Preparation Indonesia for The Ocean Decade 2021-2030

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Abstract. The Ocean Decade 2021-2030 was declared at the end of 2017. The Decade Declaration is aimed at accelerating the resolution of various social-ecological issues facing the oceans collectively and holistically by involving multi-stakeholders: natural and social scientists, governments, NGOs, private parties, and local communities. Indonesia as a large maritime country must play an important role in this Decade, both as a provider and as a beneficiary. The aims of this paper are to (1) convey important things about the Ocean Decade and (2) provide recommendations for carrying out three types of research to prepare for the Ocean Decade. This exploratory study is conducted qualitatively, using a literature review of UNESCO official documents as well as various other literature, such as scientific journal articles. An interview with a key informant was conducted for initial stakeholder analysis. The results of the analysis and the recommendations are expected to be used to help various stakeholders in Indonesia prepare to take part in the implementation of ‘The Ocean Decade’.

Keywords: Ocean Decade; social-ecological system; sustainable development

1. Introduction

The Ocean Decade 2021–2030 was declared in December 2017. This decision was based on the results of the first UN World Ocean Assessment 2016 asserted that mankind was running out of time to begin governing sustainable ocean [1, 2]. The oceans are defined not only as oceans but seas and coasts also. Ocean science also broadly covers all social sciences and various human aspects related to ocean management, such as local-traditional knowledge and wisdom [2-4].

Indonesia as part of the global community is of course very important to prepare itself to be an important part of the Decade, not only as an object but also as a key player. Moreover, Indonesia is an archipelago with the largest number of islands and a long coastline in the world. Besides, with a variety of very rich and extensive tropical landscapes and seascapes, ocean-related issues must be related to other broad socio-ecological (population and environmental) issues from upstream to downstream: starting from forest ecosystems, built terrestrial (rural-urban), to the coastal ecosystem [5-15].

The complexity of the various potential benefits and problems that cross these various sustainable development goals, of course, requires collaboration from various parties, ranging from local parties in Indonesia to regional and global levels to solve them [16-18]. Through the Decade, it is hoped that this
collaboration can be realized more strongly. Therefore, solid and adequate information is needed to be conveyed to stakeholders in Indonesia.

This paper aims to (1) convey important things about the Ocean Decade 2021-2030 that can be utilized by stakeholders in Indonesia and (2) provide recommendations for carrying out three types of research to prepare for the Ocean Decade. The method used is a literature study (desk review) of UNESCO official documents uploaded on the official website of the Ocean Decade as well as various other literature, such as scientific journal articles. A key informant was interviewed for initial stakeholder analysis.

2. Reasons for the importance of the Ocean Decade

The Ocean Decade was declared based on several important reasons. There are at least twelve points that form the basis of the needs of the Decade, as follows:

1. Support efforts/actions to reduce ecological damage and create better and more sustainable conditions for Oceans.
2. Facilitate various stakeholders to discuss and enforce, and evaluate adaptation policies and programs.
3. Motivate the science community, government, and other policymakers to think outside the box and have a strong desire to make real changes to science, knowledge, and cooperation patterns related to Oceans.
4. Uniting the relationship between the natural and social sciences through communication and research collaboration.
5. Align priority science programs with a commitment to sustainable development to stimulate great investment in science and research programs
6. Building a holistic and integrative framework that can stitch/unite the UN system to find science-based solutions.
7. Raising awareness that the sustainability of the Ocean has an impact on the lives and livelihoods of people at the local and global levels. Various perspectives (environmental, economic, and social) are needed to make it happen.
8. Promote peaceful ocean management as well as cross-country collaboration on Oceans issues.
9. Actively engage the private sector and business community.
10. Encourage important actions for the five 'P’s' (Planet, People, Prosperity, Peace, and Partnerships) in the SDGs by facilitating networking for all communities (from local to global).
11. Initiate a coordinated regional level framework to increase the capacity of scientific knowledge, especially for countries and low-level groups.
12. Unlocking the potential for innovation from the ocean to increase the growth of the ocean economy which is connected to the economy on land.

