

# Turning the Tide: **How to finance a sustainable ocean recovery**

A practical guide for  
financial institutions



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# Acknowledgements

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# Foreword

## Take the tide while it serves

**“There is a tide in the affairs of men, which taken at the flood, leads on to fortune...On such a full sea are we now afloat.”**

**William Shakespeare**

Shakespeare’s words were never more pertinent than to the circumstances of 2021. The tide will be at its flood when we congregate at COP26 in Glasgow in November, and it is from there that we may ride the blue-green current to a carbon-neutral world. If we stay true to science and set the logical course required for the security of succeeding generations, we will finally be putting an end to the cruel years of denial and appeasement.

If the challenge of greater ambition is progressively met in the months ahead, we have every reason to be hopeful. Climate change is on the lips of world leaders in governance and business, with commitments to a carbon neutral world multiplying and the cost of renewable energy plunging to more than competitive levels. Financial markets and consumers are moving to join this quantum shift in the direction of a sustainable future. The smart money is on a decarbonised economy, with the spectre of stranded assets in a grey-brown world haunting many a boardroom.

In 2015, all Member States of the United Nations agreed to the adoption of Sustainable Development Goal 14 (SDG 14), to conserve and sustainably use the resources of the ocean. The sustainable blue economy will be at the heart of our implementation of SDG 14 and we can expect the next UN Ocean Conference in Lisbon to hold us all to account on progress. Searching questions will be asked as to the degree to which major industries such as ports, shipping, fishing, coastal tourism and renewable energy are demonstrating sustainability.

In 2010, the blue economy was estimated to stand at a global gross value-added of USD 1.5 trillion, a figure that is expected to double by 2030. The essential point in all such considerations is the sustainability of what is being planned. It is in this context that the High-Level Panel for a Sustainable Ocean Economy’s call for all Exclusive Economic Zones (EEZs) to be sustainably managed under Sustainable Ocean Plans by 2030, is so seminal. In making this call, the panel’s fourteen serving heads of state and government committed their national EEZs to be governed by Sustainable Ocean Plans by 2025.

Everything is connected, from economies to ecosystems, from industry to biodiversity, and thanks to initiatives like the Task Force on Climate-Related Financial Disclosures, Principles for Responsible Banking and Principles for Sustainable Insurance, the banking sector, insurers and investors are now conscious that their financial activities impact on the health of the ocean. Financial institutions provide the financing, investment and insurance required to power ocean-related sectors, therefore financial decisions taken today impact the lives and livelihoods of future generations. This is so because climate change, pollution, habitat destruction and over-exploitation of the ocean's resources are causing a palpable decline in the ocean's health, and there cannot be a healthy planet in the future without a healthy ocean. It is therefore critical here and now that financial flows are directed towards the sustainability of the blue economy.

The publication of this timely industry guidance provides a practical toolkit for financial institutions to pivot their activities towards financing a sustainable blue economy. It offers easy-to-follow guidelines on how to approach clients in five key ocean sectors chosen for their established connection with the finance industry: maritime transportation, ports, seafood, coastal tourism and marine renewable energy. It gives a detailed breakdown of which activities to seek out as best practice, which activities to challenge, and which activities to avoid financing completely due to their damaging nature.

The guidance complements existing frameworks and literature, and is designed to be read alongside key reports such as [Rising Tide: Mapping Ocean Finance for a New Decade](#) and [The Ocean Finance Handbook: Increasing Finance for a Healthy Ocean](#). Critically, it points the way to the [Sustainable Blue Economy Finance Principles](#), the keystone for financing activities in the ocean economy. Wide use of these principles will ensure ocean finance is delivered with sustainability at its core, so that profitability goes hand-in-hand with environmental and social stewardship. The financing principles complement [policy and decision-support of UNEP to develop transformative pathways and comprehensive ocean governance towards ocean sustainability](#). I salute the more than 50 institutions who are already signatories of this initiative, signalling their commitment to take immediate action on the sustainability of the ocean economy across their financial activities.

For the sake of SDG 14's faithful implementation, for the health of the ocean and the security of generations to come, I call upon financial institutions to recognise their connection and sign up to the [Sustainable Blue Economy Finance Principles](#). On such a full sea are we now afloat.



A handwritten signature in black ink, appearing to read 'Peter Thomson'.

**Peter Thomson**  
United Nations Secretary-General's  
Special Envoy for the Ocean

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# List of abbreviations and acronyms

<b>ADD</b>	acoustic deterrent device	<b>ETP</b>	endangered, threatened and protected
<b>ASC</b>	Aquaculture Stewardship Council	<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>AER</b>	average efficiency ratio	<b>FI</b>	financial institution
<b>BC</b>	black carbon	<b>FoC</b>	flag of convenience
<b>BSEE</b>	Bureau of Safety & Environmental Enforcement	<b>FSA</b>	formal safety assessment
<b>CANARI</b>	Caribbean Natural Resources Institute	<b>GLP</b>	Global Infrastructure Partners
<b>CAR</b>	climate adaptation and resilience	<b>GMF</b>	Global Maritime Forum
<b>CBI</b>	Climate Bonds Initiative	<b>GSTC</b>	Global Sustainable Tourism Council
<b>CFCs</b>	chlorofluorocarbons	<b>GWEC</b>	Global Wind Energy Council
<b>DPSIR</b>	driver, pressure, state, impact, response	<b>HAROPA</b>	Ports of Havre, Rouen and Paris
<b>EC</b>	European Commission	<b>H&amp;M</b>	hull and machinery
<b>ECA</b>	emission control area	<b>IAPH</b>	International Association of Ports and Harbors
<b>EEA</b>	European Environment Agency	<b>IBPES</b>	Intergovernmental Panel on Biodiversity and Ecosystem Services
<b>EIB</b>	European Investment Bank	<b>ICCT</b>	International Council on Clean Transportation
<b>EJF</b>	Environmental Justice Foundation	<b>ICS</b>	International Chamber of Shipping
<b>EPR</b>	extended producer responsibility	<b>IDB</b>	Inter-American Development Bank
<b>EPS</b>	Eastern Pacific Shipping	<b>IEA</b>	International Energy Agency
<b>ESG</b>	environmental, social and governance	<b>IFREMER</b>	L'Institut Français de Recherche pour l'Exploitation de la Mer
<b>ESI</b>	Environmental Ship Index		
<b>ESPO</b>	European Sea Ports Organisation		
<b>ETC</b>	Energy Transitions Commission		

<b>ILO</b>	International Labour Organization	<b>PLA</b>	Port of London Authority
<b>IMO</b>	International Maritime Organization	<b>PM</b>	particulate matter
<b>IPCC</b>	Intergovernmental Panel on Climate Change	<b>PPIAF</b>	Public-Private Infrastructure Advisory Facility
<b>IRENA</b>	International Renewable Energy Agency	<b>PPPLRC</b>	Public-Private-Partnership Legal Resource Center
<b>ITWF</b>	International Transport Workers' Federation	<b>PRB</b>	Principles for Responsible Banking
<b>IUCN</b>	International Union for Conservation of Nature	<b>PRI</b>	Principles for Responsible Investment
<b>IUMI</b>	International Union of Marine Insurance	<b>PSC</b>	port state control
<b>IUU</b>	illegal, unreported and unregulated	<b>PSI</b>	Principles for Sustainable Insurance
<b>IWSA</b>	International Windship Association	<b>PWC</b>	PricewaterhouseCoopers
<b>KPI</b>	key performance indicator	<b>SASB</b>	Sustainability Accounting Standards Board
<b>LDCs</b>	least developed countries	<b>SBE</b>	sustainable blue economy
<b>LNG</b>	liquid natural gas	<b>SBEFI</b>	Sustainable Blue Economy Finance Initiative
<b>M&amp;A</b>	mergers and acquisitions	<b>SDG</b>	Sustainable Development Goals
<b>MARPOL</b>	International Convention for the Prevention of Pollution from Ships	<b>SIDS</b>	small island developing states
<b>MCST</b>	Micronesian Center for Sustainable Transport	<b>SIMP</b>	Seafood Import Monitoring Program
<b>MSC</b>	Marine Stewardship Council	<b>SSF</b>	small scale fisheries
<b>MSP</b>	marine spatial planning	<b>SLL</b>	sustainability-linked loan
<b>NBIM</b>	Norges Bank Investment Management	<b>SME</b>	small- and medium-sized enterprises
<b>NDCs</b>	nationally determined contributions	<b>TEEB</b>	The Economics of Ecosystems and Biodiversity
<b>NGO</b>	non-governmental organisation	<b>TNFD</b>	Taskforce on Nature-related Financial Disclosures
<b>ODA</b>	official development assistance	<b>UNCTAD</b>	United Nations Conference on Trade and Development
<b>OECD</b>	Organisation for Economic Cooperation and Development	<b>UMAS</b>	University Maritime Advisory Services
<b>OTEC</b>	ocean thermal energy conversion	<b>UNEP</b>	United Nations Environment Programme
<b>P&amp;I</b>	protection and indemnity	<b>UNEP FI</b>	United Nations Environment Programme Finance Initiative

<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization	<b>WPSP</b>	World Ports Sustainability Program
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change	<b>WTO</b>	World Trade Organization
<b>WHO</b>	World Health Organization	<b>WTTC</b>	World Travel and Tourism Council
<b>WISTA</b>	Women’s International Shipping and Trading Association	<b>WWF</b>	World Wide Fund for Nature
		<b>ZESTAs</b>	Zero Emission Ship Technology Association

**“Our ocean provides countless benefits to our planet and is essential for jobs, food security, healthy people and ecosystems. It produces over half of the world’s oxygen and absorbs 50 times more carbon dioxide than our atmosphere. Our dependence on a healthy and resilient ocean are key which is why we are committed to this initiative and to contribute to the transition to a sustainable ocean economy.**

**As someone who grew up by the sea—in a country that relies on the oceans for two-thirds of its export revenues—I know that healthy and resilient oceans are key to achieve many of the SDGs and the long-term value of companies in our portfolios.”**

**Jan Erik Saugestad, CEO, Storebrand Asset Management**

# Executive summary

The ocean covers the majority of our planet's surface, holding 97% of all water and 80% of all life forms. Major ocean sectors such as tourism, shipping, fishing, aquaculture and marine renewable energy collectively contribute to a 'blue' economy, estimated by the Organisation for Economic Co-operation and Development (OECD) at a global gross value added of USD 1.5trn in 2010. This blue economy has been projected to increase to USD 3trn by 2030, with some ocean industries set to grow faster than the global economy.

However, ocean health is under threat, faced with the triple crises of pollution, nature loss and climate change, leaving industries, businesses and livelihoods exposed. With existing financing still largely directed towards unsustainable sectors and activities, it is critical that all sectors of the blue economy are rapidly transitioned towards sustainable pathways.

Banks, insurers and investors have a major role to play in financing this transition to a sustainable blue economy, helping to rebuild ocean prosperity and restore biodiversity to the ocean. Through their lending, underwriting and investment activities, as well as their client relationships, financial institutions have a major impact on ocean health and hold the power to accelerate and mainstream the sustainable transformation of ocean-linked industries.

This seminal guidance is a market-first practical toolkit for financial institutions to pivot their activities towards financing a sustainable blue economy. It outlines how to avoid and mitigate environmental and social risks and impacts, as well as highlighting opportunities, when providing capital to companies or projects within the blue economy.

Leveraging best practice based on input from more than 50 pioneering institutions and experts, this guidance sets out pathways to sustainable growth across five key ocean sectors. It presents a detailed breakdown of which activities to *seek out* as best practice, which activities to *challenge*, and which activities to *avoid* financing completely due to their damaging nature.

This guidance provides financial decision-makers across banking, insurance and investment with a science-based and actionable toolkit, giving easy-to-follow recommendations on how to approach financial activity related to:

- Seafood, including both fisheries and aquaculture as well as their supply chains;
- Ports;
- Maritime transportation;
- Marine renewable energy, notably offshore wind; and
- Coastal and marine tourism, including cruising.

