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**Scoping Report - Ocean Accounts for Fiji**  
**Grant Funding Agreement for Global Ocean  
Accounts Partnership (GOAP)**



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## Executive Summary

The Fiji Ocean Accounting pilot is the one of the first in the Pacific and is an important milestone for testing concepts, definitions, and methodologies of Ocean Accounting in the region. Due to data limitations, this work includes compiling ecosystem accounts related to mangroves (concerning extent and condition); and estimation of ensuing ecosystem services leading to mangrove satellite account connecting to the national accounts. It also estimates one of the non-SNA benefits of mangroves. This research provides scope for further work in Ocean Accounting and for developing related sector accounts, blue carbon analysis and for developing coastline protection policies. It also provides a platform for stretching similar analysis to other ecosystem types such as sea grasses, salt marshes, corals; accounting for the services Fiji derives from them. A detailed longitudinal study involving the key ecosystems could pave the way for initial estimation of economic aspects of Ocean Accounts relevant for Fiji's Ocean policy.

The accounting methodology is based on the 2019 GOAP Technical Guidance, which extends existing statistical standards (such as national, ecosystem and environmental-economic accounting) by measuring and linking Ocean assets with economic activity and Ocean governance, allowing for the development of statistics and indicators relevant across several policy use cases, such as measuring the dependency of the Ocean economy on mangroves and furthering their integrated management.

This work is instrumental in presenting the Fijian government with pathways for addressing Ocean resource management concerns and for developing full-fledged Ocean Accounts. It will help Fiji better meet national and international policy targets on climate change and Oceans management. This initiative is timely because a meaningful yet policy-oriented version of Fiji's Ocean Accounts or its satellite components developed along the aspirations of the national objectives and System of Environmental-Economic Accounting Central Framework is non-existent in Fiji. Since the Fijian government is keen on developing full-fledged Ocean Accounts, our work will be complementary. It will also promote development of Official Statistics on environment accounts in Fiji. Together, these tools will provide greater scope for evidenced-based policy making, facilitate sustainable Ocean resource management in Fiji and support international negotiations and collaborations.

## Background

The Ocean Account is a structured compilation of consistent and comparable information, maps, data, statistics concerning marine and coastal environments, including related social and economic circumstances. They organize and present Ocean data in alignment with the System of Environmental-Economic Accounting (SEEA)<sup>1</sup> and are more recently translated into working manuals such as the GOAP Technical Guidance (December 2019). Broadly, this is similar in spirit to compiling national (economic) accounts<sup>2</sup> which are collected and maintained by the National Statistical Offices. An excellent and detailed coverage of the role, structure and purpose of Ocean Accounts is in the Technical Guidance. The need to produce Ocean Accounts arises from Sustainable Development Goal (SDG) 14 (and sections of Goals 15, 17) and countries' global commitment relating to conservation and use of Ocean and marine resources. Fiji is one of the main proponents and action-oriented economy from the Pacific on climate change and blue economy initiative. As such, this will be a useful exercise for Fiji.

Essentially, the Ocean Accounts framework adopts a few international statistical standards, mainly, the System of National Accounts (SNA) and System of Environmental Economic Accounting (SEEA) and Framework for Development of Environmental Statistics (FDES). While the SNA accounts are

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<sup>1</sup> Recent revisions in SEEA Experimental Ecosystem Accounting (March 2021).

<sup>2</sup> The Ocean Accounts (and its extensions) are based on SEEA which concurs with the SNA and are based on internationally agreed concepts, definitions and accounting rules. Experts are currently reviewing how the scope of both SEEA and Ocean Accounts could be widened to extend data accounting and analysis even further.



fundamentally used to produce macroeconomic statistics (monetary data), the SEEA is more holistic because it provides the framework for integrated environmental statistics both in physical and monetary terms. The latter is more purposeful in light of intensifying climate change, rise in the level of use (and abuse) of natural resources and the need to better understand the effects of humanity on environment and vice versa. A simplified structure of Ocean Accounts is in the GOAP Technical Guidance (Fig.1, pp.23), which relates the national economy with environmental assets and Ocean wealth. The model identifies a range of bi-directional flows to the environment and those to the economy, importantly under the ambit of active governance structures. Ocean Accounts are enriched with specific data/information related to Oceans and its ecosystems. These provide the means to measure the impact of human activity on Oceans and vice-versa, progress towards sustainability and management of the ocean economy.