UNESCO in a document entitled "Implementation Plan: Summary” explains that the Ocean Decade is prepared to deal with world changes and pressures on the ocean [3]. This is very important considering that human health and well-being, including sustainable and equitable economic development, depending on the health and safety of the world's ocean. The ocean provides food and supports the livelihoods of over 3 billion people. It is an essential ally [in an effort to reduce climate change] and a source of significant cultural, aesthetic, and recreational values. Emerging services, including renewable energy, marine genetic resources, or deep-sea minerals, have the potential to generate significant benefits, but they also raise questions about risks to fragile ecosystems and equitable access to the benefits generated by the ocean. From an economic point of view, the ocean is of monumental importance. In 2010 the ocean economy generated over 30 million direct, full-time jobs, and before the COVID-19 pandemic, the ocean's economic output had been predicted to reach US$3 trillion by 2030 [3].
3. Vision, mission, and outcomes of the Ocean Decade

UNESCO (2020) in an official document describes the vision, mission, and outcomes of the Decade [4]. Its vision is "The science we need for the oceans we want" and its mission is to deliver transformative ocean science solutions for sustainable development that connect oceans with people (both global and local communities).

Von Hillebrandt-Andrade—a member of the Executive Planning Group the Decade — in his presentation "The Ocean Decade Vision" delivered on 24 Sep 2020 explains several things related to the transformation in question: from "where we are" to "where we would like to be (we want)" [19]:

- From “Science largely competent for problem diagnostic” to “Science providing solutions and motivating action”.
- From “Observing system for climate and emerging data service” to “Ocean data and information system for past, present, and future”.
- From “Major knowledge gaps, weak ocean literacy” to “Ocean literate and well-informed decisions”.
- From “Funding base mostly in research mode” to “Clear value chain to resourcing and commitment”.
- From “Hugely uneven capacity, especially in developing countries/SIDS” to “Capacity Development/Transfer of Technology: no one left behind”.

Furthermore, he said that "The Decade, both in terms of action and outcomes, needs to move beyond business as usual to a true revolution in ocean science". With a vision, mission, and several points on the principles of transformation, UNESCO establishes the seven outcomes to be achieved. The outcomes describe the 'ocean we want' at the end of the Decade and interactions with the 2030 agenda and relevant policy frameworks [2, 3]. Besides, there were at least 10 challenges identified and needed attention. Information about these can be seen in table 1, figure 1-2.

### Table 1. The Decade outcomes and interactions with the 2030 agenda and related policy frameworks [2, 3].

| Outcome | Interactions with SDG Number |
|---------|-------------------------------|
| 1. In a clean ocean; the origin of contamination is identified, reduced, or eliminated. | 3, 6, 11, 12, 14, 15. |
| 2. A healthy-resilient ocean; marine ecological systems are understood, preserved, restored, as well as managed. | 1, 7, 13, 16, 14. |
| 3. A productive ocean supporting sustainable food supply and a sustainable ocean economy. | 1, 2, 8, 14. |
| 4. A predicted ocean; society understands and can respond to changing ocean situations. | 8, 9, 14. |
| 5. A secure ocean; life and livelihoods are preserved from ocean-related risks. | 11, 14. |
| 6. A reachable ocean; equitable access to info, data, material, technology, and innovation. | 4, 5, 10, 14, 16. |
| 7. An inspiring-attractive ocean; people grasp and respect the relationship of the ocean to human prosperity. | UNFCCC, CBD, Sendai Framework Samoa Pathway, BBNJ |
Figure 1. The decade outcomes and interactions with the 2030 agenda and related policy frameworks [2, 3].
4. Stakeholder engagement in the decade

To carry out the vision and mission, achieve the seven outcomes, and face these challenges requires the active participation of many stakeholders. They are the key actors in the success of the Decade. Involving them will drive benefits on a broad scale. UNESCO states that “Being involved in the Decade will bring many benefits. Partners will have the opportunity to collaborate on a real, joint global effort built on decades of marine science achievements. There are many opportunities to undertake new collaborations across disciplines, generations, regions and to access new support resources or to invest in bold and innovative marine science and to increase the visibility and reach of partner actions and initiatives ” [3].

