# Guidelines for Standardised and Comparable Reporting across Blue Planet Fund Projects

**Prepared for the Department of Environment, Food and Rural Affairs by IDEEA Group**

Institute for Development of Environmental-Economic Accounting
Melbourne, Victoria, Australia
www.ideeagroup.com

Institute for the Development of Environmental-Economic Accounting (IDEEA Group)

ABN 22 608 437 056

support@ideeagroup.com

www.ideeagroup.com

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Authors (IDEEA Group): Carl Obst and Daniel Whitaker

## KEY MESSAGES

- The Blue Planet Fund (BPF) is making a range of investments aimed at supporting developing countries to protect the marine environment and reducing poverty. These investments are spread across eight high level programmes and are targeted at achieving outcomes across the four interrelated areas of biodiversity, climate change, marine pollution, and sustainable seafood.
- Three primary areas of data, reporting, monitoring, and evaluation needs for the BPF were identified: (i) informing project scoping and baselining, (ii) monitoring performance, and (iii) making a case for financial investment.
- Current BPF programmes and projects have existing sets of impact, outcome, and output indicators defined within each specific body of work. It is currently not possible to confirm if these indicators are comparable across programmes and projects and up to the fund level. In order to ensure they are, it would be necessary for them to be underpinned by coherent data collection methodologies, transformations, and classifications.
- Compiling data in a set of ocean accounts can enable structured selection of indicators that relate to BPF themes that are calculated consistently and are comparable over time and across locations.
- Ocean accounting is an emerging area of practice that builds off the United Nations System of Environmental-Economic Accounting (SEEA). The SEEA can be considered in terms of two constituent and entirely coherent frameworks, the SEEA-Central Framework and SEEA-Ecosystem Accounting. Together, these frameworks enable the development of a set of environmental-economic accounts incorporating the stocks and flows of resources, environmental-economic gains and costs, and the biophysical flows provided by ecosystems.
- The development of ocean accounts is underpinned by the Ocean Accounts Framework, a statistical framework for measuring the ocean, its relationship with people, and changes it is undergoing. This framework directly incorporates and adapts the relevant parts of the SEEA-Central Framework, SEEA-Ecosystem Accounting, and the System of National Accounts.
- The link between the environment and the economy can be best viewed by the development of ecosystem service accounts which detail the contributions of ecosystems to the benefits used in economic activities and reflect the changes in these contributions as ecosystems are either degraded or restored.
- By employing a consistent ocean ecosystem accounting approach (such as the approach outlined in the SEEA-EA) it is also possible to develop portfolio level marine environmental indicators that can supplement other social and economic indicators in a comparable manner.
- The process of capacity building should be targeted at organisations, not just individuals, and should follow a structured process of identifying user needs, establishing milestones against which progress can be monitored, analysing barriers to success, and planning the account development process in a collaborative setting.

## USING THIS DOCUMENT

The intended audience for this document is members of DEFRA and delivery partners on Blue Planet Fund projects. The document aims to provide sufficient background on the Blue Planet Fund, all related programmes of work, and best practices in environmental-economic accounting as it relates to development projects that focus on the marine environment. The document is framed around the use of widely accepted international environmental-economic accounting standards, such as the United Nations System of Environmental-Economic Accounting and the Global Ocean Accounts Partnership's Ocean Accounting Framework, to drive improved coherence in measurement and reporting within and across BPF projects.

Links to material related to some questions you might have that this document can help with are included here:

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## INTRODUCTION

**The Blue Planet Fund (BPF) is making a range of investments aimed at supporting developing countries in protecting the marine environment and reducing poverty.** These investments are targeted at achieving outcomes in the four interrelated areas of biodiversity, climate change, marine pollution, and sustainable seafood. It is financed from the UK Official Development Assistance budget and jointly managed by Department of Environment, Food and Rural Affairs (DEFRA) and the Foreign Commonwealth Development Office (FCDO). There are eight high level programmes and projects receiving direct funding from the BPF, these include:

**Global Ocean Accounts Partnership (GOAP):** Enabling countries and other stakeholders to "go beyond ocean GDP" to measure and manage progress towards sustainable ocean development using comparable and standardised indicators.

**Ocean Country Partnership Programme (OCPP):** A bilateral technical assistance and capacity building programme that aims to develop partnerships with fifteen countries to develop and harness relevant scientific and technical expertise and establish effective evidence-based policy to address ocean pollution, fisheries, biodiversity, and climate issues.

**Global Fund for Coral Reefs (GFCR):** A blended finance vehicle to fund innovative business models that restore and increase the resilience of coral reefs and the communities that depend on them. Activities include feasibility studies, technical assistance, capacity building, monitoring and evaluation, and the fostering of policy development and de-risking instruments.

**Global Plastic Action Partnership (GPAP):** A multistakeholder platform led by the World Economic Forum that brings together world-leaders, decision-makers, and industry to take collaborative action on tackling plastic pollution in developing countries before it enters the marine environment.

**Ocean Risk and Resilience Action Alliance (ORRAA):** A multistakeholder platform that aims to increase investments into nature-based solutions and develop novel financial products positively impacting the resilience of coastal communities.

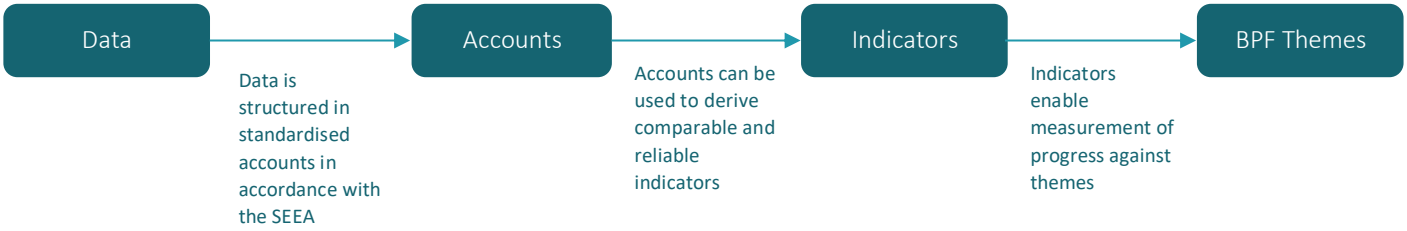
**Fiji Blue Bond:** The UK's investment in a UN-led programme to support the Government of Fiji in issuing its first sovereign blue bond aimed at investments to deliver a sustainable blue economy, create jobs, and protect the Fiji's marine environment and biodiversity.

**Friends of Ocean Action:** A coalition of over 70 ocean leaders who are fast-tracking solutions to the most pressing challenges facing the ocean. Convened by the World Economic Forum, in collaboration with the World Resources Institute, its members come from business, civil society, international organizations, science, and technology.

**PROBLUE:** A World Bank administered multi-donor trust fund that works with governments to identify programs that protect oceanic economies and communities by delivering financial support, advisory services, and technical expertise across all oceanic sectors.

**The guidelines developed here outline the motivations and a set of requirements for best practice standardised and comparable reporting across BPF projects.** They address user needs, data requirements, and indicators relevant specifically to BPF projects. The guidelines also describe the fundamental benefits of employing the United Nation System of Environmental-Economic Accounting (SEEA) in the development of a set of ocean accounts, or other relevant coherent dataset, in terms of consistency, comparability, and reliability. The link between data, accounts, indicators, and the BPF themes is shown in Figure 1 below.

**Figure 1:** The flow of information from a dataset to a structured set of accounts, to indicators representative of BPF themes.




Given the size, scale, and complexity of the projects and programmes receiving funding from the BPF, it is necessary to reliably report on impacts, outcomes, and outputs and hence ensure the available funding is used both responsibly and efficiently. In addition, appropriately collected and managed data will allow fund portfolio level statements on impact, such as total improvement in a given condition variable, to be made. Being able to report reliably, aggregate data and indicators, and compare across projects is essential to implementing an effective governance structure where accountabilities are clearly defined, and results are measurable.

The BPF also funds programs related to the development of novel financial instruments (e.g. Ocean Risk and Resilience Action Alliance) and the utilisation of blended finance vehicles (e.g. Global Fund for Coral Reefs). Therefore, it is also necessary that investment grade disclosures are possible. Data should align with standards followed by National Statistical Offices and financial institutions. This achievable by following the standards outlined in the SEEA.

These guidelines were developed through consultation with members of multiple BPF programs; review of the literature on ocean accounting and reporting for development funding; and expert analysis on the role of accounting and the SEEA in the use and management of economic, environmental, and social data. In addition, specific focus is given to data requirements and capacity building, both of which will be relevant for the administrators of the fund, partner countries, and other stakeholders.

## 1. ASSESSMENT OF USER NEEDS

Across each of the eight projects and programmes with BPF investment listed above, there is a need for consistent and comparable information, including maps, data, statistics, and indicators pertaining to marine and coastal environments and communities. This information set should incorporate environmental, social, and economic considerations, ideally across multiple relevant scales.

Data and reporting needs will vary both across projects and within projects depending on which stage they are at, and the users involved. For example, the needs of investors, banks, regulatory bodies, and communities are all likely to vary and may not remain static throughout the entire project lifecycle.

Primary data, reporting, monitoring, and evaluation needs relate predominantly to three key interrelated areas. Inherent in these primary needs are a suite of related requirements. The three areas are:

> **Informing Project Scoping and Baselining:** Enabling effective decision-making regarding project scoping that incorporates all relevant considerations. This includes providing data that ensure an accurate and representative project baseline can be established for future monitoring.
>
> **Monitoring Performance:** Development of measurable, accurate, and meaningful indicators relating to project impacts, outcomes, and outputs. These should allow performance to be managed at the project, programme, and fund portfolio level so the net benefit of the funds activities can be monitored.
>
> **Making a Case for Financial Investment:** Data is required to underpin key performance indicators for investment opportunities. These key performance indicators can then underpin ongoing monitoring of progress and/or enable development of sustainability performance targets that can be calibrated and reported upon. These are common requirements of the development of ocean related investment products such as blue bonds and sustainability-linked products. In addition, BPF funded programmes that relate to novel financial product development and distribution require data of an adequate standard to ensure relevant and appropriate financial disclosures can be made.

Monitoring and reporting should encourage positive feedback loops between government decision-making and marine and coastal projects. Ideally such reporting will improve transparency and governance. This should cover themes such as sustainable aquaculture, pollution prevention, and identification, avoidance, and removal of subsidies and other policy settings that drive environmental degradation, for example by encouraging overfishing.

Guidance is also required on the appropriateness of timing and project maturity for incorporating condition and extent indicators. This should enable BPF investment to be reported on in terms of not only the number of projects worked on (outputs) and things achieved (outcomes), but how condition has changed as a result of this work (impacts). This should also enable identification of opportunities for aggregation of programs of work that create larger scale investment pipelines in the future.

Information needs, available analytical approaches, indicators, and best practices in capability building are some of the priority areas addressed in this paper. A summary of needs regarding definitions, indicators, and data collection are noted below.

### Definitions

In order to meet the above stated primary needs, all reporting and monitoring activities should be based on a coherent set of data established within a standardised reporting boundary. Inherent in this is a requirement for a set of common definitions of ecosystems, ecosystem services, economic sectors, low-level indicators, etc.

Collectively these definitions should enable a cohesive view of the ocean economy upon which standard reporting can be built to enable ocean economy focussed financing and policy decisions to be made. By clarifying these definitions, the asset base can be defined, and ecosystem assets recognised in a meaningful and consistently applied framework.

### Indicators

There is a clear requirement for consistent and comparable indicators from the macroeconomic scale, such as Ocean GDP and GVA, to the sub-programme scale, such as individual project key performance indicators. Technical assistance is required on indicators to mainstream relevant approaches and identify those which are most relevant and useful for key stakeholders.

Both direct and indirect ocean economic indicators may comprise the set of indicators for reporting, however, whether or not such indicators are directly related to economic activities must be clearly identifiable. Where connections from the terrestrial environment to the marine environment occur it has also been identified it would be beneficial to have indicators of this relationship that are coherent with both other terrestrial and marine-specific indicators.

Ultimately, users would benefit from a listing of some indicators that can be employed to monitor marine economic, environmental, and social considerations. The inherent assumptions within and limitations of these indicators should be clearly identified.

Indicators should enable understanding of the BPF core themes of biodiversity, climate change, marine pollution, and sustainable aquaculture. In addition, a long term goal of the programme is to be able to identify the direct impact of BPF investment on global ocean capital in terms of both capital stocks and ecosystem services provided.

### Data Collection

In order to derive appropriate indicators, there is also a need for a data collection framework underpinning a common low-level infrastructure for multiple reporting processes and needs. A noted issue with development projects is that a given environmental and/or administrative region may be the recipient of funding and work from multiple bodies operating without a consistent data collection framework. This ultimately results in an inability to compare results with other studies and to aggregate results to larger economic and geographical scales.

There is also a need for a shift to ongoing data collection as opposed to just collecting data that aligns with funding and project timelines to enable real time monitoring of key indicators.

This would enable identification of emerging risks and increase the likelihood of success of a given body of work.

An uplift to data collection on environmental and social dimensions within ocean related sectors is also required. It is key that data collected is coherent with respect to other related datasets while also capturing country specific nuances for a given project.

## 2. DESCRIPTION OF CURRENT PROJECT AND PROGRAMME LEVEL APPROACHES TO SUSTAINABILITY MEASUREMENT

### Alignment of Current Projects with Blue Planet Fund Themes

There are currently eight high level projects and programmes receiving funding and support from the BPF. For each of these projects and programmes there is a clear linkage to multiple BPF themes. In the case of GOAP this is through promoting the organisation of accounts as a means of structuring and presenting data, which is relevant to all themes, projects, and programmes.