Functionally, Ocean Accounts enable countries to monitor critical trends such as changes in ocean wealth, including produced assets (e.g. ports) and non-produced assets (e.g. mangroves, coral reefs); ocean-related income and welfare possibly disaggregated by activity/location (e.g. income from fisheries for local communities); and ocean-based economic production (e.g. GDP from ocean-related sectors). Some of these aspects are implicitly captured in the national accounts, but are explicitly provided in the Ocean Accounts. These and other important indicators of Ocean sustainability are key to managing ocean resources - the traditional measures of GDP falls short of providing such finer details.

The approach to ocean accounting as an integrated statistical framework supports commitments of the Fijian Government in ensuring a balance between economic development, environmental conservation and the maintenance of ecological integrity. The national commitments and priorities are reflected in several key policies, strategic and legal frameworks such as the National Ocean Policy (NOP), the 5 and 20 year National Development Plan (that stresses the need for sustainable development and management of Fiji's marine ecosystems) and a Marine Economy Plan; the Fiji National Biodiversity Strategy and Action Plan 2020-2025 and the Environment Management Act 2005, the National Climate Change Policy, and the National Action Plan for the Implementation of Agenda 2030 for Sustainable Development.

The Ocean accounts are designed as a single reference point for ocean data and a robust, yet internationally accepted information infrastructure, for diverse coastal and marine related policies. This avoids policy shortcomings arising from isolated/limited information. In addition, the information infrastructure is critical for national ocean development and management policies, marine spatial planning, integrated environmental management, and for international reporting such as on the SDGs, the Biodiversity Targets, the Paris Agreement on Climate Change and monitoring the progress on key aspects of the blue economy following the COP26 meetings. Also, Ocean Accounts are a key priority of the High Level Panel on Sustainable Ocean Economy, of which Fiji is a member. The core aspirations of the High Level Panel are to ensure creation and restoration of additional 30% fully protected marine protected areas, 20% reduction in greenhouse gases, create 12million new jobs by 2030, generate 40 folds more renewable energy, 6 times increase in seafood supply by 2050 and cash a \$15.5trillion net benefits from sustainable Ocean investments.

As stated above, ocean accounting is relevant for meeting Fiji's international commitments on Ocean and blue economy (Fiji's Ocean commitments), which aims at enhancing sustainable socio-economic development and environmental protection in marine and coastal areas and islands. The implications of COP26 resolution for Fiji implies that Fiji must ensure ecological balance and harmonize the linkages between conservation and economic development. It also sets targets to key priority sectors such as sea and island tourism, maritime economy, petrol and other resource exploitation, aquaculture, shipbuilding industry, and renewable energy.



The need for Ocean Accounting has led to the formation of National Ocean Policy Steering Committee in Fiji<sup>3</sup> which is working with the UNESCAP on developing initial Ocean Accounts. While this is a positive development for Fiji, support from international agencies and development partners on various aspects of Ocean Accounting (developing national statistical frameworks, ecosystems accounting, national marine asset valuation, technical assistance on developing the full-fledged Ocean accounts, protection of coastal and marine ecosystems including the use of blue bonds) are important. This GOAP Fiji Pilot is therefore a useful contribution to Fiji. The Fiji pilot intends to draw from and complement existing initiatives on Ocean management in Fiji. This duality is important because of the uncharted nature of Ocean Accounts development in Fiji or on most other countries in the Pacific.

