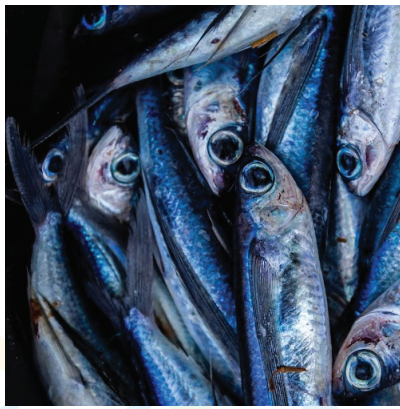




REPORT OF THE OCEAN ACCOUNTS DEVELOPMENT IN INDONESIA



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List of Acronyms

Amdal	: Environmental Impact Assessment
BAPPENAS	: Ministry of National Development Planning
BIG	: Badan Informasi Geospasial; Geospatial Information Agency
BPS	: Badan Pusat Statistik; Statistics Indonesia
BNPB	: National Agency for Disaster Management
BRIN	: National Research and Innovation Agency
CBD	: Convention on Biological Diversity
GEF	: Global Environment Facility
GOAP	: Global Ocean Accounts Partnership
GBO	: Global Biodiversity Outlook
HLP-SOE	: High Level Panel on Sustainable Ocean Economy
IELH	: Economic Instrument of Environment
ICCTF	: Indonesia Climate Change Trust Fund
COREMAP-CTI	: Coral Reef Rehabilitation and Management Program – Coral Triangle Initiative
IBSAP	: Indonesia Biodiversity Strategy and Action Plan
IPB	: Institut Pertanian Bogor
IUU Fishing	: Illegal, Unreported, Unregulated Fishing
JICA	: Japan International Cooperation Agency
KEMENKOMARVES	: Kementerian Koordinator Bidang Kemaritiman dan Investasi; Coordinating Ministry for Maritime and Investment Affairs
KKP	: Kementerian Kelautan dan Perikanan; Ministry of Marine Affairs and Fisheries
KLHS	: Kajian Lingkungan Hidup Strategis; Strategic Environment Analysis

LAPAN	:	Lembaga Penerbangan dan Antariksa Nasional; National Institute of Aeronautics and Space
MMAF	:	Ministry of Marine Affairs and Fisheries
MPA	:	Marine Protected Area
NDC	:	Nationally Determined Contribution
NGO	:	Non-Government Organization
NODC	:	National Ocean Data Center
PDB	:	Gross Domestic Product
PDRB	:	Gross Domestic Ratio Product
RPJP	:	Indonesia's National Long-Term Development Plan
RPJMN	:	Indonesia's National Medium-Term Development Plan
RTRLN	:	National Marine Spatial Plan
SDGs	:	Sustainable Development Goals
SEEA	:	System of Environmental-Economics Accounting
Sisnerling	:	Sistem Terintegrasi Neraca Ekonomi dan Lingkungan; Integrated System of Environmental - Economic Accounts of Indonesia
SUOP	:	Management Unit
SINASI	:	Integrated Accounts Survey
UKL-UPL	:	Management Effort/Environmental Monitoring
UNDP	:	United Nations Development Programme
UNESCAP	:	United Nations Economic and Social Commission for Asia and the Pacific of Environmental-Economics Accounting
USAID	:	United States Agency for International Development



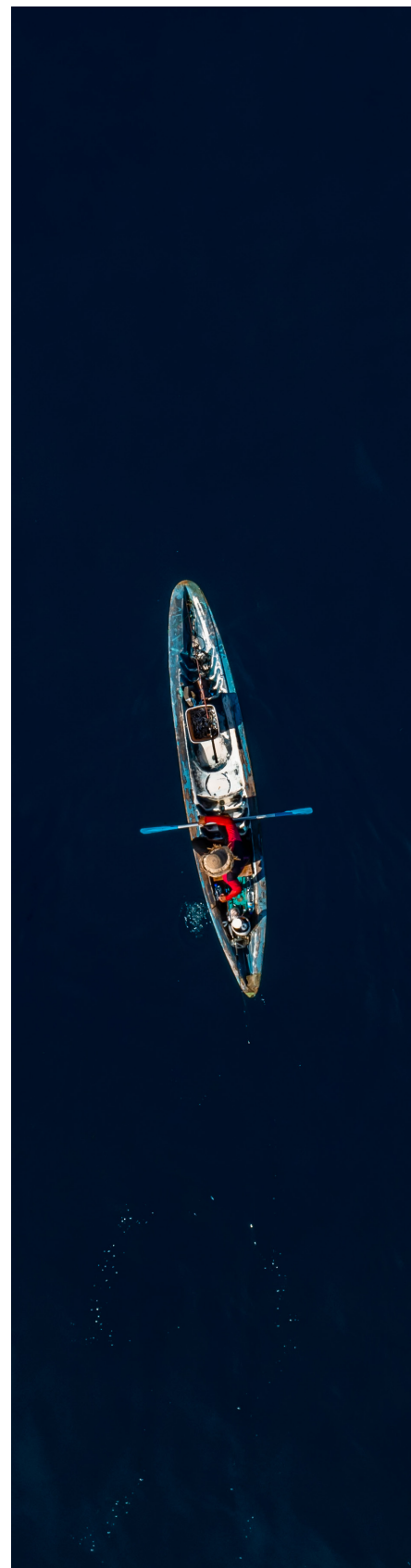
1. Introduction

Indonesia's Constitution mandated that the Earth and water and the natural resources contained therein are controlled by the state and used for the greatest prosperity of the people. Despite the high potential benefits derived from natural resources, challenges and problems, particularly in the marine and fisheries sector, continue to emerge because of its interrelationships with other sectors and are also sensitive to interactions, especially with environmental aspects. Issues in fisheries management related to the sustainability of fish resources and the environment, the sustainability of community livelihoods in fisheries, food security, and economic growth that come from the use of marine and fishery resources.

The Ocean Accounts are an ideal tool in calculating economic value versus potential ecological losses, also known as the economic value of investment. To date, however, Ocean Accounts remain unfamiliar to the public, and the capacity and experience of stakeholders related to preparing Ocean Accounts are still limited. The preparation of Ocean Accounts involving several parties requires a systematic and structured coordination system. For this reason, technical regulations to facilitate coordination mechanisms between institutions need to be in place. Referring to Indonesian Government Regulation No. 46 of 2017, planning and implementation of development and economic activities that need to use the natural resources account, including Ocean Accounts, are in the fields of (a) natural resource management, (b) spatial planning, (c) natural resource conservation, and (4) preservation of environmental functions. Therefore, piloting the preparation of Ocean Accounts can be prioritized for these four areas, including Marine Protected Areas.

The System of Environmental-Economic Accounting (SEEA) has been adapted to Indonesian context two decades ago, by compiling the Integrated System of Environmental - Economic Accounts of Indonesia (abbreviated as *Sisnerling*), focusing on calculating environmental assets in terrestrial areas. How the same initiative can be applied in Indonesian marine waters is certainly a question and challenge. Certain aspects must be taken into consideration, such as Indonesia's vast marine waters, human resource capacity, funding, and the availability of policy and regulation.

Prior to the implementation, it is necessary to undertake a scoping assessment aimed at identifying the challenges and opportunities for its formulation in Indonesia, including lessons learned from the terrestrial sector. Data, information, and inputs gathered from the scoping are expected to enrich the materials needed in developing operational policies for Ocean Accounts compilation, such as priority options for pilot locations, resources needed, institutional models, and other relevant aspects.



2. Global Agenda for Ocean Accounts

Globalization has driven a rapid growth of the economy in many places. This encourages innovation and efficiency of the global value chains, which include research and development processes, production, and large-scale distribution of goods and services. In line with this, there have been significant changes to the environment such as land conversion, increasing levels of pollutants of soil, water, and air, and human-wildlife conflicts.

The Convention on Biological Diversity (CBD) is one of the global frameworks with the aim of ensuring sustainable biodiversity to support the sustainability of life on earth. By prioritizing (1) biodiversity conservation, (2) sustainable use of biodiversity components, and (3) fair and equitable access and benefits of genetic resources, CBD has developed a strategic plan for the period of 2011-2020 by prioritizing five main strategies, of which, one emphasizes on the mainstreaming of biodiversity across government and society (Goal A). By 2020, biodiversity values will be integrated into the planning systems of (1) development at national and regional levels, (2) poverty alleviation strategy, and (3) incorporated into the national accounting and reporting systems (Aichi Target 2).

Parallel to the mandate of CBD, equilibrium between economic growth and the environment was reiterated through the Sustainable Development Goals (SDGs) initiative, or known as 'The 2030 Agenda for Sustainable Development Goals (SDGs)'. The 2030 SDGs Agenda was declared at the United Nations General Assembly (UNGA), which consists of 17 goals and 169 targets for 2015-2030 implementation. The 2030 SDGs Agenda focuses on direct contributions to humanity, development, and the environment, where biodiversity is one of key aspects to achieving those targets. As a system that has been adopted internationally and nationally, *Sisnerling* is developed to assist the government in measuring the progress of achieving the economic and environmental linkages of the SDGs. There are 9 out of 17 goals of SDGs that are closely related with *Sisnerling*, namely resource assets (SDG 6, 13, 14, 15, 17), sustainable production and consumption (SDG 2, 12), economic growth (SDG 8), and green cities (SDG 11)¹. In terms of the marine and fisheries sector, which is specifically stated in SDG 14, *Sisnerling* is related to the land asset accounts, material flow accounts, aquatic resource asset accounts, agriculture, forestry and fisheries accounts, environmental protection accounts, and environmental subsidy accounts.

1 Pirmana, V., Alisjahbana, A.S., Hoekstra, R., Tukker, A.. 2019. Implementation Barriers for a System of Environmental-Economic Accounting in Developing Countries and Its Implications for Monitoring Sustainable Development Goals. *Sustainability* Vol 11 (22). <https://doi.org/10.3390/su11226417>

Responding to the increasing level of threats in maritime sector, the initiative to strengthen sustainable ocean economy emerged with the aim of aligning effective protection, sustainable production, and equitable distribution of welfare². The High Level Panel for a Sustainable Ocean Economy, a multilateral collaboration, was established in September 2018 by 14 Heads of State including Indonesia. This Panel aims at improving the relationships between the people and the ocean, bridging the health of the ocean and human welfare, embracing all stakeholders, harnessing the latest marine knowledge, and developing a transition agenda towards a sustainable ocean economy. In line with the spirit of achieving SDGs, this Panel is committed to managing 100% of the ocean area in a sustainable manner through five pillars: Ocean Wealth, Ocean Health, Ocean Equity, Ocean Knowledge and Ocean Finance³. Through the Ocean Wealth pillar, ocean management is directed towards sustainability, along with economic growth. Through Ocean Health, retention efforts are conducted to reduce the impact of climate change, to protect and restore marine and coastal ecosystems, and to reduce marine pollution. At the same time, through the Ocean Equity, Ocean Knowledge and Ocean Finance pillars, the equity in accessing the benefits of marine resources must go hand in hand with the knowledge of ecosystem services. Based on the records of the Global Biodiversity Outlook – GBO⁴, nearly 100 countries have integrated the value of biodiversity into their accounting system, and Indonesia is one of the contributors through *Sisnerling*. Led by the Statistics Indonesia, Indonesia has started to integrate a number of natural resources components into the country assets accounts in 2014⁵.