For some programmes, such as OCPP, all BPF themes are within scope and the activities that take place are tailored to country needs. For others there is a clear focus on particular themes, for example GPAP is heavily focussed on marine pollution. A summary of each of the projects and themes can be seen in Table 1 below. Poverty alleviation is a core goal of the BPF and is intrinsically linked to the outcomes of each programme of work.

**Table 1:** Summary of alignment of Blue Planet Fund projects and programmes with the fund's themes.

| Themes | OCPP | GFCR | GPAP | ORRA | Fiji Blue Bond | Friends of Ocean Action | PROBLUE |
|---|---|---|---|---|---|---|---|
| Biodiversity | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| Climate Change | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| Marine Pollution | ✓ | | ✓ | | | ✓ | ✓ |
| Sustainable Seafood | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |

### Global Ocean Accounts Partnership

Ocean accounts are structured compilations of data developed concerning marine and coastal environments. GOAP promotes organisation of accounts in line with the Ocean Accounts Framework. These accounts can then be used to develop an array of ESG indicators and undertake analysis in the form of, for example, social cost-benefit analysis, scenario analysis, and/or environmentally extended input-output analysis.

### Ocean Country Partnership Programme

OCPP provides bilateral technical assistance to developing countries to tackle marine pollution before it enters the environment, to create and effectively manage marine protected areas, and to improve the sustainability of seafood. This is achieved by enabling developing countries to access and partner with UK's leading marine scientists. In addition to the BPF impact statements, OCPP has a number of individual outcome statements. Themes and project outcomes are managed individually and reported on in terms of impact, outcomes, and project management (e.g. spending, timing, and project risks). This reporting tends to take place in collaboration with stakeholders from partner countries. Reflecting that the goal of the OCPP to build offshore capacity in management of the marine environment.

Impact indicators reported relate to marine natural capital extent and condition, as well as number of people with improved food security and nutrition and access to waste

management. Outcome indicators are related to two outcomes: an increased ability to of partner countries to utilise technical knowledge and an increased ability of partner countries to develop and implement sustainable marine policies. They relate to the number of individuals accessing and engaging with evidence and education activities, the number of sustainable marine management policies introduced, area of marine ecosystem protected, and number of people impacted by OCPP activities. Output indicators are centred around the three related areas of education and outreach, policy and governance, and science and evidence. Included in this set of indicators are some relating to materials provided, number of people engaged, events held, policies strengthened, physical resources established, and number of publications and databases developed.

The dataset for these indicators, as well as other project level analyses undertaken on an as required basis such as cost-benefit analyses, is quite broad. Data collection is tailored to and managed within each individual project. Challenges faced include lack of reliability of official data in some countries and masking of significant variables due to informal economic structures (e.g. gender gaps may not be visible in official statistics in environments where women are more likely to be involved informal labour than men). To overcome these challenges OCPP notes some areas of focus include working with in-country stakeholders, collecting data on variables like the number of people who attend workshops, collecting readily accessible data such as data on environmental samples, and increasing populations.

Reporting to date has been largely focussed on key themes. However, this is currently an intention to refocus reporting around countries. This refocus will be beneficial in ensuring that partner country stakeholders can get access to appropriate reporting. In addition, it will reflect the focus on offshore capacity building and the importance of working with each partner country in a tailored manner. It is, however, important to note that leaving reporting decisions up to individual stakeholders and aggregating at country level will increase the difficulty of reporting consistently and coherently at the programme and fund levels.

### Global Fund for Coral Reefs

The GFCR is a UN Sustainable Development Goal (SDG) 14 (Life Below Water) implementation related fund aiming to blend public and private sector finance to scale up conservation of coral reefs and increase the resilience of both the reefs and the communities that depend upon them. Funding is targeted at the most climate resilient reefs in developing countries and focussed on ecosystem-based solutions across a number of priority sectors. The fund enables country-based consortiums of experts to deploy private sector investment into projects and aims to produce measurable benefits in more than 30 developing countries.

The impact the GFCR aims to achieve is to save coral reefs from extinction by unlocking major investment in their conservation. The associated outcomes that must be achieved include protection of priority coral reef sites and climate refugia, transformation of the livelihoods of reef dependent communities, development of novel restoration and adaptation technologies, and aiding the recovery of reef-dependent communities to shocks. For these outcomes to achieve the desired impact it is essential that a number of co-benefits are delivered. These include co-benefits related to coastal protection, food security, sustainable fisheries, conservation of biodiversity, increased gender equality, improved waste management, and increased economic opportunities including both tourism revenue and fiscal revenue.

There is a Global Team responsible for ongoing monitoring and evaluation of programmes as well as for providing guidance to implementing partners on performance indicators and methods of data collection and analysis. The Global Team collects performance data at outcome and output levels and links program-related and financial result indicators so evaluators can measure the efficiency and effectiveness of the fund. Data is consolidated in a central results-based management system. On-site UN agencies and implementing partners are responsible for the application of on-site monitoring plans, the results of which are shared with the Global Team.

Output indicators are established for each programme of work reflecting changes in skills and abilities and/or new products and services that are made accessible with GFCR resources. Implementing organisations are responsible for the data collection and reporting processes for these indicators. Outcome indicators are defined in a Results Framework. Implementing partners are obligated to report against them. For both output and outcome indicators external factors and previously identified assumptions are considered throughout the reporting process. External evaluations also take place at the mid-term and, where necessary, at the point of programme closure.

In addition to specific outcome indicators, the GFCR has nominated three relevant SDG indicators (14.2.1; 14.5.1; 14.7.1), a set of signature indicators for priority ecosystems, and a set of mandatory local monitoring indicators. The set of signature indicators relate to species richness and biomass, live coral cover, proportion of priority sites under effective protection and management, and ratio of grants to investment for coral reef conservation activities.

### Global Plastic Action Partnership

The role of GPAP is to address plastic pollution before it enters the marine environment. It is currently operating across four countries (Ghana, Indonesia, Nigeria, and Vietnam). In each of these countries a National Plastic Action Partnership is being established, or has already been established, that brings together stakeholders from across the plastics value chain.

Impact, outcome, and output indicators relating to, for example, tonnes of mismanaged municipal waste avoided, amount of funding committed, and number of partnerships supported, are being developed and reported against. Some of the indicators that are being reported against are shared with the Commonwealth Litter Programme (CLiP) being led through the Centre for Environment, Fisheries and Aquaculture Science (Cefas) and comprising part of the OCPP marine pollution work.

Scenario analysis is also employed based on the data collected for the ‘amount of mismanaged municipal waste avoided’ indicator. This is first done as part of a baselining assessment of plastic pollution with each partner country. Different models of intervention are then looked at and scenarios analysed to inform next steps based on business as usual, realistic plastic reduction, and ambitious plastic reduction scenarios. These incorporate five different interventions: reduced or substituted plastic usage, redesigned plastic products and packaging, doubling waste collection, doubling recycling capacity, and building or expanding controlled waste disposal facilities.

In the case of Indonesia and Ghana, a National Plastic Action Partnership Action Plan has already been published. For Indonesia this was then complimented with a Metrics Roadmap

created by a Metrics Task Force, to set a path to the track the progress of the implementation of the Action Plan. The Metrics Roadmap outlines three stages in reporting: strategise, implement, and achieve results. The Metrics Task Force has five objectives relating to mapping data collection, further development of baselines, collecting and aggregating data on leading indicators, establishing effective monitoring and evaluation designs, and working with the National Plastic Actions Partnership on reporting.

Data collected by GPAP comes from a variety of sources in each partner country but tends not to have been collected solely for the purpose of monitoring this programme of work, although that is the preferred data source where possible. It tends to be either data collected by government or collected by the private sector, universities, and institutions for a broad array of reasons. Reporting is provided to the World Economic Forum, as main delivery partner, based on the indicators in the GPAP logframe. There are two widely considered impacts which are: how much waste or plastic pollution is not ending up in the ocean as part of the intervention? And what is the impact of this programme on local communities? Whilst the 'amount of mismanaged municipal waste avoided' key indicator covers much of the first impact, the second impact requires a suite of socio-economic indicators, which vary across projects and may come from interviews with relevant stakeholders. For example, people who work in the informal waste management sector.

There is a longer-term view to expanding the target outcomes in further years to cover other types of marine pollution as opposed to just plastics. This could include outcomes related to ghost gear, chemical waste, etc. In addition, whilst monitoring and evaluation has thus far been largely focussed on the programme level, there is an acknowledgement that moving forward it should be built out at the fund level. This could mean all reporting across GPAP, CLiP, and other relevant work being coherently and consistently reported on to enable a holistic understanding of the impact of BPF funded marine pollution work.

### Ocean Risk and Resilience Action Alliance

The goal of ORRAA is to build resilience in vulnerable regions and communities to ocean risk by incentivising investment in nature-related solutions. This is achieved by increasing understanding of ocean and coastal risks so they can be better predicted and managed and developing novel financial products that de-risk and encourage relevant investments to drive increased private sector participation.

ORRAA has three core targets by 2030: to drive $500 million of investment into nature-based solutions, to surface fifty novel financial products incentivising private and blended finance into coastal natural capital, and to build the resilience of at least 250 million people. Its progress is monitored against a Performance Measurement Framework based on the framework developed for the Global Resilience Partnership and other established country development funding frameworks. Where implementation partners are involved, they carry out their own monitoring, evaluation, and learning activities to meet the needs of their project.

Data is collected to support the development of a number of key performance indicators relating to financial flows and development outcomes. In addition, there is work being done to

mobilise the measurement of a social impact indicator on number of people whose resilience is increased as a result of ORRAA projects.

As part of broader work on financial innovation, science, and research ORRAA has been involved in the development of several other indicators including the sustainable blue economy global value-at-risk measure, the climate and ocean risk vulnerability index, and the coastal risk index. Data is also used to value coastal ecosystems (e.g. via carbon credits), to support natural disaster risk assessments, and to provide an enabling environment for insurance of coral reef ecosystems.

### Fiji Blue Bond

The Government of Fiji's first sovereign blue bond is targeted at funding the design and delivery of a pipeline of investable blue bond projects. BPF funding is supporting the set-up of a monitoring, reporting, and verification system alongside other activities including market and communications and independent external reviews.

The Fiji Blue Bond will be aimed at investments to deliver a sustainable blue economy, create jobs, and protect Fiji's marine environment and biodiversity. The specific data requirements of the Fiji Blue Bond will depend on the actual projects funded by the bond. However, it is likely that social, economic, and environmental data will all need to be incorporated into a suite of indicators.

### Friends of Ocean Action

Friends of Ocean Action is a group of ocean leaders that aims to use its knowledge, network, and influence to assist in taking steps to conserve and sustainably use the ocean and marine resources. As a convening platform it engages with a set of ocean related partnerships and projects and provides input to oversee the success of those projects in a manner that contributes to the implementation of SDG 14 (Life Below Water).

Friends of Ocean Action reporting on social media engagement, number of projects and events engaged with, and other dialogue related metrics is published in impact reports. The details of projects and programmes in which the Friends of Ocean Action is involved is also made available. Reporting on the impacts of these projects and programmes is managed on an individual basis.

### PROBLUE

PROBLUE is a multi-donor trust fund that supports the protection of healthy and dynamic oceans organised around four themes. These themes relate to fisheries and aquaculture, marine pollution, the blueing of oceanic sectors, and seascape management. In addition, the cross-cutting topics of gender equality, climate change, and mobilising finance for development are taken into account across all PROBLUE activities.

The PROBLUE Partnership Council contains representatives from eleven contributing countries and the European Union. The Partnership Council has adopted a monitoring and evaluation plan, which is the basis of reporting on results. This plan outlines the structure and roadmap of how monitoring and reporting on results should be achieved as well as how these results should be evaluated. The structure of this plan involves assessment of progress through

indicators and focus on all relevant pillars and the cross-cutting challenges and synergies between them. Due to the integration of the pillars, results are measured at an aggregate level.

All PROBLUE proposals, projects, and completion reports follow a clearly articulated theory of change. A Project Activity Tracking System captures and aggregates output, reach, and influence generated by activities. It also evaluates performance for completed activities to verify the completion of their objectives relative to targets. Progress values and targets are reported on a cumulative basis and outputs are divided into the three areas of capacity building, tools developed, and knowledge products prepared.

Reporting is completed on number of approved proposals and financial beneficiaries and leverage ratios. In addition, reporting is undertaken on leveraging of World Bank operations that contribute to a set of indicators covering themes such as greenhouse gas emissions, marine pollution, gender, coastal resilience, fisheries, aquaculture, circular economy and waste management, chemical usage, energy usage, and tourism. National policy reforms, mobilisation of finance for development, and regional cooperation related indicators and targets are also included.