The NOP notes existing and useful initiatives for Ocean and marine resource management, together with the main policy priorities. This policy document is the key reference on Fiji's Ocean policy and plans. It includes Fiji's Ocean policy, climate related issues<sup>4</sup> and management of Ocean resources along the lines of equity, sustainability and economy. It dictates the pathway for strengthening sectoral policies and legislations based on the identified gaps, past experiences of policy implementations, and international practices and global commitments. The NOP is also expected to steer relevant stakeholder coordination and national programs dealing with Oceans. Given the dependence of Fiji's population on Ocean resources, and the risks such resources have been exposed to, the Fijian government has been at the forefront of domestic as well as international discussions on sustainable Oceans. It continues to innovate policies and legislations; and is implementing initiatives to protect and promote the blue economy. The NOP intends to create sustainable opportunities and bring prosperity and equity to current and future generations of Fijians. Through this policy, the government intends to support, synergise, promote and establish best practices and standards for Oceans management. The policy therefore charts the direction for strengthening the sectoral policies and legislations based on identified gaps, lessons learnt, evolving international practices, and international developments and commitments. The Fijian government has championed the inclusion of the Ocean agenda during its 23<sup>rd</sup> Presidency of the UN's Framework Convention on Climate Change through Oceans Pathway Partnership. It has also committed to 100% sustainable management of Fiji's Ocean and designate 30% marine protected areas by 2030. Fiji has also made a strong representation in clarifying its aspirations regarding the blue economy in the recently concluded COP26 meeting.

A survey of background literature shows that Fiji has a Marine Atlas that compiles over 100 datasets on marine and coastal information. This is the key basis for any spatial analysis in Fiji. Apart from the dataset, it also covers issues related to marine management and valuation. It agrees that system of assessment of ecosystems services would have the society and policy makers aware of the importance of marine resources. A traditional Oceans management structure is also explained in the Atlas, which can potentially be useful in the consultative phase of the Fiji pilot project. The 5 and 20 year National Development Plan also stresses the need for sustainable development and management of Fiji's marine ecosystems and a Marine Economy Plan further promotes sustainable development of Fiji's Ocean resources. The Fiji National Biodiversity Strategy and Action Plan 2020-2025 is a national document related to conservation and environmental protection and recognised by Fiji's National Environment Council established under the Environment Management Act 2005\* This Act seems to be basis of environmental practices, management policies, legislations and control.

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<sup>3</sup> The National Ocean Policy Steering Committee comprises of inter-ministerial representative of the Fiji government and subsidiary working groups with defined tasks and associated protocols. At present, it is not practically active, except with UNESCAP.

<sup>4</sup> Specific climate related policy objectives are in the National Climate Change Policy.

\* The national strategy supports the following Acts (among others) which relate directly to our work (Biosecurity Act 2008, Endangered and Protected Species Act 2002, Endangered and Protected Species (Amendment) Act 2017, Fisheries Act [Cap. 158] 1942, Litter Promulgation 2008 and Litter Decree (Amendment) 2010, Marine Spaces Act [Cap. 158] 1978, Petroleum (Exploration and Exploitation) Act [Cap. 148] 1985).



The literature also shows that there exists targeted research on ocean economy and management in Fiji. These include determining the cost of a national marine protected areas network and sustainable financing options (see for example, **Lutchman**, SCBD, O'Garra, CRISP, UNEP and two eco-systems and socio-economic and resilience analysis and mapping done by the **SPREP**). **There also exists a** scoping study on estimating the potential cost associated with deep sea-bed mining in Fiji. In addition to these, the Fijian government has applied conservation policy tools on selected locations in Fiji. The National Bio-diversity Strategy and Action Plan (which also discusses some aspects of ecosystems valuation) identifies strategies and initiatives together with the heritage/protected sites. There is literature on aspects of marine valuation for Fiji as well as a handful of economic analyses and mapping (see list of references). There are useful reports on the state of environment and conservation efforts in Fiji as well. A recent (2016) review of the relevant legislations, policies and plans on marine protection is available. These will be a good starting point for pursuing economic valuation of Ocean assets in Fiji.