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- 2 Stuchtey, M. R., Vincent, A., Merkl, A., Bucher, M., Haugan, P. M., Lubchenco, J., & Pangestu, M. E. (2020). Solusi dari Laut yang Menguntungkan Manusia, Alam, dan Ekonomi. 32. <https://oceanpanel.org/ocean-action/files/executive-summary-ocean-solutions-report-ind.pdf>
 - 3 IOC-UNESCO. (2021). Ocean Knowledge for a Sustainable Ocean Economy: Synergies between the Ocean Decade and the Outcomes of the Ocean Panel. <https://www.oceandecade.org/wp-content/uploads/2021/10/337564-Ocean%20Knowledge%20for%20a%20Sustainable%20Ocean%20Economy>
 - 4 Secretariat of the Convention on Biological Diversity (2020) Global Biodiversity Outlook 5 – Summary for Policy Makers. Montréal.
 - 5 Badan Pusat Statistik. 2019. Sistem Terintegrasi Neraca Lingkungan dan ekonomi Indonesia 2014 - 2018. Jakarta. 289 hal.

A number of challenges in SEEA implementation especially for developing countries are (1) data availability and quality, (2) inadequate financial support, and (3) limited knowledge and capacity in developing the SEEA¹. However, SEEA is currently the best approach to integrate natural resources utilization⁶. The CBD is negotiating for the next biodiversity strategic plan after the 2011-2020 plan. The Post-2020 Global Biodiversity Frameworks brings opportunities to strengthen the SEEA, where according to the first draft of the frameworks for Goal B⁷, contribution of nature to people should be accounted for and SEEA is applied as the monitoring tool for this.

Globally, the interrelations of people's welfare, nature sustainability, and economic growth is indisputable. Specifically related to the maritime sector, many of the benefits and opportunities from this sector are not explored or managed due to the suboptimal documentation system. Therefore, Ocean Accounts need to be developed as a benchmark of equilibrium between the economic growth and ocean sustainability⁸. Responding to this need, the Global Ocean Account Partnership (GOAP) was established with the aim of facilitating the coordination and communication from various institutions to ensure that the value and benefits from maritime sector become one of the foundations in policy development⁹.

6 Mahmud, S, A. Ahammad, and M.N. Islam. 2013. Concept of Green Accounting and Its Practice in Bangladesh. Journal of Science and Technology, Vol 3(2): 481-493.

7 Open-Ended Working Group on The Post-2020 Global Biodiversity Framework 3rd meeting. CBD/WG2020/3/3/ADD1 (<https://www.cbd.int/doc/c/d716/da69/5e81c8e0faca1db1dd145a59/wg2020-03-03-add1-en.pdf>)

8 Ocean Panel. 2020. Transformations for a Sustainable Ocean Economy. <https://oceanpanel.org/ocean-action/files/transformations-sustainable-ocean-economy-eng.pdf>

9 Global Ocean Accounts Partnership (GOAP). 2019. <https://www.oceanaccounts.org/about-the-global-ocean-accounts-partnership/>





3. Indonesia Ocean Management

“Earth and water, and the natural resources contained therein are controlled by the State and used for the greatest prosperity of the people” is the commitment of the Government of Indonesia in managing natural resources as mandated in the 1945 Constitution, Article 33 (3). Furthermore, the use of natural resources for the welfare of the people also needs to consider the aspect of justice for future generations. Therefore, in 1999, the implementation of this article was complemented by “The national economy is organized based on economic democracy, with the principles of togetherness, efficiency, justice, sustainability, environmentally friendly, independence, and by maintaining the balance of progress and national economic unity.”

To ensure the use of natural resources for the maximum benefit of the people, the utilization of renewable natural resources has to be conducted in a rational, optimal, and efficient manner, and must be maintained and improved in quality. As for non-renewable natural resources, the utilization is conducted in balance with reclamation efforts and the search for alternative resources or substitute materials that are renewable and more environmentally friendly. In addition, its utilization is directed at (a) improvement of added value of natural resources products, (b) development of natural resources-based industries, (c) improvement of its efficiency and competitiveness in order to reduce the level of non-renewable natural resources exploitation, (d) emphasis on environmentally friendly activities, (e) regional and local community development, (f) strengthening the support for young generations, and (f) firm and fair enforcement of environmental laws¹⁰.

As the implementation of the above mentioned commitment, the Government of Indonesia has developed the 2020-2024 National Medium-Term Development Plan (abbreviated as RPJMN in Indonesian). In line with the Law Number 32 of 2009, the government has formulated the foundation for environmental protection and management. Environmental protection and management is stated as a systematic and integrated effort conducted to preserve environmental functions and prevent environmental pollution and/or damage which includes planning, utilization, control, maintenance, supervision, and law enforcement. This principle is one of the pillars of sustainable development in Indonesia. Therefore, mainstreaming of sustainability into development planning, including the 2020-2024 RPJMN, is conducted through the implementation of Strategic Environmental Analysis (abbreviated as KLHS in Indonesian) as one of the guidelines in developing the RPJMN as well as incorporating a number of SDGs indicators into the indicators of development achievement¹¹. In 2020-2024 RPJMN, a specific development plan for marine and fisheries

¹⁰ Law No. 17 of 2007 concerning 2005 – 2025 Long-Term Development Plan

¹¹ Presidential Regulation Number 18 of 2020 concerning 2020-2024 National Medium-Term Development Plan

sector is part of the Development Agenda 1 “Strengthening economic resilience for quality and equitable growth” and Development Agenda 6 “Building the environment, improving disaster resilience, and climate change”.

Indonesia is widely recognized as the largest archipelagic state in the world, has registered 16,671 out of an estimated 17,504 islands in Indonesia to the United Nations, and has a water area of 6.4 million km² and a coastline of 108,000 km. As a maritime state, Indonesia also has a wealth of natural resources assets, including: renewable resources such as fisheries, coral reefs, seagrass beds, and mangrove forests; non-renewable resources such as oil, natural gas, and other mineral resources; marine energy such as tides, waves, and wind; as well as environmental services that support the people’s livelihoods such as marine tourism, sea transportation, and germplasm. Although the potential benefits derived from natural resources are relatively high, problems especially in the marine and fisheries sector are still a challenge as they are linked with other sectors, which are also sensitive to interactions, particularly with environmental aspects. Issues in fisheries management as outlined in the 2020-2024 Strategic Plan of the Ministry of Marine Affairs and Fisheries include those related to the sustainability of fish resources and the environment, sustainability of community livelihoods in fisheries sector, food security, and economic growth derived from the use of marine and fisheries resources.

The development of marine and fisheries sector is conducted in reference to a number of regulations such as the Law No. 31 of 2004 in conjunction with the Law No. 45 of 2009 concerning Fisheries, Law No. 27 of 2007 in conjunction with the Law No. 1 of 2014 concerning Management of Coastal Areas and Small Islands, as well as the Law No. 32 of 2014 concerning Marine Affairs. Fisheries management, as mandated in the Law No. 31 of 2004, is conducted to achieve the optimal and sustainable benefits, and to ensure the sustainability of fish resources. Management of fish resources is conducted through a sustainable use approach as well as Fisheries Management Area-based resources governance. In addition, fisheries governance also further regulates Conservation of Fish Resources through the Government Regulation No. 60 of 2007, which explains the guidelines of conservation efforts that are based on the ecosystem, aquatic species, and genetic resources.

Similar with the management of coastal areas and small islands, resources management is conducted through the process of intersectoral planning, utilization, monitoring, and control between the Central and Regional Governments, between land and marine ecosystems, as well as between science and management to improve the people's welfare¹². In a wider scope, as stated by the Maritime Law, marine management is stated as the implementation of activities, provision, exploitation, and utilization of marine resources as well as marine conservation.

Regional-based marine development planning is carried out through Marine Spatial Planning which includes Coastal Areas and Small Islands Zoning Plan, Interregional Zoning Plan, National Strategic Area Zoning Plan and/or Special National Strategic Area Zoning Plan¹³. In this area-based planning, the allocation of marine areas is conducted to avoid the conflict of utilization. Marine sectors comprise sea transportation, energy and mineral resources, marine tourism, as well as maritime industries and marine services. In the regional planning system, these sectors are accommodated in the Public Utilization Area. In addition, marine protected areas are dedicated for biodiversity conservation. However, it has to be noted that marine protected areas are not the only way in protecting marine environment¹⁴. Prevention of pollution and/or damage to the ocean environment, which includes marine pollution control, marine disaster management, as well as prevention and management of pollution, damage, and disaster are also important.

12 Law No. 27 of 2007 concerning Coastal Areas and Small Islands

13 Government Regulation No. 32 of 2019 concerning Marine Spatial Plan

14 Law No. 32 of 2014 concerning Marine Affairs, Articles 50-57

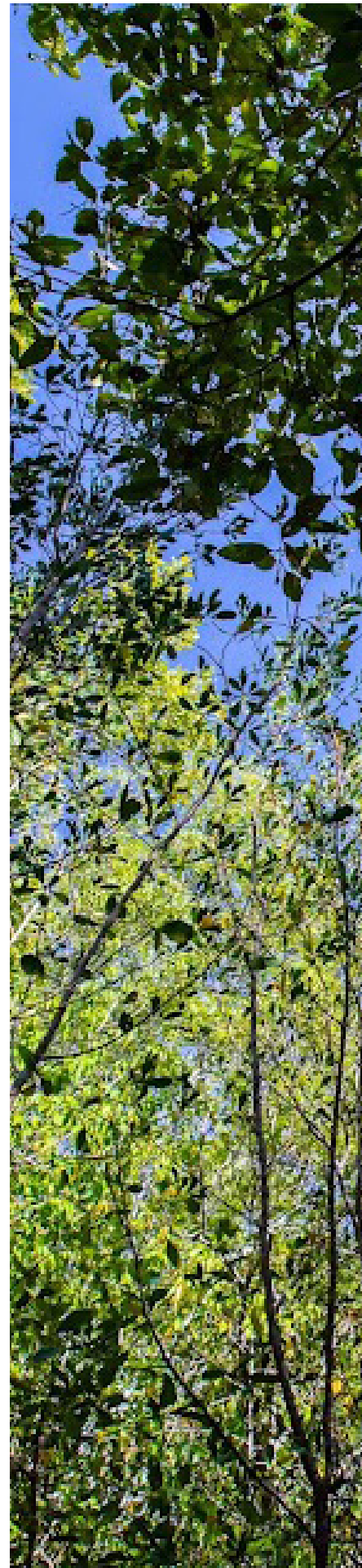
4. Framework of Ocean Account in Indonesia

Through the Vision and Direction of the 2005-2025 National Long-Term Development Plan (RPJP), the Government of Indonesia emphasizes the importance of natural resources development in the economy of Indonesia, in the past, present, and future. Natural resources contributed 30% to the national GDP in 2001, and 57% to employment rate. In the marine sector, the annual potential of fish resources reaches 53.9 ton. However, it is recorded that approximately 40% of coral reefs are damaged and only around 30% of mangrove forests are in good condition. Marine resources are highly valuable potential to support economic growth. Therefore, in the Direction of 2005-2025 RPJP, the utilization of marine resources must be supported by strong national policy, technology innovation, and human capacity. The suboptimal utilization of marine resources, among others, is due to the inadequate support of science and technology. The accurate, up-to-date, consistent, and comprehensive data become an important aspect in bridging the formulation of data or science-based policy.

