



Promotion and Strengthening of Sustainable Ocean-based Economies

## PROMOTION AND STRENGTHENING OF SUSTAINABLE OCEAN-BASED ECONOMIES

## SUSTAINABLE DEVELOPMENT GOAL 14



### NOTE

This report was prepared by Dr. Marjo Kristina Vierros, Director, Coastal Policies and Humanities Research and Consultant for the United Nations Department of Economic and Social Affairs Division for Sustainable Development Goals. The production of this report was made possible by a generous grant from the Government of Sweden to the Department. The views expressed in this report are those of the author and do not necessarily reflect those of the United Nations.

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## Foreword

Sustainable ocean-based economies have been at the forefront of many countries' strategies to implement Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development. Sometimes also called "blue economies", sustainable ocean-based economies present countries with the challenge of harnessing the economic potential of the ocean, often through multiple economic sectors, while at the same time ensuring environmental sustainability and providing for social equity.

At its best, a sustainable ocean-based economy will boost innovation, provide economic opportunities for everyone, including the vulnerable and marginalized, and ensure that priority habitats and species are conserved through marine protected areas or other appropriate means. Implemented with those considerations in mind, a sustainable ocean-based economy can help countries make progress towards all other Sustainable Development Goals. However, we need to ensure that ocean-based economies are developed in such a way that all three pillars of sustainability are actively incorporated, so that economic progress does not come at the expense of environmental degradation or inequitable growth.

This report shows that while many countries are making progress towards sustainable ocean-based economies, we still have a lot to learn. We don't yet have a common understanding, let alone a definition, of what a sustainable ocean-based economy means. We must work together to better comprehend what conditions and safeguards make ocean-based economies sustainable, share case studies and lessons learned, and develop guidance that can help us move better from concept to practice. Work towards that end is already under way, and international events such as the Sustainable Blue Economy Conference in Nairobi in 2018 – the first global conference on that topic – elicit much needed dialogue around both the concept and the practice of a sustainable ocean-based economy.

While many countries strive to advance innovation in their ocean economies, including in new sectors such as marine biotechnology and ocean energy, financing such endeavours is still difficult. That is particularly true given the impact of the COVID-19 pandemic on ocean finance. Yet, innovation and technological improvement, as well as advancement in science and scientific capacity lie at the heart of our ability to achieve the Goals. Thus, we must also innovate with regard to how we finance the development of our sustainable ocean-based economies and the science and technology that underpin them. The present report provides examples of successful and innovative financing that could be further explored.

As we move towards the second United Nations Ocean Conference in 2022, we must ensure that the development of sustainable ocean-based economies is fully consistent with the spirit of Agenda 2030 and its underlying

principle of leaving no one behind. Leadership from the United Nations and its Member States is of critical importance to provide for further dialogue and guidance on the way forward, so that the development of ocean economies goes beyond business as usual, and is undertaken based on sound scientific knowledge, good governance and technological innovation that support both environmental health and human well-being.

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## **Executive summary**

Interest in the economic potential of the ocean is escalating, with the contribution of the ocean to the global economy projected to double from \$1.5 trillion in 2010 to \$3 trillion by 2030. The ocean is seen as the next great economic frontier, with numerous ocean-based industries growing by many orders of magnitude in the recent past and near future.

The blue economy, or a sustainable ocean-based economy, has come to signify international interest in the growth of ocean-based economic development in a manner that is both environmentally sustainable and socially equitable. However, the meaning of those terms, and the manner in which they are applied, are still open to interpretation. There is concern that without the elaboration of specific principles or guidance, national blue economies, or sustainable ocean economies, are likely to focus on the pursuance of economic growth, with little attention paid to environmental sustainability and social equity.

Those concerns coincide with growing national interest in the development of blue economies, as demonstrated by the voluntary commitments announced in the lead-up to the 2017 United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development, and the growing number of publications and conferences focusing on that theme. Grenada, Kenya, Mauritius, Norway, Seychelles and South Africa were just a few of the countries that indicated that they were building their blue economies. At the regional level, the European Union, Mediterranean countries and several countries around the Mozambique Channel in Africa are exploring regional tools and policies for building a blue economy.

While a common definition is lacking, recent reports have emphasized that the blue economy aims to move beyond business as usual to consider economic development and ocean health as compatible propositions. The blue economy is understood as comprising the range of economic sectors and related policies that together determine whether the use of oceanic resources is sustainable. Some early principles highlighting those components of the blue economy have been developed by the International Union for Conservation of Nature and the World Wide Fund for Nature.

Many of the efforts to further grow ocean-based economic sectors focus not only on growing existing sectors such as fisheries, maritime tourism and shipping, but also on developing newer sectors such as renewable ocean energy, blue carbon sequestration, marine biotechnology and extractive activities, with due attention paid to the environmental impacts, including cumulative impacts, and carbon emissions of these activities.

Pursuing a blue economy requires access to affordable long-term financing at scale, yet such finance is often difficult to come by, and shifting priorities relating to the coronavirus disease (COVID-19) pandemic have made it even more difficult. As a result, there are declining flows of financing for ocean conservation, management, and economic development. In addition, many developing countries have unsustainable levels of external debt that further act as a barrier for transitioning to a blue economy. Not surprisingly, financing is often cited as a major challenge to countries' blue economy ambitions. The present report highlights some existing solutions to ocean financing, including principles developed for financing sustainable blue economies.

Other challenges include capacity and technology, and enabling conditions, including issues related to stakeholder engagement. Social equity is often seen as the forgotten dimension of blue economy transitions, and there is concern that, in the competitive ocean space, the interests of those most dependent and vulnerable (e.g., small-scale artisanal fishers) are often marginalized, mostly for the benefit of other, more visible sectors, such as tourism, which are viewed as bringing greater economic benefits.

By its nature, building a blue economy is a multisectoral activity that relies on interdisciplinary ocean science and is based on inclusive governance processes. On the national level, it will require convening diverse groups of experts and stakeholders to tackle challenges associated with the emerging blue economy. In order to ensure that governance processes are inclusive, the participation of non-governmental organizations, civil society, including small-scale fishers organizations and indigenous peoples and local communities is particularly important. The participation of the private sector is also vital owing to the technological innovations that are required to make the activities of sectors more sustainable.

Many of the challenges of a sustainable ocean-based economy can be addressed through governance that integrates sustainable human uses with environmental conservation and social equity. Marine spatial planning has shown promise as a framework that can start delivering on most of those objectives. Comprehensive and integrated marine spatial planning, which provides for the meaningful and collaborative participation of all stakeholders and ocean sectors, is also important to ensure that conflicts between sectors are avoided, and that environmental conservation and social sustainability values are not compromised.

The present report examines recent developments in sustainable oceanbased economies, including definitions, developments at the national, regional and global levels, challenges to blue economy implementation, and some of the lessons that have been learned from early examples implemented around the world.

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## 1. Introduction

Interest in the economic potential of the ocean is escalating, with the contribution of the ocean to the global economy projected to double from \$1.5 trillion in 2010 to \$3 trillion by 2030.1 The ocean is seen as the next great economic frontier, with numerous ocean-based industries growing by many orders of magnitude in the recent past and near future. Offshore wind, offshore aquaculture, seabed mining and marine genetic biotechnology were practically non-existent 20 years ago and are now growing into prominence as the relevant technology becomes available. Industries, which are already established, such as seaborne trade and tourism, have the potential to grow 3 to 4 per cent annually over the coming decades.<sup>2</sup>

At the same time, concerns for the decline in ocean health, including in the state of its ecosystems, species and genetic diversity, are escalating owing to multiple human impacts.<sup>3,4</sup> As a result, governments planning on sustainable development of the ocean and its resources must also consider the long-term health of ocean ecosystems if the benefits from oceanbased industries and the growth of those benefits, are to be sustained over long periods.

While concerns for the health of the ocean continue to grow, a less discussed issue is that of equity in the access to, and use of, ocean resources. The recent Blue Paper on Ocean Equity by the High-Level Panel for a Sustainable Ocean Economy<sup>5</sup> stated that discussions on environmental sustainability have largely overshadowed concerns about social equity. Addressing inequalities and preventing the widening of ocean inequities are integral to a sustainable ocean economy; and promoting equity is essential for securing fair development, the legitimacy of policies, social stability and sustainability.

The blue economy, or a sustainable oceanbased economy, has come to signify international interest in the growth of ocean-based economic development in a manner that is both environmentally sustainable and socially equitable. However, the meaning of these terms, and the manner in which they are applied, are still open to interpretation. There is concern that without the elaboration of specific principles or guidance, national blue economies, or sustainable ocean economies, are likely to focus on the pursuance of economic growth, with little attention paid to environmental sustainability and social equity.<sup>6</sup>

Those concerns coincide with growing national interest in the development of blue economies, as demonstrated by the voluntary commitments registered at the 2017 United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development (Ocean Conference), and the growing number of publications and conferences focusing on this theme. Grenada, Kenya, Mauritius, Norway, Seychelles and South Africa were just a few of the countries that indicated that they were building their blue economies. At the regional

<sup>&</sup>lt;sup>1</sup> Organization for Economic Cooperation and Development, *The Ocean Economy in 2030* (Paris, 2016).

<sup>&</sup>lt;sup>2</sup> Ibid.

<sup>&</sup>lt;sup>3</sup> K.L. Nash and others, "Planetary boundaries for a blue planet", *Nature Ecology and Evolution* 1 (2017), pp. 1625–1634.

<sup>&</sup>lt;sup>4</sup> B.S. Halpern and others, "Spatial and temporal changes in cumulative human impacts on the world's ocean", *Nature Communications* 6, 7615 (2015).

<sup>&</sup>lt;sup>5</sup> H. Österblom and others. *Towards Ocean Equity* (Washington, D.C.: World Resources Institute, 2016). Available at www.oceanpanel.org/how-distribute-benefits-ocean-equitably.

<sup>&</sup>lt;sup>6</sup> N.J. Bennett and others, "Towards a sustainable and equitable blue economy", Nature Sustainability 2 (2019), pp. 991–993.

level, the Mediterranean countries are exploring tools and policies for building a blue economy. Figure 1 demonstrates that most entities registering voluntary commitments that reference the terms "blue economy", "blue growth" or "ocean economy" are national governments.

Many of those efforts to further grow oceanbased economic sectors focus not only on growing existing sectors such as fisheries, aquaculture, tourism or maritime transport, but also on developing new sectors such as renewable ocean energy, blue carbon sequestration, marine biotechnology and sustainable extractive activities. There is a need to fully understand and mitigate the environmental and social impacts of all sectors, including cumulative impacts and contribution to carbon emissions.

While many of the sectors that are part of national sustainable ocean economies are not new, the current trend indicates a more holistic consideration of multiple sectoral activities through planned blue economy transitions, and through the use of cross-sectoral ocean governance mechanisms, such as marine spatial planning. In that way, competing ocean uses can be managed and undertaken in a framework that also provides for conservation and sustainable use, including through integration of area-based conservation tools such as marine protected areas. Providing for equity requires a focus on human rights and well-being, as well as inclusive participatory processes in national marine protected area efforts. A solid scientific base, including natural and social sciences, as well as applicable traditional knowledge, is key to ensuring that the development of blue economies is both environmentally and socially sustainable.

That trend is also evident in the Ocean Conference voluntary commitments. Figure 2 demonstrates that most of the voluntary commitments that reference the terms "blue economy", "blue growth" or "ocean economy"

#### Figure 1

Entities referencing "blue economy", "blue growth" or "ocean economy" in their voluntary commitments



relate to multiple ocean sectors, often also incorporating marine spatial planning, followed by commitments that seek to enhance marine protection, management or restoration in conjunction with economic development. Out of the individual sectors, economic development based on sustainable fisheries is most "common, followed by aquaculture, maritime transport and seabed minerals. Many commitments also seek to enhance capacity, technology, innovation and science in support of a blue economy.

The present report examines recent developments in sustainable ocean-based economies, including definitions, developments at the national, regional and global levels, challenges to blue economy implementation, and some of the lessons learned from early examples implemented around the world.