“Becoming a signatory of the Blue Economy Finance Principles is the start of our journey. The EBRD is in an ideal position to find synergies across our sectors and stakeholders, to develop innovative blue economy solutions. All the major sectors in which the bank is active have the opportunity to contribute to the blue economy.

I strongly believe that the application of these high standards will help the EBRD in exploring the possibility of the issuance of the first EBRD blue bond, in line with the experience developed by the World Bank and EIB.”

Annemarie Straathof, VP Risk,  
European Bank for Reconstruction and Development

It builds on the foundation of the [Sustainable Blue Economy Finance Principles](#) (‘the Principles’), the keystone for financing activities in the blue economy. Wide use of these principles will ensure ocean finance is delivered with sustainability at its core, so that profitability goes hand-in-hand with environmental and social stewardship.

The guidance is complementary to existing frameworks and literature, including UNEP FI’s Principles for Responsible Banking (PRB), Principles for Sustainable Insurance (PSI) and Principles for Positive Impact Finance (PI), as well as the Principles for Responsible Investment (PRI). It can be read in conjunction with its sister publication [Rising Tide: Mapping Ocean Finance for a New Decade](#) which explores current trends, frameworks and financial instruments that are successfully addressing ocean sustainability, highlighting new opportunities and gaps in the market.

# Introduction

## Context

It is well established that the ocean is a vital driver of planetary systems, a source of economic activity, livelihoods and food security. The Intergovernmental Panel on Climate Change (IPCC)'s 2019 special report on the ocean and cryosphere in a changing climate states:

**“In addition to their role within the climate system, such as the uptake and redistribution of natural and anthropogenic carbon dioxide (CO<sub>2</sub>) and heat, as well as ecosystem support, services provided to people by the ocean and/or cryosphere include food and water supply, renewable energy, and benefits for health and well-being, cultural values, tourism, trade, and transport. The state of the ocean and cryosphere interacts with each aspect of sustainability reflected in the United Nations Sustainable Development Goals (SDGs)”**

IPCC 2019

At the same time, the health of the global ocean is under threat from human activity, affecting climate change, pollution and nature loss, with existing financing being largely directed towards unsustainable sectors and activities. Finance for a sustainable ocean remains limited, with SDG 14 (Life Below Water) receiving the least public funding out of all the SDGs in 2017 (SDG Financing Lab 2017). Nevertheless, awareness of the key services and provisions provided by the ocean is increasing, as well as the recognition that continued ocean health decline inhibits prosperity (Friends of Ocean Action 2020).

In an effort to address this challenge, there have been a number of important developments in recent years, notably the creation of the Sustainable Blue Economy Finance Principles ('The Principles'), which set out to define what financing<sup>1</sup> a healthy and resilient ocean looks like. These principles are the world's first global guiding framework for banks, insurers and investors to finance a sustainable blue economy (SBE).

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<sup>1</sup> Defined here and throughout this guidance as capital deployed towards the sustainable blue economy, be it from investment, insurance or other financial services provided by banks, investors and/or insurance firms.

## What is the sustainable blue economy?

The Sustainable Blue Economy Finance Principles define a sustainable blue economy as one that “provides social and economic benefits for current and future generations; restores, protects and maintains diverse, productive and resilient ecosystems; and is based on clean technologies, renewable energy and circular material flows”. It is an economy based on circularity, collaboration, resilience, opportunity and inter-dependence. Its growth is driven by investments that reduce carbon emissions and pollution, enhance energy efficiency, harness the power of natural capital and the benefits that these ecosystems provide, and halt the loss of biodiversity. General economic activity in the context of marine and coastal environments, regardless of sustainability considerations, is referred to in this guidance as the *blue economy*.

By this definition, and for the purposes of this document, the sustainable blue economy is a goal for the wider blue economy, and therefore excludes non-renewable extractive industries (e.g. offshore oil and gas, and deep-sea mining) as well as unsustainable practices in other sectors. However, considerations of how to tackle these industries in the context of a longer-term transition to sustainability may be developed in future editions of this guidance.

They promote the implementation of SDG 14 (Life Below Water), and set out ocean-specific guiding principles that support the financial industry to mainstream sustainability of ocean-based sectors. The Principles were developed by the European Commission, World Wide Fund for Nature (WWF), the World Resources Institute and the European Investment Bank.

In 2019 the [Sustainable Blue Economy Finance Initiative](#) (SBEFI) was launched at the Regional Roundtables on Sustainable Finance in Luxembourg. Building on the momentum of the Principles and helping translate ambition into action, The UN Environment Programme Finance Initiative (UNEP FI) hosts the new platform bringing together financial institutions<sup>2</sup> (FIs) to work with scientists, corporates and civil society. The aim is to facilitate the adoption and implementation of the Principles, ensuring they become operational and useful for financial institutions worldwide. The SBEFI seeks to:

- Positively influence mainstream ocean-related investment, insurance and lending to drive development that underpins a sustainable blue economy;
- Catalyse finance sector engagement and practical action to adopt and implement the Principles, deliver a sustainable blue economy and support the ambitions of SDG 14 (Life Below Water); and
- Develop concrete actions and outputs for insurers, lenders and investors to align lending, insurance and investment decisions with ocean health.

---

2 A financial institution (FI) is a company engaged in the business of dealing with financial and monetary transactions such as deposits, loans, investments and currency exchange. In the context of this guidance, this includes banks, investors and insurers.

## About this resource

The Principles provide a framework to inform financial decisions relating to the sustainable blue economy. If widely adopted, the Principles could help to transform how the ocean's assets are used and managed to secure healthy ecosystems, assuring future environmental, social and economic resilience while advancing nature-based solutions. However, it is critical that further sector-specific guidance, tools and metrics are provided to give financial institutions the resources they need to adopt and implement the Principles and have tangible positive impacts on the transition to a sustainable blue economy and ocean health.

### What do we mean by finance for the sustainable blue economy?

Financial institutions can play a pivotal role in developing a sustainable blue economy, so it is important that the meaning of finance for the sustainable blue economy is clearly defined. This guidance defines it as “financial activity (including investment, insurance, banking and supporting intermediary activities) in, or in support of, the development of a sustainable blue economy, most notably through the application of the Sustainable Blue Economy Finance Principles in financial decision-making, ESG frameworks, and reporting.”

As such, it covers both finance being deployed directly to invest in SBE projects (e.g. into specific projects) as well as financial activity/capital being deployed to support the development of the SBE more broadly (e.g. activity by financial institutions to de-risk, promote or further mainstream investment in the SBE).

Whether or not finance is sustainable depends on the activities and decisions made by financial institutions, rather than any assessment of the virtue or value of the institution itself—provided it adheres to the Sustainable Blue Economy Finance Principles and the sector-specific guidance when making its decisions. Thus, on these terms, a bond issuance by a large corporation to finance sustainable shipping is as valid a means of finance for the SBE as an impact fund investing in a community-managed fishery, and one is not ‘better’ or ‘more sustainable’ than the other.

UNEP FI has developed this guidance on financing the sustainable blue economy to catalyse engagement. Building directly on the Principles and their ethos, the guidance seeks to apply the Principles at a more granular level across sectors of the sustainable blue economy. The purpose of the guidance is to provide sector-specific information to banks, investors and insurers on how to avoid and mitigate environmental and social

risks and impacts, and maximise opportunities when providing capital to companies or projects within the blue economy. This first version of the guidance provides insights into five of the most prominent sectors:

- Seafood, including both fisheries and aquaculture as well as their supply chains;
- Ports;
- Maritime transportation;
- Marine renewable energy, notably offshore wind; and
- Coastal and marine tourism, including cruising.

These sectors were selected due to their scale and nature as well-established engines of the blue economy and, as a result, their established interactions with the finance sector, which readily provides capital and insurance (though not always sustainably) to each of them. Other sectors of significance to the sustainable blue economy that remain at a more emergent stage—such as bioprospecting, blue carbon, and conservation finance (e.g. for ecosystem services)—are not included here, but will be considered for future guidance.

The SBEFP framework and guidance complements UNEP’s broader Sustainable Blue Economy Initiative to support holistic ocean policy and nature-based solutions for sustainable, resilient and equitable blue economies. This ranges from science-based knowledge and innovative decision-support tools to practical guidance and capacity building to countries, regional seas and wide-ranging stakeholders to develop and navigate tailored transformation pathways towards ocean sustainability. The guidance enables engagement of financial institutions and ocean-linked sectors in comprehensive ocean governance and resource management at local, regional and global levels, tackling the triple planetary crises of climate change, biodiversity loss and pollution the ocean faces today.

**“As a founding partner of the Sustainable Blue Economy Finance Principles, WWF is proud to contribute to a movement that is both visionary and practical. The Principles envision a finance sector that is a champion of ocean health and a partner of communities that depend on a healthy ocean for their well-being; the guidance provides the roadmap to get there.”**

**Margaret Kuhlow. Global Finance Practice Leader, WWF International**

## Intended audience

The primary audience for this guidance is financial institutions (banks, insurers and investors) that are currently—or looking to become—active in the sustainable blue economy. The guidance aims to provide an initial framework for these institutions to consider how sustainability impacts and risks specific to the blue economy manifest within their own portfolios.

Given the breadth of this subject matter and the relevance of sustainability considerations to a broad array of stakeholders, this guidance may also be valuable for the public sector, intergovernmental organisations, academia, civil society, commerce and industry.

## Methodology

The guidance was developed following a bottom-up approach. The ‘discovery’ phase (Figure 1, point 1) entailed an extensive literature review and expert interviews. Based on the latest science, it identified the sector’s impacts on environment and society, avoiding duplication of relevant existing resources. Impacts were identified using a modified DPSIR<sup>3</sup> framework that examined **drivers** of impact stemming from each sector, the different **pressures** these exert on environment and society, and the **impacts** these pressures create. While pressures are individual to each sector, the collective impacts are common across all sectors for which financing guidance has been created.

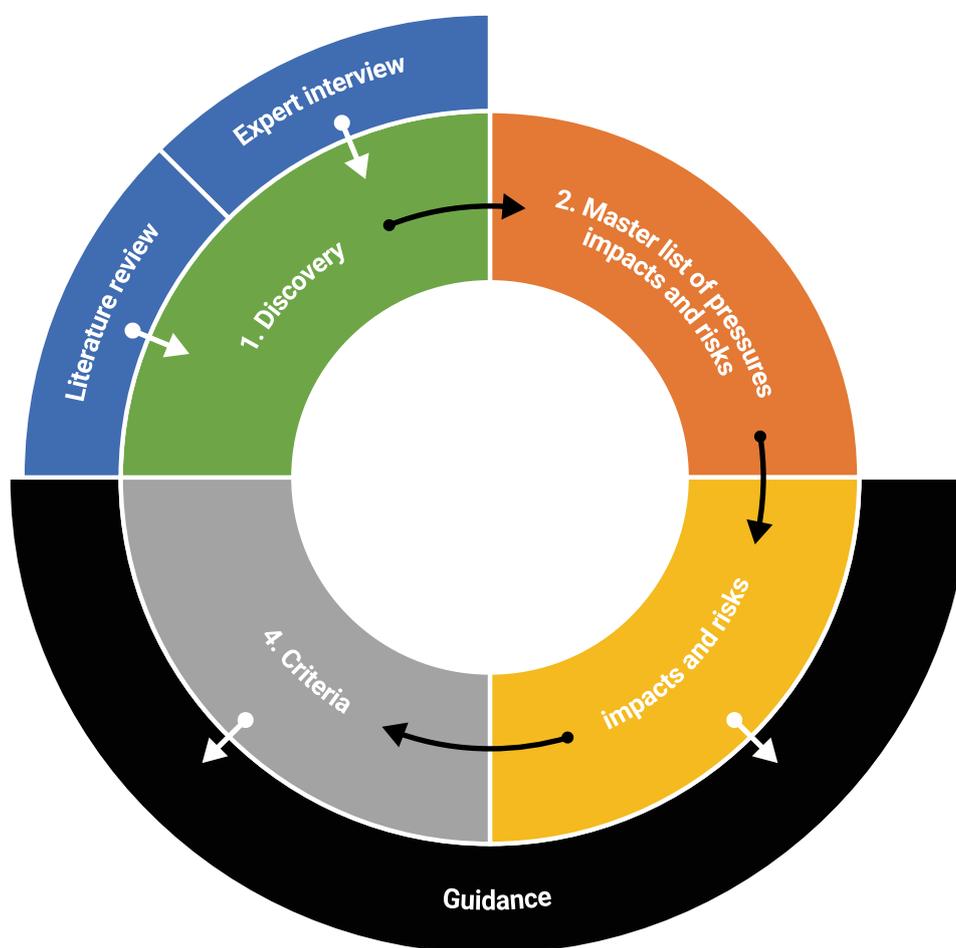
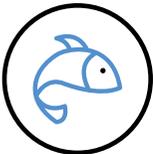
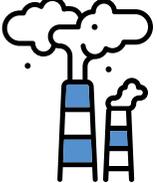


Figure 1: Guidance creation flow diagram

<sup>3</sup> DPSIR (Driver, Pressure, State, Impact, Response) is a framework to systematically approach impacts and describe the relationship between human activity and impact. It allows for a more precise assessment and understanding of how actions and activities affect the environment. It is based on a model originally developed by the Dutch National Institute of Public Health and Environment and later adopted by the European Environment Agency (EEA) (IFREMER 2004).