Indonesia's marine and fisheries management policy has been outlined in the 2020-2024 RPJMN. The policy is also in line with SDG 14: Life Below Water, i.e., to support conservation of 10% of marine and coastal areas, to manage and protect marine and coastal ecosystems in a sustainable manner, as well as to improve the economic benefits from the marine and fisheries sector. The policy direction to achieve these three objectives include strengthening the governance and synergy between institutions, sustainable use, and sustainable funding support.

The Government of Indonesia initiated the Coral Reef Rehabilitation and Management Program – Coral Triangle Initiative (COREMAP-CTI) to preserve marine and coastal resources and improve the welfare of coastal communities. This strategic program produces an innovative model of development, especially in the sustainable management of coastal and marine ecosystems and to support the management efforts of climate change impacts in the marine and fisheries sector. The Government of Indonesia also committed to realizing the sustainable ocean economy through the Blue Economy approach. The scope of Blue Economy is not only related to ocean-based economy, but also harmonization between human and ecosystem, creating jobs and social capital, and innovation based entrepreneurship¹⁵. In early 2021, the President of Indonesia emphasized the importance of the Blue Economy, as well as indicators or methods to measure marine resources potential in Indonesia.

¹⁵ KEMENKOMARVES. 2021. Agenda Nasional Pembangunan Maritim untuk Sustainable Ocean Economy. [23 September 2021]. Lokakarya Nasional Neraca Sumber Daya Laut Indonesia.





The Government of Indonesia has set 2030 as the target for achieving the implementation of the Sustainable Ocean Plan, which is a credible foundation for maintaining marine health and resilience in the long-term, attracting investments, as well as creating job opportunities for the benefit of the coastal community and national economy. To be able to describe the linkages between economic development and sustainability of natural resources and the environment, the availability of accurate data and information becomes critical. Statistics Indonesia as the centre for the *Sisnerling* appoints relevant ministries/institutions and/or Regional Governments to provide sectoral data and information. Similar mechanism was then applied in the development of Ocean Accounts. To date, Statistics Indonesia has conducted an in-depth study on the preparation of Ocean Accounts, including organizing the discussion between institutions to identify data gaps. Based on the in-depth study, in addition to Statistics Indonesia, the key institutions for the development of Ocean Accounts include the MMAF, Geospatial Information Agency, and the Ministry of Finance. Statistics Indonesia routinely conducts Integrated Accounts Survey (*Survei Neraca Terintegrasi/ SINASI*) at provincial and district/city levels. In 2021, SINASI has incorporated the element of SEEA in-depth study to improve human capacity of Regional Governments in collecting data to develop the Ocean Accounts.

Law No. 32 of 2009 regulates environmental protection and preservation through prevention efforts. A number of regulated preventive instruments include strategic environment analysis (KLHS), spatial planning, environmental quality standard, standard criteria of environmental damage, environmental impact assessment (abbreviated as *Amdal* in Indonesia), management effort-environmental monitoring (abbreviated as UKL-UPL in Indonesia), permits, economic instrument of environment (abbreviated as IELH in Indonesia), environmental-based laws and regulations, environmental-based funding, environmental risk analysis, environmental audit, as well as other instruments which continue to develop following the development of science and technology.

The economic instrument of the environment is detailed in the Government Regulation No. 46 of 2017. This instrument includes development planning and economic activities, environmental funding, as well as the development of incentive and/or disincentive mechanisms. One of the components of the development planning and economic activities is the Natural Resources and Environmental Accounts, which are the responsibility of the Central and Regional Governments. The Natural Resources and Environmental Accounts as defined in Article 1 describe the assets and their changes. Implementation at regional level is conducted based on the Circular Letter of the Minister of Home Affairs and the Head of Geospatial Information Agency (BIG) Number 660/2367/S/83.KA/RT/6/2012.

Natural resources are the main capital in economic activities that are converted into various goods and services. Economic development is defined as the chain of efforts aimed to improve human welfare, employment opportunities, equitable income, and encouraging alternative sectors¹⁶. To support economic development, indicators such as Gross Domestic Product (GDP) need to be monitored. However, in many cases, economic activities have caused environmental degradation. Hence, the measurement between economic achievement and environmental quality is needed.

According to the United Nations¹⁷, SEEA is a multipurpose conceptual framework that describes the interaction between economy and the environment, as well as the stock and changes in environmental assets. Indonesia *Sisnerling* which was initiated in 1997, has provided important lessons learnt in the assessment of environmental assets. From its development, the needs for resource account continued to expand, including for marine assets. Not only knowing the existing assets, but the government is also required to be transparent regarding the value and condition of natural resources. Therefore, the success of *Sisnerling* must be replicated, and synergized with the country's financial system and decision-making.

Marine landscape represents 70% of the earth's surface. This has placed the ocean as the centre of the world's economic activities. As an effort to measure the impact of economic, social and environmental activities, Ocean Accounts need to be developed as part of *Sisnerling*. In the United Nations report¹⁸, Ocean Accounts are defined as the compilation of structured information – consistent and comparable: maps, data, statistics and indicators – regarding marine and coastal environments, including relevant social conditions and major activities. Ocean Accounts inform and enable public policy decisions on marine affairs, as well as relevant research and analysis. At the same time, Ocean Accounts provide coherent structure to standardize dispersed data and to produce reliable integrated indicators for policy purposes.

In the aspect of Marine Spatial Planning, intersections and conflicts occurred due to the lack of boundary information. Similar issues occurred in fisheries management, which relies heavily on the stock status information. Ocean Accounts are not only important for justice, but also generating values from management. Ocean Accounts are projected to bridge Marine Spatial Planning and resources frameworks. To date, Ocean Accounts are newly

16 [BPS] Badan Pusat Statistik. 2012. Sistem Terintegrasi Neraca Lingkungan dan Ekonomi Indonesia 2007-2011. Jakarta 128 hal.

17 United Nations. 2014. System of Environmental-Economic Accounting 2012. In the System of Environmental-Economic Accounting 2012. <https://doi.org/10.5089/9789211615630.069>

18 United Nations. 2020. Technical Guidance on Ocean Accounting for Sustainable Development (Vol. 09. Issue October).

introduced. Furthermore, the preparation of Ocean Accounts requires a systematic and structured coordination system. Technical regulation and institutional arrangement are also needed prior to the implementation of Ocean Accounts.

Referring to the Government Regulation No. 46 of 2017, natural resources accounts are applied for (a) natural resources management, (b) spatial planning, (c) conservation of natural resources, and (d) preservation of environmental functions. Ocean Accounts can be prioritized for those aspects, therefore, Marine Protected Area is selected as pilot for Ocean Accounts development in Indonesia as it accommodates the aforementioned aspects. Marine Protected Area is a miniature natural system, with defined clear boundaries, consisting of natural resources (mangrove, coral reefs, etc.) as well as cultural sites, which is managed to achieve certain goals. In Indonesia, Marine Protected Area management is conducted through a zoning system, which regulates the activities or utilization inside the area. This regulatory system is described in a management plan implemented by the Management Unit (abbreviated as SUOP in Indonesia). To ensure the compliance with the zoning system, a permit is established to control activities in the Marine Protected Area. The development of Ocean Accounts for Marine Protected Area provides information on the impact of economic activities. The results of this indicator can be used by SUOP for equitable and sustainable MPA management. Information provided by Ocean Accounts including (a) the ecosystem extent and condition, (2) impact of economic activities, and (3) residual waste to the environment. Based on that information, SUOP is expected to determine the appropriate measures for Marine Protected Area management, by ensuring the benefits of the natural resources for the communities.

5. Scoping Approach and Method

The formation of a multidisciplinary team becomes the starting point in conducting the planning stage of the preparation of Ocean Accounts. A team of experts, data providers, compilers, and data users should be familiar with the basic concept and methods of Ocean Accounts development. Referring to the development of Ocean Accounts in other countries, the majority of the pilot projects were initiated by discussing the Scoping Report in the Ocean Accounts development workshop. Stakeholders have the opportunity of providing an assessment on the scoping report, make revisions if necessary, and agree on topics and implementation of the pilot project. This workshop is also an opportunity for human resources capacity building, including the organization of relevant follow-up training.

MMAF has initiated the early discussion on development of Ocean Accounts in mid-2020. MMAF with other ministries and government agencies such as Ministry of Finance, Ministry of Development Plan, Indonesia Statistics, and Geospatial Information Agency involved in series of technical meetings and at the end of 2020 an initial roadmap for Ocean Accounts was developed. The roadmap outlined key activities to conduct, list of priority locations, and the timeframe for the roadmap. The initial roadmap is developed for the time frame between 2021-2024, with key activities covering data collection, development of guidelines, data inventory and analysis, and development of Ocean Accounts for 10 national MPAs. At the beginning, these activities were planned to be piloted in 2021 in three MPAs namely Gili Matra, Kapoposang, and Pieh. However, due to COVID19 pandemic rise, for 2021 the piloting will be conducted in Gili Matra MPA and later will be replicated in the following years for the remaining nine national MPAs. The initial roadmap was consulted during the first national workshop and a number of other areas such as Jakarta Bay, Northern Coast of Java, and Mahakam Delta are among priority areas suggested by respondents for Ocean Accounts.

5.1. Using the Ocean Diagnostic Tools

Considering the difficulties to conduct physical meetings and interviews during the COVID19 pandemic, the project has decided to use the workshop as a tool to gather information and perspective from stakeholders. Prior to the workshop, participants were asked to fill a questionnaire about key aspects related to Ocean Accounts in Indonesia, which was developed by referring to the Ocean Diagnostic Tool (Annex 1). The questionnaire was distributed via online form to various related stakeholders using the registration link for the first national workshop. Three main components were outlined in the questionnaire covering (1) Indonesia's policy framework and strategic planning, (2) operationalization and methods, and (3) priority, challenges and opportunities for Ocean Accounts development. The total number of respondents to the questionnaire reached 577 (male: 357; female:





220), representing various ministries and agencies, local government, universities, NGOs, and the general public. Result from the questionnaire is provided in Annex 2.