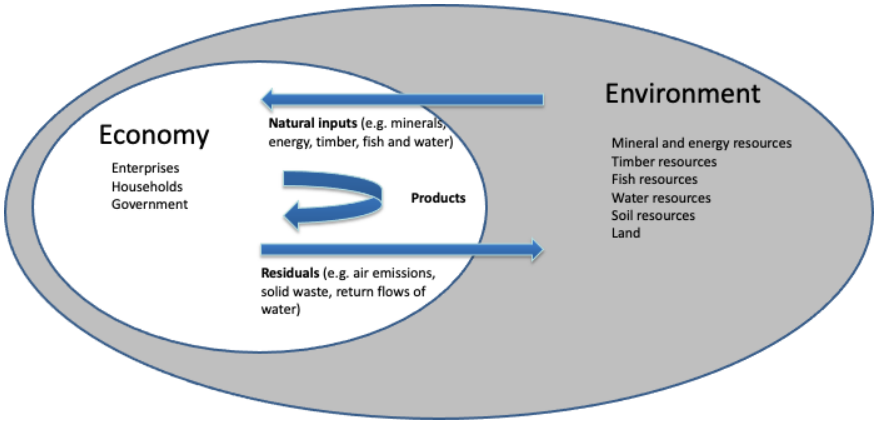
# 3. THE USE OF THE OCEAN ACCOUNTING TO SUPPORT INTEGRATED AND COMPARABLE SUSTAINABILITY MEASUREMENT

## Context

The core purpose of GOAP is to enable countries and other stakeholders to "go beyond GDP", to measure and manage progress towards sustainable ocean development (social, economic, environment) using comparable and standardised indicators. This aligns with long standing calls to extend measures of economic activity further than GDP and other traditional macroeconomic indicators. It is now widely accepted that understanding and incorporating the value of nature into economic decision making will be a key driving force in sustainable development and the transition to a net zero economy. Such findings are prominently outlined in the recently published Dasgupta review. But unfortunately, by virtue of their design, currently used macroeconomic indicators do not appropriately reflect the costs of using natural capital, the stocks of environmental assets. In order to address this issue, an extension to the existing System of National Accounts (SNA), the international statistical standard that underpins the measurement of GDP, was developed in the form of the SEEA. Which is now an accepted international statistical standard for environmental-economic accounting.

The purpose of the SEEA is to provide a framework within which to complete environmental-economic accounting so that data on the stocks and flows of natural capital and ecosystem services can be developed and used in a structured and organised manner. The use of the SEEA as the framework by which this is done has the benefits of both its level of recognition and its compatibility with the SNA in terms of alignment of concepts, definitions, and principles. Collectively the SEEA and the SNA enable the organisation and presentation of statistics on both the economy and the environment, as well as the relationship between the two as per Figure 2 below.

**Figure 2:** The flow of natural inputs, products, and residuals between the economy and the environment.




*Source: SEEA-Central Framework (United Nations, 2014).*

## SEEA Frameworks

The SEEA can be considered in terms of two constituent and entirely coherent frameworks. The SEEA-Central Framework (SEEA-CF) covers practices on individual environmental assets,

such as energy and water. The SEEA-Ecosystem Accounting (SEEA-EA) serves as a framework for the organisation of biophysical data, the measurement of ecosystem services, and the tracking of changes in ecosystem assets in terms of both their condition and extent in a way that can be linked to economic and other human activity information. Employing the SEEA provides users with the option of presenting information in terms of both physical and monetary units.

The SEEA-CF provides a methodology by which to develop accounts on resource extraction and use and the flow of residuals (e.g. waste, emissions, and water) within the economy. In addition, it incorporates accounts on environmental taxes, subsidies, and other societal responses to environmental challenges, including environmental protection expenditure and resource management expenditure.

The SEEA-EA extends this information by defining biophysical data in a spatially explicit manner. That is, it defines a set of accounts based on geographical maps to develop an integrated geospatial information set. This approach is underpinned by an appreciation of ecosystems as the source of goods and services essential to economic and social prosperity as well as an appreciation of the importance of spatial heterogeneity and localised conditions within landscapes.

### The Structure of SEEA Ecosystem Accounts

Collectively the SEEA-CF and SEEA-EA enable the development of a set of accounts incorporating the flows of resources, environmental-economic gains and costs, and the biophysical flows provided by ecosystems. An ecosystem is defined within the SEEA as “a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit” (United Nations et al., 2014).

Based on this an ecosystem asset can be defined in terms of an area of a uniform ecosystem type, e.g. a mangrove forest, coral reef, or tidal marsh. Ecosystem extent accounts can then be used to record the changes in the occurrence of ecosystem assets of different type within an area. In addition, these ecosystem assets can be characterised in terms of their condition by developing ecosystem condition accounts containing context specific condition indicators.

The link between the environment and the economy can then be best viewed by the development of ecosystem service accounts which detail the contributions of ecosystem to the benefits used in economic activities. These ecosystem service accounts detail flows between ecosystem assets and economic units that can be accounted for in both physical and monetary terms. Where monetary ecosystem service accounts are developed, it is also possible to then derive ecosystem monetary assets accounts which record the value of ecosystem assets in terms of net present value of supplied ecosystem services.

The SEEA does not necessitate application of monetary valuation approaches or prescribe any specific valuation methods. However, it does acknowledge the usefulness of valuation in certain applications and provide a framework for the organisation of biophysical stock and flow data in a manner that can underpin valuation approaches.

## The SEEA and Ocean Accounting

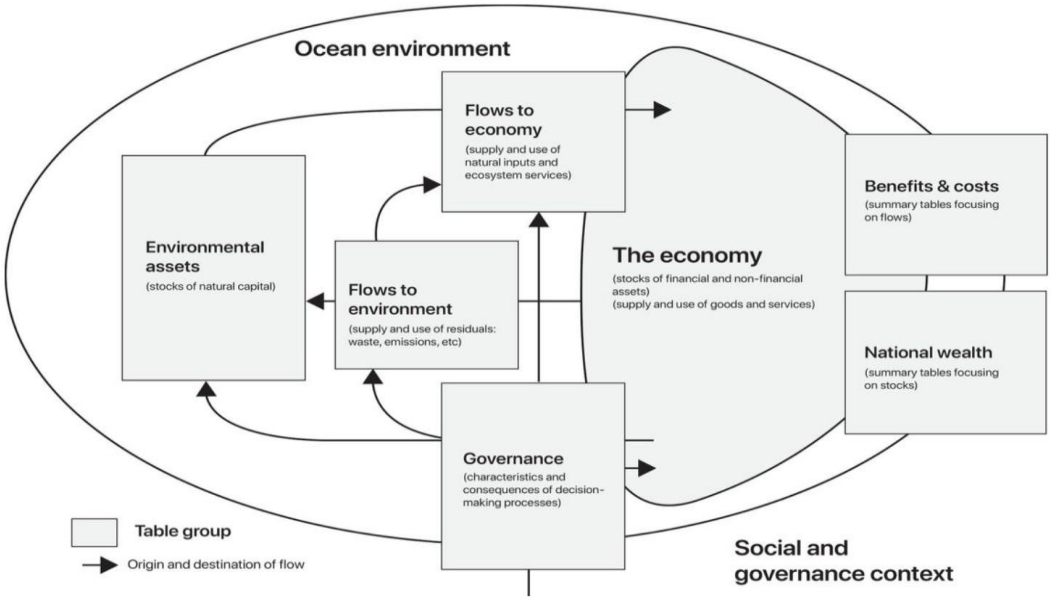
The development of ocean accounts provides a framework for data integration that enables the effective management and monitoring of oceans. These ocean accounts can be used to inform policy responses, integrate environmental variables into decision making, and to measure the contribution of the oceans to the economy and society more broadly. The GOAP Summary Guidance for Decision Makers highlights the following motivations for ocean accounts: building back blue during and post COVID-19; supporting planning and policy design for the blue economy; integrating ocean resources into economic analysis; measuring ocean capital asset prices to maintain opportunities for future generations; and constructing an innovative narrative for stakeholder participation in ocean management and governance.

Given these motivations, there are a number of potential areas in which ocean accounting can be applied. With respect to the BPF, some relevant areas include fishing, aquaculture, marine protected areas, biodiversity monitoring, waste management, tourism, marine spatial planning, the ocean/climate nexus, and the development of blue financial products.

The development of ocean accounts is underpinned by the Ocean Accounts Framework (Figure 3), a statistical framework for measuring the ocean, its relationship with people, and changes it is undergoing. Whilst this framework provides the basis for ocean accounting initiatives, it is not independent from the SEEA and is intended to directly incorporate with it and the SNA and is supporting the development of a SEEA Ocean.

The application of the SEEA in developing a set of accounts provides a framework for building a complete set of ocean accounts. Ocean accounts are comprised of environmental asset accounts, ocean supply and use accounts, ocean economy satellite accounts that record the performance of relevant industries, and in some cases ocean governance accounts that detail relationships among decision-makers. Overall ocean wealth accounts can then be defined.

**Figure 3:** The Ocean Accounts Framework.




*Source: Technical Guidance on Ocean Accounting for Sustainable Development (GOAP, 2022).*

### Applications of the SEEA for the Blue Planet Fund

Datasets underpinned by the SEEA as a statistical framework present a range of applications due to their inherent comparability and coherence. Such applications include project monitoring and evaluation, project baselining, reporting on sustainability and other indicators, risk management, cost-benefit analysis, scenario analysis, environmental impact assessments, and many more. For an overview of the links between BPF themes, policy areas, and some account types described in the SNA and the SEEA see Table 2 at the end of this Section. In addition to demonstrating these links, the table also shows how some account types (e.g. extent and condition) can be informative across a variety of different themes and policy areas.

The advantages of using the SEEA for such applications are both governance-related, given it is an internationally accepted and widely used standard, and technical. Some of these technical advantages include that the SEEA creates a common language for using and exchanging data, establishes standardised reporting tables, uses agreed upon classifications, and allows a direct connection to economic data developed based on the SNA.

Within the BPF there are requirements to be able to report on project and programme level impacts, outcomes, and outputs at both a fund level and sub-fund level. This includes requirements to report in terms of themes, countries, and specific bodies of work with the same or compatible datasets. Given the nature of these requirements, it is clear that having the data underpinned by the SEEA would be beneficial.

By applying the same ecosystem classifications, units, and measurement techniques across projects it will become possible to gain a full understanding of the impact the BPF has achieved. For example, coherently compiled condition indicators across all ecosystems impacted by the fund's activities will enable the reporting of both site level and fund level statements on change in condition achieved in a consistent manner. In addition, the compilation of monetary asset accounts will give a direct measure of the benefit gained by people from ecosystems. Changes in this measure will then enable an understanding of how well the BPF is achieving its goals of improving marine environmental condition whilst also enhancing the livelihoods of communities in developing countries. These datasets will also enable condition indicators and ecosystem service flows to be individually examined to assist in identification of future bodies of work.

The importance of applying the SEEA is further amplified by the nature of some BPF programmes, such as OCPP, being based on collaboration with a number of different partner countries. These relationships will tend to leave decision making and reporting to individual stakeholders in partner countries, so it is pertinent that data collected can be aggregated and relied upon.

Importantly, investments in natural capital are based on the fundamental relationship and dependence of people on the environment. The framing provided by the SEEA-EA of the environment in terms of natural capital stocks and flows of services aligns directly to appreciation of this relationship and the goals of natural capital investment. In addition, the SEEA is congruent with a number of other internationally accepted statistical standards relevant to ocean accounting and the BPF. Some of these frameworks that can supplement the central role of the SEEA in organising environmental-economic data are included below.

### Supplementary Frameworks – System of National Accounts

The United Nations SNA is the internationally accepted statistical framework that underpins the measurement of economic activity, most commonly summarised via the headline indicator of GDP. The organisation of data as outlined in the SNA results in a sequence of economic accounts that enables oversight of variables such as production, consumption, investment, trade, lending, prices, and saving.

The SNA is used to integrate micro level industry data with macroeconomic data on aggregate demand that can underpin assessments of productivity, capital utilisation, and sectoral performance. Data managed in line with the SNA will follow a consistent set of guidelines in the treatment of economic units that will enable coherence and comparability. In addition, it can be used to define measures of income and wealth across the economic units.

Where relevant choices are taken with respect to geographic scope and the set of economic units, the SNA enables the development of ocean economy accounts. The three main types of ocean economy accounts are: ocean economy supply and use tables; ocean economy production and income accounts; and ocean economy asset accounts. Note that while all of these accounts are recorded in monetary terms, it is also possible to record supply and use tables and asset accounts in physical asset terms.

Ocean economy supply and use tables are structured to show the supply of the products that ocean economic units produce and the use of these products by other economic units. Ocean economy production and income accounts build upon ocean economy supply and use tables. For each ocean economic unit they record production flows relating to employee wages, gross operating surplus, and intermediate consumption. They also record income flows relating to interest, rent, dividends, taxes, and royalties. Finally, ocean economy asset accounts record the opening and closing stocks of economic benefit generating produced assets, as well as natural resources, which are owned and/or managed by ocean economic units. They also include financial assets and liabilities and are relevant in seeking to understand productivity and wealth of the defined ocean economic units.

### Supplementary Frameworks – Poverty-Environment Accounting Framework

The Poverty-Environment Accounting Framework (PEAF) was developed as part of the United Nations Poverty-Environment Initiative to address the need for better integration of work on environmental management and poverty. Similar to the BPF, it is built on an appreciation of the nexus between reducing levels of poverty and protecting the natural environment. For example, this reflects how addressing inadequate seafood supplies with supplementary supply may provide short term poverty alleviation. However, over the longer term the sustainable way to alleviate poverty, increase resilience, and raise living standards in affected communities would be to address the environmental and social factors underlying declining seafood species stocks.

The PEAF is designed in a manner that is congruent with the application of the SEEA and is underpinned by the SEEA's spatial accounting approach as the integration point for differing data sources. Application of the PEAF enables a geospatial understanding of areas of high

environmental risk and opportunities that is linked to patterns of land and water use. This is particularly beneficial when addressing policy concerns pertaining to conservation and resource use, marine protected areas, sustainability, resilience building, and climate change.

While environmental and economic data are managed within the SNA and SEEA frameworks, it is relevant to incorporate considerations on poverty data in line with the PEAF. Such data may include, for example, data on the location of people, demographics, resource access, and migration. It is then possible to develop an accounting model in which natural capital assets provide services to local communities that benefit from them, where the beneficiaries can be targeted as those experiencing or vulnerable to poverty. Inherent in this approach is a quantification and recognition of the linkages between environmental assets and the social and economic wellbeing of individuals.