Table 1 clarifies what is meant by the common impacts on environment and society, outlining each impact and offering examples on where it may materialise in practice.

Environmental impacts	Description	Examples
 <p><b>Loss or reduction in marine biodiversity, including loss of endangered, threatened and protected (ETP) species</b></p>	<p>Loss or reduction of populations of a given species, or of a species as a whole, due to human impact. This includes endangered, threatened and protected (ETP) species as defined by the IUCN Red List of Threatened Species and protections under applicable jurisdictions.</p>	<p>This may result from direct overexploitation such as overfishing, or indirectly as a consequence of other impacts, such as the destruction of habitat or changes to biological and chemical cycles on which species may depend.</p>
 <p><b>Loss of ecosystem resilience and provision of ecosystem services</b></p>	<p>Loss or reduction in the ability of an ecosystem to provide specific benefits. These benefits (termed ecosystem services) include provisioning services such as oxygen production and carbon sequestration, and regulating services for the climate and against disease outbreaks.</p>	<p>A particularly prominent ecosystem service is climate resilience (e.g. through coastal flood defence), where a loss of resilience has significant bearing on the ability to adapt to the impacts of climate change.</p>
 <p><b>Loss or degradation of coastal and marine habitats</b></p>	<p>Changes to the physical environment on which life depends.</p>	<p>This may result from temporary disturbance to the seabed as a result of dredging or trawling, or from more permanent change as a result of construction work (e.g. for offshore wind farms).</p>
 <p><b>Reduction in animal welfare</b></p>	<p>The consequences of human activity on the health of individual animals, both wild and farmed. It complements the impact on biodiversity, which looks at impacts on groups of animals and species. These impacts are closely linked and often appear together.</p>	<p>Reduction in animal welfare includes sources of stress for many organisms, typically as a result of pollution. This includes noise pollution from shipping, which notably impacts the welfare of marine mammals.</p>

 <p><b>Increased GHG concentrations</b></p>	<p>The role of greenhouse gas (GHG) emissions in contributing to climate change. While human activity affects the climate in many ways, as well as the capacity to offer resilience or adapt to climate change, this impact covers the output of GHG emissions into the atmosphere itself, raising concentrations that result in a changed climate.</p>	<p>This results from a broad range of human activity, including emissions from vessels.</p>
 <p><b>Changes to marine biological, chemical and geological cycles</b></p>	<p>The consequences of changes to biogeochemistry—natural processes within the ocean such as the water, carbon and nitrogen cycles—that play a role in regulating the planet. While dependent on water chemistry, marine life also plays a role in these cycles. As such, this is closely linked to loss of ecosystem services, though the consequences are somewhat different, focusing specifically on these global regulatory processes.</p>	<p>This may result from specific pollutants that affect marine biogeochemistry (e.g. soot or sulphur dioxides emitted by vessels into the water).</p>
<p><b>Social impacts</b></p>	<p><b>Description</b></p>	<p><b>Examples</b></p>
 <p><b>Violation of human rights, including rights of indigenous communities</b></p>	<p>The violation of any human right, including the rights of indigenous communities, in the process of developing or financing a given sector. This includes both specific and clear examples of human rights violations as well as more systemic human rights violations such as the impact of inequality of opportunities between social groups and genders.</p>	<p>An example of violation of human rights includes modern slavery in fishing or shipping.</p>
 <p><b>Reduction or loss of access to sustainable and inclusive livelihoods</b></p>	<p>The consequences of development on an individual or community's ability to attain and maintain livelihoods.</p>	<p>This impact may cover the consequences of commercial overfishing on a coastal community's ability to fish for the same species.</p>

 <p><b>Increased likelihood of injury, disease or loss of life</b></p>	<p>The consequence of an activity on the short- and long-term physical health of an individual or community as a result of development.</p>	<p>This may include the higher likelihood of injury as a result of unsafe dive tourism practices, or the increased probability of fatal injury in unsafe construction of a merchant vessel.</p>
 <p><b>Economic damage and loss of productivity</b></p>	<p>While all of these impacts ultimately lead to some form of economic damage and loss of productivity, this impact specifically examines the direct, proximate consequences of a given pressure on the economic output and productivity of an individual or an enterprise.</p>	<p>This may include economic damages and losses as a result of illegal fishing or disease outbreak in aquaculture.</p>
 <p><b>Inequality of opportunities on the basis of age, sex, disability, race, ethnicity, origin, religion or economic or other status</b></p>	<p>Instances where the development of a sector reinforces or establishes inequality of opportunities within and between communities and between individuals. This is closely linked to the impact of human rights violations.</p>	<p>This may include gender imbalances in corporations across blue economy sectors, or racial discrimination in employment. It may also include unequal distribution of costs or benefits associated with a development, such as a tourism development benefitting non-indigenous, wealthy communities at the cost of marginalised and disadvantaged coastal communities.</p>

**Table 1: Table of impact definitions**

A master list of pressures and impacts was then developed for each sector (Figure 1, point 2). These were mapped against current and potential risks to financial institutions, and the materiality of these risks was assessed. There are five categories of risk, as highlighted in Table 2, although please note that in many instances where a risk falls into multiple categories—for example, a change in regulation may then present operational risks—only the ‘source’ risk is included.

Risk	Description	Example
<b>Physical</b>	The risk to physical assets, often related to the impacts of climate change.	Increased physical damage to coastal assets (e.g. hotel property) subsequent to tropical cyclones.
<b>Operational</b>	The risk of interruption of ongoing activities, including supply chain operations, logistics and other disruption of business operations.	Disruption to tourism business operations due to coral reef bleaching events.
<b>Market</b>	The risk of changes to the market served by a sector or development, including shifts in demand or supply.	Increased consumer demand for sustainable seafood options.
<b>Regulatory</b>	The risk of changes in the regulatory environment affecting the sector, including changes in how it may be taxed or subsidised.	Policy change on sulphur dioxide emissions within shipping.
<b>Reputational</b>	The risk of change in public perception, manifesting as public campaigns, boycotts or purchasing decisions.	Negative press coverage associated with wind turbine noise pollution on marine mammals.

**Table 2: Table of risk descriptions**

The most critical categories of pressures (and the impacts they create) stemming from each sector were summarised (Figure 1, point 3) alongside the key risks that these impacts create for financial institutions. This prioritised set of pressures was used to develop criteria (Figure 1, point 4) for sustainable financing in this sector. The summary of key pressures, impacts and risks forms the basis of this guidance document.<sup>4</sup> The criteria are featured in the accompanying Criteria Annex spreadsheets.

It is important to note that the resultant list of criteria for each sector is not a comprehensive review of all social and environmental pressures related to that sector; this would result in an unworkable set of guidance for institutions. Rather, where pressures are understood to be entirely related to a particular sector *and* to the blue economy, they are included under the criteria. Where pressures relate to a sector but are not unique to it *or* to the blue economy, they are not included save for those instances where the pressure is too pressing to exclude.

4 The master list of pressures, impacts and risks referred to in Figure 1 is available as a technical annex on request.

# How to use this guidance

This guidance is intended as a practical, working resource for financial institutions to assess their potential exposure to social and environmental risk factors within the sustainable blue economy and recommend actions based on indicators of the social and environmental pressures in these sectors.

Readers are encouraged to examine the chapters covering sectors of interest from start to finish before engaging directly with the list of criteria, as these chapters provide sector-specific context on the linkages between pressures, impacts and risks outlined in the Methodology section above.

Each chapter also includes case studies of current best practice and innovative approaches to financing sustainability in the different sectors, as well as industry insights surfaced through the guidance's companion report *Rising Tide: Mapping Ocean Finance for a New Decade (UNEP FI 2021)* and its survey of financial institutions.

Each sector has its own chapter. Chapters have a standard format and the same broad categories of information for consistency. Each chapter covers the relationship between a pressure and its associated impacts following the modified DPSIR framework described in the Methodology section above, building on this understanding to highlight how and why these pressures are material to financial institutions and the types of risk they represent. In some chapters—notably seafood, where there is substantial differentiation within the sector between fisheries, aquaculture and supply chains—these are broken into sub-sectors.<sup>5</sup>

## Limitations of the guidance

**The guidance does not offer investment advice or replace existing requirements for due diligence by financial institutions when engaging in the sustainable blue economy.** Rather, this resource is meant to guide financial institutions through some of the common and critical social and environmental challenges facing these sectors, thereby complementing existing reporting frameworks to assist institutions in their decision-making regarding the sustainable blue economy.

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5 For example, in the Coastal and Marine Tourism chapter, the impacts of cruise ships are included as they clearly comprise a part of the tourism sector. On the other hand, aviation—though closely linked to tourism's impacts on the environment and society—is not unique to tourism, and its impacts are excluded. Climate change, which extends beyond every sector, is treated as too pressing to exclude, and is therefore included across all sectors.

Though the guidance builds on the Principles, institutions that have signed up to these principles will not be assessed against this guidance in any way, nor are any of its recommendations mandatory. However, for each sector, the guidance and criteria for sustainability should be viewed in their entirety and treated as a single resource. Selecting individual criteria or indicators of behaviour and disregarding others is strongly discouraged to ensure a systemic and integrated view of sustainability in the blue economy and, critically, to ensure the management and mitigation of impacts and risks.

The guidance should be considered a living resource and work in progress, with improvements and iterations over time to expand its scope and applicability to be expected. As such, this document does not yet offer recommendations on behaviour and best practice beyond the five sectors covered; nor does it offer specific metrics or benchmarks for sustainability for individual sectors and their social or environmental performance.

**“At Greenbackers we see more and more investors becoming increasingly concerned about the planet. It has never been more important to mobilise the world’s capital. However, without a validated and aligned path to deploy capital our ambitious targets will remain a pipedream. We are passionate about saving the planet by improving and driving deal-flow. The creation and publication of this UNEP FI guidance gives our investors the confidence that their capital will have the desired impact on these goals and we are proud to have contributed to their development”**

**Andrew Smith, Director, Greenbackers Investment Capital**

## Using the sector-specific criteria

After reading the guidance chapters and absorbing the relationships between the sectors, their impacts on the environment and society, and the materiality of these impacts, the reader can turn to the sector-specific criteria in the accompanying Criteria Annex spreadsheets. These build on the materiality of the sector’s impacts and risks and offer specific recommendations designed to increase sustainability. Figure 2 explains these spreadsheets using the marine renewable energy criteria as an example, and setting out the elements of the guidance as they apply to specific areas and aspects of sustainability.

As mentioned above, some sectors benefit from being broken into sub-sectors facing common issues (for example, aquaculture in seafood or fixed offshore wind in marine renewable energy). Where this occurs, it is indicated in the **Sub-sector** column (Figure 2, point 1). Issues and activities common to all sub-sectors are labelled as ‘common’ or ‘cross-cutting’.

