
IMPLEMENTATION OF THE BLUE ECONOMIC SYSTEM FOR INDONESIA'S FISHERY SECTOR

Yulia Ayu N.¹, Saut Gurning²

¹Faculty of Marine Engineering, Institut Teknologi Sepuluh Nopember,
60111 Keputih, Surabaya, Indonesia

*
Email: ayu.17042@mhs.its.ac.id
Phone: +6231 5994251

²Lecturer in Faculty of Marine Engineering, Institut Teknologi Sepuluh Nopember,
60111 Keputih, Surabaya, Indonesia

ABSTRACT

Ocean filled 72% part of earth, environment and oceanic ecosystem also espouse life by manage climate and global temperature. In oceanic environment, there are potencies of nature which one can updated and another one will destroyed after be used continually. With 75% Indonesian regions as oceanic and coasts environment it containt with obstetric natural resources, therefore Indonesian Oceanic sector was best key for the next Indonesian economy development. One of the maritime sectors that can support the Indonesian economy is the fishery sector. To increase Indonesia economics required with oceanic development policy formulation. Blue Economy systems is concept that covers various aspects, such as eco-friendly, sustainable, multi-product, cyclical production system, minimum waste with an emphasis on innovation aspects of ecosystem, science & technology, community involvement through knowledge transfer, and entrepreneurship practices for local economic development towards poverty alleviation (poverty eradication). The blue economic concept is suitable for countries with large aquatic areas, such as Indonesia. About 75 percent of Indonesia's total sovereign territory is a regionwaters composed of territorial sea, Exclusive Economic Zone (ZEE), and sea 12 miles. Marine area Indonesia is a huge area of potential importance and needs to be maintained and improved quality.

Key words : Maritime Economic, Blue Economic, Fisheries sector, Fisheries Technology.

INTRODUCTION

With limited continent resources in Indonesia, therefore economic activity development by coast and sea area (ocean) as the most important variable for future of Indonesia. Economic development potency at naval area and huge fishery. Available at least seven sectors economy, namely (i.) sea tranportation, (ii.) maritime industry, (iii.) fishery, (iv.) maritime tourism, (v) energies and mineral resources , (vi) naval building, and (vii) naval service.

Blue economic concept introduced first time by DR. Paulli as green economic concept. Green economic concept is one economics concept that would not damage the environment. Green economy made for removes negative impact of economic development to environmentally and natural resources deficit. Green economic concept

is done by undertaking natural resources but regular efficiency reduce carbon and pollution issue, the expect was prevent its biodiversity decreasing and keep the ecosystem balance. Weakness of green economy concept is cost and efficiency problem, since this concept force investor for continually invested and consumer even be forced to pay more. For example organic food, need big cost to get organic food because only some country which provide it. Another example is solar cells, perpetually been required continuous finance for supply its equipment requirement.

Therefore of that blue economy to be formed to answer lack for of economic green not only by optimize naval potency, but also naval ecosystem studying to stream nutrisi and energy without issue and waste to meet the need basic. With blue economic concept expected can utilize natural resources with minimum waste principle. According to (Pauli, 2010) Lamkins in book introduction of Blue Economy said “The Blue Economy is exactly the kind of toll we need to help us repair our broken economy and create a more sustainable model. The new ideas and innovative thinking compiled here give usa exciting new options about how to transform our economy so that can generate new jobs and sustain healthy, happy communities far into the future”.

GREEN ECONOMY VS BLUE ECONOMY

As explained in the background, the fundamental difference between green economy and blue economy in implimentation of its economi sector. In green economy system, its is clear that it holds zero waste principles or safe the environment and does not seem to be applied throughly in all sectors. While blue economy seems more likely to develop in the marine sector and basically holds the principle of clean, creative, innovative, region based, sustainable and integrated production. Here are some differences between of two economys systems (read table 1).