### Supplementary Framework – Statistical Framework for Measuring the Sustainability of Tourism

The Statistical Framework for Measuring the Sustainability of Tourism (SF-MST) is an initiative of the United Nations Statistics Division and the United Nations World Tourism Organisation (UNWTO). Its purpose is to provide a statistical framework that can be used to measure the role of tourism in sustainable development across social, economic, and environmental dimensions. This will enable derivation of SDG indicators and UNWTO International Network of Sustainable Tourism Observatories indicators. The intent of this framework is to enable the development of datasets that can be used to inform sustainable tourism, facilitate dialogue, and inform decision making with regards to tourism initiatives.

The SF-MST employs the approach of multiple capital accounting (environmental, social, and economic capital) to underpin connections between the economy and the environment. Whilst still in development, it is being established based on the concepts found in the SNA and the SEEA. By incorporating SEEA data it is possible to inform tourism decision making with information from environmental dimensions including how tourism is linked to recreational services provided by ecosystems that can be accounted for using the SEEA as an accounting framework.

By recognising the connections between tourism and impacts on the environment, environmental pressures that result from tourism can also be accounted for by utilising the linkage between the SF-MST and the SEEA. This is of particular relevance to development funding where tourism may present a way to increase productive use of environmental resources for a country but also represent a risk to the stocks and flows of natural capital that country holds. By having a framework to measure these considerations cost-benefit analyses of tourism related work can be appropriately developed and incorporated into the decision making process.

**Table 2:** Indicative demonstration of the links between BPF themes, relevant policy areas, and the types of accounts that may comprise a sequence of ocean accounts.

| Themes | Policy Areas | 1. Ocean Economy Accounts | | | 2. SEEA Central Framework Accounts | | | | | 3. SEEA Ecosystem Accounts | | | | | 4. Other Accounts and Data | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Ocean economy supply and use table | Ocean economy production and income account | Ocean economy asset account | Ocean physical flow accounts - natural inputs | Ocean physical flow accounts - residual flows | Ocean natural resource accounts | Ocean area accounts | Ocean environmental transactions account | Ecosystem extent | Ecosystem condition | Ecosystem services flow accounts | Monetary ecosystem asset account | Thematic accounts (carbon / species) | Extended income and wealth accounts | Indigenous communities ocean accounts | Disasters and extreme events | Population and demography | Employment | Economic structure | Ocean Governance |
| Biodiversity | Biodiversity | | | | | | | | ■ | ■ | ■ | ■ | | ■ | | ■ | | | | | ■ |
| | Blue Carbon | | | | | | | | ■ | ■ | ■ | ■ | | ■ | | ■ | | | | | ■ |
| | Marine Protected Areas | | | | | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | | | | ■ |
| Climate Change | Ocean/Climate Nexus - Mitigation, Adaptation & Resilience | | | | ■ | ■ | | | ■ | ■ | ■ | ■ | | ■ | | ■ | ■ | ■ | | | ■ |
| | Renewable Energy | ■ | ■ | ■ | ■ | | | ■ | | ■ | ■ | ■ | | | | | | | ■ | ■ | ■ |
| | Seabed Mining/Oil & Gas Exploration | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | | | ■ | ■ | | | ■ | ■ | ■ |
| Marine Pollution | Marine Waste | ■ | | | | ■ | | | ■ | | ■ | ■ | | | | | | ■ | | | ■ |
| | Marine Spatial Planning | ■ | | ■ | | | ■ | ■ | | ■ | ■ | ■ | | ■ | | ■ | ■ | ■ | | | ■ |
| Sustainable Seafood | Commercial & Recreational Fishing | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | ■ | ■ | ■ |
| | Illegal, Unreported, Unregulated (IUU) Fishing | ■ | | | ■ | | ■ | | ■ | | ■ | | | ■ | | | | | | | ■ |
| | Aquaculture | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | ■ | | ■ | | ■ | ■ | ■ |
| Other Related Areas | Marine & Coastal Tourism | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | Shipping & Transport | ■ | ■ | ■ | ■ | ■ | | ■ | | ■ | | | | | ■ | | | ■ | ■ | ■ | ■ |
| | Indigenous Communities Tenure & Cultural Connections | ■ | ■ | | | | ■ | ■ | | ■ | ■ | ■ | | ■ | | ■ | | ■ | ■ | ■ | ■ |

## 4. DERIVING OCEAN SUSTAINABILITY INDICATORS

In developing a set of accounts, a framework such as the SEEA is employed to ensure the compilation and integration of data is compatible with international statistical standards. This results in provision of a dataset that can underpin the incorporation of socio-cultural, economic, and environmental considerations into high level indicators in a comparable, consistent and tractable manner. The relationship between data, accounts, indicators and BPF themes is outlined in Figure 1 above.

Monetised ocean accounts derived in line with the SEEA can provide relatively direct measures of progress towards specific goals in the form of changes in ocean wealth, income, etc. They also provide a common framework for indicator development and reporting that results in indicators that are comparable and compatible of incorporation with national accounts completed in accordance with the SNA.

By employing a consistent ocean ecosystem accounting approach (such as the approach outlined in the SEEA-EA) it would also be possible to develop portfolio level environmental indicators. For example, a clearly defined spatial scope would make it possible to define portfolio level changes in extent and condition of natural ecosystem types at an aggregate level. This approach would also allow more granular condition indicators to be reported on at project and portfolio level simultaneously, assuming data availability, and could be extended to statements concerning changes in ecosystem service flows and beneficiaries before and after project implementation.

For each of the BPF projects and programmes it is necessary for a set of indicators to be chosen that provides appropriate information on progress against the specific BPF themes relevant. How the individual indicators discussed in the sections below align to BPF themes is demonstrated in Table 3 here:

**Table 3:** Summary of alignment of proposed indicators with BPF themes.

| Indicators | Biodiversity | Climate Change | Marine Pollution | Sustainable Seafood |
|---|---|---|---|---|
| Red List Index for Reef-Building Corals | ✓ | ✓ | | |
| Large Reef Fish Indicator | ✓ | | | ✓ |
| Reef Fish Thermal Index | ✓ | ✓ | | |
| Marine Trophic Index | ✓ | | | ✓ |
| SDG 14.2.1 | ✓ | ✓ | ✓ | ✓ |
| SDG 14.5.1 | ✓ | | ✓ | ✓ |
| SDG 14.7.1 | | | | ✓ |
| Gross Ecosystem Product | ✓ | | | ✓ |
| Amount of Mismanaged Municipal Waste Avoided | | | ✓ | |
| Changes in Marine Natural Capital Assets | ✓ | ✓ | ✓ | ✓ |
| Value-at-Risk and Other Ocean Risk Measures | ✓ | ✓ | | ✓ |

### Widely Used Sustainability Indicators

A variety of high-level sustainability indicators already exist, each with specific purposes and data requirements. Details of some common high level groups of ocean-related indicators are included below:

**Ocean Product, Income, and Balance Sheet Indicators:** Ocean product indicators are high level indicators of ocean output that are often monetised and given in terms of ocean gross domestic product (ocean GDP), ocean net domestic product (ocean NDP), or ocean gross value added (ocean GVA). Similar to ocean product indicators, ocean income indicators provide a measure of benefits to countries and entities from the ocean. These are more akin to macroeconomic impact indicators and can be expressed in terms of ocean net national income (ocean NNI) or ocean gross national income (ocean GNI). Finally, ocean balance sheet indicators, based directly on natural and produced capital accounts, can show both physical and monetary changes to ocean wealth. Each of these indicators can be derived based on the principles within the SEEA-CF and SEEA-EA frameworks.

**Sustainable Development Goal (SDG) Indicators:** Along with the 17 SDGs and associated 169 targets there are over 200 indicators which have been adopted by the UN General Assembly. These indicators have been classified into three tiers based on data availability and methodology. Clearly the most relevant SDG to the ocean economy is goal 14 'Conserve and sustainably use the oceans, seas and marine resources'. This goal contains multiple targets relating to pollution, sustainable management, ecosystem condition, sustainable fishing, protected areas, small island developing states, conservation, and research and development. In addition, there are other goals directly relevant to the ocean economy, e.g. SDG 12 'Responsible consumption and production' and SDG 13 'Climate action'. Using the SEEA to support the delivery of the indicators for these goals can ensure consistent, policy relevant, methodologically sound, and practical indicators are developed. In 2015 the UN Statistical Commission requested that the SEEA was reflected in the SDG indicators. Employing it will assist in the production of consistent comparable statistics, streamline the process for developing environmental-economic indicators, facilitate information sharing, and reduce the potential for future data management burdens.

**The Framework for the Development of Environment Statistics:** This framework provides guidance on a set of environmental indicators deemed to be beneficial to have oversight of by policy makers. It includes indicators on areas such as environmental conditions and quality, environmental resources and their use, residuals, extreme events and disasters, and environmental protection, management, and engagement. The design of the framework articulates the scope of environmental statistics, contributes to assessment of data requirements, sources, availability, and gaps, guides the development of multipurpose data collection, and assists in coordination across entities. It is not explicitly focussed at marine and coastal systems but can be used to underpin relevant indicators within these environments. This framework provides guidance on the set of indicators, which can then be derived based on datasets developed in alignment with the SEEA to ensure their comparability and suitability for incorporation into ocean accounts.

**Environment at a Glance Indicators:** The OECD Environment at a Glance platform hosts a suite of indicators and key metrics that provide a tool to track progress towards the SDGs and to

track environmental performance more broadly. These indicators are grouped into themes, one of which is Sustainable Ocean Economy. Within Sustainable Ocean Economy the indicators are represented in six main indicator groups: natural capital of the ocean; the environmental dimension of well-being and resilience; environmental and resource productivity; economic opportunities from pursuing ocean sustainability; policy responses directed at ocean sustainability; and socio-economic context. Collectively, the indicators included across these themes provide a view of environmental, social, and economic considerations for the ocean economy. By compiling these indicators based on SEEA coherent data it becomes possible to then compare directly across the environmental, social, and economic dimensions.

**Essential Ocean Variables:** The Global Ocean Observing System, implemented under the Intergovernmental Oceanographic Commission of UNESCO coordinates sustained observations of the essential ocean variables. These essential ocean variables cover physical, biogeochemical, biological/ecological, and cross-disciplinary features of ocean systems. Collectively these variables represent a set of ocean ecosystem condition indicators that are suitable for inclusion in SEEA ecosystem condition accounts that are comprehensively monitored and closely linked to the Essential Climate Variables.

**The Ocean Health Index:** This index is based on ten 'goals', which are scored based on the delivery of specific benefits with respect to a sustainable target. These goals relate to food provisioning, artisanal fishing opportunities, natural products, carbon storage, coastal protection, livelihoods and economies, tourism and recreation, sense of place, clean waters, and biodiversity. A perfect score of 100 reflects relevant benefits are being maximised without compromising the oceans ability to deliver the same benefits in the future while lower scores indicate more benefits could be obtained and/or current methods are detrimental to future benefit flows. Trends in data, ecological and social pressures, and resilience measures based on ecological factors and social initiatives are used to calculate the goal scores. These goal scores can then be averaged to determine a regional index score. Independently determined weightings of each score can be used dependent on regional context.

### Marine Sustainability Indicators based on Species Data

In addition to the groups of sustainability indicators discussed above, there are a large number of widely used individual indicators relevant to the marine environment. One such approach to understanding environmental condition and developing indicators is to use the prevalence of species and functional groups as an indicator. This is of relevance to the application of the SEEA and the development of accounts as it demonstrates how extending a set of ecosystem accounts to include species accounts that capture species richness and ecosystem structure data can result in useful condition indicators. Some examples include:

**Red List Index for Reef-Building Corals:** This Red List Index is based solely on data for warm water reef-building coral species. It shows the change in the extinction risk of these reef-building corals aggregated into a single index. Extinction risk is based on the number of species in each Red List category (from Least Concern to Extinct). It is also possible to disaggregate this index for subsets of species relevant to a given ecosystem. An overall decline in this index has been identified over time, suggesting the ecosystems that support reef-building corals are not being appropriately conserved and managed.

**Large Reef Fish Indicator:** This indicator represents the biomass density of rocky and coral reefs. It provides a direct indication of fishable reef biomass and can be used to track ecological responses to fishing, marine protected area management, climate change, etc. As such, it provides an indication of future fish provisioning services that can be derived from an ecosystem. The data underpinning the indicator is generally based on underwater censuses and includes the sum of biomass values of all fish within a survey that in the 20 cm size class or higher.

**Reef Fish Thermal Index:** The Reef Fish Thermal index is an extension of the Large Reef Fish Indicator that combines fish species abundance/biomass at a given reef based on census data with data on the thermal affinity for each species recorded. Thermal affinity is a measure of the ocean temperature that is optimal for wild fish populations. By combining these two features into one index a measure of the balance in the composition of warmer and cooler water species in a given community is obtained. When aggregated to larger regional trends this index can provide an indication of changes in biodiversity and species composition related to sea temperatures, which may be shifting due to climate change or other anthropogenic activities.

**Marine Trophic Index:** This index measures the extent of 'fishing down the food web' for large marine ecosystems in terms of the mean trophic level. This is a measure of whether fish stocks are being overexploited or sustainably managed, specifically with regard to large-bodied fish. The mean trophic level is calculated based on the catch of a given species/group of species per year weighted by each species/groups trophic level. This index can be calculated at a national or sub-national basis, it is generally comprised of both reported catch statistics and estimated unreported catch statistics.