The **Criterion** column (Figure 2, point 2) is dedicated to the criteria themselves. These are based closely on the pressures identified in the guidance chapters for each sector, and denote a section of the guidance concerning a specific pressure, activity, or set of issues. In the Marine renewable energy example below, the criterion is ‘Planning new developments and project lifecycle’—others may be ‘Stakeholder engagement’ or ‘Seabed disturbance and habitat disruption’—categories of activities, pressures and issues within a sector.

The **Indicators** column (Figure 2, point 3) highlights specific circumstances within the criterion’s category that are relevant for a financial institution to consider—for example, the presence of a marine spatial planning process or how the siting of a wind farm was determined. The **Verification** column (Figure 2, point 4) provides guidance on how the state of this indicator (its presence or absence) may be determined, and what information sources are helpful.

On the basis of the presence or absence of an indicator, certain actions are recommended. The **Action** column (Figure 2, point 5) lists three types of action:

- **Avoid**, where it is recommended financial institutions do not provide financing due to the severity of a given indicator;
- **Challenge**, where financial institutions are recommended to address a specific issue highlighted by an indicator, for example through engagement with a company or project developer; and
- **Seek out**, where an indicator denotes current best practice on a particular issue and where financing is encouraged.

Some indicators may be either an Avoid or a Challenge depending on the jurisdiction and state of the market. These are denoted as ‘Avoid/Challenge (market dependent)’ with additional information provided in the Recommendation column.

The **Recommendation** column (Figure 2, point 6) provides additional context for the action. Specific language is used for each recommended action:

- Avoid—‘**Do not finance**’;
- Challenge (for indicators that are critical to address)—‘**Require**’;
- Challenge (for indicators that can be improved but are not critical to address)—‘**Encourage**’; and
- Seek Out—‘**Seek out**’.

The **Relevant principles** column and **SDG targets** column (Figure 2, point 7) link the specific indicators to the relevant Sustainable Blue Economy Finance Principles and Sustainable Development Goal targets, respectively. The **Resources** column (Figure 2, point 8) offers links to further reading on the specific issues addressed within the relevant indicator.

For sectors with market-leading sustainability standards or benchmarks, there is an additional **Included in major market standards** column. It denotes whether and where an indicator in the guidelines corresponds to existing sustainability frameworks. This is particularly noteworthy in seafood, which references the Marine Stewardship Council (MSC) and Aquaculture Stewardship Council (ASC) standards, and in tourism, which references the Global Sustainable Tourism Council (GSTC) standards. References to these standards are shown in relevant sections of the guidance where these correspond with the relevant recommendation, and should be considered as a minimum benchmark.

**“Providing transparent and reliable impact reporting in the blue economy will be a key driver of capital flow.”**

**Max Gottschalk, Founding Partner, Ocean 14 Capital**

1	2	3	4	5	6	7	8
Sub-sector	Criterion	Indicator	Verification	Action	Recommendation	Relevant SBEFP (if the action and recommendation is taken, the following principles apply)	Relevant SDG targets (for all criteria, SDG 7 on affordable and clean energy and SDG 13 on climate action apply)
<b>1. Planning new developments and project lifecycle</b>							
Common	1. Planning new developments and project lifecycle	Planning for the development of a wind farm in the absence of a coherent marine spatial plan and a lack of opportunities for stakeholder engagement on the use of the marine environment, access to, and benefits from the development (including access to affordable energy and livelihood opportunities for local communities).	<p>Check for presence of MSP in relevant jurisdiction. Ensure this is in line with best practice for MSPs and offshore wind as outlined by the European Commission: <a href="https://ec.europa.eu/energy/intelligent/projects/sites/default/files/projects/documents/seanergy_2020_recommendations_for_international_msp_instruments_en.pdf">https://ec.europa.eu/energy/intelligent/projects/sites/default/files/projects/documents/seanergy_2020_recommendations_for_international_msp_instruments_en.pdf</a></p> <p>Check for meaningful and comprehensive strategic environmental assessment and environmental impact assessment associated with development per UNEP best practice: <a href="https://wedocs.unep.org/bitstream/handle/20.500.11822/8753/Environmental_impact_assessment.pdf?sequence=3&amp;isAllowed=1">https://wedocs.unep.org/bitstream/handle/20.500.11822/8753/Environmental_impact_assessment.pdf?sequence=3&amp;isAllowed=1</a></p>	<b>AVOID / CHALLENGE (MARKET DEPENDENT)</b>	<p>In developed economies, do not finance projects developed in the absence of marine spatial planning until such time as a stakeholder engagement process is in place and/or the development has been contextualised with a wider marine spatial planning process.</p> <p>In developing countries, do not finance projects developed in the absence of a stakeholder engagement process and encourage developers to work with government to explore the establishment of a marine spatial planning process if none exists.</p>	<p>2. Compliant (market-dependent)</p> <p>3. Risk-aware</p> <p>10. Precautionary</p> <p>13. Partnering</p>	16.7 Ensure responsive, inclusive, participatory and equitable decision-making at all levels.
Common	1. Planning new developments and project lifecycle	Siting of wind farms in protected areas for birds, bats, fish and marine mammals negatively impacted by wind farm construction, operation and decommissioning, including resultant bird strikes. This is particularly urgent in the context of multiple wind farm developments and the potential for cumulative impacts.	<p>Verify location of protected habitat and species in vicinity of wind farm.</p> <p>Verify presence of MSP in jurisdiction and whether this follows best practice (see E7).</p> <p>Check whether SEA and EIA have identified and offered mitigating steps for environmental impact (see E7).</p>	<b>AVOID</b>	Do not finance wind farms designated for development in areas of high ecological value, high biodiversity and critical habitat for ETP species.	<p>1. Protective</p> <p>2. Compliant (market-dependent)</p> <p>8. Purposeful</p> <p>10. Precautionary</p>	<p>12.6 Encourage companies to adopt sustainable practices and to integrate sustainability information into their reporting.</p> <p>14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including through strengthening their resilience, and take actions to reduce their vulnerability to climate-related stressors and to achieve healthy and productive oceans.</p>

**KEY:**

- 1. Sub-sectors break down the sectoral focus to apply more granularity
- 2. The criterion refers to a specific aspect of sustainability, closely linked to pressures
- 3. Indicators highlight a specific circumstance within a criterion of relevance to an FI
- 4. Verification suggests how the presence or absence of an indicator may be determined
- 5. Action indicates the type of response to make based on the presence of the indicator
- 6. Recommendation provides more detailed steps to take based on the action
- 7. Relevant Principle and Relevant SDG targets highlight linkages between the indicators and the SBEFP and SDG sustainability frameworks
- 8. Resources offer links for further reading around the topic

**Figure 2: Criteria table explained**

## Relationship to other resources

This guidance is broadly supportive of—and intended to be a complementary resource to—existing frameworks for sustainable finance, notably UNEP FI’s Principles for Responsible Banking (PRB),<sup>6</sup> Principles for Sustainable Insurance (PSI)<sup>7</sup> and Principles for Positive Impact Finance (PI),<sup>8</sup> as well as the Principles for Responsible Investment (PRI).<sup>9</sup>

Within the sectors and wherever possible, explicit reference is made to the synergies and complementarities between this guidance and the Sustainable Blue Economy Finance Principles on which they are based, the Sustainable Development Goals and their targets, and sector-specific leading sustainability standards.

This guidance is a first attempt to provide a guiding framework for sustainable finance across the five sectors covered. It is aimed at a very broad audience, and should be considered a high-level framework for institutions to apply when engaging with the sustainable blue economy. Readers are encouraged to look to additional resources for further support on applying sustainability considerations for specific types of institutions and financial services. An example is the PSI ESG Guide for Non-Life Insurance.<sup>10</sup>

**‘Our Ocean is both the heart and the lung of our planet, yet it is under unprecedented threat due to climate change, over-exploitation and pollution. This guidance sets the new standard for the financial world to protect and restore our most precious living treasure.’**

**Olivier Raybaud, Co-Founder & Managing Partner, Blue Oceans Partners**

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6 The Principles for Responsible Banking are a unique framework for ensuring that signatory banks’ strategy and practice align with the vision society has set out for its future in the Sustainable Development Goals and the Paris Climate Agreement

7 The Principles for Sustainable Insurance serve as a global framework for the insurance industry to address environmental, social and governance (ESG) risks and opportunities—and a global initiative to strengthen the insurance industry’s contribution as risk managers, insurers and investors to building resilient, inclusive and sustainable communities and economies.

8 The Principles for Positive Impact Finance are a high-level framework to help finance and business address the SDG financing via a uniquely holistic approach to impact management.

9 The PRI is the world’s leading proponent of responsible investment. It works to understand the investment implications of environmental, social and governance (ESG) factors; and to support its international network of investor signatories in incorporating these factors into their investment and ownership decisions.

10 [unepfi.org/psi/wp-content/uploads/2020/06/PSI-ESG-guide-for-non-life-insurance.pdf](https://unepfi.org/psi/wp-content/uploads/2020/06/PSI-ESG-guide-for-non-life-insurance.pdf)



**Seafood**

## Sector and financial overview

The seafood sector—the production, processing, distribution and retail of fish, crustaceans, molluscs and other aquatic animals—is one of the world’s most important food commodities. Seafood is produced both through wild capture fishing and aquaculture (or seafood farming) and total production is currently estimated at around 179m tonnes annually, worth around USD 401bn at first sale value<sup>11</sup> (Food and Agriculture Organisation of the United Nations [FAO] 2020).

Total reported wild capture seafood production has been broadly stable for the past few years, although in 2018 it reached 96.4m tonnes, the highest level recorded and an increase of 5.4% compared to the average of the past three years (FAO 2020). Aquaculture production rose to 82.1m tonnes in 2018, an increase of 37% since 2010 (FAO 2020). Although aquaculture already makes up around 46% of total reported production (FAO 2020), it is the fastest growing food sector globally (with annual growth estimated at 5.8% (FAO 2018)), and is anticipated to be the means to meet the majority of future demand for seafood (Figure 3).

Seafood is also the most highly traded food commodity globally, according to the World Trade Organisation (WTO) (WTO 2020), with exports worth USD 164bn in 2018 (FAO 2020), increasing by an annual growth rate of 4% in the last five years (Rabobank 2019). China, Norway and Vietnam are the world’s biggest seafood exporters and the EU, US, Japan and China are the biggest seafood importers (Rabobank 2019).

Fishing and fish farming are undertaken in almost every country in the world, with great diversity in terms of species, technologies and scale (Figure 4). In some cases, seafood is highly consolidated with large, often vertically and horizontally integrated, companies who play an outsize global role. For example, 13 companies are said to control around 40% of the world’s most valuable fisheries (Österblom *et al.* 2015). On the other hand, upstream actors tend to be fragmented and small scale and typically located in emerging economies.

The scale of production ranges from small subsistent fisheries in Africa to large, sophisticated salmon farming operations in Norway and Scotland, for example. In terms of employment, lower-middle income countries employ around 12 million people, whereas high-income countries employ around half a million (Organisation for Economic Co-operation and Development [OECD] 2020).

In production sectors alone, fishing and fish farming employ around 59.5 million people, with the majority in developing countries and 85% in Asia (FAO 2020). Globally, seafood is a vital source of income, employment and food security for many millions of people, particularly in coastal and island nations.<sup>12</sup>

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11 As per FAO (2020) seafood production in this document refers to the production (marine and inland) of fish, crustaceans, molluscs and other aquatic animals, but excludes aquatic mammals, reptiles, seaweeds and other aquatic plants.

12 For more information on global seafood sector production trends and data see: *The State of World Fisheries and Aquaculture 2020. Sustainability in action* (FAO 2020) and *Sustainable Ocean for All Report: Harnessing the Benefits of Sustainable Ocean Economies for Developing Countries* (OECD 2020).