Additionally, the ongoing UNESCAP Ocean Accounting work; and lessons learnt from the past initiatives such as the One-Ocean Hub Programme funded by the UK Government will be useful for the Fiji pilot. Based on the outcomes of this pilot, the GOAP intends to extend such studies to selected member countries of the Pacific region as well. At present, similar projects are concurrently underway in selected countries. An introductory discussion of pilot projects are in Praphotjanaporn (n.d)<sup>[2]</sup>.

## Fiji's Vision and Concerns

The national policy documents (strategic and national development plans, ocean and climate policy documents, as well as the national budgets) talk of sustainability of natural resources. These, as well as the research literature and key stakeholder consultations suggest that Fiji's major concerns related to Oceans and marine resources management include mitigating climate risks directly impacting oceans/ocean assets; and promotion of the ocean economy and sustainability in the use of ocean resources. The specific policy objectives stated in the NOP document are:

1. Ongoing and increasing impact of climate change and natural disasters, against a limited domestic capacity to mitigate these challenges. As such, the Fijian government has been instrumental advocating small states' needs to deal with global warming and climate change impacts.
2. Pollution of the sea, coastlines and waterways leading to destruction of marine habitats, bio-diversity losses and persistent decline in incomes and livelihoods of people. The Ocean policy stresses the need for coordination and awareness of better household and industrial waste management practices (Environment Management Act 2005 and Litter Act 2008 are being enforced).
3. Increasing bio-diversity losses with such losses being amplified by above as well as due to crimes and abuses.
4. Unsustainable and or over-use of some of the Ocean and marine resources, while unexplored economic potentials of the others. Fiji needs to adopt better management tools, including innovative technologies and environment impact assessments to carefully assess the threats and potential benefits.
5. The government also stresses the immediate threats to Fiji's Oceans relate to territorial integrity and security, natural disasters, national security risks, poaching of marine resources, human rights abuses, transnational crimes, drug smuggling, invasive species and international crimes.

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## Scope of the Fiji Pilot

Given the nature of work, availability of data and the national priorities noted above, the following pre-requisites are worth noting for the Fiji pilot.

1. Quality and reliability of data - the National Statistical Office (Fiji Bureau of Statistics, FBOS henceforth) does not have detailed data required for constructing Ocean Accounts or its relevant components<sup>6</sup>. The FBOS is far from developing Ocean Accounts or even their satellite components. The Fiji pilot will have to depend on existing but limited administrative records, statistics/estimates available from past studies and use international datasets, where applicable. Given the above as well as COVID19 related restrictions, remote sensing and dedicated field surveys could help. Some potentially useful datasets for this pilot are: fish stock, natural resources and elements of environment data available with relevant Ministries and the FBOS. Some empirical estimates of technical parameters are available in focused studies on Fiji and beyond – these could be adopted also.
2. Target outputs – given that Ocean Accounts are new to Fiji, and data are limited, there is hardly any substantive work available. Thus the Fiji pilot should consider one of the ecosystem types (suggest mangroves) and later on focus on other ecosystem accounts. The study of mangroves is due to a few reasons. First, mangroves are an important Ocean Asset (for various reasons) that Fiji endeavors to preserve under its conservation plans; and second, there are relatively high-quality data available on mangroves to use and build on. Therefore, it presents a good balance between policy importance and feasibility. Detailed Ocean Accounts can be developed later, possibly in conjunction with UNESCAP. The ecosystems accounts will provide useful information for the detailed Ocean Accounts as well.
3. Logistics - there will have to ongoing discussions and collaborations with relevant agencies of the government and other research organizations/agents (SPC and SPREP, for example). This will bridge the slow processes of data generation, advocacy and vetting of project reports.
4. Connecting to policy objectives – ocean accounting must directly relate to and support the aspirations of Fiji's Ocean Policy. The Fiji pilot project intends to connect directly to 5 of the 7 goals (details later) of the Fiji's NOP. Therefore, this project intends to provide tangible benefits to that national initiatives and programs concerning Oceans.
5. Other spillovers - An interesting segment of ocean accounting is remote sensing of mangroves with greater dimension of indicators and data points. Additionally, an economic estimation of ecosystems benefits will be provided<sup>7</sup> to assist the government create further incentives for coastal protection and economic empowerment of Fijians dependent on Ocean resources. Beside these, some of the key indicators relevant to developing the Ocean accounts that can be derived from the Fiji pilot are (but not be limited to): changes in mangroves extent and cover, impact assessments of these changes on stocks of marine resources (economical/non-economical) but valuable to Fiji, economic valuation of mangroves and its possible benefits to the national income. These can (in work to follow) stretch to other eco-systems (sea grasses, salt marshes, corals); and the services Fiji's derives from such ecosystems. A roadmap of what Fiji should do and prioritize in its Ocean policy and Ocean accounts development exercise (including the use of Blue Bonds) will also be produced as part of the Fiji pilot.
6. Key Stakeholders – the project will benefit from consulting the following government agencies and organizations: Ministry of Economy, Ministry of Rural and Maritime Development, Ministry of Fisheries, Ministry of Waterways and Environment, Maritime Safety Authority of Fiji, Fiji Bureau of Statistics, National Disaster Management Office, Fiji Meteorological Service, Ministry of Lands and Mineral Resources, Ministry of i-Taukei Affairs, Locally Managed Marine Area Network; and the Pacific Regional Environmental Program and the Secretariat of the Pacific Community; and other possible local community groups.

