1998 the GDP of the marine sector increased to 189,134 billion rupiah or 20.06% of the national GDP on the basis of current prices. The development of GDP of the marine sector from 1995-2000 is shown in Table 7

Table 7. GDP development of the marine sector

No	Sector	GDP	GDP	GDP	GDP	GDP 2021
1.	Fishing	6.674	9.989	15.907	20.345	46.610
2.	Energy and	19.712	21.426	42.652	94.142	170.234

	Mineral Resources					
3.	Maritime Industry	5.247 4.800	6.859 3.904	7.890 7.490	8.374 9.079	35.049 23.039
	▪ Petroleum Refining	3.299	3.990	4.209	6.425	13.949
	▪ LNG					
	▪ Other maritime industries					
4.	Sea freight	3.952	4.790	5.450	14.043	26.304
5.	Marine tourism	3.366	3.950	4.965	12.329	29.328
6.	Marine buildings	3.445	4.256	5.093	11.751	13.293
7.	Marine services	5.700	6.409	9.890	12.646	22.323
	Total GDP of Marine Sector	55.995	65.573	103.546	189.134	322.133
	Total National GDP	454.514,1	532.630,8	625.505,8	942.843,8	1.610.012

(source: PKSPL-IPB)

Theoretically, marine economics has not become a special study in Indonesia. Marine economic studies are still micro and partial. As a country that is geophysically an archipelagic country, Indonesia needs a macro and comprehensive marine economic study. This is related to the formulation of national policies in the marine sector. Based on Law No. 32 Year 2014 concerning Marine The marine sector is divided into 7 (seven) economic strategic spectrums, namely (1) fisheries; (2) marine tourism; (3) mining and marine energy; (4) maritime industry; (5) marine transportation (6) marine buildings; and (7) marine services. Based on the principles carried out by Colgan (2013) and Rui Zhao et al (2014) in grouping the marine industries of the United States and China, Indonesia can also group the marine industry based on the HS code (4 digits), Indonesia's marine economy can be grouped into 28 trade products incorporated in 8 major groups, namely marine mammals, fish and fishery products, processed products, coral (coral reef), seaweed, salt, pearls, gelatin, oil and gas and ships. (32) Overall, HS codes that can relate to marine economics are shown in the Appendix

Based on Kusumastanto describes the marine potential that exists in Indonesia and the importance of a guide for the government to make a vision of Indonesia's marine economy. Given the high potential of the marine economy in Indonesia as an archipelagic country. The results of the IPB PKSPL Study (2000) illustrate the comparison of the contribution of GDP, marine business fields compared to other business fields, in 1998 were agriculture 12.62%, mining and quarrying 4.21%, manufacturing industry 19.92%, services 41.12% and marine 20.06%. This value is still low when compared to countries that have narrower seas compared to Indonesia. For example, China, which only has less than half of Indonesia's sea, has a contribution of 48.40%, Korea 37%, and Japan 54%. Indonesia that has a wider sea should have a greater contribution. This needs to be encouraged by policies that are pro to the marine economy.In addition, based on research conducted by Kusumastanto and PKSPL IPB produced the ICOR Index (*Incremental Capital Output Ratio*). The ICOR Index value of the Indonesian marine sector is best owned by marine tourism with a value of 3.02. The complete ICOR indices of each marine sector are shown in Table 8.

Table 8. ICOR Index Value of Indonesia's marine sector

No	Marine Sector	ICOR value (I-O, 1995)	ICOR value (I-O, 2000)	ICOR value (I-O, 1995)
1.	Marine Transport	3,81	3,67	3,65
2.	Maritime industry	3,56	3,39	3,39
3.	Fishing	3,42	3,31	3,30
4.	Energy and Minerals	3,64	3,71	3,82
5.	Marine Tourism	3,10	2,92	3,01
6.	Marine Building	4,01	4,02	4,03
7.	Marine Services	3,52	3,34	3,34

Analysis

Based on the results of the study, it has been explained that Indonesia has enormous marine economic potential. Law No.32 of 2014 has categorized Indonesia's marine potential into 7 (seven) sectors, including Fisheries, Energy and Mineral Resources, Maritime Industry, Marine Tourism, Sea Transportation, Marine Buildings, and Marine Services. If we observe the contribution of the marine economy to National GDP and then compared with several countries such as China, Japan, South Korea, and America, the article written by Kusumastanto is proven to be true. (33) That Indonesia has not yet become a maritime country.

IV. CONCLUSION

Studies on the condition of the marine environment and marine economy are still rarely found in Indonesia. The article written by Kusumastanto (2002) about the Great Potential of the Archipelago's Marine is an important article in building awareness as a maritime nation. This is an attempt to resonate the idea *of science to policy*. In the three references used as references, the concept used is a linear development model that does not accommodate resource factors. The more production is spurred, the higher the contribution of the marine economy. It can be seen that with the increase in years the contribution of the marine economy is getting higher. This raises concerns that development is heading in an unsustainable direction. At some point it will experience a decline that is difficult to correct because it does not consider *the limit to growth*.

V. ACKNOWLEDGMENTS

The author thanks the Director of the Postgraduate Program at Halu Oleo University and the Head of the Management Science Doctoral Study Program who have contributed a lot to our writing. We also thank the Advisor for the Maritime Insights Course, Prof. Dr. Eliyanti Agus Mokodompit for the invaluable advice.

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