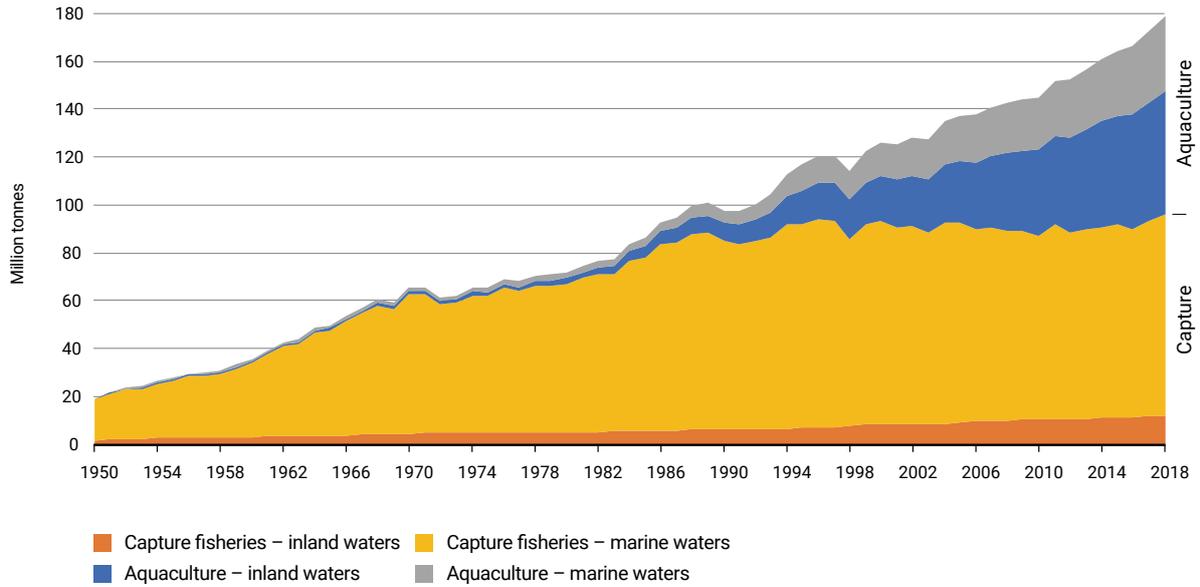


Figure 3: World capture fisheries and aquaculture production (FAO 2020)

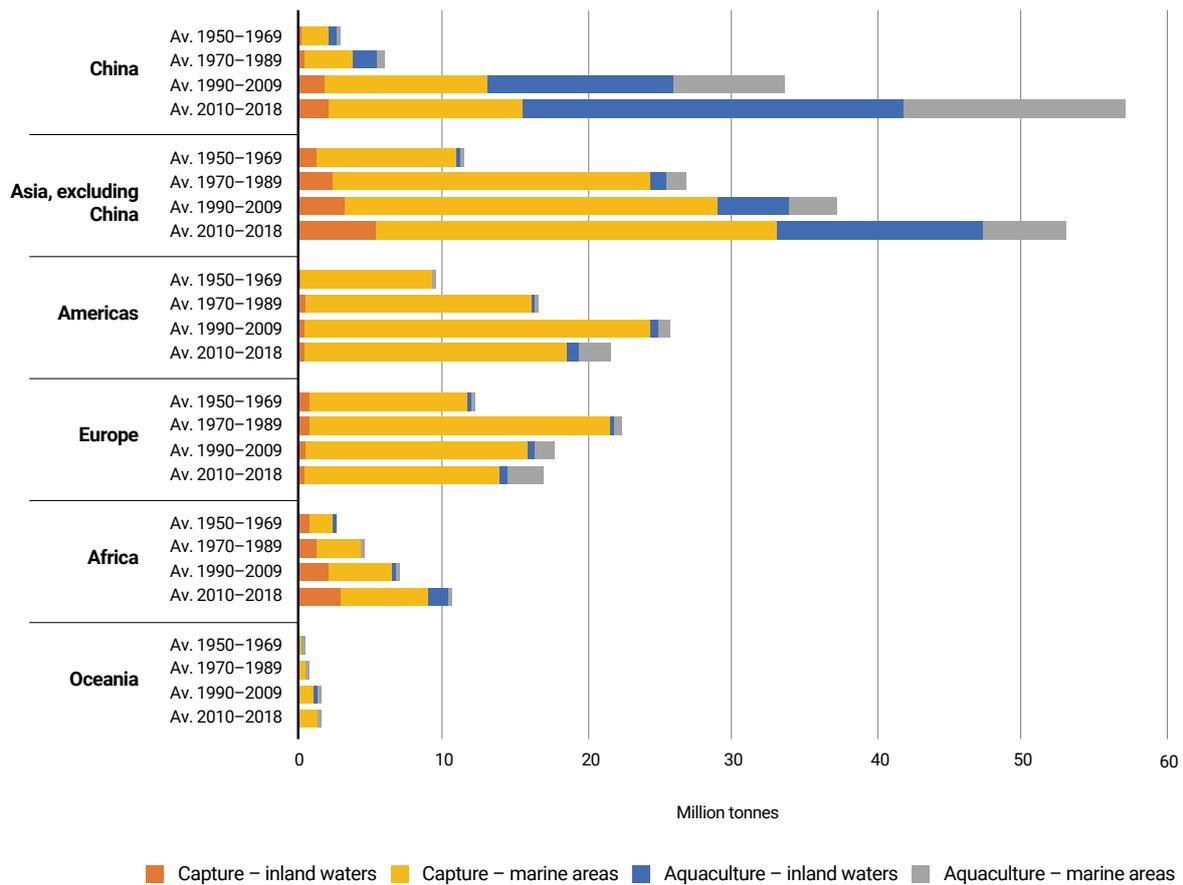


Figure 4: Geographical spread of production of seafood (FAO 2020)

## Financing the sector

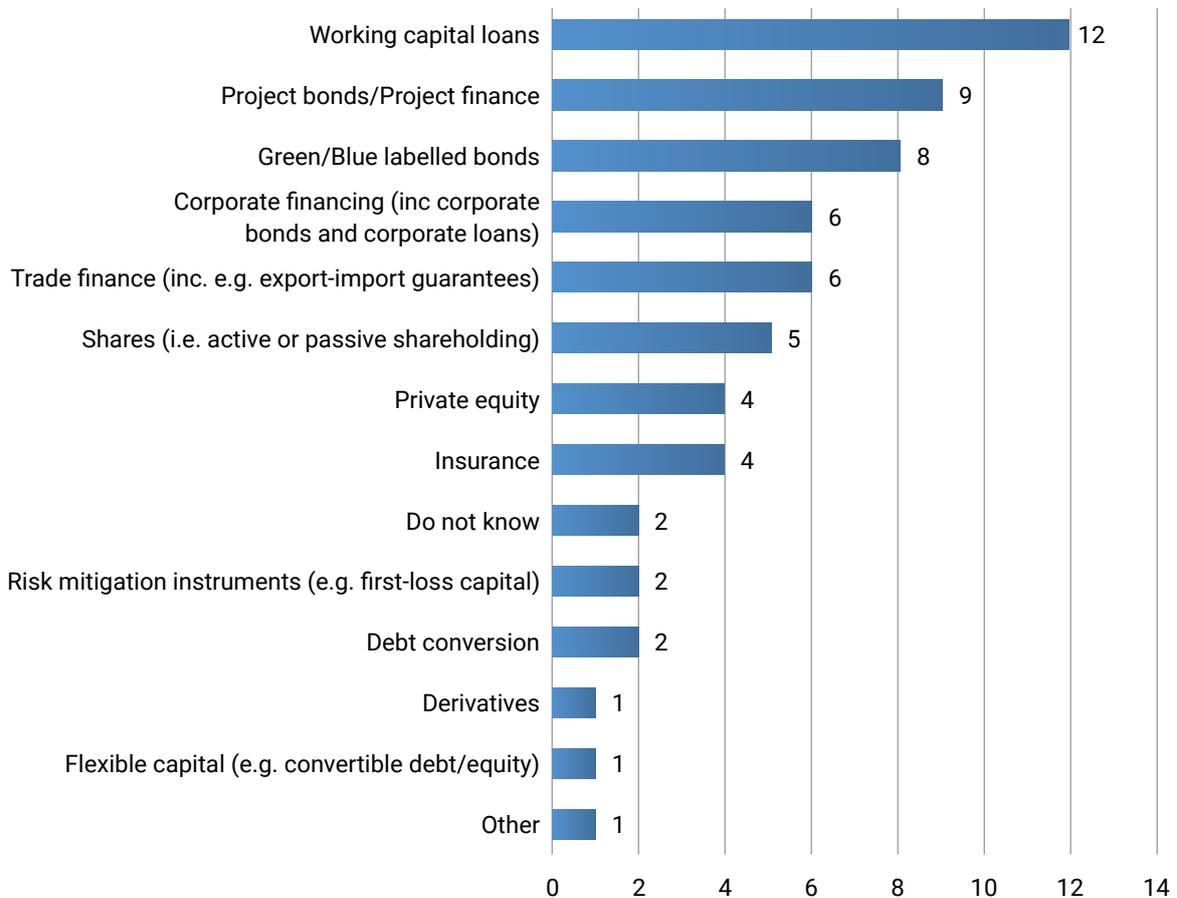
Banks, investors and insurers all play a role in the global seafood economy, providing capital and financial services to companies throughout the value chain, with variations in types and size of products and services deployed. Given its heterogeneity, it is hard to make any generalisations in this sector. Alongside commercial finance, public sector finance is an important source of funding for fisheries and aquaculture. According to the OECD (2020), fisheries was the second largest recipient sector of official development assistance (ODA) in 2013–2018 of all ‘ocean’ sectors, receiving 21.5% of the total.

The survey of financial institutions undertaken as part of this initiative (UNEP FI 2021) shows the types of financial institutions and products that typically support seafood (Figure 5). ‘Working capital loans’ is the most common financial product available to the sector, followed by ‘Project bonds or financing’, ‘Green/Blue labelled bonds’ and ‘Corporate financing’, suggesting that banks are the most important source of capital for seafood companies.

More than half of the top 100 seafood companies are privately owned (Undercurrent News 2019). Shareholdings were consequently reported as less common by respondents, and it is known that there is a limited universe of publicly traded seafood companies (228 in total according to Planet Tracker (2016)). However, these companies represent potentially up to a quarter of the total revenue from the seafood sector with around USD 70bn in seafood revenues (Planet Tracker 2016). Shareholders of these companies are critical players in shaping the seafood sector; companies tend to have a large global footprint and are responsible for much of the world’s seafood trade, processing and distribution.

Unsurprisingly, the survey suggests that trade finance plays an important role in moving seafood products around the world. It also indicates the relevance of private equity, which is increasingly important in this sector due to an increase in mergers and acquisitions (M&A) and horizontal and vertical integration.

## Which financial products does your organisation typically work with in the seafood sector?



**Figure 5: Which financial products does your organisation typically work within the seafood sector?**

Lastly, while survey suggests that the insurance sector is not actively involved in the seafood sector, and there is some evidence to suggest that insurance coverage for the global seafood sector is low (WWF 2019; FAO 2009), the hazardous nature of the commercial fishing industry and high-risk environment in which it often operates means that some vessel owners and fishing companies purchase marine insurance in order to protect themselves against potential losses. The likelihood of a fishing vessel actually having insurance cover depends on a number of factors including accessibility, vessel size, area of operation and legal requirements, but research (Miller *et al.* 2016) has shown that even vessels involved in illegal, unreported and unregulated (IUU) fishing activities make use of insurance services.

The three types of marine insurance that are the most relevant to the fishing industry are protection and indemnity (P&I) insurance, hull and machinery (H&M) insurance, and cargo insurance when fish are transported by sea in the holds or containers of cargo vessels. On land, seafood as a perishable good may be insured throughout the supply-chain along with processing, transport and storage equipment and facilities. These forms of coverage may also apply to farmed products and depending on the size of aquaculture operations, insurance protection may be provided for stock, livestock, liabilities, divers, and other insurable interests as well. Lastly, insurance may also play an indirect role in seafood through the insurance of bank loans.

## Key environmental and social impacts and dependencies

While the seafood sector is vital to many millions of people in terms of jobs and food security and plays an important role in many regional, national and local economies, it can also have a significant negative impact on the environment and on local communities. Seafood production has been identified as a major contributor to ocean health decline. The recent Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES) report (2019) notes that since the 1970s direct exploitation—mainly from fishing and land-use change—has had the largest adverse impact on marine and coastal ecosystems. Impacts are here divided across the sub-sectors of seafood (fisheries and aquaculture) as well as those that cross-cut the sector.

