Integration of marine spatial objects management to support toward sustainable maritime policy development

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Abstract. Utilization of land and marine potential is an absolute right mandated in Article 33 of the 1945 Constitution. One of the efforts to manage land and marine potential includes the integration of the management of land and marine space objects in the context of sustainable maritime development. However, the implementation of management of marine space objects is overlapping in legal, technical, and institution aspects. Based on ownership of rights and their use, marine space objects are not only limited to the fishery and tourism, but also marine structures, cultivation, underwater treasures, underwater cables and pipes, conservation, customary culture, garbage disposal, shipping, energy and mineral resources, renewable resources, and military. This study will determine maritime policy that can provide assurance of legal, technical, and institutional aspects of management especially for marine space objects. It regulates rights, boundaries, management and an integrated maritime information system. The policy includes management of ownership, use and economic value of marine space. Marine space ownership data consists of the subject and marine space objects. Data on the use of marine space consists of characteristics of marine space, marine spatial use planning and monitoring and evaluation of the implementation of marine space utilization. Meanwhile, data on the economic value of marine space includes information related to the marine space assessment system as well as taxation related to marine space.

1. Introduction

Indonesia is the largest archipelagic states in the world who has an area of 8.3 million km², consists of 17,504 islands, 1.9 million km² of land, and 6.4 million km² of water based on national reference data. An absolute right mandated in Article 33 of the 1945 Constitution that the land, the waters and the natural resources within shall be under the powers of the State and shall be used to the greatest benefit of the people [1, 2].

Indonesia is the only state that able to expand its sovereignty territory and sovereign rights as the largest archipelagic state with international recognition without military power. This international recognition has strengthened the fundamental perspective of the Indonesian nation and the insight of the archipelago, not only as an independent nation, but also with the territorial integrity of the homeland in the form of the archipelago as a single political, economic, social, cultural, defense and security unit. Independence and territorial integrity have become Indonesia's capital in planning a national development as a whole and comprehensively [3].

Rethinking the management of marine potential, it is undeniable that Indonesia's marine potential have become the strategic value for the country. However, the management of its potential has not in line with the expectations of the people. In fact, the use of land waters in several places as transportation and economic infrastructure has even been abandoned. Thus, a concept is needed so that the management of marine areas in Indonesia can be carried out in a sustainable manner and can be used as a supporting tool for economic growth and improving the welfare of the community [4, 5].
Indonesia requires adjustments to the nation's mindset, attitude and action patterns based on the awareness of the marine space in which the Indonesian nation is located through marine-oriented development. For this reason, the marine vision has become a demand and need for the Indonesian nation. This marine vision is embodied in the vision of Indonesia as a World Maritime organization, namely Indonesia as a maritime country that is sovereign, advanced, independent, strong, and capable of making a positive contribution to regional and world security and peace in accordance with national interests [5].

The Coordinating Ministry for Maritime Affairs of the Republic of Indonesia has issued a road map for Indonesia's maritime policy towards a world maritime axis, which is the implementation of Presidential Regulation Number 16 of 2017. One of the seven pillars of policy is the management of marine resources and human resource development. There are 21 main strategies in it with nine strategies for developing marine resources [6].

Djunarsjah & Handayani (2019) have classified the marine resources into 13 marine space objects based on its ownership of rights and uses. They are fishery, tourism, marine structures, cultivation, underwater treasures, underwater cables and pipes, conservation, customary culture, garbage disposal, shipping, energy and mineral resources, renewable resources, and military [7].

Finance Minister Sri Mulyani Indrawati said that technically and institutionally there are still many overlaps in the management of the Indonesian marine space objects. The Coordinating Minister for Political, Legal and Security also supports this statement and adds information that legal aspect of marine resource management is also overlap [8].

In order to support the strategy of developing marine resources to create sustainable maritime policy, it is necessary to have a system to manage marine resources in an integrated manner. The policy has to assurance the legal, technical, and institutional aspects of management especially for marine space objects. This paper aims to suggest policy of integration of marine spatial objects management to support toward sustainable maritime policy development.