### Sustainability Indicators Relevant to the Blue Planet Fund

In the case of BPF programmes and projects there are suites of impact, outcome, and output indicators defined within each specific body of work as discussed in Section 2 above. In order to ensure that these indicators are comparable and tractable across programmes and projects and up to the fund level it is necessary to ensure they are underpinned by coherent data collection methodologies, transformations, and classifications. Some examples of indicators used within the BPF programmes and projects, or otherwise considered directly relevant, along with how the application of the SEEA can be beneficial in deriving these indicators, are included below:

**SDG 14.2.1 – Proportion of National Exclusive Economic Zones (EEZs) Managed Using Ecosystem-based Approaches:** This SDG target indicator was designed to address the goal of sustainably managing and protecting marine and coastal ecosystems to avoid significant adverse impacts. It is underpinned by an understanding of the extent of countries EEZs, as well as the extent of these zones being managed using ecosystem-based approaches. Inherent in the derivation of this indicator is a requirement for a clearly defined EEZ area for each country of interest where both the boundary between land and sea ecosystems is defined and the boundary between a countries EEZ and otherwise governed marine areas is defined. By producing ecosystem extent accounts in line with the guidance of the SEEA and recording details on ocean governance, including the delineation of EEAs as per the ocean accounts

framework, it is possible to calculate this indicator in a consistent and comparable way wherever areas being managed using ecosystem-based approaches are known. The area in which management by ecosystem-based approaches is being employed is also best captured with reference to ecosystem extent accounts. An optional extension to this could be to evaluate information within condition accounts and ecosystem services accounts inside and outside of managed areas to understand the impact of the ecosystem-based approaches being applied.

**SDG 14.5.1 – Coverage of Protected Areas in Relation to Marine Areas:** The purpose of this target indicator is to drive the protection of marine areas in acknowledgement of them being essential to protecting ocean biodiversity and natural resources. Similar to SDG 14.2.1 discussed above, collecting data on ecosystem extent and supplementing with spatially defined protected area data can enable efficient and reliable calculation of this metric. In addition, supplementation with data from condition accounts and ecosystem services accounts can provide an optional extension that proxies the effectiveness of these protected areas. When evaluating condition and the provision of ecosystem services, emphasis should be placed not just on the protected areas themselves but the entire relevant marine area so positive flow on effects from protected area implementation can be identified and quantified.

**SDG 14.7.1 – Sustainable Fisheries as a Percentage of GDP in Small Island Developing States, Least Developed Countries, and all Countries:** Measurement of this SDG target indicator provides a measure of the value of sustainable fisheries and aquaculture in the target countries. Tracking it over time provides a view of sustainable fisheries and aquaculture expansion/contraction in the country of measurement. At a minimum, the indicator should be represented as a percentage calculated by dividing the value added by the fisheries and aquaculture sector by GDP, where both sectoral value added and GDP are to be calculated in line with the SNA for each country of interest. Where data is collected in line with the SEEA, and a set of fishing accounts produced there is an option to disaggregate the value added between fisheries and aquaculture by multiplying the sectoral value added over GDP measure by the quantity of fish captured from fishing over total quantity of fish stocks estimated in the given country. In this instance the quantity of production from fish capture would be used as a proxy for the value of the fishing industry. The aquaculture component would then be assumed to comprise the remainder of the value added. Further extensions to indicate the sustainability of the fishing and aquaculture industries that more accurately reflect the targets intent could also be developed. This could be done by applying sustainability multipliers based on regional sustainability values.

**Amount of Mismanaged Municipal Waste Avoided:** The amount of mismanaged municipal waste avoided (tonnes) metric is one of the key impact metrics of the GPAP programme. It enables measurement against the impact target of reducing the amount of waste or plastic pollution ending up in the marine environment. Calculation of this metric is underpinned by scenario analysis where a baseline assessment of plastic pollution is calculated, and different models of intervention are then analysed. Underpinning the scenario analysis with a coherent dataset compiled in a set of SEEA underpinned accounts would enhance confidence in the outputs. Ensuring that all inputs into the scenario analysis are coherent would also increase comparability across scenarios, over time, and across sites. In addition, this would potentially enable linkages to other related datasets. An optional extension would be to link the scenario analysis and results of this indicator to ecosystem condition accounts which would enable

measurement of environmental impact of the programme in a more tailored manner. This could then inform predicted ecosystem services flows and elucidate the linkage between waste management and the benefits derived to the local communities. In addition, preparing a coherent underpinning dataset would be beneficial if next steps in the programme were taken to include other types of waste besides plastics. For example, chemical waste related data could be maintained in ecosystem condition accounts and used to inform the scenario analysis if chemical waste were to become a focus of GPAP.

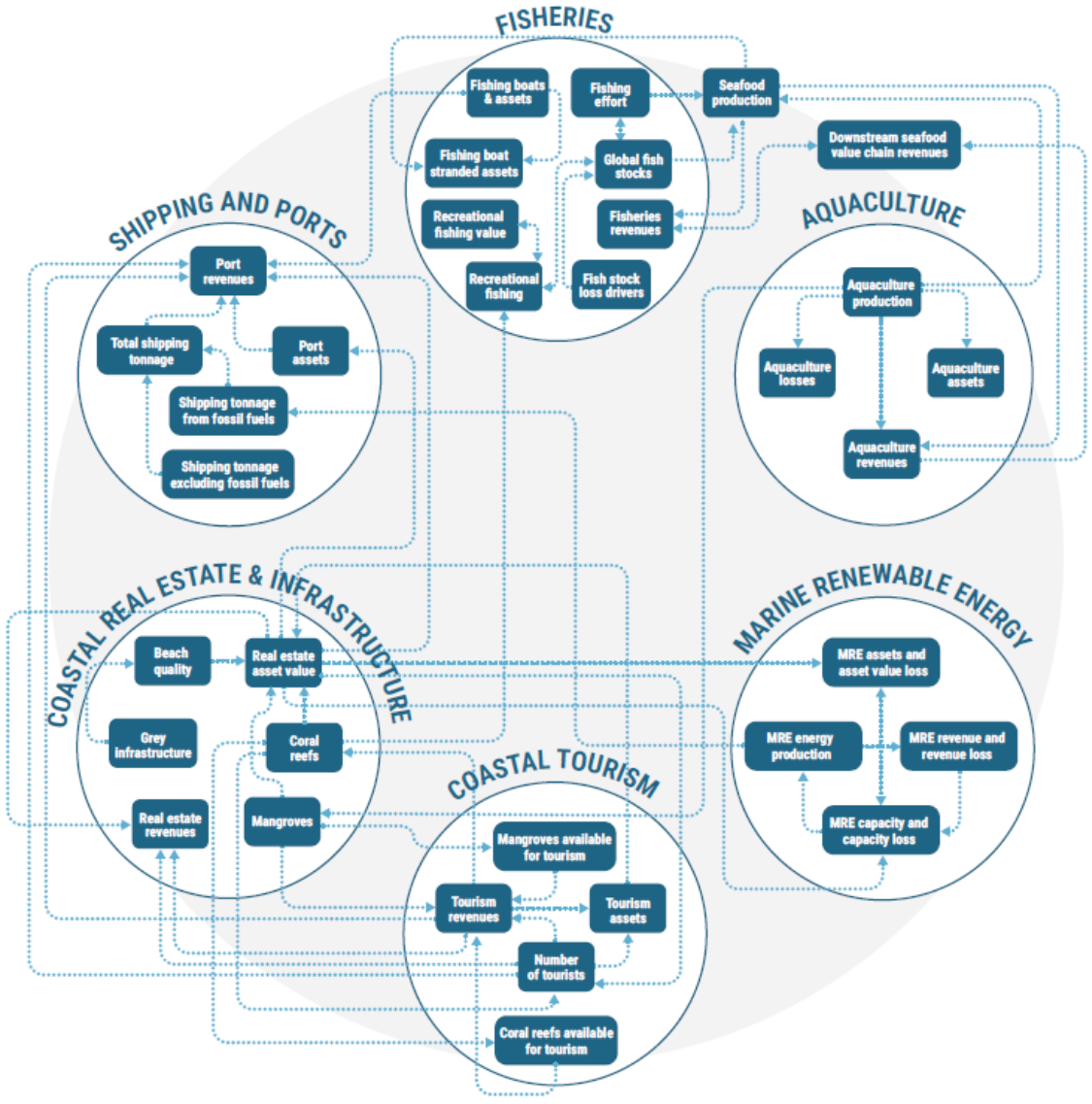
**Changes in Marine Natural Capital Assets:** The measurement of changes in marine natural capital assets in terms of extent, condition and the ecosystem service flows they provide can give a measure of environmental change and the impact of interventions over time. When extent and condition measures are calculated in alignment with the SEEA before and after interventions this can be used to provide a view of the potential effectiveness of these interventions in improving natural capital asset quality. In addition, it may be possible to aggregate the results across areas and projects so that statements of change in natural capital asset quality across sites can be made where the underlying measures are compatible. Related metrics are employed in some BPF projects, such as change in asset extent and condition in OCPP and percentage of coral cover in GFCR. Calculation of these metrics allows an understanding of changing environmental characteristics and can underpin additional metrics such as changes in monetary ecosystem service provisioning and evaluation of specific interventions across sites where they are repeated.

**Gross Ecosystem Product:** Gross Ecosystem Product (GEP) represents an aggregate measure of the value of the contributions of nature to economic activity. It bears similarity to GDP, a summary measure of economic information widely used by decision makers. GEP is the total value of final ecosystems goods and services supplied to humans in a defined region on an annual basis. It is suited to reporting in both biophysical terms and monetary terms where a valuation technique is applied to the biophysical flows. Reporting GEP in monetary terms allows a single dollar value metric to be produced that can be compared with GDP and provide a more holistic measure of a regions changing wealth. This is beneficial in that it reduces the risk of unknowingly increasing GDP at the expense of natural capital value, an approach which may yield negative outcomes over the longer term. GEP should be calculated in accordance with the principles of the SEEA to ensure it is comparable to GDP outputs calculated in alignment with the SNA. Calculating GEP will both directly inform decision makers and also enable more comprehensive economic analyses to be undertaken at a regional scale. For example, changes in GEP, either absolute or relative to GDP, may be the sought after outputs of a cost-benefit analysis or may be used as an output variable in scenario analyses to inform policy and funding decisions.

**Ocean Value-at-Risk:** ORRAA has been involved in the development of a number of risk metrics for use by financial institutions in order to increase access to financial products to those exposed to ocean related risk. This included recent efforts to develop a Value-at-Risk (VaR) metric for the global blue economy. VaR is a frequently used financial risk metric, which quantifies possible financial losses for a portfolio, position, or whole firm over a defined period of time. It is fundamentally based on a process of defining an expected distribution of losses per unit time based on either historical data or an expected probability distribution so risk managers can establish an expected level of potential loss with which they are comfortable. The VaR for the global blue economy (Ocean VaR) metric developed via ORRAA and partners is

based on a systems modelling approach that incorporates information on interactions between ocean related sectors, event based damage, and chronic environmental degradation (Figure 4). It incorporates two scenarios, a BAU scenario and a sustainable development scenario. Whilst Ocean VaR represents a global economic risk modelling approach, the principle of applying VaR techniques to the ocean economy can also be performed at smaller scales. Any attempts to calculate an ocean related VaR metric would benefit from the application of the SEEA in organising the underlying dataset. This could reflect accounts of ocean related assets that detail their quantity and quality, geospatial information that can be used to supplement understanding of environmental risks, and data on environmental pressures and inputs that are likely to impact the value of related assets over time. For an overview of different ocean account types and their links to BPF themes see Table 2 above.

**Figure 4:** Ocean VaR systems dynamics model scope and interactions. This figure demonstrates the types of data and relationships that were used in the development of the VaR metric for the global blue economy. Note that each of the components detailed in the model could be represented in a set of stock and flow accounts compiled in accordance with the SEEA and SNA.




*Source: Navigating Ocean Risk – Value at Risk in the Global Blue Economy (WWF & Metabolic, 2021).*

## 5. ANALYSIS OF ACCOUNTING AND DATA REQUIREMENTS

To enable the reliable derivation of indicators, and the application of environmental-economic data for other purposes, a data collection approach that aligns with both generic and context-specific requirements should be employed.

An appropriate starting point is by completing a data assessment that starts out broadly to ensure that full consideration is given to key assets, services, users, drivers, and pressures, within a given project or programme. In addition, data on social, environmental, cultural, and economic activities (both market and non-market) should be kept in consideration throughout the process. Table 4 demonstrates the types of accounts data should be collected in order to implement the indicators discussed in Section 4 above. Note that implementation of some indicators may be possible with fewer accounts than indicated, the table suggests the full set of accounts that would enable the most meaningful reporting.

**Table 4:** Summary of alignment of proposed indicators with some SEEA account types.

| Indicators | Extent | Condition | Ecosystem Services (Physical) | Ecosystem Services (Monetary) | Species | Ocean Economy Accounts | Socio-Economic Data |
|---|---|---|---|---|---|---|---|
| Red List Index for Reef-Building Corals | ✓ | | | | ✓ | | |
| Large Reef Fish Indicator | ✓ | | | | ✓ | | |
| Reef Fish Thermal Index | ✓ | | | | ✓ | | |
| Marine Trophic Index | ✓ | | ✓ | | ✓ | | ✓ |
| SDG 14.2.1 | ✓ | ✓ | ✓ | | | ✓ | |
| SDG 14.5.1 | ✓ | ✓ | ✓ | | | ✓ | |
| SDG 14.7.1 | ✓ | ✓ | ✓ | ✓ | | ✓ | |
| Gross Ecosystem Product | ✓ | ✓ | ✓ | ✓ | | | ✓ |
| Amount of Mismanaged Municipal Waste Avoided | | | | | | ✓ | ✓ |
| Changes in Marine Natural Capital Assets | ✓ | ✓ | ✓ | | | | |
| Ocean Value-at-Risk Metrics | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |

It is important to commence with a broad data assessment in order to evaluate expectations and establish appropriately measurable targets throughout each project and programme. Data assessments should be focussed on ensuring alignment between projects, and also give clear reasons why some data may be in or out of scope. This information can then be used to inform ongoing data collection strategies and priorities at a project or higher level.