According to the FAO (2020), more than a third of marine capture fisheries (around 32.4%) are over-exploited. In addition, fishing activities have contributed to the decline of non-target fish stocks, the mortality of cetaceans, marine mammals and seabirds, and exacerbated marine ecosystem degradation due to destructive fishing practices. Illegal, unreported and unregulated (IUU) fishing is rife throughout the fishing sector. In addition to acting as a multiplier of other social and environmental impacts, it is thought to cost the industry as much as USD 50bn annually (Sumaila *et al.* 2020).

Aquaculture operations—when sited in ecologically sensitive areas—can impact negatively on biodiversity and ecosystem functioning. For example, in parts of South-East Asia shrimp farming has led to the clearance of wetlands and mangrove forests. The extent of the damage to mangrove habitats caused by shrimp farming is contested. Much of the damage is historic, but studies suggest that between 5% and 38% of total mangrove loss can be attributed to shrimp farming (Ashton 2007).

Aquaculture has also contributed to the contamination of water bodies in surrounding ecosystems through chemicals, anti-microbials and other harmful substances, for example, and impacted wild species through disease and parasite transfer (WWF 2021). Some types of aquaculture have also indirectly contributed to the decline of wild capture fisheries given that fishmeal production for feed still relies heavily on the procurement of wild-caught fish. In addition, soy for feed production has been linked to deforestation in soy-producing regions such as the Amazon (IUCN 2017).

Across the seafood sector, social issues—including human rights abuses, gender and racial inequality and low labour standards—have increasingly come to the fore. The Environmental Justice Foundation (EJF) have investigated and reported on significant abuses in the seafood sector including slavery, human trafficking and forced or bonded labour (EJF 2017). Additionally, there is increasing evidence that these social abuses are linked to ecological decline and fishery over-exploitation, which has pushed the fishing sector to cut corners to make up for rising costs and reduced income, with devastating outcomes (ibid). Other pressures on the environment from seafood include carbon emissions, water usage and food loss and waste along the seafood supply chain (FAO 2021).

The drivers, pressures and impacts on the marine environment and seafood communities from seafood production, processing and distribution are outlined in Table 3.

## Relationship to other sectors of the blue economy

Fishing and aquaculture can have negative impacts on other blue economy sectors, affecting their potential for sustainable growth, and be negatively impacted by those other sectors as well. For example:

- Overfishing and marine ecosystem decline can negatively impact tourism that is dependent on healthy fish populations and marine habitats such as coral reefs for their revenue;
- Mangrove clearance for aquaculture can decrease natural coastal protection for coastal tourism and other coastal development sectors;
- Offshore renewable energy can encroach on important fishing grounds for the sector if robust planning measures are not undertaken; and
- Waste and wastewater that pollutes coastal areas can negatively impact fish populations and the availability of fish for harvest.

Pressures	Impacts	
<b>Aquaculture</b>		
<b>Location and siting of farms</b>		<p>The siting of aquaculture operations near, in, or connected to marine and coastal habitats can lead to land-use change, deforestation and habitat degradation. This can be particularly acute when multiple farms are located in the same region, multiplying the pressure on these ecosystems. In some cases, aquaculture operations can be sited in or near to protected areas including High Conservation Value Areas, or Ramsar and UNESCO World Heritage Sites where the potential for loss of essential marine habitats is high.</p>
		<p>When aquaculture leads to direct land conversion, coastal and marine ecosystems, such as wetlands and mangrove forests, can be affected and important habitats threatened, degraded or destroyed. This leads to the loss of species that rely on them, including, in some cases, species that are endangered, threatened or protected (ETP).</p>
		<p>Land-use change and deforestation in coastal ecosystems disrupts their ability to provide vital services to people, biodiversity and climate. For example, mangroves act as coastal 'green' infrastructure, providing protection from storm surges and flooding. Mangroves are also significant carbon sinks and provide vital habitats and nurseries for commercial fish species. Coastal wetlands provide watershed regulation, maintain water quality, are habitats for fish species, and also store and sequester carbon.</p>
<b>Pollution and water contamination</b>		<p>Aquaculture operations can use harmful chemicals, pesticides and anti-microbials to control disease or parasite outbreaks, deter predators and clean nets and pens. These can then leach out into the surrounding environment affecting local ecosystems and biodiversity.</p>
		<p>Aquaculture, when exceeding the carrying capacity of an ecosystem, can lead to eutrophication in local water bodies as a result of effluents from farming operations that contain phosphorous or nitrogen. Eutrophication leads to over-production of plankton that consume available oxygen, suffocating other species (notably commercial fish stocks) and disrupting the balance of the ecosystem.</p>
<b>Invasive species and escapes</b>		<p>Aquaculture of some major species, such as salmon, can lead to escape events where farmed fish are released accidentally into the wild. The mixing of farmed species with wild species can impact local wild populations through gene pool dilution, the spread of disease and pathogens, and increased competition for scarce food resources.</p>
		<p>Escapes have a direct negative impact on businesses through a loss of revenue.</p>

<b>Spread of disease and parasites</b>		The outbreak and spread of disease is a common occurrence in aquaculture and can lead to widespread harvest losses both at individual farms and regionally. Disease can spread rapidly from farm to farm, particularly when multiple farms share an underlying ecosystem or water body. Over-stocked ponds or ecosystems with poor management practices and low levels of bio-security can exacerbate the scale of disease outbreaks.
		When outbreaks occur in open-net or pen farming, disease or pathogens can spread to local wild populations putting them at risk, especially if they are already threatened and under increasing pressures from other impacts, such as food scarcity and climate change.
<b>Use of unsustainable marine and terrestrial ingredients in feed</b>		For some species, farming relies on the harvesting of wild fish to supply raw materials to the fish feed industry. If these fisheries are managed poorly then fish farming can indirectly lead to the over-exploitation of wild fish populations. As an alternative to marine ingredients in fish feed production, soy is sometimes used, which in some areas leads to deforestation, land-use change, loss of biodiversity and ecosystem functionality.
		Through soy-based feeds, land-use change and deforestation also lead to a high level of carbon emissions.
<b>Interaction with wildlife and predators</b>		To deter predators, farms may take measures that directly or indirectly affect wildlife populations, such as using acoustic deterrent devices (ADDs). Research suggests ADDs can cause pain to cetaceans and cause marine mammals (e.g. seals, dolphins, whales) to avoid areas that may be important for feeding, breeding and migration. In addition, wildlife can be affected through entanglement in nets or ropes.
<b>Wild capture fishing</b>		
<b>Illegal, unreported or unregulated (IUU) fishing</b>		IUU fishing is more likely to lead to indiscriminate fishing techniques that overfish target species, catch non-target species and even ETP species, such as sharks, rays, turtles and many others, exacerbating marine biodiversity loss. IUU fishing activities also include shark finning, dumping shark carcasses or dumping juvenile fish to increase yields or avoid quotas.
		IUU fishing is de facto unregulated and unreported, and is more likely to lead to fisheries being poorly managed, over-exploited and marine ecosystems being damaged. This leads to a decrease in ecosystem resilience and its ability to provide ecosystem services, including maintenance of fish stocks at sustainable levels.
		IUU fishing is costly to the industry as a whole and to fishery managers. IUU fishing makes fisheries management harder, as managers don't know the true level of exploitation, reducing the profitability of legal fisheries and impacting on fishing opportunities for local communities. IUU fishing also leads to significant losses in government revenue, making it harder to manage and enforce legal fisheries.
		In recent years, there has been evidence of bonded or slave labour on IUU fishing vessels, in some cases leading to serious human rights abuses, including physical and mental abuse and even murder.

<b>Destructive and unselective fishing practices</b>		Destructive and unselective fishing practices can lead to increased mortality of non-target species, legally or illegally, including those that are considered endangered, threatened or are protected by local or international law. Unselective practices also incentivise discarding of low-value, over-quota or non-target species, where fish are caught but thrown back either dead or dying.
		Destructive fishing practices, whether legal or illegal, can lead to the loss or deterioration of marine habitats such as coral reefs that support fisheries and associated biodiversity.
		Some fishing practices affect carbon storage and reduce carbon sequestration rates. Unselective fishing practices that catch too many fish, or too many large fish, contribute to the interruption of nutrient transfer, particularly in large pelagic species.
<b>Overfishing</b>		Overfishing is a result of too much fishing effort deployed on a fish stock such that it cannot sustain itself over time. This can include catching too many fish overall or catching excessive females and juveniles, leading to too few adults in the population. Overfishing causes declines of species biomass below scientifically derived sustainable levels. Overfishing can also result in significant negative ecosystem shifts. For example: when top predators are removed, low-trophic species abundance changes and the ecological food chain is altered; or when habitat-forming species are removed, the ecosystem as a whole is affected.
		When fisheries are not managed at sustainable levels, fish stocks will decline over time and affect the fisheries' ability to remain productive. Globally, the FAO estimates that more than one-third of fisheries are fished past their maximum sustainable limit. Crucially, depleted ecosystems and fish stocks are less able to withstand climate change shocks and stressors. Subsidies that prop up otherwise unsustainable or unprofitable parts of the fishing sector, both in terms of international and domestic fishing fleets, contribute to overfishing and the overall decline in profitability of the sector.
		A loss of ecosystem resilience from overfishing can have significant food security and livelihood impacts in certain geographies. Persistent overfishing below critical stock level can lead to localised extirpation and even the economic collapse of fisheries, resulting in loss of livelihoods and nutrition security for seafood-dependent communities.

<b>Abandoned, lost or discarded fishing gear</b>		Fishing vessels that abandon, discard or lose fishing gear in the ocean can contribute to the loss of biodiversity by impacting on marine mammals, sharks, turtles, fish populations and other species through entanglement and so-called 'ghost' fishing where nets continue to catch fish after they have been lost. According to the Global Ghost Gear Initiative, lost or abandoned fishing gear is known to have impacted 40% of known marine mammal species through the estimated 640,000 tonnes of gear lost at sea each year.
		Abandoned, lost or discarded gear adds over 640,000 tonnes of plastic to the marine environment each year, further threatening ocean health and marine ecosystem functionality, and indirectly, human health.
		Ghost gear causes the loss of commercially valuable fish stocks—a fish lost to ghost gear is a fish that will never breed, be sold or be eaten.
<b>Cross-cutting</b>		
<b>Carbon emissions and water usage</b>		Seafood products can have high carbon emissions due to production (e.g. fuel use for fishing gear, aeration or pumping), habitat destruction (e.g. mangrove destruction or seabed impacts), and energy from processing, cold storage and transportation to markets (highest through airfreight for fresh fish). It is worth noting that in some cases, fishing is made possible by fuel subsidies, facilitating overfishing, destructive practices and non-efficient use of fuel.
<b>Labour conditions</b>		Human rights abuses have been linked to seafood production and processing in recent years. In some parts of the world, fishing vessels are cutting costs by using forced or indentured labour to form the crews needed to undertake fishing activities. In addition, there have been reports of human and labour rights issues, including bonded and child labour, and poor working conditions in seafood processing units around the world.
		Women and girls play an important role in seafood production and processing and make up a large share of the post-harvest workforce. However, their role is often unrecognised and under-represented in official statistics, meaning they lack access to public support and can be excluded from decision-making. Women and girls can also be subject to discriminatory policies in seafood companies in which they are directly employed.
		Fishing and farmed fish harvesting can be dangerous activities. The danger is exacerbated if fishing and farming operations do not provide adequate working and living conditions for fishery crew members or farm workers, are not equipped to navigate dangerous weather or don't have the economic resilience to choose when, where or how to fish or farm.
<b>Loss and waste of seafood products</b>		Production, processing, shipping and selling of seafood products can lead to loss and waste due to: non-efficient use of feed on farms; a lack of handling/slaughtering skills; a lack of ice/freezing capacity on vessels or farms; lack of cold-chain storage to get product to market; lack of market for by-product or off-cuts during processing; and waste at the retail and consumer end of the chain. Loss and waste can lead to higher levels of farming or fishing to get the same amount of product to market, putting additional pressure on natural resources and ecosystems.