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<sup>6</sup> Recently, the Fiji Bureau of Statistics (the NSO) has worked on a few elements of SEEA (waste, water and energy) accounts, but there is no hard data directly relation to Ocean accounts. Some useful dataset include data on subsistence and informal fishing and aquaculture GVA, population GIS maps, key tourism statistics and tourism satellite account.

<sup>7</sup> A chapter of the NOP identifies some previous estimates of Fiji's marine ecosystems value (of about US1.2b in 2014), but does note the limitations of undervaluation due to accounted domestic use. The current project is targeted to bridge such gaps.



## Key Objectives of the Fiji Pilot

In support to Fiji's policy priorities and in addressing the stated concerns, key objectives of Fiji pilot (which are linked to those of the NOP in brackets) are to:

- a) Strengthen Fiji's capacity to better account for its Ocean resources (mangroves, and other marine resources). This will support the government's priority to mitigate immediate threats to incomes and livelihoods of local communities due to climate change effects. This supports goals 1 (cooperation), 2 (sustainability), 3 (security), 4 (people) and 5 (development) of the NOP.
- b) Develop information on a range of Ocean ecosystem services (starting with those of mangrove ecosystems) to assist Ocean Accounting in Fiji. This promotes goal 1 (cooperation and integrated approach), and 3, 4 & 5 of the NOP.
- c) Promote development and/or adoption of better technologies and assessment tools for dealing with bio-diversity losses, pollution and destruction of marine ecosystems and unsustainable use of marine resources. This supports goals 4 & 5.
- d) Assist Fiji with development of evidence-based policies, legislative mechanisms and advanced monitoring platforms. This relates to goals 2, 3, 5 & 6 (knowledge).

## Approach and Methodology

Given the data limitations in Fiji, a consultative and cautious approach will be taken. As stated earlier, presently, the focus is on mangroves, but later such an exercise could be replicated for other ecosystem types. We envisage the stakeholder consultations will facilitate dialogue, some data and information while existing research knowledge will provide certain key indicators/parameters needed for technical analysis. Site visits and surveys will be conducted as feasible and necessary. To conduct mangrove mapping exercise, the GIS technology and remote sensing will be applied. This method has been used successfully in previous similar studies. The methodology for economic valuation of SNA benefits will involve analyzing sector-specific data using the existing national accounts framework applied by the Fiji Bureau of Statistics. While there are data gaps, reasonable estimations will be made. Later on, one of the most strategic sites producing mangrove services will be evaluated to determine one of the non-SNA benefits. Therefore, selected ecosystem accounts and a road map for further activities (post March 2022) will be developed for Fiji.