5.2. National Workshops on Ocean Accounting in Indonesia

First national workshop was held on September 23, 2021, involving stakeholders from government institutions, universities, NGOs, and civil society. The workshop aimed to gather initial inputs to develop a roadmap for Ocean Account implementation in Indonesia. Workshop was divided into four sessions: opening speech, presentation of topics by invited speakers, group discussion, and closing remarks. In the opening speech, Director General of Marine Spatial Management of MMAF (Dr. Pamuji Lestari), emphasized the importance of developing the Ocean Accounts in the MPAs. The speech continued by the Executive Secretary of the UNESCAP (Prof. Armida S. Alisjahbana), Head of Statistics Indonesia (Dr. Margo Yuwono), and Deputy for Coordination of Maritime Sovereignty and Energy of KEMENKOMARVES (Basilio Dias Araujo, M.A.). Keynote speakers convey important points, such as: i) the legal and planning basis for the Ocean Accounts development, ii) common agenda and interest among line ministries on the issue, iii) challenges and opportunities through collaboration and partnership, and iv) the availability of standardized statistical data as the foundation for preparing the Ocean Accounts, as well as for formulating sustainable development policies. KEMENKOMARVES also delivered its direction regarding the link between the Blue Economy Development Index in Indonesia's maritime management and the development of the Ocean Accounts as a mechanism for measuring Blue Economy achievements.

The event continued with presentations from experts from multiple agencies, i.e. National Development Planning Agency (Dr. Sriyanti J. S.), MMAF (Andi Rusandi, M.Si.), Statistics Indonesia (Dody Herlando, M. Econ.), UNESCAP (Rikke M. Hansen, M.Sc.), Ministry of Finance (Nafiantoro Agus Setiawan, M.Si.), GOAP (Dr. Ben Milligan), Geospatial Information Agency (Dr. Ing. Khafid), and IPB University (Prof. Akhmad Fauzi). After the topic presentations, participants were assigned to three groups to discuss the main issues related to the development of Ocean Accounts in Indonesia. To lead the discussion, facilitators were assigned for groups, namely Group 1: Regulations Aspect (Dr. Luky Adrianto); Group 2: Operational Aspects (Etjih Tasriah, M.PP.); and Group 3: Priority Aspects (Diah Retno Minarni, M.Si.). The results of the group discussion were then summarized and delivered to all participants by MMAF (Dr. Firdaus Agung) in the closing remarks. He also highlighted several important workshop's output, including: i) updated information on Ocean Accounts development both globally and nationally, ii) lesson-learned from stakeholders related to efforts to support Ocean Accounts in Indonesia, and iii) recommendations from stakeholders regarding priority areas and roadmap of Ocean Accounts implementation. Documentation from the first national workshop is provided in Annex 3.

Second national workshop was held on March 29, 2022 to finalize the roadmap of Ocean Accounts implementation in Indonesia that was initiated in the first workshop in September 2021. The workshop involved 26 representatives from various ministries, other related government institutions, universities, and NGOs. The workshop was divided into four sessions: opening, presentation, breakout group discussion, and pleno discussion. The workshop mainly discussed three key subjects to finalize the roadmap: (1) priority accounts to be developed, (2) priority locations, and (3) inter-institutions coordination mechanisms. Regarding environmental asset accounts, participants agreed that data collection for the development of marine accounts needs to cover not only the ecosystem assets, but also the biotic and abiotic assets, such as fish resources and hidro-oceanography parameters. Data can be retrieved from various projects that have been undertaken, i.e., projects supported by the Coral Reef Rehabilitation and Management Program – Coral Triangle Initiative (COREMAP-CTI), Marine Resources Evaluation and Planning Project (MREPP), and the Indonesia Climate Change Trust Fund (ICCTF), as well as from satellite imageries collected and managed by the Indonesia Research and Innovation Agency (BRIN). For the future implementation, Ocean Accounts will be expanded to other marine protected areas (MPAs), i.e., Raja Ampat and Padaido MPA in Papua and Banda MPA in Maluku (2022), Anambas MPA in Riau Islands (2023), and Sawu Sea MPA in East Nusa Tenggara (2024). Besides MPAs, locations with prominent marine industry and aquaculture activities will also be included in the priority list. Effort in determining priority sites can be started by satellite imagery analysis highlighting the area with potential resources, for instance, abundant fish resources.

For better inter-institutional coordination, all have agreed upon the need for establishing a joint secretariat. Statistics Indonesia and other relevant government institutions play an important role in the preparation of the Ocean Accounts. Statistics Indonesia will take the lead while other institutions will provide the necessary data. Once completed, participating institutions are allowed to officially publish the final result of Indonesia's Ocean Accounts according to their respective roles that will be justified later in a written agreement.

Align with the scoping assessment, input and recommendation have been produced to finalize the roadmap for Ocean Accounts implementation in Indonesia. The country implementation plan will be developed to outline the logical framework for Ocean Accounts in Indonesia by:

1. Setting up targeted goals and outputs
2. Tackling identified issues and challenges such as:
 - a. Regulatory gap in technical implementation
 - b. Insufficient data
 - c. Limited knowledge and capacity
 - d. Inadequate funding
3. Addressing key actors and stakeholders, as well as the institutional arrangement
4. Piloting priority accounts and areas



6. Scoping Assessment Result

The results of the workshop and its recommendations provide important input for the planning preparation of an Ocean Accounts in Indonesia related to aspects of regulation, operation, and site selection. Each of these aspects is described in detail in the following sections.

6.1. Regulatory Aspect

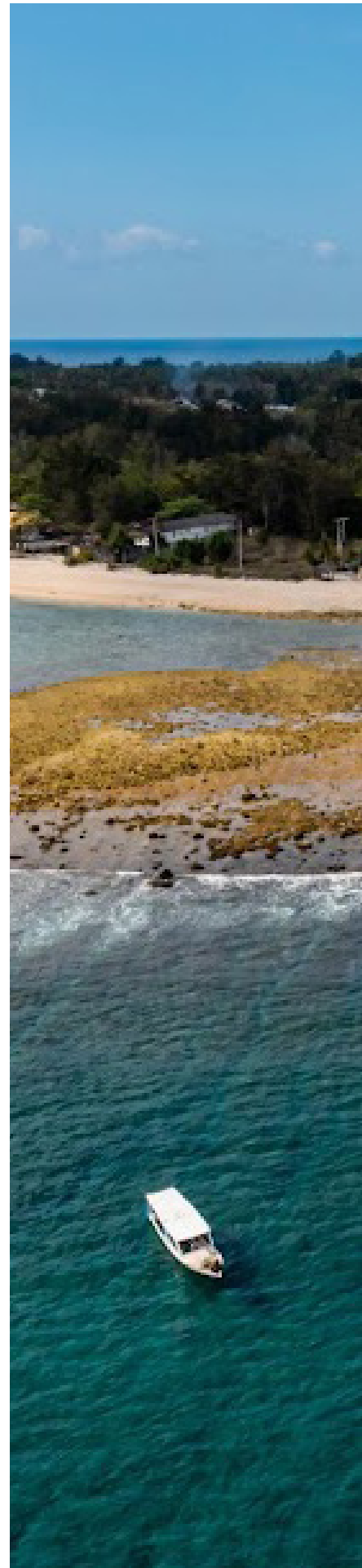
Regulations and in this case including policies are the most fundamental things in the preparation of the Ocean Accounts in Indonesia. Regulations and policies provide the basis for coordinating, budgeting, and operating Ocean Accounts. This is very strategic considering that the Ocean Accounts in Indonesia is still relatively new both in terms of material, substance, and products compared to the land natural resource account which has developed relatively early.

The presentations from the speakers and the results of group discussions at the national workshop show that currently there are laws and policies that can be used as the basis for preparing the Ocean Accounts in Indonesia. At the legal level, at least implicitly, the preparation of the marine natural resources account is part of the obligation to preserve fish resources (fishery law), coastal areas and small islands (coastal area management law), and marine resources (marine law). In addition, the law also stipulates that all utilization of coastal, small islands, and marine resources must be in accordance with their carrying capacity.

Operationally, Government Regulation No. 46 of 2017 has mandated the preparation of natural resources accounts. The instruments that must be prepared by the government include: a) natural resources accounts; b) count the GDP and GDRP of the environment; c) Environmental service compensation/reward; and d) internalization of environmental costs. The planning and implementation of such development and economic activities shall at least cover the following areas: a) natural resource management; b) spatial planning; c) conservation; and d) environmental preservation.

6.2. Aspects of Development Planning

Beside the regulatory aspect, another element that needs to be evaluated in scoping the preparation of Ocean Accounts in Indonesia is development planning, especially mid-term planning. In the development planning system in Indonesia, all national development activities are based on policy directions, objectives, and targets that have been set out in





the 2020-2024 RPJMN. Indonesia's RPJMN also provides direction and a strong commitment to sustainable development. This can be seen from development programs that clearly support the SDGs, implement and fulfill the Nationally Determined Contribution (NDC) and green growth. Of course, these directions require various tools or instruments to measure their success. In this case, the natural resource account is needed to assess the sustainability and resilience of Indonesia's economic growth model.

In this aspect of development planning, three key bases for the preparation of the natural resource account were highlighted. First, development in Indonesia so far has been able to provide economic growth, employment, provision of goods and services, and reduce poverty. However, the impact of these development activities is also evident in terms of a decrease in the quality and quantity of the environment. If this is not managed properly, national development and economic growth will be unsustainable. Second, the government's increasing awareness of the importance of natural capital as a whole and its management for the sustainability of national development. Third, there are currently active government efforts to improve and strengthen: (a) *Sisnerling* as tools to communicate policies and understanding of the economy and the environment, (b) development of low carbon development and green growth and, (c) application of natural resources in policies and regulations.

6.3. Operational Aspect

Operationally, the scoping carried out includes identification of key stakeholders, coordination mechanisms, and provision of data. These three aspects are one of the key factors in the preparation of the ocean given the large scope of activities and resource requirements in its implementation.

Looking at the diversity of workshop participants and the result of discussions, there are at least three major groups of key stakeholders who are the main actors in the preparation of Ocean Accounts in Indonesia. First, the government which includes ministries/sectors related to regulation and utilization of the ocean, especially those with mandates in the preparation of natural resource accounts. At this government level, the main ministries/sectors include the Statistics Indonesia, Ministry of Finance, MMAF, KEMENKOMARVES, National Development Planning Agency, and Geospatial Information Agency. Supporting ministries/sectors include the ministry of tourism, the ministry of transportation, and the Ministry of Environment and Forestry. Second, local government stakeholders which include governors/regents and offices in charge of marine affairs, fisheries, transportation, tourism, and the environment. Third, non-government stakeholders which include universities, research institutions, private sector, NGOs, and regional and international organizations.