#### Figure 2





# 2. Developing a common understanding of the blue economy: existing definitions and principles

## a. What is a blue economy? Exploring definitions

The concept of a "blue economy" came out of the 2012 United Nations Conference on Sustainable Development (Rio+20) and emphasizes conservation and sustainable management, based on the premise that healthy ocean ecosystems are more productive, and form a vital basis for sustainable ocean-based economies. The concept follows from scientific findings that ocean resources are limited and that the health of the ocean has drastically declined because of damage caused by carbon dioxide emissions; nutrient, chemical and plastics pollution; unsustainable fishing; habitat degradation and destruction; and the spread of invasive species. Those changes are already profoundly impacting human well-being and societies, and they are likely to increase in the future.

There is currently no common definition for the terms "ocean economy", "blue economy", "blue growth" and "sustainable ocean-based economy". Those terms continue to be used in slightly different ways by different countries and organizations. Use of the term "blue economy" has increased over the last decade,<sup>7</sup> but many questions still remain about its conceptual and

#### Figure 3 Terminology used in voluntary commitments



<sup>&</sup>lt;sup>7</sup> Luca Mulazzani and Giulio Malorgio' "Blue growth and ecosystem services", Marine Policy 85 (2017), pp. 17–24.

practical definitions.<sup>8</sup> The ambiguity relating to definitions extends across countries. For example, 14 countries have used 14 different definitions of ocean economy in recent years.<sup>9</sup>

The use of a variety of terms also extends to the Ocean Conference voluntary commitments. As shown in figure 3, the majority of commitments use the term "blue economy", followed by "blue growth" and "ocean economy". Three commitments use the term "sustainable ocean economy", and only one refers to "sustainable ocean-based economy.

Table 1 provides examples of some common definitions used for the key terms relating to a sustainable ocean-based economy.

#### Table 1

Some common definitions for "ocean economy", "blue economy", "blue growth" and "sustainable ocean-based economy"

Concept	Existing definitions/descriptions	
Ocean economy	"That portion of the economy which relies on the ocean as an input to the production process or which, by virtue of geographic location, takes place on or under the ocean." <sup>10</sup> "The sum of the economic activities of ocean-based industries, together with the assets, goods and services provided by marine ecosystems." <sup>11</sup>	
Blue economy	"A sustainable ocean economy emerges when economic activity is in balance with the long-term capacity of ocean ecosystems to support this activity and remain resilient and healthy." <sup>12</sup> "The "blue economy" concept seeks to promote economic growth, social inclusion, and the preservation or improvement of livelihoods while at the same time ensuring environmental sustainability of the oceans and coastal areas." <sup>13</sup> "Sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of ocean ecosystem." <sup>14</sup>	

<sup>8</sup> M. Voyer and others, "Shades of blue: what do competing interpretations of the Blue Economy mean for oceans governance?" Journal of environmental policy and planning, 20(5), (2018), pp. 595–616.

<sup>&</sup>lt;sup>9</sup> Economist Intelligence Unit, "The blue economy: growth, opportunity, and a sustainable ocean economy. An Economist Intelligence Unit briefing paper for the World Ocean Summit 2015". Available at www.eiuperspectives.economist.com/sites/default/files/images/Blue%20Economy\_briefing%20paper\_WOS2015.pdf.

<sup>&</sup>lt;sup>10</sup> J.T. Kildow and A. McIlgorm, "The importance of estimating the contribution of the oceans to national economies", *Marine Policy* 34, No. 3 (2010), pp. 367–374.

<sup>&</sup>lt;sup>11</sup> Organization for Economic Cooperation and Development (OECD), "What is the ocean economy?" Available at www.oecd.org/ocean/topics/ocean-economy/.

Economist Intelligence Unit. "The blue economy: growth, opportunity, and a sustainable ocean economy. An Economist Intelligence Unit briefing paper for the World Ocean Summit 2015".

<sup>&</sup>lt;sup>13</sup> World Bank and United Nations, Department of Economic and Social Affairs. The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries (2017).

<sup>&</sup>lt;sup>14</sup> World Bank, What is the blue economy? (2017). Available at www.worldbank.org/en/news/infographic/ 2017/06/06/blue-economy.

Concept	Existing definitions/descriptions	
Blue growth	"A strategic, innovative approach to improving the use of aquatic resources while simultaneously increasing social, economic and environmental benefits for communities dependent on fisheries and aquaculture." <sup>15</sup> "The long-term strategy to support sustainable growth in the marine and maritime sectors as a whole." <sup>16</sup>	
Sustainable ocean- based economy	Undefined, but considered synonymous with blue economy	

As table 1 demonstrates, the term "ocean economy" tends to focus on the variety of economic activities in the ocean, without consideration to their sustainability. However, the Organization for Economic Cooperation and Development (OECD) definition takes into account the goods and services provided by the ocean, and maintaining those goods and services would require the maintenance of ocean health as a whole. Thus, activities degrading ocean health would likely not fit under that definition.

The "blue economy" and "blue growth" definitions generally focus on "triple bottom-line objectives" of environmental sustainability, economic growth and social equity, driven by an integrated oceans governance approach and technological innovation.<sup>17</sup> However, even here there are differences. The definitions of "blue growth" definitions tend to emphasize economic growth, with the Food and Agriculture Organization (FAO) focusing on marine living resources, taking into account social, economic and environmental benefits of their use. The European Commission, on the other hand, refers to "sustainable growth in the marine and maritime sectors as a whole". Consideration of the sectors as a whole is important, given that it is understood that their management would be undertaken through a cross-sectoral framework, such as marine spatial planning, which would allocate space for a variety of sustainable uses and conservation outcomes.

The definitions/descriptions of "blue economy" are also slightly different. The Economist Intelligence Unit states that a sustainable blue economy emerges "when economic activity is in balance with the long-term capacity of ocean ecosystems to support this activity and remain resilient and healthy."18 That definition emphasizes environmental sustainability but is silent on social equity. The description by the World Bank and the United Nations is perhaps the most explicit: it "seeks to promote economic growth, social inclusion, and the preservation or improvement of livelihoods while at the same time ensuring environmental sustainability of the oceans and coastal areas. At its core, that definition refers to the decoupling of socioeconomic development through ocean-related sectors and activities from environmental and ecosystems degradation."

<sup>&</sup>lt;sup>15</sup> Food and Agriculture Organization of the United Nations (FAO). Available at www.fao.org/fisheries/bluegrowth/en/.

<sup>&</sup>lt;sup>16</sup> European Commission. Available at https://ec.europa.eu/maritimeaffairs/policy/blue\_growth\_en.

M.R. Keen, A.M. Schwarz and L. Wini-Simeon, "Towards defining the Blue Economy: Practical lessons from Pacific Ocean governance", Marine Policy 88 (2018), pp. 333–341; Smith-Godfrey, S., "Defining the blue economy", Maritime affairs: Journal of the national maritime foundation of India 12, no. 1 (2016), pp. 58-64.

<sup>&</sup>lt;sup>18</sup> Economist Intelligence Unit. "The blue economy: growth, opportunity, and a sustainable ocean economy.

Importantly, the 2017 report by the World Bank and the United Nations<sup>19</sup> emphasizes that the blue economy aims to move beyond business as usual to consider economic development and ocean health as compatible propositions. Thus, while a mix of economic activities may contribute to a blue economy, those activities need to: (i) provide social and economic benefits for current and future generations; (ii) restore, protect, and maintain the diversity, productivity, resilience, core functions and intrinsic value of marine ecosystems; and (iii) be based on clean technologies, renewable energy and circular material flows that will reduce waste and promote recycling of materials. The report states that the blue economy is understood to comprise the range of economic sectors and related policies that together determine whether the use of oceanic resources is sustainable.

In order to be transformative, a blue economy needs to go beyond business as usual, which would require ocean industries to focus not only on economic development and profits, but also on achieving human well-being objectives and environmental sustainability. To achieve improvements in human well-being, economic sectors would need to address current and historical inequities, and would need to provide basic needs, alternative livelihoods and income for people residing in coastal areas, addressing, in particular, the needs of marginalized groups, women and youth. To be environmentally sustainable, economic activities would need to undertake their operations with the preservation of the environment in mind, and would need to minimize ongoing risks and restore and protect ecosystems and species. All of these actions would need to be undertaken in the context of climate change. Achieving this triple bottom line would require many changes to industrial development,

policy planning, and attitudes regarding social and environmental issues, and could be viewed as an opportunity for a fundamental shift towards ambitious social and environmental goals.<sup>20</sup>

The above discussion has highlighted the lack of a commonly accepted definition, as well as terminology, relating to a sustainable oceanbased economy. It also demonstrates that countries and stakeholders understand and interpret the blue economy concept in many different ways. For example, considerable debate still exists relating to whether a blue economy should include only low-carbon activities.

## b. Principles and guidance

One question arising from this discussion is whether having a commonly accepted definition, or description, of blue economy matters. After all, many policy concepts are successfully implemented without a clear definition, or with competing definitions or interpretations. Thus, a certain degree of ambiguity is not uncommon in the case of policy terminology. One example is the concept of "ecosystem approach" or "ecosystem-based management", which lacks a commonly accepted definition, but has differing descriptions, principles and quidance, primarily developed under the Convention on Biological Diversity for an integrated biodiversity-oriented ecosystem approach, and by FAO for an ecosystem approach to fisheries. Related tools for the implementation of an ecosystem approach, such as integrated coastal management and marine spatial planning, also remain poorly defined, but interact with the blue economy in complex ways.

The practical application of an ecosystem approach has greatly benefited from the elaboration of principles and guidance under the

<sup>&</sup>lt;sup>19</sup> World Bank and United Nations, Department of Economic and Social Affairs, 17. The Potential of the Blue Economy.

A.M. Cisneros-Montemayor, A blue economy: equitable, sustainable and viable development in the world's oceans. In: *Predicting Future Oceans* (Elsevier, 2019).

Convention on Biological Diversity, as well as the decision by the parties to the Convention to learn from its practical application. That has led to the development of a database of case studies of how the ecosystem approach has been applied around the world, on various scales and in differing contexts.

Unlike the ecosystem approach, the concept of a blue economy lacks established and agreed-upon principles and guidance.<sup>21</sup> However, developing principles and/or guidance may be a way forward towards a common understanding of a blue economy and its component factors. Work towards that end is already under way, with several sets of principles emerging to guide countries in their blue economy transitions, and moving towards sustainability in implementation. Principles are a flexible tool that can be applied in any part of marine and coastal ecosystems, and by all actors involved in the economic development and/or marine protection, including governments, private sector, development partners, scientific community and civil society groups.

According to principles elaborated by the International Union for Conservation of Nature, a blue economy should:<sup>22</sup>

- Provide social and economic benefits for current and future generations, securing people's need for food, water, energy, materials, recreation and health, as well as jobs, livelihoods, community well-being and political stability;
- Ensure ecosystem integrity: ensuring that ecosystem goods and services are harvested, processed and used in a way that does not contribute to further decline, but improves biodiversity and productivity;

- Recognize marine ecosystems as natural capital and protect and maintain them accordingly;
- Aspire for social and economic stability through the use of clean technology and renewable energy.

Another set of principles has been developed by the World Wide Fund for Nature (see box 1 for details.

In addition to principles, guidance/guidelines and practical case studies are important for developing a common understanding of a blue economy, and the various ways in which it could be applied. It is likely that a blue economy will look different in each country, depending on a particular country's existing ocean sectors, ocean resources, geographies, cultures, as well as societal and economic aspirations. Scientific and technological capacities will also play an important role. Thus, a closer look at specific case studies, and lessons learned from them, will help in developing an understanding of the range of options for implementation. They will also help develop best practices to inform implementation.