Pendleton et al. explain that because all parties have a stake in ocean health, all of them must be involved in active participation and collaboration in The Ocean Decade: “the decade will depend on a process of planning and implementing an inclusive, participatory and global process carried out by stakeholders.” He continued that “scientists, focused on research issues and driven by varying stakeholder priorities, are often unaware of the public’s perceptions, concerns, and priorities for ocean science and associated knowledge. The Decade will bring together scientists, engineers, and scholars from all disciplines to work with stakeholders from sectors that directly or indirectly use ocean science data, including policy and decision-makers at local, regional, national, and global levels, Non-Governmental Organizations, civil society, the philanthropic sector, blue economy leaders, and
education and communications professionals. This will guarantee that the science conducted under the Decade directly meets the needs of the public and decision-makers in setting future sustainable pathways” [20].

The Ocean Decade opens as many collaborations as possible and as widely as possible for all interested stakeholders, both individuals, and organizations. They can establish or join a voluntary, self-organizing Ocean Decade stakeholder engagement network. The networks formed will drive a significant part in co-design and co-delivery of Decade Actions and in increasing awareness of the Ocean Decade at the local, national, and regional levels. To strengthen the network, UNESCO (2) initiated the development of the Forum of Stakeholder. The membership of the Stakeholder Forum includes, at a minimum, a wide range of representatives from UN agencies, countries, research institutions and the scientific community, NGOs, the private sector, and donor agencies.

Figure 3. The Ocean decades of voluntary stakeholder engagement networks in the Global Stakeholder Forum [3].

Furthermore, in 2020, UNESCO has mapped potential stakeholders in more detail. Mapping is accompanied by potential roles, interests, and types of collaboration that can be done. Below are the categories of stakeholders that are mapped [4]:

a. Scientists, research institutions, and universities
b. Local and indigenous knowledge-holders
c. Early Career Ocean Professionals (ECOPs)
d. UN entities and intergovernmental organizations (IGOs)
e. Regional organizations including regional seas conventions
f. National Governments  
g. Sub-National Governments  
h. Local Coastal Communities  
i. Business and private sector stakeholders  
j. Technology and innovation hubs  
k. Professional societies  
l. Philanthropic foundations and science funding agencies  
m. NGOs and civil society  
n. Aquarium, zoo, and museum operators  
o. Children, youth, school students, and educators  
p. The general public, including poor and marginalized communities  

These stakeholders will then join the Global Stakeholder Forum will provide a platform for catalyzing virtual and in-person connections and collaborations. The Decade Coordination Unit will use the Global Stakeholder Forum to convene communities of practice around the Ocean Decade Challenges and will promote exchange between stakeholder groups with similar interests. Funding opportunities, partnership opportunities, training events, meetings or conferences, or requests for inputs to Decade review processes will also be broadcast via the virtual platform. The members of the Global Stakeholder Forum will meet in regular regional and international conferences, which will be a mix of in-person and virtual events. For visualization of ocean decades of voluntary stakeholder engagement networks in the Global Stakeholder Forum, please see figure 3.

5. Discussion and conclusions

Based on the results of a review of various data and information related to the Decade, it is clear that this program is a very ambitious big program to help achieve the achievement of sustainable development goals related to the socio-ecological systems of the ocean, seas, and coastal areas around the world. Indonesia as a large maritime country must play an important role in this Decade, both as a provider and as a beneficiary.

For current conditions, Indonesia's role and contribution to ocean science are still low. In the map of world marine science publications, Indonesia occupies a very low level of publication (first level from the bottom), which is only 1 - 2,500 publications from a range of 0 - 100,000 total publications (divided into 6 levels). Likewise, in terms of action or action plans. Until this article was written, the number of activities/events and communities from Indonesia that were registered on the official website of the Decade was still very small. It is different from other countries that are quite active.

Before starting to plan plans and program/activity actions, we recommend conducting, at least, three types of preliminary research related to oceans (including fisheries, coastal and small islands) in Indonesia: (1) social-ecological analysis, (2) analysis policies, and (3) systematic stakeholder analysis. The socio-ecological analysis will help determine the current condition of social-ecological systems related to natural resource management or governance, both in terms of problems and potentials [21-24]. Policy analysis will help identify related policies that can support the Decade in Indonesia. Meanwhile, stakeholder analysis can help map various stakeholders with their various interests as well as specifically analyze each interest, role, and position at various levels [25-28].