2. Materials and Methods
First, this research will identify the laws and regulations regarding marine activities. Furthermore, the analyze needs to identify the marine policy and institutions related to marine objects management. The data will be used to reconstruct the concept of an integrated marine space objects management policy. The end of the product is the concept of marine policy that provides legal, technical and institutional for the management of marine space objects. Figure 1 show the flowchart of the methodology.

2.1. Identification of Marine Law and Regulation
Marine activities can be classified into 13 marine space object. Military is under authority of Ministry of Political, Legal and Security. Thus, this paper focus on other 12 marine space object. Each object will identify the legal law, which give guarantee for the management of the object. Attachment 1 as in this paper shows the law above the object.

2.2. Identification of Marine Technical Management and Institution
Marine technical management is sectoral based and overlaps among the institution. Attachment 2 in this paper shows the institutions and laws related to marine management. There are 1 coordination institution and 18 other institution related to management of marine space objects.
3. Result and Discussion
There are at least 3 points of view for human beings to approach development. The first view is the land-oriented development. The second view is a direct opposite to the big island centered development, which is the marine-oriented development. The last view is maritime-oriented development or usually called as archipelago paradigm.

The land-oriented development reflects a view of the world as if there is no sea to see. This view is inward looking, static, agricultural, and hierarchical or feudal. In contrast, marine-oriented development reflects a view of the world as if there is no land to see for a standing person onboard an always moving, floating, and vessel. The view is dynamics, outward looking, and egalitarian. This view is not natural for human beings, since its evolutionary path has made human beings land-based creatures. Substituting the land with the marine-oriented development has proved to be a failure, at least in the case of Indonesia during the last few decades. It is extremely difficult for people who used to think that there is no sea to see, then to adopt a total different view.

If maritime is defined as an integrated system of land and waters in-between including its bottom and the soil beneath, the maritime is therefore the most natural view to adopt for Indonesia. This view is “the middle way” view. The view is more realistic, inclusive, sufficiently dynamic, and outward
looking than the big island or Small Island centered development that is exclusive, isolationist, unfriendly to foreigners, and in breeding.

However, seeing the current condition, the implementation of seamless management between the management of land and water objects is still difficult to achieve. Indonesian marine with its strategic value is still overlapping in legal, technical and institutional regulations that make the management of marine space objects ineffective. Thus, this paper aims to suggest integrated marine space management to construct marine policy.

3.1. Legal
Presidential Regulation Number 16 of 2017 concerning Indonesian Marine Policy is a fundamental law that can be used as a guide in the development of marine resources policy. Therefore, the integration of the management of marine space objects toward sustainable maritime development is a strategic need. Figure 4 shows land, coastal, and marine activities.

Figure 2. Marine Activities [9]

Figure 2 shows each marine space objects already has its own legal document. However, it still overlaps among the laws. As an example is the conflict of management of submarine pipelines. It is regulated in the Minister of Transportation Regulation No. 68 of 2011, Decree of the Minister of Mines and Energy 300.K / 38 / M.PE / 1997, and Government Regulation (PP) Number 32 of 2019 concerning Marine Spatial Planning. This leads to an institutional management conflict that will have an impact on funding. Therefore, it becomes a crucial to have law in management of ownership, use and economic value of marine space objects.

Marine space objects ownership consists data of the subject and marine space objects. Marine space use consists of data of characteristics of marine space, marine spatial use planning and monitoring and evaluation of the implementation of marine space utilization. Meanwhile, data on the economic value of marine space includes information related to the marine space assessment system as well as taxation related to marine space.

Important to note, the implementation of law of marine space objects management policy must be in line with the relevant laws and regulations. They are Law Number 25 of 2004 concerning the
National Development Planning System, Law Number 17 of 2007 concerning the National Long-Term Development Plan 2005-2025, Law Number 32 of 2014 concerning Maritime Affairs, and Presidential Regulation Number 2 of 2015 concerning the 2015-2019 National Medium-Term Development Plan.

3.2. Technical
Information system platform related to the management of ownership, use and economic value of marine space objects would support the sustainability of maritime policy. The system should be integrated system between spatial data and metadata, which consist of subject, object, and value, of marine space objects.