A recent publication<sup>23</sup> recommends that the United Nations establish or designate a commission or agency within the Economic and Social Council system to be responsible for developing best practices and establishing international guidelines for the implementation, monitoring and management of blue economy activities. Guidelines could provide a foundation for international deliberations and multilateral discussions, as well as guidance for national policies and corporate activities. Several existing initiatives show momentum and provide building blocks including FAO's Voluntary Guidelines for Securing Sustainable

<sup>&</sup>lt;sup>21</sup> M. Voyer and others, "Shades of blue: what do competing interpretations of the Blue Economy mean for oceans governance?" *Journal of environmental policy and planning*, 20(5) (2018), pp. 595–616.

<sup>&</sup>lt;sup>22</sup> International Union for Conservation of Nature: Towards partnerships and collaboration on the blue economy. Available at www.iucn.org/sites/dev/files/import/downloads/towards\_partnerships\_and\_collaboration\_on\_ the\_blue\_economy.pdf.

<sup>&</sup>lt;sup>23</sup> N.J. Bennett and others, "Towards a sustainable and equitable blue economy", Nature Sustainability 2 (2019) pp. 1–3.

## Box 1 World Wide Fund for Nature principles for a sustainable blue economy

A sustainable blue economy is a marine-based economy that:

- Provides social and economic benefits for current and future generations, by contributing to food security, poverty eradication, livelihoods, income, employment, health, safety, equity and political stability.
- Restores, protects and maintains the diversity, productivity, resilience, core functions, and intrinsic value of marine ecosystems the natural capital upon which its prosperity depends.
- Is based on clean technologies, renewable energy, and circular material flows to secure economic and social stability over time, while keeping within the limits of one planet.

It is governed by public and private processes that are:

- Inclusive
- Well-informed, precautionary and adaptive
- Accountable and transparent
- Holistic, cross-sectoral and long-term
- Innovative and proactive

To create a **sustainable blue economy**, public and private actors must:

- Set clear, measurable, and internally consistent goals and targets for a sustainable blue economy.
- Assess and communicate their performance on these goals and targets.
- **Create a level economic and legislative playing field** that provides the blue economy with adequate incentives and rules.
- Plan, manage and effectively govern the use of marine space and resources, applying inclusive methods and the ecosystem approach.
- **Develop and apply standards, guidelines and best practices** that support a sustainable blue economy.
- **Recognize that the maritime and land-based economies are interlinked** and that many of the threats facing marine environments originate on land.
- Actively cooperate, sharing information, knowledge, best practices, lessons learned, perspectives, and ideas, to realize a sustainable and prosperous future for all.

*Source:* World Wide Fund for Nature, Principles for a Sustainable Blue Economy (2015). Available at wwf. panda.org/wwf\_news/?247477/Principles-for-a-Sustainable-Blue-Economy.

Small-Scale Fisheries, The Commonwealth Blue Charter and the European Commission's Blue Growth Strategy.

A common understanding of a sustainable ocean economy is important to ensure that the term is not misused to enable unsustainable practices. A common critique of the green economy is that the term is used as a tool to legitimize and conceal less than ethical or environmentally responsible behaviour or uses, through "greenwashing". Identifying and defining what practices, sectors or businesses are considered "green" (or "blue") are therefore central to the legitimacy of blue economy as a concept and to public confidence in associated actions.<sup>24</sup>

M. Voyer and others, "Shades of blue: what do competing interpretations of the Blue Economy mean for oceans governance?" Journal of environmental policy and planning, 20(5) (2018), pp. 595–616.

# 3. The blue economy: examples of implementation

## a. National-level initiatives

The blue economy concept was pioneered at the national level, particularly by small island developing States. It is clear from a study of the 2017 Ocean Conference voluntary commitments that transition to a blue economy is a top priority for many coastal and island countries. Over 80 voluntary commitments directly refer to developments related to blue economy or blue growth. Currently, 57 voluntary commitments<sup>25</sup> mention development of a blue economy, while the term "blue growth" was an aspect of 25 commitments.<sup>26</sup> When all sectors of the blue economy are factored in, over 330 voluntary commitments relate to some aspects of sustainable ocean-based economic development. Those commitments encompass a broad range of ocean industries, including fisheries, aquaculture, shipping, tourism, renewable ocean energy and other industries that rely on the ocean. Market access for small-scale fishers was also covered by voluntary commitments.

The voluntary commitment of the Government of Kenya provides an example of this approach. In defining its blue economy vision, Kenya has identified the following key sectors: fisheries and aquaculture; maritime transport and logistics services, culture and tourism; and extractives as key to delivering quick and sustainable results for food security and employment creation.<sup>27</sup> Many countries are also undertaking marine spatial planning and conservation measures to counterbalance sectoral activities.

In 2015, the Government of Seychelles began to implement its Blue Economy Strategic Roadmap as a pathway to realizing sustainable ocean-based economic development. Seychelles has a dedicated agency to oversee the road map, which is intended to support economic diversification, food security, sustainable management of ocean and coastal ecosystems, and job growth. Consideration of sustainable ocean management in national economic planning is a critical step in building resilience to climate change impacts.<sup>28</sup>

Development assistance also plays a role in national-level implementation. Some countries are engaged in the implementation of blue economy-related activities, with the support of development banks and major financial institutions. Some examples include FAO-World Bank-African Development Bank African Package for Climate-Resilient Ocean Economies, and World Bank-funded projects that are estimating the costs and benefits of preserving ecosystem services as part of coastal conservation in Mauritania and Belize. Major financial institutions such as the Green Climate Fund and the European Investment Bank are willing to support ocean economies through more bankable and less risky projects, including the use of public-private partnerships to address challenges of better managing the many aspects of ocean sustainability and addressing climate change adaptation and mitigation.<sup>29</sup>

<sup>&</sup>lt;sup>25</sup> This figure was accurate as of 9 July 2020.

<sup>&</sup>lt;sup>26</sup> This figure was accurate as of 9 July 2020.

<sup>&</sup>lt;sup>27</sup> Voluntary commitment 21560. Available at https://oceanconference.un.org/commitments/?id=21560.

<sup>&</sup>lt;sup>28</sup> M. Kurz and B. Cicin-Sai, "Assessing Progress on Ocean and Climate Action 2016-2017". A Report of the Roadmap to Oceans and Climate Action (ROCA) Initiative" (2017).

<sup>&</sup>lt;sup>29</sup> Ibid.

A report prepared for the World Bank highlighted Grenada's blue growth initiative.<sup>30</sup> The Grenada Blue Growth Coastal Master Plan expands marine monitoring and management while growing fishery and tourism industries in a sustainable, low-carbon manner (see box 2 for details).

### Box 2 Grenada: Blue Growth Coastal Master Plan

Grenada is one of the first countries within the Organisation of Eastern Caribbean States to create a vision for managing and protecting national waters as well as setting a path to "blue growth". Grenada's Blue Growth Coastal Master Plan sets out a strategy to harness Grenada's coasts to provide new jobs and alternative livelihoods, expanding their economy while also committing to preserving the natural environment. Nine areas have been identified as centres of excellence for blue growth activities, including marine research. In particular, Northern Grenada has been identified as a significant location for marine research owing to its pristine ocean waters, leatherback turtle nesting areas near Levera and its offshore volcano. The Integrated Coastal Zone Management Policy for the three islands (Grenada, Carriacou and Petite Martinique) provides a vision for the management of the coastal zone that accounts for all sectoral activities which have an impact on the coastal natural resources. The policy goals are focused around three areas: good governance, sustainable development and capacity development

*Source*: Ocean Foundation Towards Sustainable Blue Economies in the Caribbean (2019). Available at https://oceanfdn.org/wp-content/uploads/2019/12/Mapping-Sustainable-Blue-Economy-in-the-Caribbean\_ Inf-Doc.pdf.

The Government of Indonesia is also undertaking blue economy development, as described in box 3. Indonesia's blue economy is based on a number of different sectors such as marine fisheries, maritime transportation, tourism, energy and material production industries.

Blue economy development can also start with improvements made within a single sector, for example fisheries. A case study from the Mediterranean region, discussed in box 4, relates to enhancing the capacity of smallscale fishers to improve fisheries governance, as a stepping stone towards transitioning this sector to play a role in a blue economy. What sets this case study apart are its strengths: the actual involvement of fishers in selecting management measures to be tested; the contribution of the project to improving socioeconomic conditions of the small-scale fisheries sector; improved relationship between marine protected area managers and fishers; and reduced fishing effort, with increased environmental and fisheries conservation benefits.

<sup>&</sup>lt;sup>30</sup> P.G. Patil and others, Toward a Blue Economy: A Promise for Sustainable Growth in the Caribbean. (World Bank Group, 2016). Available at https://openknowledge.worldbank.org/bitstream/handle/10986/25061/ Demystifying0t0the0Caribbean0Region.pdf?sequence=4.

## Box 3 Indonesia: sustainable and equal growth of marine and coastal regions

Indonesia proposed the principles of developing marine and fishing industries based on their blue economy concept to formulate comprehensive economy and environment protection policies; boost regional economic development; realize sustainable development by promoting clean production systems; and encourage creative and innovative investment. The highlights of growing a blue economy in Indonesia include developing marine fisheries, marine transportation, tourism, energy and material production industries, based on the blue economy concept; further improving and coordinating marine and land economy national policies; developing blue economy demonstration zones; strengthen connections between trade and infrastructure; and promoting the development of technology and human resources. In addition, Indonesia plans to set up blue economy demonstration zones in Lombok and Anamabs Islands and Tomini Bay for exploring the blue economy model featured with marine industry, fisheries, breeding, seaside tourism industries, small island collective, regional and bay development.

*Source:* L. Wenhai and others, Successful blue economy examples with an emphasis on international perspectives. *Frontiers in Marine Science*, 6, (2019) p. 261.

## Box 4 Improving governance of small-scale fisheries in the Mediterranean

The FishMPABlue2 project is the follow-up to the FishMPABlue project (July 2014–June 2015) and is funded by Interreg MED Programme. FishMPABlue had carried out an analysis of the management of small-scale fisheries within and around a set of Mediterranean marine protected areas and developed a "regional-based governance toolkit" to strengthen the capacity of small-scale fisheries in marine protected area management. More specifically, the FishMPABlue project had highlighted that fish stocks are healthier, fishers incomes higher and social acceptance of management practices stronger (in other words, a successful management of small-scale fisheries is reached) if a set of attributes is present in the marine protected areas, including regulation enforcement, presence of a management plan, fishers' engagement in marine protected area management, fishers representatives on the marine protected areas board and promotion of sustainable fishing.

The aim of FishMPABlue2 is to test the toolkit developed in FishMPABlue through several pilot actions to assess and quantify its capacity in achieving the expected results, namely marine protected area ecological effectiveness, benefits delivered to small-scale fisheries and stakeholders' acceptance of marine protected area management measures. Eleven pilot marine protected areas in six Mediterranean countries (Croatia, France, Greece, Italy, Slovenia and Spain) were selected during the FishMPABlue project, as they illustrate most of the management conditions existing in the Mediterranean basin and are therefore particularly suitable for testing the effects of a significant number of governance tools in an integrated way.

In the first phase, testing will be carried out by engaging marine protected area management bodies and local small-scale fishers in the establishment of local governance clusters. Identified governance tools will be implemented in each pilot marine protected area by the local governance clusters under the coordination of the marine protected area managing body and with the "coaching" of relevant project partners. In this phase, scientific monitoring will be carried out both before and after implementing the governance tools, in order to measure the ecological, economic and social status of the marine protected areas and the potential effect of the governance tools. In the last phase, testing results will be transferred and discussed among the local governance clusters of the pilot marine protected areas in order to upgrade the "governance toolkit". That will allow the project partners to prepare a new version of the toolkit and share it with other marine protected areas in the Mediterranean. In parallel, a know-how exchange activity involving the 11 pilot marine protected areas will be carried out in order to capitalize on, and exchange and transfer the results of the implementation through communication tools and various cross-fertilization formats so that the partners will be able to share common challenges and solutions.

Source: Plan Bleu, Blue economy in the Mediterranean: case studies, lessons and perspectives, paper 19 (2020).