The three stakeholder groups of course have different roles and functions according to their duties and authorities. However, for the preparation of the Ocean Accounts in Indonesia, the cooperation and synergy of the three stakeholders are needed to optimize and accelerate the process. There are several choices of coordination mechanisms to be applied, namely: coordination forums (secretariat, committees, work teams), cross-ministerial teams (for government levels), and technical committees (multi-stakeholders). The three options require further analysis to be implemented in Indonesia. However, at least the participants of the national workshop already understood that the preparation of Ocean Accounts cannot stand by the government alone.

Data availability is one of the limitations to be overcome by stakeholder synergy. The Ocean Accounts need a) basic statistical data and information; b) sectoral statistical data and information originating from ministries, institutions, and/or Regional Governments; c) inventory of natural resources and environment. Data and information of the ocean spread across different units, organizations, and institutions, including government, universities, private sector, NGOs, and public. In this workshop, certain data for the preparation of the Ocean Account has been identified, specifically for statistical data which describes Indonesia's marine resource wealth. Data sources can also come from research, activity reports, studies, news reports, and other sources that can be identified as data providers.

6.4. Location and Priority

Considering the vastness of Indonesia's seas, it is necessary to set priorities for Ocean Accounts preparation, i.e., location and account. Both have different implications in terms of their implementation strategy. In terms of priority, the Government Regulation No. 46 of 2017 mandates the preparation of a) assets accounts in physical units; and b) assets accounts in currency units. The asset account in currency units is further complemented by the calculation of the account of flows of natural resources and the environment. For the location, the workshop participants suggested fishery areas, Marine Protected Areas, marine tourism, mining and industry as priority locations for accounts compilation. For the Ocean Accounts, ecosystem extent and flows to the economy were suggested as priorities.

7. Ocean Accounts Pilot Implementation

Given the relatively complex aspects and process in Ocean Accounting, as well as a relatively new issue for Indonesia, GOAP and the MMAF agreed to pilot the OA implementation in one of the national Marine Protected Areas. Marine Protected Area (MPA) was selected as it has a clear management boundary with a dedicated management authority. Among the 10 national MPAs, the Gili Ayer, Gili Meno and Gili Trawangan (Gili Matra) MPA have been chosen as pilot sites. Gili Matra MPA is located within the administrative area of Pemenang Sub District of North Lombok District, West Nusa Tenggara Province. Although being the smallest national MPA in terms of area, Gili Matra MPA has several special features, such as being one of the 50 National Tourism Destinations. This area is also located within the Lesser Sunda Seascape, which is one of the priority seascapes of CTI-CFF. More importantly, Gili Matra is the habitat of various species of coral reef, mangrove, and seagrass, as well as provides livelihood for local communities from tourism and fisheries.

The GOAP funded ocean account pilot project at Gili Matra MPA has three main objectives: (i) creation of National Pilot Ocean Accounts and Roadmap for the future ocean account development in Indonesia, (ii) improve knowledge and capacity on Ocean Accounting for key stakeholders, and (iii) publish a national ocean account pilot report. The three project objectives has nine (9) deliverables, including (1) project preparation, (2) stakeholder workshop to discuss and assess priorities for implementing Ocean Accounts, (3) scoping assessment and the country implementation plan, (4) participate in capacity building with GOAP secretariat, (5) data collection for Ocean Accounts pilot implementation, (6) produce draft pilot report, (7) stakeholders workshop to review and discuss initial pilot accounts and development roadmap, (8) produce final pilot report, and (9) developing awareness materials, training on ocean accounting for government officials, as well as provincial and national workshop to disseminate pilot plan. Detailed activities in this project are provided in Annex 4.

Prior to project implementation, several preparation activities were conducted to determine project deliverables, budget, and timeline. To reach an effective implementation, Indonesia team has set biweekly meetings with GOAP, and participate in several capacity building such as consultation with UNEP-WCMC; Regional Ocean Accounts Meeting by GOAP and Madras School of Economics; and Ocean Accounting Training by GOAP.

To actualize cross-sectoral collaboration in the Ocean Accounts pilot implementation, MMAF has initiated discussion between agencies. A meeting was conducted on August 24th 2021, to discuss the initial survey of extent accounts. The meeting involved 31 participants from across agencies, including the MMAF, Ministry of Finance, Statistics Indonesia,

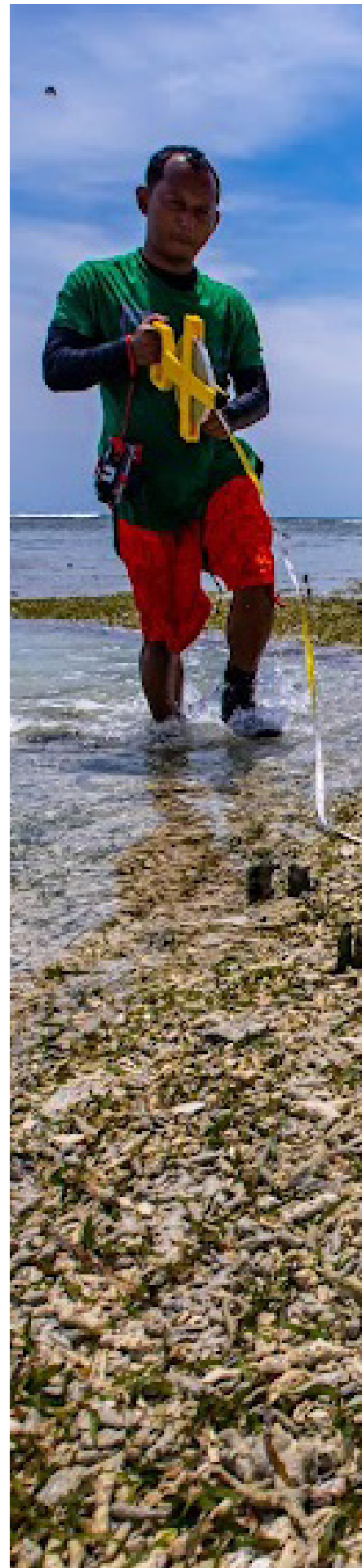
Geospatial Information Agency, ICCTF, and Rekam Nusantara Foundation. The meeting was then followed up on August 31st, attended by 33 participants to agree upon data collection methods for field survey in Gili Matra MPA.

The Ocean Accounts framework in Gili Matra MPA is composed of the following structures: environmental assets; flows to economy; flows to environment; and ocean governance. In preparing the environmental assets, supporting data consist of (1) ecosystem extent and condition of coral reefs, seagrass, and mangroves; and (2) biophysical features which include sea surface temperature (SST), chlorophyll-a, total suspended solids (TSS), acidity (pH) and dissolved oxygen (DO). The data represents the 2015 and 2021 observation periods. Data were obtained through field surveys, sampling, and analysis of image data; as well as from the Geospatial Information Agency, scientific articles, and technical reports. Data collection and analysis were carried out from September to October 2021.

The monetary value of the ecosystem in Gili Matra MPA was determined based on their environmental services. The estimation of economic value is carried out using two main approaches, namely the market price and the non-market price. For the market price approach, the methods used are (1) productivity level, (2) replacement cost, and (3) prevention cost. As for the non-market price approach, the methods used include the expressed preference method, i.e., the contingent valuation method; and revealed preference method, i.e., travel cost method.

In order to compile, standardize, and summarize the environmental assets data, MMAF has set up a meeting on 27-28 October 2021, and resulted in the Interim Report of Ocean Accounts Pilot in Gili Matra MPA. The Interim Report was launched on 3 December 2021, during an event called *“Effective Conservation for Sustainable Ocean – Launching of management tools and talk show”*. More than 60 participants have joined on site and 1100+ viewers joined through online streaming¹⁹. The event was also attended by the Development Director in the British Embassy in Jakarta, Amanda McLoughlin.

Data and information to develop flow to economy and flow to environment of Gili Matra MPA were conducted through desk studies, field surveys, and interviews. Desk studies aimed to identify the forms of economic activity and zoning system in the pilot study area. A set of questionnaires on the zoning system and economic activity in Gili Matra MPA was prepared and distributed among key figures in the study site. The questionnaires referred to the survey questionnaire of integrated accounts (SINASI) undertaken by Statistics Indonesia. Data collection was carried out in February 2022, involving a total number of



¹⁹ Pekan PRL- Lokakarya Nasional: Konservasi Efektif untuk Ruang Laut Lestari. <https://youtu.be/9ohMH8o0zas>



107 respondents (36 from Gili Meno, 36 from Gili Ayer, and 35 from Gili Trawangan). Data and information obtained from the field were analyzed to estimate (1) the monetary value of economic activity in the region, (2) the spatial distribution of economic activity, and (3) the monetary estimation of extraction of natural resources and the residues into the environment.

The results of Ocean Accounts of Gili Matra MPA were discussed on March 14, 2022 in West Nusa Tenggara. This activity was attended by 11 participants from MMAF, Rekam Nusantara Foundation, and GOAP Secretariat (Mr. Teerapong Praphotjanaporn). During the discussion, MMAF highlighted that the Ocean Accounts need to be completed immediately as a basis for evaluating the impact of activities on asset utilization. In this discussion, the study of Ocean Accounts in Indonesia where the pilot study is located on Gili Matra was also explained. Furthermore, all inputs and feedback from stakeholders were included in the final report.

Capacity building for stakeholders was undertaken to facilitate discussion on the preparation of the Ocean Accounts. This activity was held on 1-2 March 2022, in Semarang combined with a virtual meeting. This activity was attended by 56 participants from MMAF, BAPPENAS, Ministry of Finance, Statistics Indonesia, Geospatial Information Agency, and Universities. Participants discussed regulatory framework, methodology, and data interpretation for decision making. Documentation of each activity in this section is provided in Annex 55.

8. Roadmap for Country Implementation

Ocean Accounts Roadmap for Indonesia has been consulted at the two National Stakeholder Workshop in September 2021 and March 2022. The national Workshops resulted in several recommendations for: (1) priority accounts to be developed, (2) priority locations, and (3) inter-institutions coordination mechanisms. General timeframe for Ocean Accounts development was proposed where in the first year priority will be for institutional and governance strengthening; survey data analysis and accounts drafting, and presentation. In the second year, the main components include stakeholder consultation, developing guidelines, and standard for accounts data collection. And the next years are dedicated to accounts finalization, socialization, and knowledge management. General timetable for the implementation of Ocean Accounts development has been formulated as presented in Table 1.