The platform is integrated web-based which also concern to collect and analyze the legal and institutional aspect. Technically, this system develops a sectoral marine information database system into an integrated database from various related data. First, it needs to classify the laws and regulations for each sector of marine space utilization. Furthermore, the definition of user needs is carried out, with describing the scope of marine space objects including rights, obligations, boundaries, legal aspects, technical aspects and institutional aspects of each marine space utilization sector. The next stage is the design of a conceptual model, which is realized in the form of a list of entities and their attributes including provinces, districts/cities, marine space objects, marine sector, legal laws, rights to marine space, institutions, and subjects.

With the existence of the information system, this allows to minimize the overlaps of legal and institutional interest. It makes possible to manage marine space objects more cost and time effective.

3.3. Institutional
The implementation of the Indonesian Marine Policy is carried out by ministries and agencies according to their respective duties and functions. The implementation and policies of Indonesian Marine Affairs are coordinated by the Coordinating Ministry for Maritime Affairs. Minister for Maritime Affairs give report to the president about the implementation of marine policy after coordinating with the Coordinating Minister for Political, Legal and Security Affairs, the Coordinating Minister for the Economy, and the Coordinating Minister for Human Development and Culture.

However, overlapping regulations causes overlapping management in term of institution. Based on identification showed in Table 1, big number of institution, 18 institutions, manage marine space objects. The correlation matrix between institutions and marine space objects can be seen in Table 1.

Each institution has its own strategic value, duties, and functions in the management of marine space objects. One solution that can minimize the conflicts of interest in managing marine space objects among institution is to create a new power that have a mandatory to regulate as a good marine governance. This power is responsible to manage marine space objects, guarantee the legal, monitor the use, and evaluate the impact of marine objects management in integrated ways. This power is capable to coordinate among institutions related to marine space objects. This power has right to give or remove the authority and responsible to president or directly to the people.
Table 1. Matrix Correlation of Institution and Marine Space Objects

| Institution / Object        | A | B | C | D | E | F | G | H | I | J | K | L |
|----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Kemenhan                   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |   |
| Kejaksaan Agung            | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |   |
| TNI                        | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |   |
| POLRI                      | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| BIN                        | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |   |
| Kemenhub                   | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Kemenhumham                | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kemen Keuangan             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kemendagri                 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kemenlu                    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bakamla                    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| KKP                        | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| BIG                        | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BPN-RI                     | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 |
| Dishidros                  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Kementerian ESDM           | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Kemenlinghut               | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| Kemenpar                   | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |

Notes: 1 related; 0 not related
A: Building on the water  G: Marine tourism
B: Cultivation          H: Garbage disposal
C: Submarine cables and pipes  I: Fishing
D: Conservation        A: Shipping
E: Customary culture   K: Renewable energy sources
F: Treasure           L: Oil and gas energy sources

4. Conclusion
Maritime-oriented development is defined as an integrated system of land and waters in-between including its bottom and the soil beneath, the maritime is therefore the most natural view to adopt for Indonesia. However, marine management is overlapping in legal, technical and institutional regulations that make the management of marine space objects ineffective. The concept of marine policy will focus to integrate the management of marine space object to support sustainable maritime policy development.

Presidential Regulation Number 16 of 2017 concerning Indonesian Marine Policy is a fundamental law that can be used as a guide in the development of marine resources policy. Therefore, the integration of the management of marine space objects toward sustainable maritime development is a strategic need. It becomes a crucial to have law in management of ownership, use and economic value of marine space objects to ensure no overlapping regulation among the laws related to marine policy. The implementation of law of marine management policy must be in line with the relevant laws and regulations

Information system platform related to the management of ownership, use and economic value of marine space objects would support the sustainability of maritime policy. The platform is integrated web-based which also concern to collect and analyze the legal and institutional aspect. Technically, this system develops a sectoral marine information database system into an integrated database from various related data.
Good marine governance is needed to coordinate marine space management to minimize overlapping duties and functions among institutions. Good marine governance is responsible to manage marine space objects, guarantee the legal, monitor the use, and evaluate the impact of marine objects used in integrated ways.

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**Attachment A.** Marine Space Objects Law [10]
Attachment B. Marine Space Objects Institution [10]
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