In addition to the voluntary commitments, the blue economy had a high profile at the 2017 United Nations Oceans Conference. Ten side events held across the five days of the conference explicitly mentioned "blue economy" in their titles, including partnerships, such as the SIDS-SIDS Partnership on Sustainable Energy for Blue Island Economies, dedicated to building renewable marine energy sectors in small islands developing States.<sup>31</sup>

## b. Regional-level initiatives

While the majority of blue economy development is taking place at the national level, there are also some regional developments that aim to build comprehensive, regional-level blue economy plans. For example, the Mediterranean region is working towards its transition to a sustainable blue economy, coordinated by the United Nations Environment Programme (UNEP)/Mediterranean Action Plan Regional Activity Centre, "Plan Bleu". Recent Plan Bleu activities include the 2019 report, State of the Environment and Development in the Mediterranean, which includes a chapter on economic sectors and the potential for transition towards a blue/green circular economy, as well as reports on case studies highlighting blue economy opportunities. The report builds on the project "Measuring, monitoring and promoting a blue economy for a sustainable development of the Mediterranean region", which is funded by the MAVA Foundation. The Mediterranean region is

also undertaking the Integrated Maritime Policy for the Mediterranean project, in which a Mediterranean Blue Economy Stakeholder Platform has been created to provide a regional networking platform for sharing knowledge and supporting the development of the blue economy. The report "The Mediterranean Sea We Need for the Future We Want" is yet to be published. Those activities highlight a holistic preparatory process considering how all sectors in Mediterranean countries, either established or new, can contribute towards a blue economy in the context of sustainable use and conservation of ecosystems and resources.

The Caribbean region is also actively considering a regional transition. A new project, "Blue Economy: Caribbean Large Marine Ecosystem Plus (BE-CLME+): Promoting National Blue Economy Priorities through Marine Spatial Planning in the Caribbean Large Marine Ecosystem Plus", began in March 2020. It is a four-year project funded by the Global Environment Facility with a grant of \$6.2 million and co-financing of \$40.1 million. The Development Bank of Latin America will be the lead implementing agency while FAO will be a co-implementing agency. The Caribbean Regional Fisheries Mechanism will be the project executing agency. BE-CLME+ Project will promote blue economy development in the Caribbean region through marine spatial planning and marine protected areas, an ecosystem approach to fisheries, and development of sustainable fisheries value

<sup>&</sup>lt;sup>31</sup> See https://oceanconference.un.org/commitments/?id=20608.

chains. The expected results of the project include focused climate-smart investments into national and regional marine spatial planning efforts that inform development and implementation of national blue economy strategies. The multi-country project will also focus on extending or strengthening marine protected areas to preserve marine ecosystems and ensure sustainable livelihoods to coastal and fishery communities. The project is expected to result in the establishment of a regional marine spatial planning for ecosystem-based fisheries, inclusive sustainable fisheries value chains, and new or expanded marine protected areas in at least five Caribbean countries. It will also support improvements in knowledge management, monitoring and evaluation, based upon knowledge and experiences from the project and experiences.32

While Africa does not yet have a regional blue economy initiative, the importance of a blue economy for the region is highlighted by the first-ever blue economy conference hosted in November 2018 in Nairobi. In addition, the 2016 a policy handbook on Africa's blue economy<sup>33</sup> argues that the blue economy can play a major role in Africa's structural transformation, sustainable economic progress, and social development. The largest sectors of the current African aquatic and ocean-based economy are fisheries, aquaculture, tourism, transport, ports, coastal mining and energy. The policy handbook provides a step-by-step guide to help African member States to better mainstream the blue economy into their national development plans, strategies, policies and laws.

Also in Africa, the regional Northern Mozambique Channel Initiative was registered as a 2017 Ocean Conference voluntary commitment. It provides an example of regional efforts to transition to a blue economy, while taking into account environmental, economic and social aspects of sustainability. The Northern Mozambique Channel Initiative, which is presented in box 5, is an example of a partnership between Governments, civil society and the private sector.

#### Box 5 Northern Mozambigue Channel Initiative

The Northern Mozambique Channel initiative is an emerging partnership of countries, civil society and the private sector, whose goal is to deliver a sustainable blue economy that preserves and builds its wealth across the natural, social and economic capitals, within the central vision that by 2050, the people, countries and economies of the Northern Mozambique Channel will prosper in a sustainable future founded on the natural and cultural assets and diversity of the region.

The promotion of integrated ocean governance – through the use of marine spatial planning – and sustainable principles and standards for key economic sectors – in particular oil and gas extraction – are the two main focus areas of the partners. Each country in the Northern Mozambique Channel area will be supported to build multi-actor and multisectoral collaborations and partnerships, allowing for an effective integrated approach to marine and coastal resources and coordinated use of marine space.

Source: https://oceanconference.un.org/commitments/?id=17618.

<sup>32</sup> CARICOM Today, "New GEF-funded blue economy initiative begins in Caribbean" (2020). Available at https:// today.caricom.org/2020/03/05/new-gef-funded-blue-economy-initiative-begins-in-caribbean/.

<sup>&</sup>lt;sup>33</sup> United Nations, Economic Commission for Africa, Africa's blue economy: a policy handbook (Addis Ababa, 2016). Available at www.uneca.org/publications/africas-blue-economy-policy-handbook.

Perhaps one of the most developed regional initiatives towards blue economy transition can be found in Europe. The third European Union Blue Economy Report<sup>34</sup> seeks to improve the measuring and monitoring of the socioeconomic impact of the blue economy, without disregarding the environmental implications. The report is accompanied by "Blue Economy indicators", an information technology tool that stores and disseminates additional breakdowns of the data. According to the report, the established sectors of the European Union blue economy directly employed close to 5 million people and generated around €750 billion in turnover and €218 billion in gross value added in 2018. A summary of the report, and other considerations relating to the European Union blue economy are provided in box 6.

#### Box 6

#### **European Union blue economy**

For the purposes of the European Union Blue Economy Report (2020) the blue economy includes all activities that are marine based or marine related. Therefore, the report examines not only established sectors (i.e., those that traditionally contribute to the blue economy) but also emerging sectors (for which reliable data are still developing) and innovative sectors, which bring new opportunities for investment and hold huge potential for the future development of coastal communities.

The seven blue economy established sectors include the following: marine living resources, marine non-living resources, marine renewable energy, port activities, shipbuilding and repair, maritime transport and coastal tourism. According to the most recent figures, the established sectors of the European Union blue economy directly employed close to 5 million people and generated around €750 billion in turnover and €218 billion in gross value added in 2018.

The blue economy emerging and innovative sectors include some marine renewable energy (i.e., ocean energy, floating solar energy and offshore hydrogen generation), blue bioeconomy and biotechnology, marine minerals, desalination, maritime defence, and submarine cables. Those sectors offer significant potential, especially as regards renewable energies for which the European Union is in the lead, hosting 70 per cent of global ocean energy (wave and tidal) installed capacity in its waters. The maritime defence sector accounts for over 177,000 jobs and within the blue bioeconomy sector, the algae sector generated an estimated turnover of over €350 million. Desalination continues to be a key sector for those countries that are more likely to suffer water shortages (e.g., Spain), not least as a result of climate change, even if with significant side effects (e.g., brine, energy consumption, etc.).

Preserving and increasing the natural capital accumulated in the seas and oceans is critical for delivering sustainable ecosystem services and for the European Union to achieve the Sustainable Development Goals set by the United Nations for 2030. The Marine Strategy Framework Directive provides a comprehensive, holistic approach to the protection of European Seas, acting as the environmental pillar of the wider European Union maritime strategy. Climate change (e.g., rising temperatures, acidification, deoxygenation, sea-level rise) constitutes an additional pressure compounding the effects of pollution, biodiversity and other existing threats.

Source: European Commission, The European Union Blue Economy Report 2020 (Luxembourg, 2020).

In addition to the activities and results set out in the 2020 report, the European Commission places a special focus on the blue bioeconomy. It established the Blue Bioeconomy Forum,

<sup>&</sup>lt;sup>34</sup> European Commission, The European Union Blue Economy Report 2020 (Luxembourg, 2020).

a multi-stakeholder process involving industry, public authorities, academia, finance and civil society to exploit the potential of the emerging blue economy and ensure sustainable use. The results of the forum will be presented in the form of a "blue bioeconomy road map." The European Union has also emphasized the importance of financing to foster the blue economy. The European Commission has been working with the European Investment Bank to create a growing "blue investment community" and set up a European Union blue economy investment platform.<sup>35</sup> At the international level, there is limited available guidance for the financial sector. With its "sustainable blue economy finance principles<sup>36</sup>, the European Commission is seeking to build an international coalition of financial institutions that endorses and adopts those principles on

a voluntary basis, thereby supporting healthy oceans in their investment decisions and the development of a sustainable blue economy.<sup>37</sup>

## c. International initiatives to support blue economy implementation

As stated previously, most blue economy efforts to date have been undertaken at the national level, though some regional efforts also exist. In addition, there are a number of collaborative initiatives that are global in scale, and that aim to assist countries better understand what a blue economy entails, and help them in their blue economy transitions. Table 2 lists a sampling of those efforts.

### Table 2

Partnership or collaborative process	Goals of collaboration	Members and coordination			
PROBLUE	PROBLUE is a new umbrella multi- donor trust fund, housed at the World Bank, that supports healthy and productive oceans. PROBLUE supports implementation of Goal 14 and is fully aligned with the World Bank's twin goals of ending extreme poverty and increasing the income and welfare of the poor in a sustainable way.	Several donor countries, including Canada, France, Germany, Iceland, Norway and Sweden			
Blue Economy Development Framework <sup>38</sup>	Blue Economy Development Framework aims to help developing coastal states transition to diverse and sustainable blue economies while building resilience to climate change.	World Bank and European Union			

International partnerships supporting a blue economy and countries wishing to transition to a blue economy

<sup>&</sup>lt;sup>35</sup> See https://webgate.ec.europa.eu/maritimeforum/en/frontpage/1451.

<sup>&</sup>lt;sup>36</sup> See https://ec.europa.eu/maritimeaffairs/befp\_en.

<sup>&</sup>lt;sup>37</sup> B. Cicin-Sain and others, Assessing Progress on Ocean and Climate Action.

<sup>&</sup>lt;sup>38</sup> See https://ec.europa.eu/maritimeaffairs/press/world-bank-and-european-commission-promote-blue-economy-through-new-tool\_en.

Partnership or collaborative process	Goals of collaboration	Members and coordination
FAO Blue Growth Initiative <sup>39</sup>	The FAO Blue Growth Initiative builds on the Code of Conduct for Responsible Fisheries and focuses on fisheries, aquaculture, ecosystem services, trade and social protection. It advocates ways to balance economic growth, social development, food security, and sustainable use of aquatic living resources.	FAO with participating countries

## d. Sectoral initiatives towards a blue economy transition

Blue economy implementation generally relies on innovation by sectors of the ocean economy to increasingly make their operations both environmentally and socially sustainable. The 2017 Ocean Conference voluntary commitments provide examples of sectoral innovation in the context of blue economy transitions.

- Norwegian Shipowners Association through the Green Coastal Shipping Programme is promoting environmentally friendly coastal shipping powered wholly or partially by batteries, liquefied natural gas or other eco-friendly fuels (voluntary commitment 20944).
- Moana New Zealand the largest Māoriowned seafood company and the second largest seafood company in terms of quota volume and value in New Zealand – is committed to stewardship of marine ecosystems, science-based management, compliance, monitoring, enforcement, restoration initiatives and social sustainability (voluntary commitment 1667).
- Fiji Fishing Industry Association is, in collaboration with the Fiji Maritime Academy and the World Wide Fund for Nature, developing a by-catch mitigation curriculum for fishing vessels (voluntary commitment 19894).