An outline of key considerations during the data analysis and collection processes is included in Table 5. Some specific considerations across different accounts and data types/uses relevant to the indicators discussed in Section 4 above is then detailed below.

**Table 5:** Outline of key data requirements.

| Dimension | Relevant Aspects | Details |
|---|---|---|
| **Governance** | Objectivity | Data sources should be free of bias and reliably collected. |
| | Mandate for collection | Data sourced from administrative organisations should be available for its intended use on an appropriate basis. |
| **Interpretability** | Contextual information available | Background material should be available to support use of the data. This includes methodological and source information. |
| **Relevance** | Geographical scope | Sourced data should match the defined geographical scope for its use. |
| | Timing and coverage | Historical data should be available, and data should be used that is collected at an appropriate frequency. |
| | Classifications | Classifications and standards used should be aligned across data collected and appropriate for methodologies applied. |
| | Materiality with respect to intended use | Data collected should be aligned with its intended use and where proxy measures are used this should be clearly identified. |
| **Availability and Accessibility** | Ongoing availability and timeliness | Where ongoing monitoring and reporting is required, data should be made available on an appropriate schedule. |
| | Accessibility | Data should be publicly available, or ongoing access to it obtained, if intended to be used on an ongoing basis. |
| **Accuracy and Precision** | Error margins | Sample error and other sources of error should be identified and where possible quantified to enable valid reporting. |
| | Extent to which data is subject to revision | Where data is subject to ongoing revision or correction this should be documented and a process for ensuring all corrections are incorporated established. |

Further guidance on data requirements can be found in the SEEA-CF, SEEA-EA, and the Detailed Technical Guidance on Ocean Accounting.

### Extent

Data on extent is a key underpinning of accurately and appropriately deriving sustainability indicators relevant to marine environments. It is also the fundamental data underlying the structure of accounts developed in line with the SEEA-EA. Where extent data is being collected it is important that it relates to physical, institutional, and ecosystem extent. As well as enables an understanding of the context in which any analysis is being performed.

In the case of marine environments physical extent relates to the features of a given space in terms of area, depth, coverage, and arrangement. This may include variables regarding topography, bathymetry, and the presence of any surface level features such as islands and coral atolls. Ecosystem extent should reflect the area and composition of the ecosystem types within the area of focus. This may include maps and area values for seagrass meadows, reef systems, mangroves, and other marine ecosystem types. Institutional extent refers to the extent of zoning such as planning and regulatory defined areas. Data on maritime boundaries and marine protected areas should be included in any dataset on institutional extent.

By collecting extent data in a consistent manner it becomes possible to compare across regions and aggregate up to a portfolio level scale. Where extent data is collected it should also incorporate information on the broader context including social uses of an area, intensive land use zones (e.g. agricultural areas), and connections to external areas such as rivers.

### Condition

Condition variables can relate to physical (e.g. temperature), chemical (e.g. pH), biological (e.g. planktonic abundance), or ecological (e.g. species diversity) characteristics of an area. Condition variables should be measurable within the defined extent for a given dataset. Ideally condition variables covering multiple different attributes should be gathered for each ecosystem type or other variable of interest.

In selecting a set of condition variables the socio-economic context should be considered in addition to the environmental context. In particular, the intent of the project or programme and the ecosystem types involved should inform the types of condition variables that should be measured. Where condition measures are being aggregated it is important to ensure they are done so in a tractable and meaningful manner.

Where appropriate for a given body of work, a set of mandatory monitoring indicators should be established. An example of this can be seen in the GFCR Results Framework. This constitutes a good practice approach to environmental monitoring that enables ongoing understanding of direct and indirect impacts on environmental systems that can be correlated with interventions.

### Ecosystem Services

Services related data encompasses the economic, social, and environmental benefits derived by people in the area of interest. These benefits refer not only to the consumption of resources in the form of physical and monetary flows but also to other benefits people may derive including cultural and social benefits. In the case of ocean environments relevant services include those provided by ecosystems (e.g. fish provisioning and recreation), abiotic physical services (e.g. transport and energy provisioning), and direct ocean use services (e.g. tourism and fishing).

The scope of services for which data is collected should be based on both the intent of the body of work in question and the context in which the work takes place. In marine ecosystems

it is common for carbon related services, fisheries services, tourism, recreational services, and vessel use to be included. Given this set of services, common variables to target for collection include vegetation type and coverage, quantities of carbon stocks, quantities of fish captured, tourism spend, number of people engaging in recreational activities, and vessel use data compiled by maritime authorities.

In the case of ecosystem services in particular it is pertinent to understand both the ecosystem types that provision a service and the users who ultimately benefit from that service. This helps to provide a structure within which data collection can take place, reduces the risk of double counting provided services, and enables further uses of the data such as in monetary valuation.

### Monetary Valuation

The monetary valuation of ecosystem services and ecosystem assets can be performed using a variety of different methods and is inherently challenging due to the lack of direct market prices for many environmental assets, leading to the need to apply non-market valuation techniques. In addition, monetary valuation must incorporate quantified values for stocks and flows of biophysical assets and result in values that are coherent and integrable with other economic calculations.

Where values are derived for monetary ecosystem services accounts, these can then be used to derive ecosystem monetary asset accounts. These value ecosystem assets in terms of the net present value of the ecosystem services that the asset supplies. In order to remain in alignment with the SEEA-EA asset values should be based on exchange values, which is the values at which services, goods, assets, and/or labour could be exchanged for cash.

Data on the stocks and flows of biophysical assets should be accounted for in line with the SEEA frameworks as described above. Data for valuation techniques can then be sought in a manner that is tailored to the specific context and the services involved. Some valuation methodologies that should be considered include revealed preference methods such as imputing values directly via market values or through behaviour; stated preference methods such as compiling surveys on willingness to pay and willingness to accept; and value transfer where results from other studies completed elsewhere are used to inform the valuation of a set of service flows.

When collecting data for valuation and calculating non-market values it is important to consider the relationship between the exchange values and the biophysical stock and flow data. For example, consider if stock or flow values are more appropriate, if total, average, or marginal exchange values would yield the best result, and if flows are expected to be constant over time or if a non-linear approach to valuation is required.

In the application of the value transfer approach to valuation in particular, it is important to consider the degree of similarity between the primary study and the current body of work. It is unlikely transferring estimates will be precise unless there is a high degree of similarity between the use cases. Finally, valuation may not always be appropriate and in many cases will need to be supplemented with data in biophysical terms. This will assist in oversight of

different value perspectives including intrinsic values, which may be inherently linked to project outcomes and relevant to decision makers.

### Species and Biodiversity

In the development of a set of ecosystem accounts it is often beneficial to include data on species and biodiversity. Biodiversity comprises the three levels of ecosystems, species, and genes. The definition of biodiversity employed in the SEEA is that of the Convention on Biological Diversity stating that biodiversity is "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems."

Species accounts can be compiled as a specific set of thematic accounts that complement ecosystem accounts. Data included in species accounts may be regional, national, or global in scale and may consider individual species or ecosystem types and/or group species in taxonomically or functionally relevant classifications. For example, aggregate data on marine invertebrates may be beneficial as a taxonomic grouping or aggregate data on habitat building corals may be beneficial to understanding a coral reef environment. The compilation of this data at an aggregate level should be undertaken where species level data collection would increase the burden on compilation of accounts materially without providing a sufficient level of return in terms of useability and the derivation of insights.

Species and biodiversity data should be collected in a manner that complements the existing dataset and set of accounts. This may be by supporting the compilation of ecosystem condition accounts, by providing input into ecosystem services measurement, or by enabling understanding of the measurement of the composition, structure, and function of relevant ecosystems.

Data collected in species accounts should enable measurement of changes in species status in terms of extinction risk as per IUCN guidelines, should incorporate species stocks (i.e. presence and abundance), and should detail information on the distribution of species. When collecting data to compile species accounts species to be included should be selected based on the use case. The SEEA-EA outlines four high level groups for species accounting: species of concern (e.g. threatened species); species important for ecosystem services; species of social or cultural significance; and species important for maintaining ecosystem condition.

### Environmental Pressures

Environmental pressures are human induced processes that alter ecosystem condition. The incorporation of data on environmental pressures into accounts generally takes place via the collection of data on stocks and residual flows as indications of environmental pressures that can be related to changes in ecosystem condition. These residuals are flows of materials and energy that are discarded, discharged, or emitted through processes of production, consumption, and accumulation.

Environmental pressure data can often be incorporated directly into ecosystem condition accounts as condition variables with changes reflected in the difference between values over the accounting period. For examples, air emissions can be reported under chemical state condition variables, sea level rise as a physical state condition variable, and introductions of invasive species as compositional state condition variables.

When collecting data on environmental pressures it is beneficial to look for relevant environmental stocks and include data on them in condition tables as changes in these stocks over time may reflect pressures. It is also beneficial to look at direct pressure indicators (e.g. greenhouse gas emissions) that do not directly reflect condition of ecosystem assets but do provide a broader measure of pressures on relevant local ecosystems.

### Environmental Management Activity

In order to obtain a full understanding of the environmental-economic situation in a given area data should also be collected on costs and activities associated with environmental protection, resource management, ecosystem restoration, and ecosystem remediation. Data should be collected such that activity data can be incorporated into physical environmental activity accounts and cost data can be incorporated into monetary environmental activity accounts.

Where this data is collected there is potential to link financial transactions to changes in ecosystem condition, species status, and other indicators at a larger scale. This has the potential to provide meaningful insights with tangible policy implications. Data should include costs of environmental service provisioning, compensation of employees, taxes and subsidies, fixed capital consumption, and other relevant items. In addition, data should be collected on the timing of expenditures and the users and producers of the relevant goods and services.

### Socio-economic Data

In order to evaluate the development impacts of a project socio-economic data including labour data, demographics, consumption, and measures of productivity and quality of life should supplement environmental data. Socio-economic data collected should be based on the context of the particular work underway and should be collected in a manner that is coherent with other national statistics and environmental statistics compiled in accordance with the SEEA.

A key area of focus in the collection of socio-economic data should be the boundaries of the data. Environmental assets and ecosystem types may cross administrative borders so environmental data may not be geographically or temporally aligned to collected socio-economic data. To account for this, information on administrative and institutional borders should be incorporated as part of extent accounting. Where necessary, allocation of data across borders can be used to enhance the coherence of accounts.

In developing impact indicators for socio-economic considerations it is important to ensure an appropriate baseline and counterfactual dataset is available. This is often difficult to obtain give the requirement for historical datasets. If it is not possible to collect the entire desired

dataset, then estimations or approximations of data may be possible if appropriate methodology is employed and disclosures on the underlying dataset are provided. Proxy measures may also be useful in such situations, however, the use of these measures in informing decision making should be completed in a transparent manner.

# 6. IMPLEMENTATION AND CAPACITY BUILDING

BPF programmes and projects, as environmentally-linked development projects, have a focus not just on delivering direct outcomes to partner countries but on building capacity within those countries so that progress can be made in a sustainable manner. The focus here is on the application of the SEEA as an internationally accepted statistical standard for environmental-economic accounting as its use enables the provisioning of coherent datasets which enable effective monitoring of progress in a reliable and comparable manner. This is critical to capacity building in that it provides a framework for data collection, the application of classifications, and the application of relevant techniques that is needed to enable consistency in measurement and evaluation of programme success.

In building capacity it is clear that there should be some focus on building the skills of individuals. This presents a relatively low cost means of building in-country capacity quickly and efficiently. However, focus on individual capacity building alone increases the key person risk of organisations and can result in the loss of knowledge and skills so may not be sustainable over the medium to long term. Thus, there should also be an additional focus on capacity building interventions that focus on building the performance of entire organisations.

The most direct method of building organisational capacity is through the hosting of workshops and training sessions. However, this alone is not sufficient and should be supplemented with the provisioning of materials, the creation of networks within and across countries and organisations, and the development of leadership skills specific to the area of focus. Each of these activities should assist in fostering a sense of ownership with respect to the work underway.

### User Needs and Milestone Establishment

The first step in capacity building for a given partner country should be to identify the overall needs and use cases that are relevant. This should be reflective of both current capacity and strategic priorities. Identification of these needs and use cases should be underpinned by collaboration with local partners to enhance in-country ownership of the capacity building program.

Following the initial needs and use cases assessment, milestones for capacity building should be established. These milestones should be reflective of both technical capacity building and functional capacity building and performance against them should be monitored on an ongoing basis. Technical capacity building includes, for example, sharing knowledge on data collection methodologies, the use of data, and modelling techniques. Functional capacity building should supplement this by improving partner countries capacity by demonstrating how to formulate and implement policies using the data; creating access to information; implementing knowledge sharing programs; and initiating and sustaining both formal and informal networks.

### Analysis of Barriers

Once needs, use cases, and capacity building milestones have been established the focus should shift to the identification and understanding of potential barriers to capacity building. This process should be completed as part of the initial capacity building exercise and should be supplemented with ongoing monitoring. It is beneficial to discuss potential barriers with in-country partners and to critically review historical attempts at capacity building in the region to assist in the identification of barriers. Types of barriers to consider include:

**Resource Barriers:** Fundamental to any capacity building process is consideration of resource barriers. This includes human capital required to support capacity building and the associated budgetary needs. When evaluating resource barriers it is pertinent to consider not just immediately available resources but how resource availability varies both temporally and spatially. For example, resources are likely to be more available at points in time where there is an impetus to use government funding so may be affected by financial year timings and election cycles and are more likely to be available in capital cities and other major metropolitan areas than they are in rural areas.