Regarding the initial stakeholder analysis, a discussion with an oceanographer (research professor) at LIPI who is also active in the IOC / UNESCO Sub-Commission for the Western Pacific which includes 22 member countries (including Indonesia) at the time of completing this paper (January 2021) stated that at least several state agencies of Indonesia must be the main stakeholders, namely the Indonesian Institute of Sciences (LIPI), Ministry of National Development Planning (Bappenas), Coordinating Ministry for Maritime and Investment Affairs (Kemenkomarves), Ministry of Marine Affairs and Fisheries (KKP), Ministry of Environment and Forestry (KLHK), Meteorology, Climatology, and Geophysical Agency (BMKG), and Agency for the Assessment and Application of Technology (BPPT). These state agencies have a role to lead / coordinate planning and implementation that can deliver the seven outcomes (see table 1).
Outcome 1, for example, can be led by LIPI, Kemenkomarves, and KLHK. LIPI can continue research related to marine debris. The physical aspect was carried out by researchers at the Deputy for Earth Sciences and the social aspect by researchers at the Deputy for Social Sciences. Kemenkomarves and KLHK can also integrate it with the plastic waste reduction program and roadmap they are currently running.

Outcome 2 can be coordinated by Kemenkomarves and KKP. Kemenkomarvest has guidelines for measuring the Indonesian Marine Health Index (IKLI) and the MMAF has a National Fish Stock Study program. Outcome 3 was led by Bappenas, KKP, and Kemenkomarves. This is closely related to SDG 14, where Bappenas is the leading agency for SDGs in Indonesia.

Outcome 4 can be led by LIPI and other research institutions, including universities. LIPI is the national scientific authority in Indonesia, including ocean science. Outcome 5 is led by BMKG, especially regarding hazards and risks of geo and hydrometeorological disasters, such as tsunamis, robbs, floods, and others.

Outcome 6 relates to big data and data mining. The goal is to build a data center that can be accessed by the public from all over the world. Therefore, this outcome can be led by BPPT and LIPI. BPPT is developing the Ocean Data Center and LIPI is developing the Coastal Ecosystem Data Center. Outcome 7 on how the oceans can inspire. This outcome can be led by LIPI (particularly social science researchers) in collaboration with other state agencies such as the KKP, the Ministry of Tourism and Creative Economy (Kemenparekraf), and the KLHK.

Besides, state agencies that become leaders/ coordinators in each outcome need to invite and involve various other state agencies (including local governments), private parties, NGOs, donor agencies, and local communities.

Furthermore, to be more comprehensive, in-depth, and able to reveal data and information that are usually hidden, we also suggest that the third research process pays attention to aspects of political ecology [29] and also Foucauldian concepts of 'power-knowledge relations', 'governmentality', and 'discourse' [30-35]. Other scholars [36-38] recommend the use of a Foucauldian perspective to prevent various collaborative failures in programs related to natural resource management.

By using these approaches (ecology politic & Foucauldian), the analyzes conducted will provide a more critical perspective on the "ocean science" agenda and sustainable development goals. It cannot be denied that the penetration of development, production, and investment in the global, regional, and national realms often neglects and even criminalizes local interests. It needs to be examined in the scheme who is the winner and loser from the activities of the social-ecological production system. The sea must be understood as a space for the socio-ecological contestation of various units, including government, society, the private sector, and environmental activists with different goals. This contestation space usually also appears, either express or implied, in various policies, starting from the main policy and its derivative policies. The Indonesian National Mid-Term Development, for example, is the basis for various Ministries and Government Agencies to prepare Strategic Plans for Ministries and Government Agencies related to Ocean policies in Indonesia, including the coastal sector, fisheries, and small islands. The implementation of these recommendations is only a few initial attempts that need to be prepared to greet this Decade with great enthusiasm. There are still many other participatory and collaborative efforts that can be prepared, either in stages or in parallel.

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