- EagleRail container logistics is replacing idling diesel trucks and ports with a fully electric and automated, overhead container movement system in order to reduce CO<sub>2</sub> emissions (voluntary commitment 19178).
- KnipBio has developed an alternative to fishmeal used in aquaculture. The feed is derived from the microbe *Methylobacterium extorquens* and is a fish feed alternative that is nutritionally equivalent to fishmeal and additionally contains many of the antioxidants and carotenoids found in wild fish diets (voluntary commitment 22493).
- Maritime Singapore Green Initiative aims to reduce the environmental impact of shipping and shipping-related activities to promote clean and green shipping in Singapore (voluntary commitment 18953).
- Odaku online services in India has developed a mobile GPS solution that allows local small-scale fisheries to be alerted about boundaries of marine protected areas and other spatial management. The data can also be analysed to improve catch and access to resources (voluntary commitment 15728).

Norway's Green Shipping Programme, a public-private partnership, is piloting a number of different solutions to reduce emissions from domestic shipping. The programme is described in box 7.

<sup>&</sup>lt;sup>39</sup> See www.fao.org/zhc/detail-events/en/c/233765/.

PROMOTION AND STRENGTHENING OF SUSTAINABLE OCEAN-BASED ECONOMIES

## Box 7 Norway: Green Shipping Programme

Norway has committed itself to reducing greenhouse gas emissions by 40 per cent by 2030 – a huge challenge.

If Norwegian domestic shipping is to take its share of the reduction, the rate of introducing environmentally friendly fuels and alternative propulsion technology needs to be multiplied. Furthermore, the International Maritime Organization has decided that emissions shall be halved by 2050. That means that the international markets for green technologies and solutions will soon be a reality.

The Green Shipping Programme aims to find scalable solutions for efficient and environmentally friendly shipping. The results will be cost-effective emission cuts, economic growth, increased competitiveness, and new jobs in Norway. Both authorities and industry actors participate in the programme and are working together to achieve those goals.

The studies and pilots in the Green Shipping Programme are crucial for the phasing in of zero- and low-emission solutions in shipping towards 2030, with significant climate, environmental and public health benefits

Some 20 large-scale pilot projects have been launched thus far, including two to develop green ports and one to create shuttle tankers powered by liquefied natural gas or volatile organic compounds; a hydrogen-powered speed boat; a bunkering vessel; and, finally, two autonomous, zero-emission vessels.

All of the projects are an important step in making Norwegian domestic shipping greener. Seven of the pilots have been implemented or are under construction.

Norway has also signed agreements for 30 to 40 battery-powered ferries, with additional investments of roughly \$228 million in battery and charging technology, and more to come. By 2021, there will be 70 all-electric and hybrid ferries in total.

*Source*: Green Shipping Programme website: www.dnvgl.com/maritime/green-shipping-programme/index. html and the Explorer Green Shipping Programme: creating the world's most environment-friendly fleet (2020). Available at www.theexplorer.no/stories/ocean/green-shipping-programme-creating-the-worldsmost-environment-friendly-coastal-fleet/.

## e. Supporting blue economy transition: Our Ocean conferences commitments

In addition to the 2017 United Nations Ocean Conference voluntary commitments, participants in the Our Ocean series of conferences have also made concrete commitments towards blue economy development. Those commitments are detailed in the present section.

## 2017 Our Ocean Conference

At the 2017 Our Ocean Conference in Malta, 78 concrete commitments under the theme of sustainable blue economy were announced, almost €1.6 billion.<sup>40</sup> For example, the United Kingdom of Great Britain and Northern Ireland announced €9.1 million between 2017 and 2018 to support small island developing States in preserving their marine environments and tap into maritime resources to catalyse

<sup>40</sup> Our Ocean Commitments: Sustainable blue economy. Available at www.ourocean2017.org/our-ocean-commitments.

economic development in a sustainable way across Commonwealth countries. The European Union also announced that it would launch a €14.5 million investment initiative in 2017 to promote a sustainable blue economy in the European Union. Around €8 million of the fund is to provide start-up grants for high-potential projects in emerging blue economy sectors across the European Union. In order to better monitor and combat marine litter, a further €2 million will go towards providing support for innovative technologies to monitor and/ or combat marine litter in waters around the European Union. Furthermore, €3 million will go towards facilitating twinning projects in the Mediterranean Basin, such as between maritime training and education institutes, businesses operating in the blue economy and local fishing communities.

## 2018 Our Ocean Conference

The 2018 Our Ocean Conference in Bali, Indonesia, resulted in 48 tangible and measurable commitments specifically regarding the blue economy. Around 257 other commitments targeted maritime security, climate change, marine protected areas, marine pollution and sustainable fisheries, bringing the total monetary commitment to roughly \$10.7 billion.41 Among other commitments, the European Union maintained its €250 million investment in an All-Atlantic Ocean Research Alliance that seeks to support over 1,000 Atlantic research teams from the Arctic to the Antarctic by 2020. The programme will support research in assessing ecosystems, seafloor mapping, and developing innovative ecosystem-based aquaculture systems. The European Union also announced an investment of €18 million towards developing a sustainable blue economy in the European Union, with funds going towards

skill development, demonstration projects, and "Blue Labs" that will focus on innovating sustainable products and services relevant to the marine field. Furthermore, the European Union pledged a combined €8 million in its partnership with 18 African countries and the African Union towards the satellite monitoring programme Copernicus. Significant commitments were also made by the Governments of Chile, Indonesia, Ireland, Japan, Mauritius, Norway, Portugal and the United States of America.

The 2018 Our Ocean Conference also yielded considerable commitments from non-governmental organizations (NGOs), United Nations entities, academia, and the corporate sector. Most notably, the World Bank committed more than \$1 billion to advance the sustainable oceans and blue economy agenda in developing countries. Building on its previous work in developing the blue economy, the World Bank announced its PROBLUE initiative in September. This multi-donor trust fund focuses on four key themes: management of fisheries and aguaculture, reducing marine pollution, sustainable development of oceanic sectors like tourism and offshore renewable energy, and building government capacity for managing marine and coastal resources. The World Bank has already designated about \$4 billion towards the blue economy, not including the \$1 billion noted previously. So far, the PROBLUE fund has raised roughly \$100 million from donors like Canada, Denmark, France, Germany, Iceland, Norway, Portugal, Sweden and the European Union.

The 2018 Our Ocean Conference further resulted in the Ocean Policy Research Institute of the Sasakawa Peace Foundation pledging \$25 million in research funding, in addition to releasing a publication detailing success factors to promote blue economy and achieve Goal 14 using analyses of cases in Japan and

<sup>&</sup>lt;sup>41</sup> See https://ourocean2018.org/?l=our-ocean-commitments.

overseas.<sup>42</sup> PepsiCo set aside \$15 million towards water infrastructure in South/Southeast Asia. Tidal BV plans to invest \$225 million in a bridge connecting Flores and Adonara Islands in Indonesia, coupled with a tidal power station that is projected to save 47,500 metric tons of carbon annually. REV Ocean, Norway, pledged \$400 million to \$500 million to build the world's largest and most advanced research and expedition vessel.

## 2019 Our Ocean Conference

The 2019 Our Ocean Conference took place in Oslo from 23 to 24 October, and a resulted in 370 commitments from Governments, academia, the private sector, and NGOs, totalling roughly \$63 billion, of which 16 per cent (81 commitments) were designated towards the development of the sustainable blue economy. Some notable commitments included the Asian Development Bank pledging a financing increase to \$5 billion by 2024, and BNP Paribas pledging \$1 billion by 2025 towards the ecological transition of maritime transport. Nike and Ocean Conservancy launched the Arctic Shipping Corporate Pledge, inviting businesses and industry to join them in the commitment not to ship through the Arctic Ocean shipping routes

The 2019 Our Ocean Conference saw commitments from entities outside the private sector, as well. The European Commission pledged \$82.5 million towards companies that contribute to lowering carbon emissions, building the circular economy and promoting ecosystem conservation. The Government of Australia pledged \$47.23 million towards the Blue Economy Cooperative Research Centre, forming a science-industry partnership. The Government of Mozambique pledged \$1 million to maintain the regional platform established by "Growing Blue" conference, fostering integrated blue economy development in the Western Indian Ocean region. Considerable commitments were also made by the Governments of Argentina, Belgium, Canada, Germany, Ireland, Japan, New Zealand, Norway, Panama, Peru, the United Kingdom and the United States.

The Global Environment Facility committed \$6.8 million to the blue economy along the Pacific coasts of seven Central American countries. The Ocean Foundation committed \$6.8 million towards promoting a climate-resilient, sustainable blue economy in Latin America and the wider Caribbean Region. The Maritime Alliance announced a commitment of \$100,000 over the next 12 months to develop workforce development materials, produce job profile videos and launch a blue jobs website to inform youth and their parents about jobs in the growing blue economy. The Norwegian University of Science and Technology pledged \$382,725 towards sustainable blue economy development of aquaculture.

The United States announced that the National Oceanic and Atmospheric Administration would partner with industry, other Governments, scientific institutions and civil society organizations in the development of an Ocean Risk Index that would quantify the economic value of coastlines that are physically, biologically and ecologically resilient.

## f. Providing space for dialogue: blue economyrelated conferences and publications

Conferences and meetings related to blue economy topics provide an opportunity for dialogue and for sharing experiences in blue economy development. The following list provides examples of such conferences:

<sup>42</sup> Ocean Policy Research Institute, "Strategies for promoting blue economy: innovation and partnership development – Empirical lessons and future perspectives" (2018).

- First global Sustainable Blue Economy **Conference**, organized by the Government of Kenya, indicated that a blue economy is one that necessarily involves a commitment to sustainability and conservation.43 The conference, held in Nairobi from 26 to 28 November 2018, included over 18,000 participants from 184 countries, and focused on nine themes: (1) smart shipping, ports, transportation and global connectivity; (2) employment, job creation and poverty eradication; (3) cities, tourism, resilient coasts and infrastructure; (4) sustainable energy, mineral resources and innovative industries; (5) ending hunger, securing food supplies, and promoting good health and sustainable fisheries; (6) management and sustaining of marine life, conservation and sustainable economic activities; (7) climate action, agriculture, waste management and pollution-free oceans; (8) maritime security, safety and regulatory enforcement; and (9) people, culture, communities and societies.
- Conference on Financing Sustainable and Climate-Resilient Ocean Economies in Africa was hosted by Seychelles in partnership with the World Bank in February 2018. Seychelles announced the completion of the first stage of its ambitious marine spatial plan and pledged to create two new expansive marine protected areas, both using an innovative funding technique involving a debt swap with groups like the Nature Conservancy.<sup>44</sup>
- Tenth and eleventh annual Blue Tech Weeks, held in San Diego in November 2018 and November 2019, focused on technological innovations targeting sustainability

and efficient use of marine resources that can bring the marine economy into a new age.<sup>45</sup>

- 2018 East Asian Seas Conference held in Iloilo, the Philippines, which concluded on 28 November, demonstrated a strong focus on building the blue economy through growing partnerships, investments and technologies.<sup>46</sup>
- Africa Blue Economy Forum was held in Tunis in June 2018. Sessions focused on public-private partnerships; women's empowerment in the maritime sector; fishing and aquaculture; ocean pollution; governance and security; sustainable ocean energy; ports and sustainable shipping; youth education; and innovative funding solutions.
- Workshop on Arctic Governance, hosted in Tokyo in February 2018 by the Sasakawa Peace Foundation, brought together leaders from the Arctic nations, as well as China, India, Japan, Singapore and the European Union to discuss the future of the Arctic from the perspectives of conservation, use and sustainable development of the region.<sup>47</sup>
- Fifth World Ocean Summit was hosted by the Economist Group in Cancun-Playa del Carmen, Mexico, in 2018, bringing together political leaders and policymakers, industry heads, scientists and NGOs to find and discuss the ideas most likely to achieve the transition to a sustainable ocean economy.<sup>48</sup>
- Sixth World Ocean Summit, hosted by the Economist Group, was held in Abu Dhabi in March 2019.

<sup>&</sup>lt;sup>43</sup> See www.blueeconomyconference.go.ke.

<sup>44</sup> See www.nature.org/en-us/about-us/where-we-work/africa/stories-in-africa/seychelles-conservationcommitment-comes-to-life/.