**Behavioural Barriers:** These are likely to be based largely around indifference towards potential outcomes and resistance to changes in existing processes and procedures. In the case of indifference to potential outcomes this is likely to be reflective of a lack of information on environmental and social benefits and what this means for individuals households and entities. Resistance to change tends to be a result of a fear of negative consequences or reflective of a negative historical precedent.

**Infrastructure and Equipment Barriers:** Where there are infrastructural and equipment requirements for capacity building this has the potential to lead to barriers. These barriers may relate to analytical facilities, data collection and processing equipment, or simply to access to computing resources and network connectivity.

**Governmental Barriers:** When working at the national or regional scale, it is common for the complexity of the policy and regulatory environment to provide a number of barriers to capacity building. These are often reflective of existing regulations that impede interactions or transfer of materials, lack of linkages between policies and regulations, opaqueness of regulatory bodies, and/or non-availability of appropriate accreditation standards for products and services.

**Market Barriers:** Small economies that are focussed on their domestic market tend to be insufficiently sized to receive the benefits of returns to scale in newly created sectors. This tends to result in a dependency on import of goods and, in some cases, in the development of informal services sectors. These factors can reduce the incentive to build capacity as the implicit cost of time spent on capacity building may not be greater than returns that can be achieved elsewhere in the short to medium term.

When completing the analysis of barriers, potential actions to overcome these barriers should be considered and documented. These actions should be tailored to the specific circumstances but are likely to include support on data related work and implementation of governance

structures. Production of a set of ocean governance accounts in line with the Ocean Accounts Framework would be beneficial in these circumstances to provide clarity and oversight.

Where there is a view that capacity building on environmental and development projects would not yield returns that would make it worthwhile, the application of environmental-economic accounting and the development of monetary ecosystem services accounts and monetary asset accounts can help in the communication of potential benefits. Where it is not possible to overcome barriers otherwise, financial guarantees and other financial support may be beneficial to ensuring the effectiveness of the capacity building program.

### Ocean Account Development Planning

As per the Detailed Technical Guidance on Ocean Accounting, the first step in the development of a set of ocean accounts is to understand priorities and plan accounts for development. To assist in this process the diagnostic components in Table 6 below can be used to identify practical steps that should be taken. Note that this has been designed for use in a workshop setting and should be completed in collaboration with in-country stakeholders. The intent is to build upon the initial user needs assessment and barrier analysis to provide a more structured understanding of partner requirements and enable the development of a set of pilot ocean accounts.

**Table 6:** Process for identifying priority topics and policy concerns as part of ocean accounts projects.

| Component | Practical Actions |
|---|---|
| **Statement of Strategy and Policy Priorities** | • Document national visions and priorities related to the environment, sustainable development, and green economy, including managing natural assets and flows of services.<br>• Link priorities to the BPF themes of biodiversity, climate change, marine pollution, and seafood. |
| **Institutions** | • Identify stakeholders including producers and users of related information (government agencies, academia, NGOs, international agencies) and other groups such as civil society that can benefit from improved information.<br>• Identify relevant institutional mechanisms currently in place.<br>• Review the role of the National Statistical Office to highlight the advantages of integrating information and approaches across the National Statistical System. |
| **Knowledge** | • Identify key national data sources that can be used as a basis for further development. |
| **Progress** | • Understand what progress has already been made in developing environment statistics and accounts. |
| **Context** | • Identify related statistical development activities that could benefit (and benefit from) environment statistics initiatives. |
| **Priorities** | • Determine the priorities for the action to develop selected environment statistics. |
| **Constraints and Opportunities** | • Assess constraints to implementing specific environment statistics and opportunities for immediate actions to address these constraints. |

*Source: Adapted from Technical Guidance on Ocean Accounting for Sustainable Development (GOAP, 2022).*

After going through the user needs assessment, barrier analysis, and account development planning diagnostic it should be possible to commence the process of scoping an ocean account pilot project. For a comprehensive overview of the process by which ocean accounts should be compiled refer to the Detailed Technical Guidance on Ocean Accounting. At a high level next steps would involve:

1. Developing a spatial database
2. Assessing extent and condition of ocean assets
3. Assessing supply and use of ocean services/inputs to the economy
4. Assessing the pollutants
5. Assessing the ocean economy
6. Assessing ocean governance
7. Compiling summary indicators

In order to support the implementation of these next steps, the following guidance documents should also be referred to:

**UNEP-WCMC/GOAP:** Global Ocean Asset Data Guide – A guide for the use of global ocean asset data in ocean accounting

**WRI Indonesia:** Ecosystem Services Factors Report

**GOAP:** A Guide to Creating Core Ocean GDP Accounts

### Capacity Building for Data Collection

When seeking to build in-country capacity pertaining to data collection it is important that the user needs assessment and analysis of barriers are used to inform the process. The focus should be on enabling the identification of necessary data sources, the collection methodologies that should be used, and the frequency with which data should be collected. The key data requirements outlined in Table 5 above should be considered throughout the process.

In order to identify necessary data sources it is useful to consider the specific themes or policy areas of interest and how they relate to particular account types as demonstrated in Table 2 above. Once relevant account types for a given body of work have been identified, this will inform the types of data to be collected. Consulting the SEEA frameworks and the Ocean Accounts Framework will assist in this process (see especially SEEA-EA Chapter 13.5 – Accounting for the ocean) and outline requirements around data classifications and account structure. Where possible, it is beneficial to provide decision making tools and process templates for data collection that will help to guide users. It is recommended that these materials are tailored to the specific in-country partners based on the user needs assessment and barrier analysis completed.

### Capacity Building for Indicator Selection

The types of indicators selected will be related to the specific use case and the available datasets. In order to build capacity relating to indicator selection it is important to transfer knowledge around the relation of specific policy themes to account types in a manner that enables strategic decisions to be made regarding appropriate variables for measurement. Table 2 above can assist in understanding these relationships.

The focus should always be on establishing a set of indicators that covers impacts, outcomes, and outputs. In addition, there should be an understanding of the difference between environmental, social, and economic indicators and how they can all be incorporated into a coherent set of indicators that are comparable. The application of the SEEA and the SNA as statistical frameworks will provide the structure in which this can be done so sharing knowledge of where to find relevant resources and how to use them is critical.

In addition, a focus of capacity building, as it relates to indicator selection and also more generally, should be on building the fundamental knowledge base that underpins environmental-economic accounting and environmental measurement more broadly. This includes knowledge sharing on topics such as ecology, ecosystem processes, climate change, and environmental chemistry. By building out this knowledge base in the relevant areas it should become possible for organisations to both identify relevant indicators across environmental, social, and economic themes and to identify indicators that represent the flow of goods and services across these themes.

Refer to the Ocean Accounts Framework in Figure 3 above for a conceptual framework for natural capital that can be used to inform this process. In addition, refer to 'Chapter 14 – Indicators and combined presentations' of the SEEA-EA for further guidance on indicator selection and the Appendix for a set of example variables and indicators from ocean accounts.

## 8. NEXT STEPS

Given the current status of monitoring and reporting on BPF projects and programmes the next steps over the short to medium term should be focussed on ensuring the primary data, reporting, monitoring, and evaluation needs are addressed. It is beneficial to frame overarching next steps around the three primary needs areas identified in Section 1 above, namely:

> **Informing Project Scoping and Baselining:** There should be focus placed on the collection of data that will enable meaningful baselining of metrics to be undertaken. This is particularly important in the case of impact related indicators where it is difficult to assess environmental, economic, or social impact without an understanding of current trends and historical data. Each of the bodies of work should identify gaps in their data environment that are inhibiting the development of appropriate baselines to enable reporting. For example, during consultation with stakeholders from the ORRAA project they identified that impact indicator 'GRP3 – People More Resilient' has been difficult to implement due to a lack of the historical data needed.
>
> **Monitoring Performance:** Indicators used across the BPF programmes and projects are currently managed on a case by case basis. Whilst this is appropriate given the diverse range of activities involved, without an underpinning set of standards on data collection and use this leads to issues around comparability and consistency in reporting. By implementing the use of the SEEA and the SNA as statistical frameworks for the collection and management of data the development of more reliable indicators will become possible. Next steps should be focussed on capacity building as it relates to the SEEA and utilising the Ocean Accounts Framework as described in Section 6 above. In addition, transparency around the construction of indicators should be improved at the level of the BPF so a greater degree of oversight can be achieved.
>
> **Making a Case for Financial Investment:** Identification of the link between current reporting practices and reporting requirements for financial investment should be an immediate focus in all relevant areas. This should include consideration of requirements around disclosures for participation in financial and environmental markets so that where beneficial indicators can be developed that would enable participation in these markets.

In order to address these primary needs areas, some immediate steps that could be taken to implement a set of requirements for best practice standardised and comparable reporting across BPF projects include:

- Compiling a database of all currently used indicators across BPF projects and programmes and supplementing this with a wish list of indicators to be included in the future. This will enable a reporting strategy to be developed that can be used to inform data collection and capacity building initiatives.
- Scheduling a deep dive review of one of the BPF programmes to develop a set of detailed requirements and come up with detailed practical outputs for implementation. The results of this deep dive review can then be used to inform work on the other

programmes and projects and prioritise where further reviews may be beneficial. Alternatively, a review focussed on one of the BPF cross-cutting themes could be undertaken instead.

- Identifying some core partners for capacity building and implementing a structured capacity building programme for a selected project. Learnings from this programme can then be used to inform future capacity building initiatives.
- Developing a set of BPF reporting requirements that outline the data, classification, and methodological techniques that should be used in line with the Ocean Accounts Framework for reporting purposes. These reporting requirements should also detail timelines for reporting and minimum requirements on the scope of the indicators to be reported. Additionally, they should provide direct guidance on the process of deriving indicators from accounts.
- Implementing a practical data collection framework that is based on the principles included in the SEEA and outlines the importance of a shift to ongoing data collection as opposed to ad-hoc collection schedules.

Whilst there is a clear need for tailoring of reporting to the project and programme level, the use of statistical standards and the compilation of data in the form of accounts to underpin this reporting would have significant tangible benefits in ensuring the BPF can monitor progress against its targets. A focus on upskilling within DEFRA and with key delivery partners is fundamental to ensuring best practice standardised and comparable reporting can be implemented across BPF projects.

## GLOSSARY

The terms below are defined as per the SEEA-CF, SEEA-EA, and SNA. A more comprehensive glossary of relevant terms can be found in the source documents.

**Asset:** A store of value representing a benefit or series of benefits accruing to an economic owner by holding or using the entity over a period of time. It is a means of carrying forward value from one accounting period to another.

**Asset life (also known as the resource life):** The expected time over which an asset can be used in production or the expected time over which extraction from a natural resource can take place.

**Benefits:** The goods and services that are ultimately used and enjoyed by people and society.

**Biodiversity:** The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. (Convention on Biological Diversity, article 2, entitled "Use of Terms").

**Compensation of employees:** The total remuneration, in cash or in kind, payable by an enterprise to an employee in return for work done by the latter during the accounting period.

**Consumption:** The use of goods and services for the satisfaction of individual or collective human needs or wants.

**Discount rate:** A rate of interest used to adjust the value of a stream of future flows of revenue, costs, or income to account for time preferences and attitudes to risk.

**Economic benefits:** These reflect a gain or positive utility arising from economic production, consumption, or accumulation.

**Ecosystem:** A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit. (Convention on Biological Diversity, article 2, entitled "Use of terms").

**Ecosystem assets (EAs):** Contiguous spaces of a specific ecosystem type characterized by a distinct set of biotic and abiotic components and their interactions.

**Ecosystem condition:** The quality of an ecosystem measured in terms of its abiotic and biotic characteristics.

**Ecosystem condition variables:** Quantitative metrics describing individual characteristics of an ecosystem asset.

**Ecosystem extent**: The size of an ecosystem asset.

**Ecosystem services:** The contributions of ecosystems to the benefits that are used in economic and other human activity.

**Ecosystem type (ET):** These reflect a distinct set of abiotic and biotic components and their interactions.

**Emissions:** Substances released to the environment by establishments and households as a result of production, consumption, and accumulation processes.

**Emissions to air:** Gaseous and particulate substances released to the atmosphere by establishments and households as a result of production, consumption, and accumulation processes.

**Emissions to soil:** Substances released to the soil by establishments and households as a result of production, consumption, and accumulation processes.

**Emissions to water:** Substances released to water resources by establishments and households as a result of production, consumption, and accumulation processes.

**Energy products** are products that are used (or might be used) as a source of energy. They comprise (a) fuels that are produced/generated by an economic unit (including households) and are used (or might be used) as sources of energy; (b) electricity that is generated by an economic unit (including households); and (c) heat that is generated and sold to third parties by an economic unit.

**Environmental assets:** The naturally occurring living and non-living components of the Earth, together constituting the biophysical environment, which may provide benefits to humanity.

**Environmental pressure:** Human induced processes that alter the condition of ecosystems.

**Environmental protection activities:** Those activities whose primary purpose is the prevention, reduction and elimination of pollution and other forms of degradation of the environment.

**Environmental protection specific services:** Environmental protection services produced by economic units for sale or own use.

**Exchange values:** The values at which goods, services, labour, or assets are in fact exchanged or else could be exchanged for cash.

**Exclusive economic zone (EEZ):** The EEZ of a country is the area extending up to 200 nautical miles from a country's normal baselines as defined in the United Nations Convention on the Law of the Sea of 10 December 1982.