Tabel 1. General Implementation Plan for Ocean Account Development in Indonesia

No.	Main Component/ Activity	Output	Year				
			1	2	3	4	5
1.	Institutional and governance strengthening: 1.1.Coordination and consolidation 1.2.Policy development and Capacity building 1.3.Inter stakeholder collaboration	<ul style="list-style-type: none"> Pilot site, account priority, data requirement, key actors, project management New and/or improved policy to support operational level National and local staff including key stakeholders are trained in ocean account conceptual approach and practice Stakeholder forum 					
2.	Survey, data analysis, and presentation	<ul style="list-style-type: none"> Primary and secondary data for ocean accounts development Scenario, trend, and changes analysis 					
3.	Developing guideline and standard for data collection, analysis, and presentation	National guideline for ocean account and standard for data collection, analysis, and presentation.					
4.	Stakeholder consultation at national and local level	Input, comments, and recommendation to improve data, guideline, and relevant policy and programs.					
5.	Knowledge management	Awareness and education, best practices, data management					

One of the priority Ocean Accounts themes and areas is fisheries (both capture and aquaculture). According to FAO, fisheries constitute almost 17% of protein source worldwide and it is one of the most traded foods globally. Indonesia is one of the world's largest suppliers and at the same time is also one of the fish-dependent nations in the

world. This sector contributes to a 2.8% share of Indonesia's GDP and source of livelihood to approximately 2.24 million fishers. Although its volume and economic value increase over time, the resources remain heavily exploited and threaten its sustainability.

Since 1999, Indonesia has adopted an area-based fisheries management system, known as the Fisheries Management Areas of the Republic of Indonesia (WPPNRI). The Indonesian waters were then divided into 11 WPPNRIs, which covers internal waters, archipelagic waters, territorial seas, contiguous zones, and exclusive economic zone of Indonesia. By Law No. 45 of 2009, the Fisheries Management Plan is mandated, followed by the potential estimation for each WPPNRI. The Fisheries Accounts which provide information regarding the potential and resources utilization, should become a reference for the Fishery Management Plan. Thus, the Ocean Accounts pilot particularly in WPPNRI scale will seize nationwide fisheries management, as the WPPNRI contained by cross-sectoral interest (capture fisheries, aquaculture, conservation, processing and marketing, and research).

Other than fisheries, the nationwide and national scale implementation will focus on environmental asset accounts for mangrove, seagrass, coral reef, and other benthic habitats. Considering the vast geographic scale of Indonesia ocean, most of the data will be obtained from secondary sources (e.g. global dataset). To provide detailed information, several priority sites will be selected to represent major ocean sectors in Indonesia, including fisheries, tourism, and seabed mining. Primary data will be collected as much as possible for these priority/representative sites. Specific accounts that are potentially to be developed including 1) environmental assets, 2) flows to the economy, 3) Ocean Economy, and 4) Ocean Governance.

Deliverables for the nationwide and national scale Ocean Accounts consist of: 1) four accounts (including primary and secondary data); 2) training on ocean account; 3) stakeholder forum; also 4) policy and national guideline for ocean account and standard for data collection, analysis, and presentation.

The implementation will involve inter-ministerial team, including Ministry of Marine Affairs and Fisheries, Coordinating Ministry of Maritime and Investment, Ministry of Finance, National Development Planning Agency, Statistics Indonesia, Geospatial and Information Agency, Ministry of Energy and Mineral Resources, Ministry of Tourism, Ministry of Environment and Forestry, Ministry of Home Affairs, Provincial Government, and National Research and Innovation Agency. Other stakeholders will include universities, non-government organizations, donors, and international organizations. The development of this national ocean account will assist Indonesia in meeting the national development agenda and global commitment for sustainable ocean management (CBD, SDG).

Table 2. Summary of National Workshop Results*

STATEMENT OF STRATEGY AND POLICY PRIORITIES	
Vision	<ul style="list-style-type: none"> Indonesia that is self-reliant, advanced, just and prosperous [1] Global maritime fulcrum: to become a sovereign, advanced, independent, strong maritime nation that is able to provide positive contribution for peace and security of the region as well as to the world in accordance with its national interest [2]
Concerns	<ul style="list-style-type: none"> General related issues in the marine and fisheries sector include (1) marine plastic debris; (2) IUU fishing and overfishing; and (3) livelihood of small-scale fishers. On managing the ocean sustainably, the main challenges are (1) ineffective implementation of current policies and regulations, (2) human resource capacity and competence, (3) inadequate funding, (4) lack of support from the public, (5) policy and regulatory gaps for implementation, and (6) vast coverage and remote areas. At this point, respondents provided identification of more generic challenges. More specific problems and challenges to prioritizing in Indonesian ocean management will be explored further in the assessment report and national roadmap development.
Priorities	<ul style="list-style-type: none"> The “marine” goal in the 2005-2025 long-term development plan prioritizes infrastructure and human resource development, sustainable and integrated marine economy, and reduction of the impact of coastal disasters and sea pollution [1] Ocean policy establishes seven strategies, each with specific proposed priority areas. The seven strategies include (1) management of marine resources and the development of human resources (2) maritime security, law enforcement and safety at sea (3) ocean governance and institution (4) economic and infrastructure of marine sector and of prosperity enhancement (5) management of the ocean space and protection of marine environment (6) maritime culture and (7) maritime diplomacy [2] National Medium-Term Development Plan (RPJMN) 2020-2024 integrates SDG14 in one of its seven development agendas supported by specific targets and indicators (for instance, a target on maritime and oceanic management uses the same indicator as the global SDG14 indicator) [3] Natural resources management in Indonesia focuses on (a) leveraging added value of natural resources-based products, (b) development of natural resources-based industry, (c) improve efficiency and competitiveness of products to minimize exploitation of nonrenewable natural resources, (d) stressing on environmentally friendly program, (e) development of local governments and communities, (f) engagement of youth, and (g) a just and firm law enforcement

Plans	<ul style="list-style-type: none"> • SDGs roadmap, national action plans and subnational action plans in support of SDG implementation, including SDG14 [3] • Indonesia Biodiversity Strategy and Action Plan (IBSAP) 2015-2020 as a sectoral action plan with which the national targets were prepared following the 20 Aichi targets (with some national adjustments) and two additional targets aiming specifically for improving data integration and mapping, and improving conflict settlement processes related to biodiversity [7]. IBSAP also supports the government target of protecting 20 million hectares of marine areas by 2020. • The implementation of Indonesian Ocean Policy refers to the Long-Term National Development Plan (2005-2025) which was breakdown in more detail through a series of 5-year plans of action (National Medium-Term Development Plan/RPJMN). The first plan of action (2016-2019) focused on five areas namely (1) maritime boundary, open space and maritime diplomacy (2) maritime industry and sea connectivity (3) services and industry of natural resources and marine environment management (4) maritime defense and security and (5) maritime culture [2]. The new plan of action would cover the period that coincided with the current RPJMN (2020-2024). • In addition to the development plan, the Government of Indonesia (GoI) is also working on the development of spatial plans both for land and sea. The spatial plan for coastal and marine areas are governed under Law no 27/2007 juncto Law no 1/2014 concerning Management of Coastal and Small Islands and Law No 32/2014 on The Sea which later cascaded to Government Regulation No 32/2019 on Marine Spatial Plan. The National Marine Spatial Plan (RTRLN) as well as provincial coastal zoning plans to support an integrated and sustainable use of marine and coastal areas [6] • The 2015 “poros” report suggests growing the marine economy from 22% to 35% [28] • Multi-stakeholder Action Plan on Radically Reducing Plastic Pollution in Indonesia, National Action Plan on Marine Debris, and National Waste Management Policy and Strategy with statement “70% reduction in the nation’s marine plastic debris by 2025 and near-zero plastic pollution by 2040” [8]. This supports the need for a comprehensive waste account. • In addition to the national development planning, Indonesia also has a strong legal basis for governing, managing and protecting the ocean and marine environments and their use through ministerial regulation, such as: • Regulation No. 19/1999 on Control of Marine Pollution/ Destruction, Act No. 31/2004 jo Act No. 45/2009 regarding fisheries and IUU fishing <ul style="list-style-type: none"> - Law No.18/2008 regarding Waste Management, Law No. 32/2009 on the Protection and Management of Environment - Regulation No. 21/2010 on Marine Environment Protection, Law No. 32/2014 on the Sea - Act No. 7/2016 regarding Protection and Empowerment of Fishermen, Fish and Salt Farmers - Regulation No. 83/2018 on Handling Marine Litter
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INSTITUTIONS	
Stakeholders	<ul style="list-style-type: none"> • The Ministry of Marine Affairs and Fisheries • National Development Planning Agency (BAPPENAS) • Coordinating Ministry of Maritime and Investment • Research institutions • The Ministry of Finance • Statistics Indonesia • Agency for Geospatial Information • Ministry of Environment and Forestry (environmental quality data, general state of the environment reporting, carbon accounts) • National Research and Innovation Agency (BRIN) • Bureau of Meteorology, Climatology and Geophysics (BMKG: oceanographic data) • Indonesian National Ocean Data Center (NODC) • National Agency for Disaster Management (BNPB: disaster-related data)
Roles of NSO	<ul style="list-style-type: none"> • Collect and produce population, social, economic and environment statistics, including SEEA compilation • Compiling data for 136 indicators from national custodian agencies to support SDG Implementation [10]
Mechanisms	<ul style="list-style-type: none"> • Coordination forum • Inter-agency team • Technical committee • National SDG coordination team (BAPPENAS as the main coordinator) [10], including a working group on SDG14. • National Plastic Action Partnership [8] • National Committee of Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security [11]

KNOWLEDGE	
Data sources and key documents	<ul style="list-style-type: none"> • There is a wealth of publicly accessible ocean-related data and maps held by many institutions including but not limited to KKP (fisheries; protected areas; ocean forecasting), LIPI (carbon; red-list species; coral reefs; mangroves; sea grasses), LAPAN (fisheries; land cover; mangroves; coral reefs; SST), BMPK (SST; current; wind; wave; salinity), BPS (population, social, economic, environment data; SEEA national-level land accounts), BIG (mangroves; land cover; tide; ocean forecasting), Ministry of Environment and Forestry (wastes; pollutants; environmental quality), Ministry of Transportation (ports), Ministry of Tourism (tourism areas), BNPB (disaster-related data), etc. • There is also an initiative to integrate data in Indonesia by the National Ocean Data Center (http://nodc.id/). • New statistical data is needed. Other data sources and key documents are scientific studies, policy papers, technical reports, global data portals.
Other key documents	<ul style="list-style-type: none"> • Environment Statistics of Indonesia 2019, https://www.bps.go.id/publication/2019/12/13/e11bfc8ff8392e5e13a8cff3/statistik-lingkungan-hidup-indonesia-2019.html • Integrated System of Environmental-Economic Accounts of Indonesia 2014-2018, https://www.bps.go.id/publication/2019/12/27/53e7360b49c122c58475d2c9/sistem-terintegrasi-neraca-lingkungan-dan-ekonomi-indonesia-2014-2018.html
PROGRESS	
Progress	<ul style="list-style-type: none"> • One map and one data policy [14,15] • Experienced in SEEA implementation [16,17,18] • Achieved the 2020 target for 20 million hectares of MPAs [19] • Established and implemented MSP at the national and provincial (in 22 out of 34 provinces) levels [20]