<sup>45</sup> See www.bluetechweek.org/.

<sup>&</sup>lt;sup>46</sup> See http://eascongress2018.pemsea.org/eas-congress-2018/official-programme/.

<sup>&</sup>lt;sup>47</sup> See www.spf.org/en/topri/news/workshop\_on\_arctic\_governance\_in\_tokyo\_2018.html.

<sup>48</sup> See https://events.economist.com/events-conferences/americas/world-ocean-summit/?utm\_ source=eloqua&utm\_medium=ied-m&utm\_campaign=edm1.

- African Conference on Blue Economy was held in September 2019 at the Suez University in Egypt.
- Blue Economy Caribbean Conference was held in Miami, United States, in October 2019. Participants discussed progress, financing, energy security and renewables, gender equity, and future directions.
- Sustainable Ocean Summit was held in Paris in November 2019.
- Aquabe Conference on Aquatic Resources and Blue Economy was held in Kochi, India, in November 2019.
- Policy Dialogue on Blue Economy and Climate Change in the Context of Sustainable **Development** was held in September 2019 in Seychelles to: (1) discuss the current threats to the blue economy arising from climate change, and environmental issues and challenges, which pose serious risks to the viability, sustainability and economic value of the ocean economy; (2) discuss conditions that would support the successful development of the blue economy and increase climate resilience; and (3) review measures that would enable coastal and small island States to cope effectively, creatively and sustainably with environmental changes as well mitigate impacts and threats to marine and coastal resources. The policy dialogue brought together high-level officials from Angola, Comoros, Madagascar, Mauritius, Mozambigue, Namibia, Seychelles and South Africa, as well

as representatives of regional agencies in Africa and civil society organizations.<sup>49</sup>

 The Blue Economy, Climate Change and Environmental Sustainability dialogue was held in November 2019 in Windhoek. The two-day high-level policy dialogue provided the opportunity for stakeholders to share ideas and experiences related to the potential threats and dangers to the blue economy sector from climate change and environmental challenges.<sup>50</sup>

Concurrent with global conferences, many organizations have released important publications that detail the current situation of the blue economy, as well as advise on next steps. One example is the Institute of Renewable Energy's May 2018 report,<sup>51</sup> which highlights the increased emphasis corporations place on renewable energy sources due to decreasing costs and growing public support.

In May 2018, the Caribbean Development Bank and the UNDP jointly published "Financing the Blue Economy: A Caribbean Development Opportunity".<sup>52</sup> The detailed report discusses innovative financing techniques in the context of the Caribbean region with recommendations and advisories regarding the optimal path into the future.

A 2018 report from the Nicholas Institute for Environmental Policy Solutions and the Environmental Defense Fund delved into the topic of fisheries finance. The report laid out the necessary steps for achieving a sustainable fishing industry using blended capital approaches.<sup>53</sup>

<sup>&</sup>lt;sup>49</sup> United Nations, Economic Commission for Africa, Policy Dialogue on Blue Economy and Climate Change in the Context of Sustainable Development (2019). Available www.uneca.org/policy-dialogue-blue-economy-climatechange-sd-2019.

<sup>&</sup>lt;sup>50</sup> Xinhua, Namibia hosts high-level policy dialogue on blue economy, climate change (2019). Available www. xinhuanet.com/english/2019-11/19/c\_138567654.htm.

<sup>&</sup>lt;sup>51</sup> IRENA, Corporate Sourcing of Renewables: Market and Industry Trends – REmade Index 2018. International Renewable Energy Agency, Abu Dhabi (2018). Available at www.irena.org/publications/2018/May/Corporate-Sourcing-of-Renewable-Energy.

<sup>&</sup>lt;sup>52</sup> Caribbean Development Bank. Financing the Blue Economy: A Caribbean Development Opportunity (2018). Available at http://issuu.com/caribank/docs/financing\_the\_blue\_economy-\_a\_carib?e=21431045/6183183.

<sup>&</sup>lt;sup>53</sup> Environmental Defense Fund and Nicholas Institute for Environmental Policy Solutions at Duke University, Financing fisheries reform: Blended capital approaches in support of sustainable wild-capture fisheries (2018).

In 2019, the United States Department of Energy released a comprehensive report titled "Powering the Blue Economy: Exploiting Opportunities for Marine Renewable Energy in Maritime Markets".<sup>54</sup>

In June 2020, the European Union released its Blue Economy Report 2020, which provided an overview of the performance of the European Union economic sectors related to oceans and the coastal environments.<sup>55</sup> Envirostrat Consulting released the report, "ENCORE and the Transition to a Blue Economy in India: From Assessment to Investment", as part of the World Bank's ENCORE programme. It is focused specifically on India and emphasizes the benefits of a more localized approach on a national and subnational scale as opposed to a global, generalized model of a blue economy transition.

## 4. Challenges to blue economy implementation

## a. Financing and capacity

Pursuing the blue economy requires access to affordable long-term financing at scale, yet such financing is often difficult to come by, and shifting priorities relating to the coronavirus disease (COVID-19) pandemic have made it even more difficult. As a result, there are declining flows of financing for ocean conservation, management and economic development. In addition, many developing countries have unsustainable levels of external debt that further act as a barrier to transitioning to a blue economy. Not surprisingly, financing is often cited as a major challenge to countries' blue economy ambitions. For example, 26 out of 34 (76 per cent) of the Ocean Conference voluntary commitments are resourcing deficiencies that can be further categorized into staff/expertise related, in-kind delays and financial issues.56

A second major challenge is lack of capacity and technology. Depending on its scope and focus, a blue economy will require capacity for technological innovation, including cleaner and renewable technologies, sustainability innovations for fisheries, aquaculture, tourism and shipping, as well as capacity to develop bio-based industries. Along with technologies, a skilled workforce is also required to undertake the transition. Thus, capacity development and technology transfer are often vital components of a blue economy transition

## b. Enabling conditions and coordination

An additional challenge relates to developing enabling conditions for a blue economy, including institutional, regulatory, governance, legislative and human resources needed to achieve both intersectoral and transboundary coordination. That requires political will and leadership, as well as time to build trust and capacity towards intersectoral collaboration.

Approximately 18 per cent of the Ocean Conference voluntary commitments towards a

Available at edf.org/blendedcap.

<sup>&</sup>lt;sup>54</sup> See www.energy.gov/sites/prod/files/2019/03/f61/73355.pdf.

<sup>&</sup>lt;sup>55</sup> See https://ec.europa.eu/commission/presscorner/detail/en/ip\_20\_986.

<sup>&</sup>lt;sup>56</sup> Community of Ocean Action on Sustainable Blue Economy, Interim Assessment (2019). Available at https:// sustainabledevelopment.un.org/content/documents/22805Sustainable\_blue\_economy\_COA\_interim\_ assessment.pdf.

sustainable blue economy reported issues relating to stakeholder engagement. For example, the Mozambique Channel Partnership (see box 5) reported challenges regarding obtaining consensus among countries, partners and stakeholders at many levels.<sup>57</sup> That challenge is particularly pertinent to large-scale efforts that include partners from national and local governments, multiple sectors, NGOs, civil society and local communities.

## c. Ensuring equity

Concerns have been raised in both green and blue economy literature about the potential for blue economies to justify or facilitate land (or ocean) grabbing, displacement of indigenous peoples and other activities at odds with sustainability objectives.58 Even without appropriation of land and resources belonging to communities, blue growth/blue economy policy proposals that draw on market-based mechanisms, and increasingly rely on commodification and valuation of nature and its resources may not provide equitable solutions for coastal communities and small-scale and artisanal fishers.<sup>59</sup> In the competitive ocean space, the interests of those most dependent and vulnerable (e.g., small-scale artisanal fishers) are often marginalized, mostly to the benefit of other, more visible sectors (such as coastal tourism), which are viewed as bringing greater economic benefits.60

Overall, there has been inadequate attention paid to social justice and inclusion in ocean science management, governance and funding. Equity is often seen as the forgotten dimension of blue economy transitions.<sup>61</sup> In order to achieve the goals of the 2030 Agenda, it is important that initiatives aim to leave no one behind and that coastal communities are able to equitably share in the benefits.

## d. Addressing environmental concerns

Ocean ecosystems and species are threatened by multiple impacts from human activities. Those impacts include unsustainable extraction of marine resources, including unsustainable fishing, physical alterations and destruction of marine and coastal habitats and landscapes, marine pollution, as well as impacts of climate change that include warming, sea-level rise, ocean acidification, deoxygenation, and intense and frequent weather events.<sup>62</sup> Further developing economic activities in the context of declining ocean health requires added attention to ensuring that such activities do not cause additional environmental degradation. Increased focus on the combined impacts of multiple sectors, and the use of tools such as marine protected areas, environmental impact assessments and strategic environmental assessments are important for the sustainability of a blue economy.

## e. Meeting the science needs of a blue economy

By its nature, building a blue economy is an intersectoral activity that relies on interdisciplinary ocean science and is based on inclusive governance processes. At the national level,

<sup>57</sup> Ibid.

<sup>&</sup>lt;sup>58</sup> N.J. Bennett, H. Govan and T. Satterfield, "Ocean grabbing", *Marine Policy*, 57 C (2015).

<sup>&</sup>lt;sup>59</sup> M. Barbesgaard, Blue growth: savior or ocean grabbing? *Journal of Peasant Studies*, 45(1) (2018), pp. 130–149.

<sup>&</sup>lt;sup>60</sup> World Bank and United Nations, Department of Economic and Social Affairs, The Potential of the Blue Economy.

<sup>&</sup>lt;sup>61</sup> A.M. Cisneros-Montemayor and others, Social equity and benefits as the nexus of a transformative Blue Economy: A sectoral review of implications. *Marine Policy*, 109, 103702 (2019).

<sup>&</sup>lt;sup>62</sup> World Bank and United Nations, Department of Economic and Social Affairs, The Potential of the Blue Economy.

it will require convening diverse groups of experts and stakeholders to tackle challenges associated with the emerging blue economy. In order to ensure that governance processes are inclusive, the participation of NGOs, civil society, including small-scale fishers organizations, indigenous peoples and local communities is particularly important. The participation of the private sector is also vital owing to the technological innovations that are required to make the activities of sectors more sustainable.

Science and innovation are key to delivering a sustainable blue economy. With regard to science, an interdisciplinary approach is required to fully understand the economic, environmental and societal aspects of a blue economy, as well as the potential trade-offs and synergies between them. Thus, environmental sciences are important for ensuring that economic activities occur in the context of conservation and sustainable use of the ocean environment. The social sciences are important for ensuring that social inclusion and sustainable livelihoods are central to economic activities. The incorporation of traditional knowledge and building on traditional practices provides opportunities for community participation and increases the available knowledge base. And innovation is important to provide for economic growth, but also for ensuring that sectoral activities are both environmentally and socially responsible.

Interdisciplinary or transdisciplinary science is still a new field, and such approaches will need to be further explored to underpin sustainable blue economies.

## 5. Strengthening sustainable ocean-based economies: learning from early examples of implementation

## a. Improving ocean governance

The environmental and social sustainability, and ultimately the economic outcomes, of blue economies are dependent on good governance. A blue economy requires improved governance of individual sectors, as well as multisectoral governance of all ocean activities.

Some key components of governance include the following: blue economies are inclusive of all stakeholders; blue economies pioneer new pilot projects and replicate successful ones; blue economies further public participation and advocacy; blue economies are responsive to national needs and aspirations; and blue economies are based on solid science, including natural, social and economic sciences.

Figure 4 demonstrates the steps that need to be taken to continue developing the blue economy in the Caribbean. They include leadership, coordination, public advocacy, demand and valuation, as well as strengthening of governance-related issues.