Table 1. Diferences between green economy system and blue economy system

Green Economy System	Blue Economy System
The principle goals to reduce carbon, natural resource efficiency, efficient labor, and social improvement.	There are 21 principles, among which are managing natural resources in a sustainable, efficient and clean production system without damaging the environment, learning from nature and using processes that occur in nature, minimize waste until zero waste, emphasizing cyclical systems in production processes, social inclusion (social equity and many employment opportunities for the poor), innovation and adaptation to the principles of the laws of physics and adaptive nature, and the economic effects of multipliers.
A friendly economy in two ways, earth's ecosystems and poverty alleviation,	Relates to aspects of oceans and coasts in sustainable development and poverty alleviation. More focus on water resources, sea and coastal.
The indicator is a high investment to clean	Helping entrepreneurs, providing benefits to the

the environment, low carbon, clean, reduce waste, and use limited labor.	company along with a clean environment, and efficient use of labor. Environmental indicators are integrated into the economic process.
Encouraging the economy towards environmentally friendly investments, low carbon, resource efficiency, social welfare, and encouraging sustainable consumption and production.	Emphasizing multiple products that do not rely on a single product (core business). This flow emphasizes the importance of new values, new ways of thinking and collective action that do not put nature as an object. Apply the principle of how nature works, or is popular with the term back to nature (back to nature).

INDONESIA'S OCEAN POTENCY

As has already been known widely that Indonesia as state maritime and archipelagic greatest being universalized have naval economic development potency and fishery that multiple diverse. Indonesian naval potency gets to be sorted becomes 4 oceanic resource groups, for example: first renewable resource that included at in is fishery, mangrove forest, etc. The second resource that included at it is oil, natural gas, bauxite, tin, iron steel, quartz sand, mineral and another mineral. Third ocean wave energy, OTEC(Ocean Thermal Energy Conversion). Fourth sea as environmental service where does oceanic constitute transportation media, communication, recreation, tourism, education, research, defense and security, climatic regulator(climate regulator) and another life supporter system(life supporting system).

Potency of a variety ocean sector shall develop evenly and equal so blue economic growth will strength and stable tend walk or not branch among sectorallies the one and another. There are many opportunity of Blue Economy sector in Indonesia, among others:

a. Sea transportation sector

Goals of blue economy development at sea transportation systems area is provide service for safe archipelago society, easy-going, cozy and increases sea transportation service get international level. Sea Transportation sector also one of important which really necessary for archipelago state for Indonesian, so must be needed a lot of or appreciative time for sail ours to supply all requirement and support trade transfer life at each archipelago. Require sea transportation building with installation system that can discard more carbon.

b. Maritime Industry

Maritime industrial sector is lead to build maritime industry to be free waste, efficiency, robust and independent, so can push national ocean economic growth. With main steps, for example: creating national maritime industry one economizes energy and waste, developing coherent maritime industrial park gets ecoregion basis, and developing and strengthens biotechnology industry naval one environmentally-friendly and gets innovation basis.

c. Fishery Sectors

Economic development strategy in fishery sector is build to optimal fishery, abiding, value added get, and useful rival. More, fishery area development as part of revitalization is directed to four main stages which is (1) human resource knowledge, (2) food robustness securities(*food security*), (3) productivity step-up, production and fishery product competitive, and (4) effort step-up diversified by fishery product in order to value added increase it.

Its implementation as technological tool for catch fish out that efficient, effective, environmentally-friendly, and can secure haul fish quality, coolant installation development that utilize water pressure goes out to sea as drive, beaming ices production installation / *ice cube* with water raw material goes out to sea, purpose *fish finder* one that linked by satellite network that can economize *route* fishing boat navigational.

d. Maritime Tourism Sector

Maritime tourism has a big potential for Indonesia. Indonesia contain with thousands beautiful island, which is every island has its own potential and has not utilized optimally. Development strategy is build tourism sector with environmentally coherent systems and giving job chance for local society. Aesthetical nature of sea, coast and small island gets to be developed becomes tourism destination potential in Indonesian, as: Raja Ampat in West Papua, Bunaken in North Sulawesi, Wakatobi in South East Sulawesi, Derawan Island is East Kalimantan,etc. Its potential with sea plants variety, fishes, rock , etc. Maritime tourism activities concern with leisure activities like submerged sport like diving or snorkling.

e. Energy and Mineral Resource

Economic development strategy for this sector directed to increase national ability in supply energy and mineral resources by optimize its productivity, keep this energy work but still support saving enviroentment.