<p><b>Marginalisation of coastal communities and small-scale fishers/farmers</b></p>		<p>Local or traditional livelihoods of coastal communities can be put at risk by the establishment of poorly managed fishing or farming operations. In fisheries where industrial national or international fleets are able to legally or illegally fish in waters that are traditionally used by coastal fishing communities, over-exploitation and an unequal allocation of resources can occur. Small-scale fisheries (SSF) are said to land around half of the world's seafood and are by far the biggest employer in the blue economy. Impacting the ability of coastal communities to continue to fish can also lead to poverty and food insecurity.</p> <p>Similarly, aquaculture operations can impact existing or historic access to natural resources for local communities who may depend on them for income and/or food security. Aquaculture can be an unstable source of income and livelihood in cases where boom and bust cycles are prevalent due to disease outbreaks, food safety recalls, or natural disasters. Equally, rapid commercial aquaculture development can impact more traditional production, giving rise to resource conflicts.</p>
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**Table 3: Pressures and impacts of seafood**

## Outlining materiality

While there is a clear moral and societal imperative to mitigate the environmental and social damage that the seafood sector can cause, there is also a strong business rationale. Most of these impacts are self-defeating and present hidden or unaccounted-for business and financial risks that hinder the sector's long-term viability and growth potential, and limit profitability.

Perhaps the clearest example of this is in wild capture fisheries where the erosion of the natural capital base (i.e. the fish stocks and their associated ecosystems) on which fishing depends is clearly a threat to the profitability and future potential of the sector as a whole. Fisheries are considered to be underperforming assets according to the World Bank (2018) who estimate lost potential due to poor management and over-exploitation at USD 85bn a year.

By contrast, they estimate a potential for a 13% increase in global harvests if they were managed at sustainable levels. Planet Tracker (2019) estimated that Japanese seafood companies, with a combined market capitalisation of USD 134bn in 2019, face hidden financial and reputational risk from unsustainable wild capture fisheries. One recent study estimated that Japanese fisheries alone could generate additional revenue of up to USD 1bn a year by 2065, as well as tripling profits and increasing biomass, if catches were reduced in the short term to allow stocks to rebuild (Tokunaga *et al.* 2019).

The impacts of overfishing, fishing of endangered species, human rights abuses and IUU fishing are increasingly apparent, creating a high reputational risk for companies and financiers who are directly or indirectly exposed to these practices. Markets and regulators are reacting to these risks through tighter controls on domestic production standards and imports and higher sustainability standards for end buyers. End markets are also responding to increased consumer awareness of the plight of the ocean. The Marine Stewardship Council (MSC) (MSC 2019) suggests that 83% of global consumers

agree on the need to protect the ocean for future generations. The EU and US have led in this regard, but increasingly markets like Japan are moving towards tighter regulatory measures and increasing consumer awareness of fishery issues.

In the aquaculture sector, one of the biggest costs to the industry from poor management and regulation is disease, which is said to have the potential to cost the sector around USD 6bn a year (Stentiford 2017). In Thailand and Vietnam, the shrimp sector has suffered economic losses due to disease of more than USD 5bn to date (Shinn *et al.* 2016). Disease outbreaks—particularly when they affect whole producing regions—can affect market supply and demand as well as prices. This has been seen in both salmon and shrimp markets over the past decade. In some cases, where the carrying capacity for farmed species has been exceeded and management poor, this has led to deterioration in the quality and viability of farming overall. Planet Tracker research suggests that should business as usual in the salmon industry continue, current production forecasts for coastal farmed Atlantic salmon (towards 2025) may be out by 6% to 8%, i.e., production might be worth USD 4.1bn less than predicted (Planet Tracker 2020).

**“I welcome UNEP FI’s ‘Turning the Tide’ report as an important step in encouraging and facilitating the financing of our oceans. As we have highlighted in our own Planet Tracker reports, the ocean economy is an essential factor in our understanding of planetary boundaries. This report makes a key contribution to guiding financial institutions into blue finance”.**

**Robin Millington, CEO, Planet Tracker**

Interaction with wild species—such as in salmon farming, where disease and escapes can be common and costly—also attracts notice from the media and NGOs. Deforestation and destruction of coastal mangrove forests and wetlands from shrimp farming, particularly in South-East Asia, has also caught the attention of a wide array of NGOs. As with wild capture fishing, markets are increasingly demanding certified and traceable farmed products. The Aquaculture Stewardship Council, a standard setting body for responsible aquaculture products, reported that nearly 18,000 products were able to carry the ASC logo around the world through 2019, a 380% increase in five years (Aquaculture Stewardship Council [ASC] 2020).

While great strides have been made in the past few decades by seafood companies, governments and NGOs to identify, manage and mitigate environmental and social impacts and risks, there is still much to be done to transition seafood to a sustainable and viable sector that is able to deliver returns to businesses into the future, particularly when climate change impacts are considered. Sustainable seafood is not only the most responsible financial proposition but also the most prudent. Banks, investors and insurers need to understand the potential risks associated with ‘business as usual’ in the seafood sector and seek opportunities to play a role in supporting the transition. Table 4 outlines the key risks associated with each pressure and impact arising from the production, processing, distribution and sale of seafood. For information about the different risk categories, see the Methodology section of the Introduction.

Pressures	Impacts	Risks	
<b>Aquaculture</b>			
<b>Location and siting of farms</b>	  	Regulatory	Carbon emissions associated with coastal habitat destruction, particularly through mangroves and wetlands are high. With scope 3 emissions (i.e. those emitted through a company's supply chain) on course to be taken up by markets demanding disclosure, carbon emissions in seafood production and supply chains will become a material issue for seafood companies and FIs needing to measure and manage carbon emissions.
		Market	Seafood demand markets are increasingly aware of the links between seafood production (particularly shrimp farming in South-East Asia) and land conversion/mangrove deforestation. Market actors are under pressure to commit to deforestation and conversion-free supply chains.
		Physical	Loss of mangroves and wetlands can lead to increased risk from flooding and storm surges to local farms and businesses. As aquaculture operations are often family-run small businesses in emerging economies, they don't have financial resilience or insurance to smooth the costs of disruption or re-building.
<b>Pollution and water contamination</b>	 	Reputational	Water contamination and eutrophication caused by aquaculture is a high-visibility issue with the media and NGOs, affecting the reputation of the industry.
		Regulatory	Regulations on the use of chemicals, pesticides and feeds are tightening in producing markets in response to increased pressure from NGOs, local communities and media. The risk of fines for companies not meeting high standards is an increasing risk.
		Market	Farmed fish that has been overly exposed to harmful chemicals, pesticides or antibiotics are at risk of being detrimental to human consumption and rejected by importing markets with high food standards. This is particularly relevant where anti-microbial resistance emerges.
<b>Invasive species and escapes</b>	 	Reputational	Escape events often make media headlines—for example in UK, Norway and Chile—causing reputational damage to the industry.
		Operational	Escape events lead to substantial economic losses for farmers due to lost harvest potential.

<b>Spread of disease and parasites</b>		Reputational	Spreading disease and parasites to wild populations is a highly visible issue in aquaculture for some species, particularly wild salmon.
		Operational	Biosecurity and disease prevention and control are major problems for aquaculture. Uncontrolled spread can lead to severe economic losses due to mitigation costs and harvest loss at production level. Disease causes supply and demand disruption and price volatility across the supply chain. The aggregated nature of farms in particular regions means that losses can be across whole supply markets, pushing up prices elsewhere.
<b>Use of unsustainable marine and terrestrial ingredients in feed</b>		Reputational	Deforestation in soy-producing countries is a high-visibility issue with the potential to create media and NGO pressure.
		Market	Seafood demand markets are moving towards making it harder to import products with illegal deforestation in their supply chain and are introducing market measures, such as ASC certification, that include provisions for marine and terrestrial feed ingredients.
		Operational	Poorly managed fisheries that are under high demand for low-value and low-trophic fish species to supply the feed industry can be quickly over-exploited, putting pressure on the ability of the fishery to continue to supply raw materials at affordable prices.
<b>Interaction with wildlife and predators</b>		Reputational	The culling of predators in fish farming has led to NGO campaigns.
		Regulatory	Negative impacts on endangered, threatened and protected species could result in aquaculture policy reforms or regulations and forced shutdown of operations in the worst cases.

Wild capture fishing			
<b>Illegal, unreported or unregulated (IUU) fishing</b>		Reputational	Illegal fishing and associated human rights abuses and environmental impact have been the subject of multiple NGO and media campaigns. The issue has extremely high visibility, putting companies' reputations at risk with potential legal repercussions.
		Regulatory	<p>In response to the pervasiveness and severity of the issues associated with IUU fishing, regulatory measures have been introduced in key seafood demand markets. These include those incorporated within the US Seafood Import Monitoring Program (SIMP) and the EU Catch Certification Scheme, which is complemented by a procedure to identify non-EU countries as non-cooperating in the fight against IUU fishing. Regulations are being introduced in other key demand markets such as Japan.</p> <p>In addition, providing financial services to IUU fishing vessels may make companies liable to criminal, civil, or administrative sanctions and asset recovery actions. For example, companies based both within the EU and in the UK have legal responsibilities to ensure they are not supporting IUU fishing.</p>
			
			
			
	Market	Seafood buyers in the US, EU and Japan are responding to reports of illegality and human rights abuses by demanding higher levels of traceability and certification.	
	Operational	Where IUU fishing leads to rapid over-exploitation of critical natural resources that underpin the sector, it presents high risks to the continued viability of both individual companies and the sector as a whole.	
<b>Destructive and unselective fishing practices</b>		Reputational	Destructive fishing practices lead to the damage of critical marine habitats such as coral reefs, and can lead to high mortality levels of ETP species. As such they have the potential to be the basis for NGO and media campaigns.
		Regulatory	In response to the pervasiveness and severity of the harmful environmental issues associated with destructive gear, regulatory measures could be introduced in key seafood demand markets.
		Market	Seafood demand markets are increasingly requiring sustainability assurances. Fish sourced from suppliers that use destructive fishing practices are unlikely to meet market-leading standards.
		Operational	Destructive fishing practices lead to the damage of ecosystems that are the basis of the fishing sector and put the viability of seafood production and supply chains at risk.

<b>Overfishing</b>	  	Regulatory	Fisheries that are over-exploited are likely to eventually face control regulations such as moratoria, fines and penalties.
		Market	Markets are increasingly requiring assurance of sustainability and best practice management, including the use of certification schemes. Markets are increasingly wanting fisheries to be sourced transparently and sustainably. Those that are not operating or sourcing from sustainable fisheries stand to lose out as demand for sustainable product increases.
		Operational	Fisheries that are over-exploited will not be able to sustain fishing over the long term. More than two-thirds of global fisheries are already over-exploited or fished at their maximum level. Evidence is beginning to show how seafood companies are at risk due to over-exploitation of natural resources in the form of supply crunches, price volatility and competition for raw material.
<b>Abandoned, lost or discarded fishing gear</b>	  	Reputational	Polluting activities and items are currently highly visible issues in the media and among consumers—particularly plastics pollution, a substantial portion of which is from fishing gear. There are also specific NGO initiatives targeting 'ghost gear' that is responsible for catching ETP species.
		Regulatory	Possible mandatory net identification schemes to enable identification by competent authorities could come into effect. This may be linked to fines and penalties for those found responsible for abandoned, lost or discarded gear.
<b>Cross-cutting Issues</b>			
<b>Carbon emissions and water usage</b>		Market	Scope 3 emissions are on course to be taken up by markets demanding disclosure. Carbon emissions in seafood production and supply chains will become a material issue for seafood companies and FIs needing to measure and manage carbon emissions.
		Regulatory	Fuel subsidies may be removed from fishing fleets. This could increase operational costs and lead to a potential loss of income and supply of seafood.
		Physical	Aquaculture and fishing operations are often exposed to extreme weather events, caused by increasing climate change and being located in high-risk countries and regions. Low economic resilience and lack of access to risk finance means losses can be significant.