## Figure 4 Next steps for blue economy development in the Caribbean



## b. Developing a common understanding of a sustainable ocean economy

As discussed in chapter 2, there is currently no common definition for the terms "blue economy" or "sustainable ocean-based economy". While work relating to blue economy transitions can proceed without such a definition, it is important that a common understanding of what is meant by the term is developed globally. It might consist of a description, principles and guidance, drawing from current experiences and best practice and should ensure that concerns related to environmental sustainability and social equity are firmly embedded in blue economy transitions. A United Nations entity, such as the Department of Economic and Social Affairs and/or the World Bank would be well positioned to lead an effort to bring together stakeholders and start the process of gathering case studies and developing guidance and/or principles, which, once accepted, could be used to guide national processes. A

long-term learning process that involves the sharing of experiences and good practice could be established. There is already a large amount of existing documentation to draw upon, including the work of the High-Level Panel for a Sustainable Ocean Economy, FAO's Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries, The Commonwealth Blue Charter and the European Commission's Blue Growth Strategy. In addition, principles have been developed by the International Union for Conservation of Nature and the World Wide Fund for Nature.

## c. Ensuring stakeholder representation and ocean protection

One best practice from national experiences thus far is the need for a multi-stakeholder governing framework that provides for multiple sustainable uses as well as conservation outcomes. Marine spatial planning, a multi-sectoral collaborative activity, plays a critical role in helping to overcome the sector-by-sector approach often found in ocean governance. The comprehensive and integrated nature of marine spatial planning demands a level of stakeholder engagement, participatory decision-making, communication, collaboration and flexibility that goes well beyond the current status quo.<sup>63</sup> In order to be effective and equitable, marine spatial planning must be attentive to representation, power dynamics and how new boundaries, rights and activities can impact the tenure, rights, livelihoods and food security of local communities.<sup>64</sup>

# d. Diversifying sectoral representation in blue economies

While the more traditional sectors of a blue economy (e.g., fisheries, shipping, tourism) are well covered in most blue economies, some newer, innovative sectors are not, including in particular, marine biotechnology. Supported by the exceptional biodiversity of the ocean, novel genes and natural products sourced from marine life have applications in medicine, food, materials, energy and across a wide array of bio-based industries.<sup>65</sup> Marine biotechnology is generally environmentally sustainable, and it has the potential to provide employment and economic benefits from product discovery and development. Development of marine biotechnology can also advance gender equality through providing skilled jobs, including for women.

Blue economy implementation could also further innovate on new tools that bring together economic development, and social and environmental sustainability, such as new genomic tools. Omics (e.g., genomics, proteomics, metabolomics) show promise across fisheries management, aquaculture development, food and water safety, species and habitat conservation, seafood consumer protection, and natural products discovery. Omics tools can jointly advance Goal 14 (Life Below Water) and Goal 3 (Good Health and Well-being) through their ability to detect and monitor harmful algal blooms, toxins, pathogens and invasive species, thus protecting human health and coastal economies. Omics can improve fisheries management and consumer protection through genetic analysis to identify fraudulent and illegally sourced seafood products. Fisheries management will further benefit from the ability of omics to increase understanding of fisheries population structure, distribution and food webs.66

Other underrepresented sectors in blue economy development include new and innovative ocean technologies and engineering solutions, as well as renewable ocean energy suitable for small island developing States, and developing and least-developed coastal countries. In addition, sustainable small-scale aquaculture, including multitrophic aquaculture and lower trophic-level aquaculture (e.g., growing of seaweed), is likely to provide economic opportunities, social inclusion and a small environmental footprint.

### The blue economy can also incorporate nonextractive activities, such as blue carbon.

Preservation of important ecosystem services is a key component of a blue economy. One such service is carbon sequestration. "Blue

<sup>&</sup>lt;sup>63</sup> G. Wright and others, "Marine spatial planning in areas beyond national jurisdiction", *Marine Policy* (2019).

<sup>&</sup>lt;sup>64</sup> N.J. Bennett and others, "Towards a sustainable and equitable blue economy", Nature Sustainability 2 (2019), pp. 1–3.

<sup>&</sup>lt;sup>65</sup> M. Vierros and others, "Who owns the ocean? Policy issues surrounding marine genetic resources", *Limnology and Oceanography Bulletin*, 25(2) (2016), pp. 29–35.

<sup>&</sup>lt;sup>66</sup> NOAA, 'Omics Strategy: Strategic Application of Transformational Tools. Available at https://nrc.noaa.gov/ Portals/0/Draft%20NOAA%20'Omics%20Strategy\_11.13.2019\_fixed%20photo.pdf?ver=2019-11-14-004831-273.

carbon" is the carbon captured in oceans and coastal ecosystems.<sup>67</sup> The carbon captured by living organisms in oceans is stored in the form of biomass and sediments from mangroves, salt marshes, sea grasses, and – potentially – algae. Several key coastal habitats, such as sea grasses and mangroves, fix carbon at a much higher rate than comparable terrestrial systems.<sup>68</sup>

If the value of the services provided by those coastal ecosystems in storing carbon could be quantified, payments could theoretically also be extracted and paid to communities involved in managing and conserving or restoring those habitats through a "carbon market approach". Thus far, though, blue carbon has not been fully incorporated into global carbon markets. Some blue carbon pilot projects are under way, and there is a potential for that sector to emerge more fully in the future, particularly as carbon prices on the voluntary or compliance markets increase.<sup>69</sup>

## e. Financing and capacity for a blue economy transition

Some good examples of financing a blue economy transition are starting to emerge from representatives of the financial services sector and non-profit groups. For example, the European Commission, the European Investment Bank, the World Wide Fund for Nature, and the World Resources Institute created a framework called the Sustainable Blue Economy Finance Principles aimed at guiding investors. The 14 principles include being transparent, risk-aware, impactful and science-based when developing the blue economy. Their goal is to support the development of, and provide a framework for, a sustainable ocean-based economy. The principles are described in box 8.

## Box 8 Sustainable Blue Economy Finance Principles

The Sustainable Blue Economy Finance Principles aim to guide the crucial role that banks, insurers and investors can play in blue economies. The Principles provide a guiding framework for financing a sustainable blue economy. They were developed by the European Commission, the World Wide Fund for Nature, the World Resources Institute and the European Investment Bank.

#### 1. Protective

We will support investments, activities and projects that take all possible measures to restore, protect or maintain the diversity, productivity, resilience, core functions, value and the overall health of marine ecosystems, as well as the livelihoods and communities dependent upon them.

#### 2. Compliant

We will support investments, activities and projects that are compliant with international, regional, national legal and other relevant frameworks which underpin sustainable development and ocean health.

<sup>&</sup>lt;sup>67</sup> D. Herr, E. Pidgeon and D. Laffoley, eds., 2012. Blue carbon policy framework: based on the discussion of the international blue carbon policy working group. International Union for Conservation of Nature and Arlington Conservation International, Virginia: Conservation International, Gland, Switzerland.

<sup>&</sup>lt;sup>68</sup> L. Pendleton and others, Estimating global "blue carbon" emissions from conversion and degradation of vegetated coastal ecosystems. PloS one, 7(9), e43542 (2012).

<sup>&</sup>lt;sup>69</sup> World Bank and United Nations, Department of Economic and Social Affairs. The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries (2017).

#### 3. Risk-aware

We will endeavour to base our investment decisions on holistic and long-term assessments that account for economic, social and environmental values, quantified risks and systemic impacts and will adapt our decision-making processes and activities to reflect new knowledge of the potential risks, cumulative impacts and opportunities associated with our business activities.

#### 4. Systemic

We will endeavour to identify the systemic and cumulative impacts of our investments, activities and projects across value chains.

#### 5. Inclusive

We will support investments, activities and projects that include, support and enhance local livelihoods, and engage effectively with relevant stakeholders, identifying, responding to, and mitigating any issues arising from affected parties.

#### 6. Cooperative

We will cooperate with other financial institutions and relevant stakeholders to promote and implement these principles through sharing of knowledge about the ocean, best practices for a sustainable Blue Economy, lessons learned, perspectives and ideas.

#### 7. Transparent

We will make information available on our investments and their social, environmental and economic impacts (positive and negative), with due respect to confidentiality. We will endeavour to report on progress in terms of implementation of these Principles.

#### 8. Purposeful

We will endeavour to direct investment to projects and activities that contribute directly to the achievement of Goal 14 ("Conserve and sustainably use the oceans, seas and marine resources for sustainable development") and other Sustainable Development Goals especially those which contribute to good governance of the ocean.

#### 9. Impactful

We will support investments, projects and activities that go beyond the avoidance of harm to provide social, environmental and economic benefits from our ocean for both current and future generations.

#### 10. Precautionary

We will support investments, activities and projects in our ocean that have assessed the environmental and social risks and impacts of their activities based on sound scientific evidence. The precautionary principle will prevail, especially when scientific data is not available.

#### 11. Diversified

Recognizing the importance of small to medium enterprises in the Blue Economy, we will endeavour to diversify our investment instruments to reach a wider range of sustainable development projects, for example in traditional and non-traditional maritime sectors, and in small and large-scale projects.

#### 12. Solution-driven

We will endeavour to direct investments to innovative commercial solutions to maritime issues (both land- and ocean-based), that have a positive impact on marine ecosystems and ocean-dependent livelihoods. We will work to identify and to foster the business case for such projects, and to encourage the spread of best practice thus developed.

#### 13. Partnering

We will partner with public, private and non-government sector entities to accelerate progress towards a sustainable Blue Economy, including in the establishment and implementation of coastal and maritime spatial planning approaches.

#### 14. Science-led

We will actively seek to develop knowledge and data on the potential risks and impacts associated with our investments, as well as encouraging sustainable investment opportunities in the Blue Economy. More broadly, we will endeavour to share scientific information and data on the marine environment.

Source: UNEP Finance Initiative. Available at <a href="http://www.unepfi.org/ecosystems/sustainable-blue-economy-finance/the-principles/">www.unepfi.org/ecosystems/sustainable-blue-economy-finance/the-principles/</a>

In general, sources of financing can be broken down into two major categories. The first category includes support for governance reform, ecosystem-based management of marine areas and resources, and other enabling conditions required for a blue economy. Activities in that category have been advanced and financed by the Global Environment Facility, UNDP, the World Bank Group, UNEP and FAO. The second category includes new and innovative sources of financing, such as debt for nature swaps and blue bonds.

As an example of the first category, over the last 20 years, UNDP and the Global Environment Facility have successfully developed and applied a series of ocean and coastal market transformation methodologies that have proven very effective at removing barriers and putting in place an enabling policy environment that can catalyse sizeable guantities of public- and private-sector financial flows for ocean restoration and protection. Instruments employed for transformation include Transboundary Diagnostic Analysis/Strategic Action Programme, which allows countries to work together to address common issues in shared ecosystems; Integrated Coastal Management/Framework for Sustainable Development of Coastal Areas; and Global or Regional Ocean Legal Frameworks. The last approach involves building upon, and helping to advance, an existing or anticipated intergovernmental process of negotiating a new regional or global legal framework to address a major ocean issue. Each of those frameworks allows the

advancement of ocean governance as an enabling condition for transition to a blue economy. Lessons from the application of those methodologies have shown that correcting market and policy failures through application of science-based integrated ocean planning and barrier removal instruments can not only act catalytically to restore and protect coasts and oceans, but it can also generate sizeable business activity and jobs when job-creation activities are deliberately built into ocean management reforms.

The second category includes a small but growing number of international public financing and other innovative instruments that are emerging to finance investments in both existing nascent and new sectors. Examples of emerging and innovative financing include financing through marine conservation, such as visitor entry fees to marine protected areas; debt for nature swaps, which mobilize private impact investor resources to swap out high-interest-bearing sovereign debt in exchange for governmental commitments to conservation and climate adaptation and mitigation; and blue bonds, an adaptation of land-based green bond instruments to finance the ocean economy.

Debt for coastal/marine nature swap allow a country to redirect a portion of its current debt payments to fund nature-based solutions to climate change, including marine spatial planning and networks of marine protected areas. For example, Seychelles is proceeding with a \$30 million debt for conservation swap, in exchange for the Government's commitment to enhance marine conservation and climate adaptation, including protecting important tuna feeding grounds. The initiative will also establish a permanent endowment-generating sustainable financing for Seychelles' marine conservation and climate adaptation activities.