FISHERY SECTOR IN INDONESIA

According to Pasal 1 UU No. 31 Republik Indonesia 2004, Fisheries define as all activities related to management and utilization of fish resources and the environment ranging from pre-production, production, management, up to marketing, carried out in a fisheries business system. Not only that in Law no. 31 also dicribe that fishery resources are the potential of all kinds of fish species, both capture fisheries and aquaculture. And Fishermen are the people whose livelihood is fishing and Fish breeders are people whose livelihoods do fish cultivation.

Based on Fisheries and Aquaculture Statistics of 2012 from Food and Agriculture Organization (FAO, 2012), Indonesia ranks second in the production of capture

fisheries and ranked fourth in the production of aquaculture fishery. Indonesia is also listed as a country the second most in terms of the number of ships owned after China. From absorption side workforce, the fishery sector was recorded to accommodate 2,748,908 workers in 2012, ranked fourth in the world. The fishery sector has a strategic role in national development. Viewed from potential natural resources, Indonesia is known as a country the largest maritime in the world because it has potential wealth of fishery resources is relatively large. The fishery sector also absorbs a lot of energy work, ranging from fishing activities, cultivation, processing, distribution and trade (Triarso, 2012).

Implementation of the Blue Economic System that carried with the concept of sustainable development is defined as an effort to improve the economy by minimizing the negative effects caused later on. For example, the concept of a blue economic system, fishing is allowed to use fishing gear trawls or cantrang but since 2015 official regulations have been issued by the government regarding the ban on the use of fishing gear so that fishing does not damage the ecosystem and marine biota. With the survival of ecosystems and marine biota its called sustainable.

Sustainable development is defined as development that can completed the needs of the current generation without compromising the ability for future generations. The need here is biological survival and the need for human life, in principle the concept of sustainable development is development that integrates ecological, economic and social issues (JS-Sri Yanti, 2014). Following the concept of sustainable development which integrates ecology, economy and social causes many new policies regulation in Indonesia. In the fisheries sector this affected by level knowledge of human resources and technology used in the management of both capture fisheries and cultivation.

a) Capture Fisheries

Capture fisheries are defined as all fishing activities and other organisms in the wild either the sea, rivers, lakes and other bodies of water, with life of aquatic organisms in wild and factors are not controlled by humans. The main problems that weigh on catching are overfishing and marine pollution. A number of fish species have decreased the population by a significant amount and are in danger of extinction.

Therefore, the government issued a ministerial regulation number 2 of 2015. It states that everyone is prohibited from using trawls and seine nets, which cantrang is included in the prohibition (Menteri-Kelautan-dan-Perikanan, 2015). Not only does the interdiction take place, the government also helps provide new fishing gear as a substitute for fishing equipment which is prohibited by the provisions of ship size as follows:

Ship <10 GT is given fishing gear of gillnet, handline, rawal dasar, rawal hanyut, tonda fishing line, pole and line, and catching tools “bubu”.

Ships 10 to 30 GT, the government will provide capital facilities to obtain business credit people.

Ships > 30 GT, the government grants licensing facilities and relocation of fishing areas.

b) Cultivation

Aquaculture is an enlargement activity of fish with certain techniques and keep the quality of the fish. So far, aquaculture fishery does not have a serious problem of natural damage because the waste from fish farming itself can be processed and reused for optimization of cultivation activities or mina village other types of plants. Such as the Chinese state that performs controlled input settings by requiring use bio-fertilizer as well as using environmentally friendly fertilizers and drugs. Cultivation management is done in an environmentally friendly manner including feeding, fertilizing, pest control and water quality management (Menteri-Kelautan-dan-Perikanan, 2015).