CONTEXT	
Statistical context	New 2020-2024 BPS strategic plan has been finalized [21]
Other international activities	<p>Some on-going international activities directly relevant to ocean data/statistics/ policy include:</p> <ul style="list-style-type: none"> • Active member of the High Level Panel for Sustainable Ocean Economy [22] • World Bank: Indonesia's Sustainable Oceans Program [23] • ADB: Promoting Action on Plastic Pollution from Source to Sea in Asia and the Pacific [24] • UNDP/GEF: Global Sustainable Supply Chains for Marine Commodities [25] • USAID: Sustainable Ecosystems Advanced project [26] • JICA: Comprehensive Assessment and Conservation of Blue Carbon Ecosystems and Their Services in the Coral Triangle [27]
PRIORITIES FOR ACTIONS	
Priority Ocean Accounts	<ul style="list-style-type: none"> • Aspect: physical extent and flow to economy • Themes and areas: marine protected areas, fisheries, aquaculture, tourism, coastal industry zone, marine mining area, sea transportation • Location: Gili Matra MPA, West Nusa Tenggara
CONSTRAINTS AND OPPORTUNITIES	
Constraints	<ul style="list-style-type: none"> • Data provision • Budgeting • Human resources capacity • Guide provision
Opportunities	<ul style="list-style-type: none"> • Ocean accounts provides a framework to structure, standardize, harmonize and integrate existing ocean data within the decentralized government system (national, provincial and local levels) towards informing the ocean policy strategies, MSP, as well as targets and indicators set in the 2020-2024 RPJMN and SDG14. • Multilateral and bilateral cooperation, partnership with private sectors



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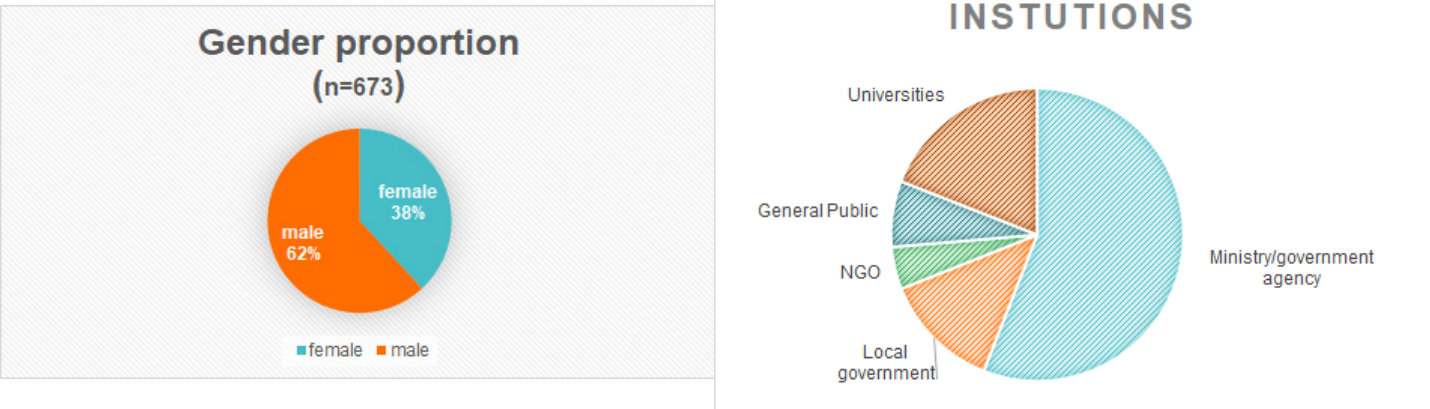
Annex 1. Questionnaire structure in accordance to the Ocean Accounts Diagnostic Tool

Topic	Question(s)	
Regulation Aspects		
Concerns	Please identify any challenges in the management of marine resources in Indonesia?	
Priorities	<p>Which of the following aspects have been prioritized in the Sustainable Development Plan?</p> <ul style="list-style-type: none">• Tourism sector• Capture fisheries sector• Marine Protected Areas• Aquaculture sector• Participation and equality in marine resources management• Others (please specify)	
Plans	<ul style="list-style-type: none">• What tools have been implemented for sustainable marine resources management?• Please indicate any planning documents that can be used as references for the implementation of Ocean Accounts.• Please indicate any available regulations that can be used as references for the implementation of Ocean Accounts.	
Operational Aspects		
Stakeholders	Please indicate institution(s) need to be involved in Ocean Accounts compilation.	
Mechanisms	Which of the following mechanisms has the most potential to facilitate the coordination of Ocean Accounts compilation?	
	<ul style="list-style-type: none">• Coordination forum• Technical committee	<ul style="list-style-type: none">• Inter-ministry team• Others (please specify)

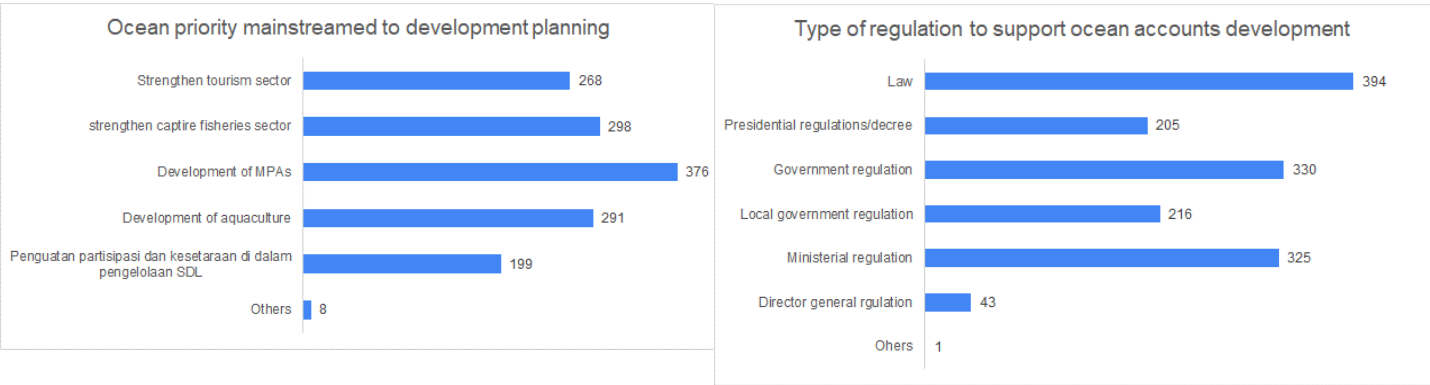
Data sources	<p>To prepare the Ocean Accounts in accordance with the System of Environmental Economic Accounting (SEEA) standard, is it necessary to provide new statistical data?</p> <p>Beside the national statistics data, is it necessary to consider using other data sources? If so, what sources?</p>	
Other key documents	Please indicate any other documents needed for the compilation of Ocean Accounts.	
Progress related to Ocean Accounts	Are you aware of the progress of Ocean Accounts compilation in Indonesia?	
Prioritization Aspects		
Priority on Ocean Accounts	<p>Among the following aspects in the Ocean Accounts, which aspect should be prioritized?</p> <ul style="list-style-type: none"> Physical Extent (Mangrove, Seagrass, Coral reef) Flow To Economy (Tourism, Fisheries, Social and Cultural) Flow To Environment (Waste/Pollution) Ocean Governance Ocean Economy <p>Which themes and areas should be prioritized for the ocean account compilation?</p>	
	<ul style="list-style-type: none"> Fishing grounds Aquaculture Marine Protected Area Tourism spots 	<ul style="list-style-type: none"> Offshore mining Coastal industrial zone Marine transportation
	Please specify the locations (Province/District/City/Waters) that need to be prioritized for Ocean Accounts compilation?	
Constraints	Please identify any obstacles faced in the preparation of Ocean Accounts	
Opportunities	Please identify any opportunities in the preparation of Ocean Accounts	