Blue bonds are modelled after green bonds. They are issued to raise capital and investment for new and existing projects with environmental benefits. Seychelles issued blue bonds in 2018, the first trial of this instrument among small island developing States. Bond sales, facilitated by multilateral institutions including the World Bank and the African Development Bank, will fund the implementation of a fisheries management plan to develop Seychelles' semi-industrial and artisanal fisheries. The World Bank is currently considering a number of projects in which blue bonds provide the means to fund blue economy and fisheries development. The lessons from those projects will be shared after implementation, as soon as they become available. If successfully trialed, both debt swaps and blue bonds offer significant new blue financing potential for small island developing States and least developed countries.

#### Box 9 Seychelles blue finance innovation

During the 2015 United Nations Climate Change Conference in Paris, the Government of Seychelles completed a first-of-its-kind debt-for-adaptation swap to enhance marine conservation and climate adaptation activities. The debt swap created a sustainable source of funding to support Seychelles in the creation and management of 400,000 km<sup>2</sup> of new marine protected areas (the second largest in the Indian Ocean) to improve resiliency of coastal ecosystems.

The landmark agreement reached between Seychelles and its Paris Club creditors, led by France, and the Government of South Africa resulted in a \$25.9 million debt swap. The Nature Conservancy designed the debt swap to enable Seychelles to redirect a portion of their current debt payments to fund nature-based solutions to climate change through the newly established Seychelles Conservation and Climate Adaptation Trust. Over a 20-year period, the proceeds of the debt will be used to:

- Finance marine and coastal management to increase resilience to the impacts of climate change;
- · Capitalize an endowment to finance work to support adaptation in the future;
- Repay impact investors.

This is the first debt swap designed explicitly for climate adaptation and the first to include impact investments. The combination of public and private funds – each leveraging the other – creates a new model for co-investment debt swap in other areas of the world, notably other small island developing States.

*Source*: Adapted from Global Island Partnership at www.glispa.org/glispa-bright-spots/191-innovative-debt-swap-to-finance-climate-adaptation-in-seychelles.

## f. Science for a blue economy

Interdisciplinary ocean science is required to inform international negotiations, design ocean policy, shape blue economy initiatives and monitor social and environmental impacts and outcomes. The upcoming United Nations Decade of Ocean Science for Sustainable Development (2021–2030) offers an important opportunity to identify how natural and social sciences can be employed and mobilized to enable the realization of a sustainable and equitable blue economy.<sup>70</sup>

The science and innovation needs of a blue economy could be summarized as follows:

- Natural sciences to ensure that conservation and sustainable use of marine habitats and species are not compromised, but rather promoted, by economic activities
- Social sciences to address inequality, basic needs, employment and well-being through economic activities, and to provide opportunities and benefits for all segments of society. That may include job opportunities for women, youth, indigenous peoples and marginalized people
- Interdisciplinary sciences to ensure that work undertaken by natural and social scientists, as well as economists, create synergies and avoid trade-offs
- Innovation by sectors of the blue economy to not only make their activities more efficient and economically viable, but also to reduce their environmental impact, and to provide for social inclusion
- Sciences supporting marine spatial planning to bring together the needs of the economic sectors with those of environmental conservation and sustainable use
- Technological innovation related to renewable energy, particularly renewable energy suitable for small island developing States and developing coastal countries, as well as climate change adaptation and ocean health

Social science data are particularly important for better understanding ocean users and their roles and aspirations. Up to now, the blue economy has been largely informed by economic and ecological research. Key insights from the social sciences can contribute to a better understanding of the concerns of coastal communities, including in relation to food and nutrition security, livelihoods and social justice.<sup>71</sup> Social sciences can ensure that blue economies consider equity as an integral component of their implementation plans.

In ocean sciences, an important source of science for a blue economy comes from ocean observation. Sustained ocean observations provide an essential input to ocean scientific research. The ultimate beneficiaries of ocean observations are end users whose activities or businesses benefit from ocean data and information in terms of better scientific understanding of the ocean, improved safety, economic efficiency gains or more effective regulation of ocean use, and protection of the ocean environment.

In many parts of the world, traditional knowledge, with full participation of the knowledge holders, provides an important source of ocean observation. Policy, including policy related to a blue economy, depends on ocean data and information to inform the drafting of effective legislation to ensure safety of life or property, protection of the environment, or regulation of the use of ocean space and ocean resources. Ocean data and information are also needed to monitor compliance with the resulting legislation. Ocean data and information deliver benefits in terms of measuring policy effectiveness; for example, determining the effectiveness of a policy to reduce concentrations of a harmful pollutant requires long-term monitoring to determine whether the policy is delivering on that goal.72

N.J. Bennett and others, Towards a sustainable and equitable blue economy. Nature Sustainability 2 (2019), pp. 1–3.

P.J. Cohen and others, Securing a just space for small-scale fisheries in the blue economy, *Frontiers in Marine Science*, 6 (2019), p. 171.

<sup>72</sup> R. Rayner, C. Jolly and C.C. Gouldman, Ocean observing and the blue economy. Frontiers in Marine Science, 6 (2019) p. 330.

Sustainable data streams are an essential part of management infrastructure. Collecting sufficient data to inform effective decision-making requires dedicated infrastructure to ensure that sampling and data collection are directly linked to, and sufficient for, management needs.<sup>73</sup>

While engaging science to support policy is important for a blue economy, access to scientific data is also vital. Open data are critically important for effective conservation and sustainable use of marine biodiversity. Open data enable sectors to operate in a sustainable manner, and help in the design of marine spatial planning and marine protected areas. Increasing availability of open data is an intrinsic component of the future use of marine environments, and it would expand the collective knowledge and capacity to sustainably develop and manage the ocean. Data should be accessible online through databases and meet international standards.<sup>74</sup>

Such databases already exist, and they could be further built upon to meet the needs of national and regional blue economies. Some examples of existing databases include:

- Ocean Biodiversity Information System: www.iobis.org – a global repository for marine data
- World Register of Marine Species: www. marinespecies.org – a global database supporting consistent species identification
- Global Biodiversity Information Facility: www.gbif.org – an interoperable network of biodiversity databases and information technology tools
- Encyclopedia of Life: www.eol.org an online collaborative bio-encyclopedia
- Global Ocean Observing System: www. ioc-goos.org – a network identifying and

supporting global collection of essential ocean variables

- GenBank: www.ncbi.nlm.nih.gov/genbank/

   an annotated collection of all publicly available DNA sequences
- International Oceanographic Data and Information Exchange: www.iode.org – UNESCO, Intergovernmental Oceanographic Commission programme and network of 80 National Oceanographic Data Centres
- World Ocean Database: www.nodc.noaa. gov/OC5/WOD/wod\_updates.html – a global central database of oceanographic variables
- Ocean Data Publication Cookbook (UNESCO, 2013): www.oceandocs.org/ handle/1834/5562 – a guide for assigning a permanent identifier to a data set for the purposes of publishing it online and the citation to be used in scientific literature
- Ocean Best Practices: https://repository. oceanbestpractices.org – a repository containing a wide variety of "practices" such as manuals and guides related to oceanographic data and information management

Interpreting data sets and translating data into useful information, however, requires technical tools and knowledge. Capacity development is, therefore, needed to enable all countries to access and use data, samples and information and benefit from the outcomes of marine scientific research.

The United Nations Decade of Ocean Science for Sustainable Development has the potential to connect the dots in improving the science, capacity and technology for sustainable ocean-based economies. Box 10 describes some of the major features of the Decade.

N. Bax and others, Open data: enabling conservation and sustainable use of biodiversity in areas beyond national jurisdiction. *Nereus Policy Brief* (2016), pp. 1–3.
 Ibid

<sup>&</sup>lt;sup>74</sup> Ibid.

## Box 10 United Nations Decade of Ocean Science for Sustainable Development

The Intergovernmental Oceanographic Commission of UNESCO was mandated by the General Assembly to lead the preparation phase of the United Nations Decade for Ocean Science for Sustainable Development 2021–2030 (the Ocean Decade). The vision of the Ocean Decade is "the science we need for the ocean we want".<sup>75</sup> It will provide a global convening framework for a wide and diverse range of ocean stakeholders to work towards common scientific priorities and address the most pressing needs for knowledge generation and application to achieve sustainable development. The Ocean Decade will focus significant efforts on capacity development and the transfer of marine technology, as well as data and knowledge management, given their critical importance in creating a robust enabling environment for ocean science.

The Ocean Decade has the potential to greatly increase the available scientific knowledge about the entire ocean, including the currently poorly known areas of the deep sea, as well as regions where data gaps exist. The Ocean Decade also presents an important opportunity to advance capacity-building and technology transfer, engage and synergize partnerships across diverse ocean actor groups and improve data management and accessibility practices and policies that are tailored to blue economy priorities. In doing so, the Ocean Decade can build synergies between the 2030 Agenda and other ocean-relevant agreements, and advance coordination and collaboration between national, regional and global agencies and stakeholders working on ocean science and management. The Ocean Decade aims to leave no one behind in progress towards a sustainable ocean, and, as such, geographical, generational and gender diversity will be addressed in all actions carried out as part of the Decade.

The Ocean Decade has the potential to improve the scientific basis for ocean governance and blue economies. For example, the Decade will accelerate knowledge about currently understudied ocean ecosystems and processes, help develop a comprehensive digital atlas of the entire ocean, expand observations infrastructure, enhance understanding of the connectivity between environmental and human processes, increase knowledge, applications and services related to marine genetic resources and improve forecasts and predictive capacity. All of the above will contribute towards the ability of countries to implement their national and regional blue economies, allowing them to better understand the impacts of multiple stressors, including climate change, on species and ecosystems in the ocean.

Source: UNESCO, Intergovernmental Oceanographic Commission.

<sup>&</sup>lt;sup>75</sup> UNESCO, Intergovernmental Oceanographic Commission, The Science We Need for the Ocean We Want: The United Nations Decade of Ocean Science for Sustainable Development (2021–2030) (May 2019).

## 6. Conclusions

This report discussed the current status of blue economies, some of the challenges faced, as well as emerging solutions and best practices. In particular, the report has highlighted the need for multisectoral governance that integrates sustainable human uses with environmental conservation and social equity. Marine spatial planning has shown promise as a framework that can start delivering on most of those objectives. Comprehensive and integrated marine spatial planning, which provides for the meaningful and collaborative participation of all stakeholder and ocean sectors, is also important to ensure that conflicts between sectors are avoided, and that environmental conservation and social sustainability values are not compromised.

The report also pointed out the lack of a commonly accepted definition of, and guidance on, the blue economy. Thus, there is a need for the United Nations system to start work to develop a common understanding of that concept. That might include compiling case studies, extracting lessons learned and best practices, compiling existing principles, and using them to start working, together with all stakeholders, towards the development of international guidelines and/or principles for the implementation, monitoring and management of blue economy activities. The development of guidance or guidelines, as well as a definition or description, would help build collaborative activities and partnerships around blue economy transitions that are based on a common understanding of the concept.

Blue economies will also need to be based on interdisciplinary sciences, with sciencepolicy interfaces that can inform international negotiations, design ocean policy, shape blue economy initiatives and monitor social and environmental impacts and outcomes. The United Nations Decade of Ocean Science for Sustainable Development has the potential to improve the available scientific information for blue economy development.

Finally, financing blue economy transitions presents a challenge for many countries. This report highlighted some innovative solutions for blue economy financing, including Seychelles' debt swap and blue bond issuance. The report also highlighted the Sustainable Blue Economy Finance Principles, which aim to guide the crucial role that banks, insurers and investors can play in blue economies. The principles provide a guiding framework for financing a sustainable ocean economy.



The present report examines recent developments in sustainable ocean-based economies, including definitions, developments at the national, regional and global levels, challenges to blue economy implementation, and some of the lessons that have been learned from early examples implemented around the world.