RESULTS AND DISCUSSION

After discussing and reviewing the literature as above, it found that, territorial waters of Indonesia has a promising fishery potential, but the utilization is still less than the maximum. Among others, fishermen are still traditional fishermen, fishery fleets are still dominated by small scale / traditional with low technological skills, inadequate fishery data sources, low handling capacity and processing of fishery products and many other problems that still not getting serious handling from the relevant departments.

And about sustainability criteria in the fishery sector both fishing activities (capture fishing) or fish farming by minimizing waste or damage occurring. Such as limiting the number of fish catches or replacing fishing gear that can harm the ecosystem. While in the cultivation activities (fresh water), fish waste can be used as fertilizer for certain crops (rice) or other marine mina activities.

CONCLUSION

Based on the results and discussion derived from the above discussion, the suggestion may be given as follows :

1. The blue economic system can be implemented in the fishery sector of Indonesia slowly with a good socialization to the actors of the fishery sector.
2. Further research is needed to facilitate the adoption of environmentally friendly technologies and new efforts towards a solid and optimal blue economic system.
3. The government must accompany economic actors by providing advanced science and technology.

ACKNOWLEDGEMENTS

The authors would like to be obliged to Institut Teknologi Sepuluh Nopember for providing laboratory facilities.

REFERENCES

- Anonim, t.thn. Blue Economy Concept Paper. pp. 1-13. DPR-dan-Presiden-Republik-Indonesia, 2004. *Undang-Undang Republik Indonesia No.31*. Republik Indonesia.
- HLPE-Steering-Committee-Members, 2014. *Sustainable Fisheries and Aquaculture*. Rome: HLPE Report.
- Kelsey I. Jacobsen, Sarah E. Lester, Benjamin S. Halpern, 2014. A global synthesis of the economic multiplier effects of marine sectors. *Science Direct-Marine Policy*, 44(Marine Policy), pp. 273-278.
- Kementrian-Kelautan-dan-Perikanan, 2012. *Kebijakan Ekonomi Kelautan Dengan Model Ekonomi Biru*. Jakarta: Sekjen Satker Dewan Kelautan Indonesia.
- Menteri-Kelautan-dan-Perikanan, 2015. *Permen Kelautan dan Perikanan No. 2*. Jakarta.
- Pauli, G., 2010. *The Blue Economy (Booklet)*. New Mexico: Paradigm Publications.
- Rakhmindyarto, Sinulingga, Wesley F, 2014. Ekonomi Biru untuk Maritim Indonesia yang Berkelanjutan. *Publikasi Kementerian Keuangan*.
- Septifitri, Monintja, Daniel R, Wisudo, Sugeng Hari, Martasuganda, Sulaeman, 2010. Peluang Pengembangan Perikanan Tangkap Di Provinsi Sumatera Selatan. *Jurnal Saintek Perikanan*, Volume Vol.6, pp. 8-21.
- Sutanto, H. A., 2005. *Analisis Efisiensi Alat Tangkap Perikanan Gillnet dan Cantrang*, Semarang: Perpustakaan UNDIP.
- Triarso, Imam, 2012. Potensi dan Peluang Pengembangan Usaha Perikanan Tangkap di Pantura Jawa Tengah. *Jurnal Saintek Perikanan*, p. Volume 8 No.1.
- Patterson, Trista, Gulden, Tim, Cousins, Ken, Kraev, Egor, 2004. Integrating Environmental, Social and Economic systems : A Dinamic Model of Tourism in Dominica. *Science Direct - Ecological Modelling*, pp. 121-136.
- JS, Sri Yanti, 2014. *Kajian Strategi Pengelolaan Perikanan Berkelanjutan*. Jakarta: Kementrian-PPN/Bappenas.