## Expected Outputs

The Fiji pilot outcomes can be described as follows:

1. A scoping study which intends to guide the project. It is a desk review developed in consulting policy documents, national priorities and existing research knowledge along the lines of Fiji's Ocean Accounts Diagnostic Tool. It has also benefitted from consultations with key stakeholders of this project.
2. A mangrove mapping exercise using existing knowledge and data, and an assessment of mangrove resources using remote sensing. This include:
  - a. An updated GIS mapping exercise of mangrove extent, and one or two mangrove condition measures (e.g., canopy cover and enhanced vegetation index).
  - b. Research and preliminary estimation of mangrove blue carbon for Fiji, and a statistical summary table and discussions of key attributes of mangrove resources. There is some scope for additional biochemical analysis of mangrove area and sea water which will be decided at the later stage.
  - c. A third component of the output explains the methodology and findings of economic contributions of mangroves. A practical, yet methodologically sound approach will be taken for this exercise taking into consideration conceptual consistency with the SNA





and the SEEA. In linking the economic value of ecosystems to GDP, we will map relevant data onto the SNA 2008 based detailed GDP dis-aggregated data from the Fiji Bureau of Statistics.

- d. Subject to further research and data availability, (c) may include but not limited to identifying and estimating selected economic measures/aggregates of industries/economic activities associated with mangroves valuing selected mangrove ecosystem services (e.g., coastal protection, habitat, recreation). This serves to explain the basis for why government should protect and prioritize development of mangroves and surrounding ecosystems. It also intends to invite future work in board areas of marine resources (use/costing and benefits) as well.
- e. Selected components of Ocean accounts and the roadmap for Fiji. This output would be based on the scoping study, our work and in consultation with GOAP, ESCAP and local data providers (MOE FBOS etc), selected accounts will be drawn. A roadmap of what Fiji should do and prioritize in its Ocean policy and Ocean accounts development (including use of Blue Bonds) will be included as well.

## Work Plan

The following plan is envisaged for Fiji.

1. Inception meetings and background literature (July – September, 2021)
2. Inception study (September – December, 2021)
3. Mangrove mapping and extent analysis (September – December, 2021)
4. Economic valuation of mangroves (November 2021 –January 2022)
5. Selected components of ocean accounts (January-March 2022)
6. Road map and final endorsement meeting (February - March 2022)

## Mechanisms of Engagement/Support

The following list of organizations can provide useful overarching support and mandates to Climate and Ocean related research for Fiji.

1. The High-Level (Global) Panel for a Sustainable Ocean Economy sets up global strategy, funding and mandates to deal with climate change and its impact on nations)
2. National Ocean Policy Steering Committee (key local group in Fiji expected to advance work on Ocean Accounts and provide advice to government).
3. The Ministry of Economy's Climate Change Unit and the Fiji Bureau of Statistics.
4. National Protected Areas Committee (comprises people from different sectors and of different skill sets and terrestrial and marine working groups as activist and advisor to relevant Ministries - mainly to Ministry of Environment).
5. National Environment Council (dedicated group set-up by the government to monitor, evaluate and advise on environment regulations and management)
6. Parliament Committees on SDGs and SDG taskforce (dedicated committees of the national parliament in charge of monitoring and supporting work of agencies working on the SDGs)
7. Marine Working Group (dedicated working groups of key Government agencies that monitors and provides advocacy on marine resources and marine protected areas)
8. Geospatial Information Management Council (the key government body responsible for spatial information in Fiji).



## Issues and Challenges

The project offers a timely and meaningful platform of support to Fiji to develop details relevant for a full-fledged Ocean Account. It may be noted that Ocean is a key resource for Fiji of great value. The key issue in Fiji is data quality and availability, because most of the components relevant for the project do not exist in the national statistics. As such, existing research literature, similar parameters from other environments, and some estimates may have to be done/borrowed for the project. A notable issue with working alongside the National Ocean Policy Steering Committee is that they have made limited progress (for unanticipated reasons); and have a longer time frame for completion. As such, this pilot will study will independently feed into their work. The other limiting factor is/could be the COVID-19 related challenges.



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