Annex 2. Results of the scoping assessment

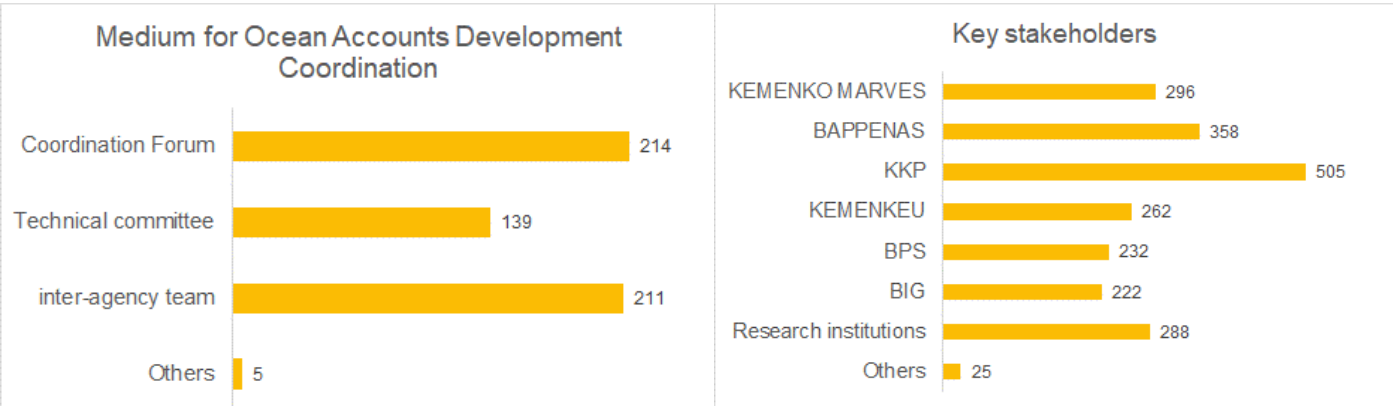
A. Participants



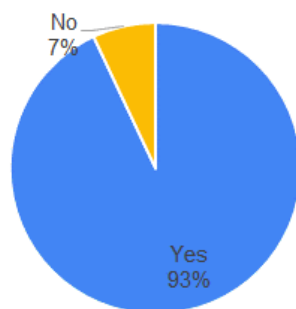
B. Policy framework and regulations



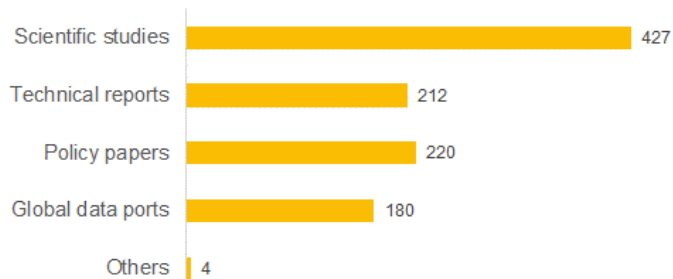
C. Operationalization



The need for new statistical data

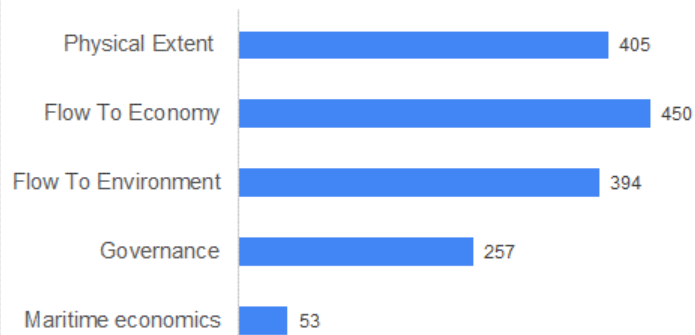


Complimentary source of data aside official government data

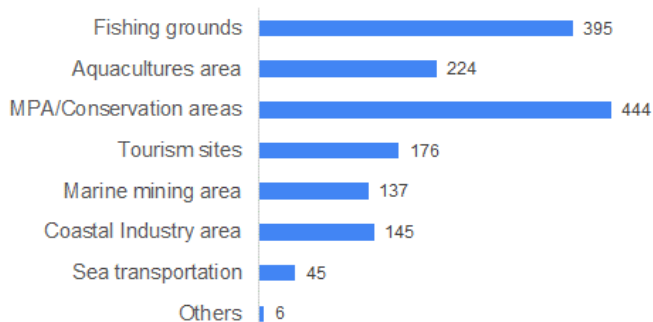


D. Priority, challenges and opportunities

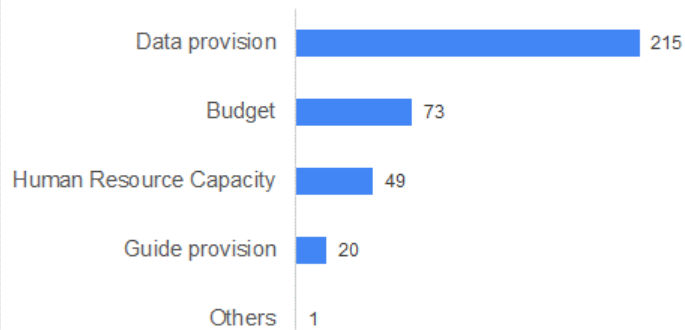
Priority ocean accounts



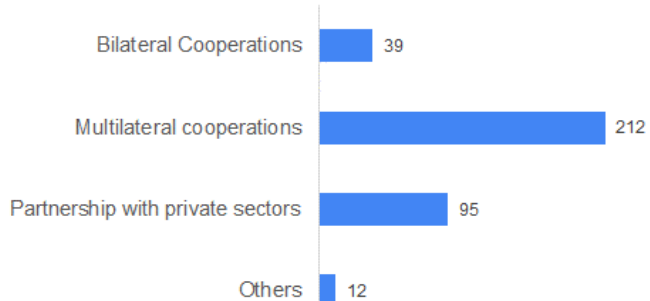
Priority area and thematic



Main challenges



Means to address challenges



Annex 3. Documentation of the national workshop





Annex 4. Matrix of Ocean Accounts Pilot Implementation (September 2021-March 2022)

DETAIL ACTIVITY	DELIVER- ABLE	DATE	PLACE	PARTICIPANTS	NOTES
Project Preparation: Kickoff meeting with key government officials	add	17 Aug 21	Online	Rekam, MMAF	Deploy team, preparing timeline
		24 Aug 21	Online	31 participants from across agencies, including the Ministry of Marine Affairs and Fisheries, the Ministry of Finance, Statistics Indonesia (BPS), Geospatial Information Agency (BIG), Indonesia Climate Change Trust Fund (ICCTF), and Rekam	Discuss the results of the physical extension analysis conducted by BIG
		31 Aug 21	Online	33 participants from across agencies, including the Ministry of Marine Affairs and Fisheries, the Ministry of Finance, Statistics Indonesia (BPS), Geospatial Information Agency (BIG), Indonesia Climate Change Trust Fund (ICCTF), and Rekam	Data collection methods and plans for ocean accounting assessment in Gili Matra MPA
D1: Stakeholder Workshop I to discuss and assess priorities for implementing Ocean Accounts in country					
Workshop preparation meeting	1	10 Sep 21	Online	36 participants from Ministry of Marine Affairs and Fisheries, the Ministry of Finance, Statistics Indonesia (BPS), Geospatial Information Agency (BIG), Indonesia Climate Change Trust Fund (ICCTF), and Rekam	Framework, agenda and speakers for the national workshop

Stakeholder Workshop I (Hybrid; combined online and offline)	1	23 Sep 21	IICC, Online	659 registered; 452 attended	The national workshop on Ocean Accounting in Indonesia
D2: Drafting Scoping Assessment Report 2					
Writing workshop D2.1	2	20 Sep 21	Online	26 representatives from multiple agencies	Technical plan of the national dialogue, as well as scoping assessment on Ocean Accounting in Indonesia
Writing workshop D2.2	2	22 Sep 21	Online	25 representatives from multiple agencies	Technical plan of the national dialogue, as well as scoping assessment on Ocean Accounting in Indonesia
D3: Produce a final scoping assessment and the country implementation plan 3					
Writing workshop D3.1	3	26 Nov 21	Bogor	MMAF, Rekam	Updated scoping report
		18 Dec 21	Bogor	Rekam	Updated scoping report
Writing workshop D3.2	3	21 Feb 22	Bogor	MMAF, Rekam	Finalize scoping report
D4: Participate in capacity building Q&A sessions with GOAP secretariat	4	26 Oct 21	Online	Invited participants	Informal meeting of ocean accounts pilot countries led by GOAP
		11 Nov 21	Online	Invited participants	Consultation on the global ocean asset data package led by UNEP-WCMC
		29-30 Nov 21	Online	Invited participants	Training of Ocean Accounts
		14 Dec 21	Online	Invited participants	Indonesia was invited as speaker to present the progress of Ocean Account Development held by GOAP and Madras School of Economics

D5: Data collection for Ocean accounts pilot implementation	5	7 Sep 21	Bogor	MMAF, Rekam	Technical discussion for ecosystem survey
		10 Sep 21	Online	Rekam, BIG, BPS	Technical discussion to determine ecosystem extent accounts and flow to the environment
		13-18 Sep 21 (biophysics)	Gili Matra	Rekam	Ecosystem Extent
		Sep-Oct 21 (Fish monitoring)			
		Jan 2022	Online	BPS, MMAF, Rekam	Technical consultation on the survey questionnaire: Flows to the economy and environment
		Feb 2022	Gili Matra	Rekam	Flows to the economy and environment
D6: Produce draft pilot reports 6					
Writing workshop D6.1	6	30 Sep 21	Online	35 participants from MMAF, BKKPN Kupang, BIG, Statistics Indonesia, BAPPENAS, and the Ministry of Finance, Rekam	Discuss the survey results
Writing workshop D6.2	6	27-28 Oct 21	Bogor	MMAF, BKKPN Kupang, BIG, Statistics Indonesia, BAPPENAS, and the Ministry of Finance, Rekam	Discuss the data collection results in Gili Matra MPA, as well as methods to collect flows to the economy and environment data
		2 Nov 21	Bogor	MMAF, IPB, Rekam	Discuss the methodology of monetary assets

Gathering inputs for the pilot report	6	3 Dec 21	Jakarta	MMAF, IPB University, BPS, Ministry of Finance, BIG, and Ministry of Finance as panelist, attended by 60 participants on site and 1100+ viewers joined through online streaming	Ocean Accounts MPA piloted in Gili Matra was delivered as one of tools that launched in the event: “ <i>Effective Conservation for Sustainable Ocean – Launching of management tools and talk show</i> ”
		30 Dec 21	Online	MMAF, BKKPN Kupang, BIG, Statistics Indonesia, BAPPENAS, and the Ministry of Finance, Rekam	Discuss the results of Ocean Accounts pilot (assets, flows to the economy and environment)
D7: Stakeholder Workshop II to review and discuss initial pilot accounts and development roadmap 7					
Workshop preparation meeting	7	8 March 22	Online	MMAF, Rekam	Preparing concept notes for the stakeholders workshop
Stakeholder Workshop II (Hybrid; combined online and offline)	7	29 March 22	Jakarta	Attended by 26 participants from MMAF, Ministry of Finance, Ministry of National Development Planning (Bappenas), Geospatial Information Agency, Statistics Indonesia, IPB University, BRIN, NGOs	Deliver overviews from institutions involved regarding their concerns, roles, and contributions to the development of the Ocean Accounts.
D8: Produce final pilot reports 8					
Writing workshop D8.1	8	19 Dec 21	Bogor	Rekam	Finalize report of ecosystem extent
		12 Jan 22	Bogor	MMAF, Rekam	Develop supplementary notes for the Ocean Accounts implementation roadmap

Writing workshop D8.2	8	23 Feb 22	Bogor	MMAF, Rekam	Finalize report of ecosystem extent, flows to the economy and ecosystem, and ocean government
D9: Developing awareness material on Ocean Accounting*	add	Sep 21-Mar 22			Video, poster, fun fact, etc.
D10: Training on Ocean accounting for Gov Officials	add	1-2 March 22	Semarang	56 participants from MMAF, BAPPENAS, Ministry of Finance, Statistics Indonesia, Geospatial Information Agency, and Universities	Training including the regulatory framework, methodology, and data interpretation for decision making
D11: Provincial Workshop and Socialization of Ocean Account Assessment and Pilot Plan (Lombok, West Nusa Tenggara)	add	14 March 22	Lombok	11 participants from MMAF, Rekam Nusantara Foundation, and GOAP Secretariat (Mr. Teerapong Praphotjanaporn)	Discuss the result of Ocean Accounting in Gili Matra MPA, as well as future implementation
D12: National Workshop and Socialization of Ocean Account Assessment and Pilot Plan; Closing event (Jakarta)	add	29 March 22	Jakarta	Attended by 26 participants from MMAF, Ministry of Finance, Ministry of National Development Planning (Bappenas), Geospatial Information Agency, Statistics Indonesia, IPB University, BRIN, NGOs	Deliver overviews from institutions involved regarding their concerns, roles, and contributions to the development of the Ocean Accounts

Annex 5. Documentation of the ocean pilot implementation