**Exports of goods and services:** These consist of sales, barter, or gifts and grants, of goods and services from residents to non-residents.

**Extractions:** Reductions in stock due to the physical removal or harvest of an environmental asset through a process of production.

**Final ecosystem services:** Those ecosystem services in which the user of the service is an economic unit – i.e., business, government, or household.

**Financial assets:** These consist of all financial claims, shares, or other equity in corporations plus gold bullion held by monetary authorities as a reserve asset.

**Financial corporations:** These consist of all resident corporations that are principally engaged in providing financial services, including insurance and pension funding services, to other institutional units.

**Gross domestic product (GDP):** GDP is an aggregate measure of gross value added for all resident institutional units. It can be measured in three conceptually equivalent ways:

> (*a*) Income measure of GDP. The income measure of gross domestic product (GDP) is derived as compensation of employees plus gross operating surplus plus gross mixed incomes plus taxes less subsidies on both production and imports;
>
> (*b*) Expenditure measure of GDP. The expenditure measure of gross domestic product (GDP) is derived as the sum of expenditure on final consumption plus gross capital formation plus exports less imports;
>
> (*c*) Production measure of GDP. The production measure of gross domestic product (GDP) is derived as the value of output less intermediate consumption plus any taxes less subsidies on products not already included in the value of output.

**Gross value added:** The value of output less the value of intermediate consumption.

**Household:** A group of persons who share the same living accommodation, who pool some, or all, of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food.

**IUCN Global Ecosystem Typology (IUCN GET):** A global typological framework that applies an ecosystem process-based approach to ecosystem classification for all ecosystems around the world. The SEEA ecosystem type reference classification reflects the IUCN GET.

**Landscapes (including those involving freshwater):** These are defined for accounting purposes as groups of contiguous, interconnected ecosystem assets representing a range of different ecosystem types.

**Land use:** This reflects both (a) the activities undertaken and (b) the institutional arrangements put in place for a given area for the purposes of economic production, or the maintenance and restoration of environmental functions.

**Market prices:** These are defined as amounts of money that willing buyers pay to acquire something from willing sellers.

**Mineral and energy resources:** These comprise known deposits of oil resources, natural gas resources, coal and peat resources, non-metallic minerals, and metallic minerals.

**Natural ecosystems:** These are ecosystems predominantly influenced by natural ecological processes characterised by a stable ecological state maintaining ecosystem integrity; ecosystem condition ranges within its natural variability.

**Natural inputs:** All physical inputs that are moved from their location in the environment as part of economic production processes or are directly used in production.

**Natural resources:** These include all natural biological resources (including timber and aquatic resources), mineral and energy resources, soil resources and water resources.

**Natural resource residuals:** Natural resource inputs that do not subsequently become incorporated into production processes and, instead, immediately return to the environment.

**Net present value (NPV):** The value of an asset determined by estimating the stream of income expected to be earned in the future and then discounting the future income back to the present accounting period.

**Non-use values:** Values that people assign to ecosystems irrespective of whether they use or intend to use the ecosystems.

**Output:** The goods and services produced by an establishment, excluding the value of any goods and services used in an activity for which the establishment does not assume the risk of using the products in production, and excluding the value of goods and services consumed by the same establishment except for goods and services used for capital formation (fixed capital or changes in inventories) or own final consumption.

**Physical flows:** These are reflected in the movement and use of materials, water, and energy.

**Products:** Goods and services (including knowledge-capturing products) that result from a process of production.

**Production:** An activity, carried out under the responsibility, control and management of an institutional unit, that uses inputs of labour, capital, and goods and services to produce outputs of goods and services.

**Provisioning services:** Those ecosystem services representing the contributions to benefits that are extracted or harvested from ecosystems.

**Regulating and maintenance services:** Those ecosystem services resulting from the ability of ecosystems to regulate biological processes and to influence climate, hydrological and biochemical cycles, and thereby maintain environmental conditions beneficial to individuals and society.

**Residuals:** Flows of solid, liquid, and gaseous materials, and energy that are discarded, discharged, or emitted by establishments and households through processes of production, consumption, or accumulation.

**Resource management activities:** Activities whose primary purpose is preserving and maintaining the stock of natural resources and hence safeguarding against depletion.

**Seascapes (including those involving freshwater):** These are defined for accounting purposes as groups of contiguous, interconnected ecosystem assets representing a range of different ecosystem types.

**Supply and use tables:** Accounting tables structured to record flows of final ecosystem services between economic units and ecosystems and flows of intermediate services among ecosystems. Entries can be made in physical and monetary terms.

**Taxes:** Compulsory, unrequited payments, in cash or in kind, made by institutional units to government units.

**Transaction:** An economic flow that is an interaction between institutional units by mutual agreement or an action within an institutional unit that it is analytically useful to treat like a transaction, often because the unit is operating in two different capacities.

**Transfer:** A transaction in which one institutional unit provides a good, service or asset to another unit without receiving from the latter any good, service or asset in return as a direct counterpart.

**Use values:** Values arising where the benefit to people is revealed through their direct, personal interaction with the environment or through indirect use.

**Value transfers:** These comprise a set of techniques that utilize data from specific locations to estimate monetary values in other locations (they are also known as benefit transfers).

**Water resources:** These consist of fresh and brackish water in inland water bodies, including groundwater and soil water.

**Waste:** Discarded materials that are no longer required by the owner or user.

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## APPENDIX: VARIABLES AND INDICATORS FROM OCEAN ACCOUNTS

See here a listing of indicators that can be derived from ocean accounts taken from Annex 13.3 of the SEEA-EA.

| | Ocean-related biomes | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | SM1 Subterranean tidal biome | FM1 Transitional waters biome (Freshwater Marine) | M1 Marine shelf biome | M2 Pelagic ocean waters biome | M3 Deep sea floors biome | M4 Anthropogenic marine biome | MT1 Shorelines biome | MT2 Supralittoral coastal biome | MT3 Anthropogenic shorelines biome | MFT1 Brackish tidal biome | Total |
| **Physical ocean assets** | | | | | | | | | | | |
| *Ecosystem assets* | | | | | | | | | | | |
| Area (ha) | | | | | | | | | | | |
| Change in area from previous accounting period (%) | | | | | | | | | | | |
| *Individual environmental assets* | | | | | | | | | | | |
| Minerals (tonnes) | | | | | | | | | | | |
| Energy (PJ) | | | | | | | | | | | |
| Fish (tonnes) | | | | | | | | | | | |
| Timber (e.g., mangrove) ($m^3$) | | | | | | | | | | | |
| Other flora available for harvesting (e.g., seaweed) (tonnes dry weight) | | | | | | | | | | | |
| **Monetary ocean assets (NPV of expected flow of services) (currency units)** | | | | | | | | | | | |
| *Ecosystem assets* | | | | | | | | | | | |
| Value (currency units) | | | | | | | | | | | |
| Change in value from previous accounting period (%) | | | | | | | | | | | |
| *Individual environmental assets* | | | | | | | | | | | |
| Minerals | | | | | | | | | | | |
| Energy | | | | | | | | | | | |

| | Ocean-related biomes | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | SM1 Subterranean tidal biome | FM1 Transitional waters biome (Freshwater Marine) | M1 Marine shelf biome | M2 Pelagic ocean waters biome | M3 Deep sea floors biome | M4 Anthropogenic marine biome | MT1 Shorelines biome | MT2 Supralittoral coastal biome | MT3 Anthropogenic shorelines biome | MFT1 Brackish tidal biome | Total |
| Fish | | | | | | | | | | | |
| Timber (e.g., mangrove) | | | | | | | | | | | |
| Other flora available for harvesting (e.g., seaweed) | | | | | | | | | | | |
| **Condition of ocean assets** [Note a] | | | | | | | | | | | |
| *For marine and coastal ecosystems* | | | | | | | | | | | |
| Acidification (pH) | | | | | | | | | | | |
| Eutrophication (BOD, COD, Chlorophyll-A concentrations) | | | | | | | | | | | |
| Temperature (°C) | | | | | | | | | | | |
| Plastics density (g/m$^3$) | | | | | | | | | | | |
| Biodiversity (Shannon index) | | | | | | | | | | | |
| Health (index) | | | | | | | | | | | |
| *For individual environmental assets* | | | | | | | | | | | |
| Minerals (quality, accessibility) | | | | | | | | | | | |
| Energy (quality, accessibility) | | | | | | | | | | | |
| Fish (quality in terms of size, age, health) | | | | | | | | | | | |
| Timber (e.g., mangrove) (quality, accessibility) | | | | | | | | | | | |
| Other flora available for harvesting (e.g., seaweed) (quality, health) | | | | | | | | | | | |
| **Physical ocean services** | | | | | | | | | | | |
| *Ocean ecosystem services* | | | | | | | | | | | |
| As in SEEA-EA services list (specific units) | | | | | | | | | | | |

| | Ocean-related biomes | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | SM1 Subterranean tidal biome | FM1 Transitional waters biome (Freshwater Marine) | M1 Marine shelf biome | M2 Pelagic ocean waters biome | M3 Deep sea floors biome | M4 Anthropogenic marine biome | MT1 Shorelines biome | MT2 Supralittoral coastal biome | MT3 Anthropogenic shorelines biome | MFT1 Brackish tidal biome | Total |
| *Other ocean services (examples)* | | | | | | | | | | | |
| Seawater for cooling ($m^3$) | | | | | | | | | | | |
| Sand (tonnes) | | | | | | | | | | | |
| Petroleum (megalitres, PJ) | | | | | | | | | | | |
| **Monetary ocean services** | | | | | | | | | | | |
| *Ocean ecosystem services* | | | | | | | | | | | |
| As in SEEA-EA services list (appropriate valuation techniques) | | | | | | | | | | | |
| *Other ocean services (examples)* | | | | | | | | | | | |
| Seawater for cooling (market or equivalent value) | | | | | | | | | | | |
| Sand (market or equivalent value) | | | | | | | | | | | |
| Petroleum (market or equivalent value) | | | | | | | | | | | |
| **Pressures (Flows to the environment)** [Note b] | | | | | | | | | | | |
| *Water emissions flows to the ocean* | | | | | | | | | | | |
| BOD/COD (tonnes) | | | | | | | | | | | |
| Suspended solids (tonnes) | | | | | | | | | | | |
| Bilge ($m^3$) | | | | | | | | | | | |
| Heavy metals (tonnes) | | | | | | | | | | | |
| *Solid waste flows to the ocean* | | | | | | | | | | | |
| Chemical and health care waste (tonnes) | | | | | | | | | | | |
| Metallic waste (tonnes) | | | | | | | | | | | |

| | Ocean-related biomes | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | SM1 Subterranean tidal biome | FM1 Transitional waters biome (Freshwater Marine) | M1 Marine shelf biome | M2 Pelagic ocean waters biome | M3 Deep sea floors biome | M4 Anthropogenic marine biome | MT1 Shorelines biome | MT2 Supralittoral coastal biome | MT3 Anthropogenic shorelines biome | MFT1 Brackish tidal biome | Total |
| Mineral waste and soil (tonnes) | | | | | | | | | | | |
| Mixed residential and commercial waste (tonnes) | | | | | | | | | | | |
| Plastics (tonnes) | | | | | | | | | | | |
| Radioactive waste (tonnes) | | | | | | | | | | | |
| Other waste (tonnes) | | | | | | | | | | | |
| *Wastewater flows to the ocean ($m^3$)* | | | | | | | | | | | |
| *Air emissions flows to the ocean (examples) [Note c]* | | | | | | | | | | | |
| $CO_2$ (tonnes) | | | | | | | | | | | |
| Methane (tonnes) | | | | | | | | | | | |
| **Ocean economy** | | | | | | | | | | | |
| *Contribution of ocean sectors to the national economy (GVA, %GDP) [Note d]* | | | | | | | | | | | |
| By sector (fishing/aquaculture, offshore oil and gas, boat and ship building, etc.) | | | | | | | | | | | |
| *Contribution of ocean sectors to the national employment (FTE, %)* | | | | | | | | | | | |
| By sector (fishing/aquaculture, offshore oil and gas, boat and ship building, etc.) | | | | | | | | | | | |
| **Ocean governance** | | | | | | | | | | | |
| *Zoning* | | | | | | | | | | | |
| Jurisdictional zone: internal waters, territorial sea, EEZ (area) | | | | | | | | | | | |

| | Ocean-related biomes | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | SM1 Subterranean tidal biome | FM1 Transitional waters biome (Freshwater Marine) | M1 Marine shelf biome | M2 Pelagic ocean waters biome | M3 Deep sea floors biome | M4 Anthropogenic marine biome | MT1 Shorelines biome | MT2 Supralittoral coastal biome | MT3 Anthropogenic shorelines biome | MFT1 Brackish tidal biome | Total |
| Management or planning zone: protected area, private property, use designation (area) [Note e] | | | | | | | | | | | |
| *Rules and decision-making institutions* | | | | | | | | | | | |
| By activity: fishing, wind farm development, marine spatial planning (institution) | | | | | | | | | | | |
| *Social circumstances of resident populations (examples) [Note f]* | | | | | | | | | | | |
| Health (index), economic equity (GINI), poverty (% below low income) | | | | | | | | | | | |
| *Risk and resilience (examples)* | | | | | | | | | | | |
| Flood/storm surge, sea level rise, coastal storm risk (vulnerability, occurrence) | | | | | | | | | | | |
| Resilience: disaster plan in place, adequate supplies and facilities (yes/no) | | | | | | | | | | | |
| *Environmental protection expenditures ($)* | | | | | | | | | | | |
| *Value of environmental goods and services sector ($, see Ocean Economy) [Note g]* | | | | | | | | | | | |
| *Environmental taxes less subsidies ($)* | | | | | | | | | | | |