<b>Labour conditions</b>		Reputational	There is high visibility of social and labour abuses and human rights violations in the fishing sector as a result of NGO campaigns. Major seafood companies and retailers have been targeted and court cases with fines have occurred.
		Regulatory	Regulations around traceability and illegality are in place in major seafood importing markets such as the US and the EU.
		Market	Seafood demand markets are increasingly responding to high-visibility social issues in seafood production and processing, demanding transparency and traceability as a prerequisite for buying.
<b>Loss and waste of seafood products</b>		Operational	Loss of seafood products along the value chain account for substantial economic losses and loss of opportunities for higher incomes and higher quality products entering into markets. Companies could make better use of the by-products and waste in seafood supply chains, thus deriving more income from raw materials. In some emerging markets cold chain storage is a major constraint to maintaining quality of seafood products, and rejects can be high.
<b>Marginalisation of coastal communities and small-scale fishers/farmers</b>		Reputational	The plight of coastal communities is a major concern for global environmental development and conservation-focused institutions and NGOs. Governments are particularly motivated by the socio-economic resilience of coastal populations, particularly in light of Covid-19 impacts and pressures.

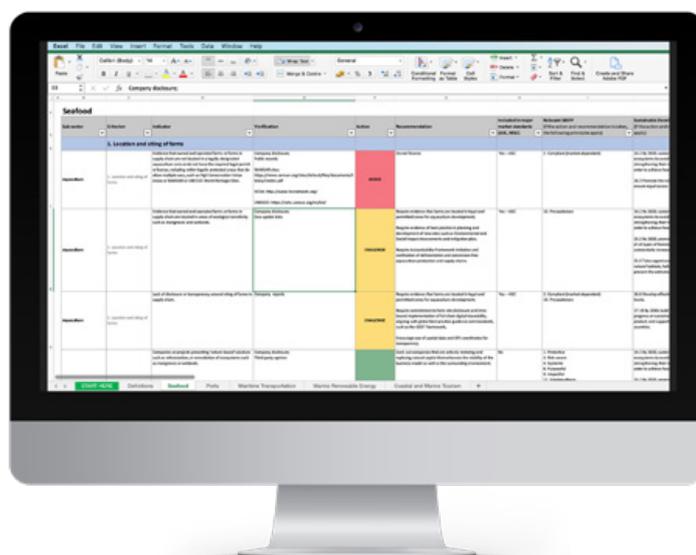
**Table 4: Overview of seafood risks and materiality**

## Criteria for sustainable financing

Based on the impacts and their materiality outlined above, the attached Criteria Annex for the sustainable financing of the seafood sector is proposed. This list of criteria and their associated indicators offer recommendations for financial institutions. These recommendations are to: **avoid** the worst scenarios, **challenge** areas for improvement, or **seek out** best practice.

The seafood criteria are grouped into aquaculture and wild capture fisheries criteria, given the distinct impacts and risks that these different modes of seafood production present. There are also a number of criteria relating to cross-cutting impacts and risks, given that seafood supply chains can include products that come from both wild and farmed origins.

Refer to the  
Criteria Annex  
for more detailed  
information



## From risk to opportunity

Sustainable seafood offers huge opportunity. Not only does it protect and restore marine ecosystems, contributing to ocean health and resilience, it also provides jobs and food security for coastal communities and income and revenue for local economies. Banks, investors and insurers can make the most of these opportunities by providing financial products that support businesses in the seafood sector to grow and prosper towards a sustainable future, helping the world to achieve the Sustainable Development Goals.

Financial institutions have signalled that they believe trends towards more sustainable seafood outcomes are where the future lies. Survey results from a range of FIs show a number of key trends in fisheries and aquaculture—notably towards greater efforts to make wild-caught fishing sustainable, certification in both fisheries and aquaculture, and reducing the negative environmental impact of aquaculture (UNEP FI 2021).

There are already examples of funds, bonds, loans and insurance products, amongst others, that are financially supporting projects and businesses to flourish and work towards greater implementation of sustainability outcomes in the seafood sector. Specialised impact funds such as [Aqua-spark](#), the [Mirova Sustainable Ocean Fund](#), [8F Ocean 14 Capital](#), the [Credit Suisse/Rockefeller Ocean Engagement Fund](#) and the [Blue Impact Fund](#) are targeting sustainable seafood opportunities in both wild capture and aquaculture sectors.

Companies such as Mowi and Grieg, both in the farmed salmon sector, have recently issued green bonds to finance their sustainability strategies (Mowi 2020; Grieg Seafood 2020). And the World Bank, in partnership with the Caribbean Risk Insurance Facility and others, has developed an insurance product for local fishing and aquaculture communities that face increasingly extreme weather events (World Bank 2019). In 2017, a group of insurance companies committed publicly to take action against IUU fishing and pledged to not knowingly insure vessels officially listed for their involvement in IUU fishing (Oceana and UNEPFI PSI 2018).

There have also been a number of sustainability-linked loans for seafood companies which have included sustainability KPIs as part of the loan performance. The following case studies illustrate some existing efforts to finance sustainable seafood.

**“We are committed to protecting the ocean by globally scaling up sustainable land-based RAS salmon farming to deliver clean and healthy fish. A healthy ocean and the protection of marine ecosystems and marine biodiversity are crucial for effective climate change mitigation and for the well-being of our planet for generations to come. 8F Asset Management and Pure Salmon are proud to be Founding Signatory and Supporting Organisation to the Sustainable Blue Economy Finance Principles.”**

**Stéphane Farouze, Founder of 8F Asset Management, Chairman of Pure Salmon**

## Case studies

### Ocean Engagement Fund – Credit Suisse and Rockefeller<sup>13</sup>

In September 2020 Credit Suisse—in collaboration with Rockefeller Asset Management—launched a novel investment fund called the Ocean Engagement Fund. Together with the Ocean Foundation, the equity fund will focus on SDG 14 (Life Below Water) with a goal of helping to restore global ocean health, including through the seafood sector, while generating positive returns for investors. Fund managers will actively engage with investee companies and encourage them to take steps to mitigate harmful impacts and move towards sustainable practices. The Ocean Foundation will help Credit Suisse and Rockefeller define the universe of companies for the fund and the framework for engagement. The fund will have a concentrated portfolio of around 30 to 50 stocks and together with the engagement strategy, the fund managers believe that the fund will be able to out-perform the global equity markets over the long-term. By 31 December 2020, the fund had raised USD 320m.

#### Takeaway

Investors who actively manage portfolios that include blue economy companies, not only are able to play a direct role in supporting companies in the transition to sustainability, but also beat the market at the same time by managing and mitigating key risks arising from social and environmental impacts.

**“At Climate Fund Managers we recognise the need to collectively respond to the climate crisis in a purposeful and sustainable way, through innovation and thought leadership. We are proud to promote this guidance as a means to advancing the sustainable financing, development and management of the ocean, the world’s seventh largest economy.”**

Andrew Johnstone, CEO, Climate Fund Managers

13 Case study written on the basis of personal communication with Rockefeller Asset Management (2021).

## Sustainability-linked loans – Rabobank<sup>14</sup>

In 2019 Rabobank issued one of the world's first sustainable loans within the seafood sector. Working alongside WWF Chile, with whom they have been in partnership since 2012, Rabobank issued a loan to Agrosuper, Chile's leading salmon company and the world's second-largest salmon producer. The seven-year agreement for a USD 100m loan to finance Agrosuper's acquisition strategy came with a range of environmental and social key performance indicators (KPIs) attached (Seafoodsource 2019). These included provisions for increasing ASC certification, getting farms into improvement programmes (with a goal of reaching 100% of its production sites), and commitments to reduce antibiotic use and improve social conditions (ibid).

In January 2021, Rabobank structured two additional sustainability-linked loans in the Chilean salmon sector (Undercurrent News 2020). The first is with Blumar, one of the main animal protein companies in Chile with a presence in the capture fishing and salmon farming business. This deal is the result of years of discussions with shareholders and senior management to find the most adequate capital structure for Blumar for its new stage of sustainable development. The agreed financial solution is a USD 300m sustainability-linked loan in which the client commits to improve its sustainability standards throughout the lifetime of the loan, including KPIs related to clean energy, carbon footprint, antibiotic use and waste management, amongst others. Rabobank led a group of local (BCI and Security) and international (DNB Norske and Santander) banks that endorsed the structure, its sustainability-linked loan principles and its KPIs. This landmark deal represents one of the very first syndicated sustainability-linked loans in Chile and the first one in food and agriculture.

The second transaction is with the Chilean salmon company Ventisqueros for USD 120m to finance growth towards its output target of 60,000 tonnes of salmon (Undercurrent News 2020). The loan, provided by Rabobank together with DNB, also comes with sustainability targets to align the company's growth with increasing market demand for sustainable seafood. Ventisqueros has committed to improving its sustainability standards throughout the lifetime of the loan, including KPIs related to antibiotic use, ASC certification, clean energy, and carbon and water footprint (ibid). This loan programme is a promising step in the right direction towards improvements in aquaculture practices in Chile.

### Takeaway

Banks can influence a company's sustainability journey by including environmental and social KPIs into loan contracts, helping to manage and mitigate risks and increase overall sustainability performance of the company. To ensure success, it is important for companies involved to be transparent in their reporting of compliance with sustainability targets.

14 Case study written on the basis of personal communication with Rabobank (2021) and additional source as listed in the text.

## Equity investment in sustainable aquaculture in Africa – Aqua-Spark<sup>15</sup>

Aqua-Spark is the first fund dedicated to investing in sustainable aquaculture. As such Aqua-Spark invests only in companies that solve a real sustainability problem, have a collaborative attitude and are positive towards sustainable best practices. In 2015 Aqua-Spark made an equity investment in Chicoa, a greenfield tilapia farm in Mozambique, a country where nearly half the children under the age of five suffer from malnutrition, but also a country that since the end of the civil war has had an annual GDP growth of 7.5%.

Chicoa has grown into a vertically integrated company with a production capacity of approximately 2,000 tonnes and the first aquaculture company to undertake an analysis of their prospective out-grower program. The goal is to further grow to 20,000 tonnes, half of which is to be realised through out-grower programs. In 2016 Aqua-Spark invested in Indian Ocean Trepang, a community-based sea cucumber producer in Madagascar. Through these investments Aqua-Spark demonstrated that it is possible to generate healthy returns, while, among others, increasing food security, creating climate-resilient jobs and reducing pressure on red-listed species. Aqua-Spark also incorporates social criteria into pipeline development, including treating all workers fairly, providing them with safe and healthy working conditions, equal pay and conditions for women, and access to maternity rights. These considerations are particularly important given the prevalence of a practice known as 'sex for fish', through which female fish traders offer sexual favours from fishers in return for fish to sell and make money.

Aqua-Spark is currently raising equity capital for its Africa Fund, aiming for a USD 50m close in 2021. The Africa Fund will be dedicated to investing in sub-Saharan African aquaculture, taking minority stakes in companies across the value chain and supporting their growth both directly and through a dedicated technical assistance facility.

### Takeaway

Investment opportunities can be found that couple high levels of environmental and social impact with positive returns if sustainability criteria are embedded in the investor's mission from the outset.

15 Case study written on the basis of personal communication with Aqua-Spark (2021).



# Ports

## Sector and financial overview

Ports are gateways for development, global trade and maritime innovation, and being located at sea level, they are on the front lines of climate change. Ports are clusters of companies and hubs of economic activity. With strong scale and scope advantages they are ideal hubs for sustainable maritime innovation and have become a key part of development strategies employed by many nations (Rodrigue and Notteboom 2020).

The regulation of shipping, fishing and other maritime activities takes place at the world's ports. Therefore the scope of this guidance embraces all port functions and assets, stopping short of the shipyard and recycling segments covered in the Maritime Transportation chapter. Ancillary services such as pilotage, towage, waste reception, mooring, onshore power, bunkering, technical nautical services, cargo handling, logistics, warehouse and transport to hinterland are also within the scope of this guidance. With the exception of pilotage, most of these services are in private hands.

Ports are often categorized by their primary customers: Containers, Fuel Tankers, Cruise Ships, Fishing, Private Vessels/Marinas ('pleasure'). As highlighted in Figure 6 below, these are typically structured and financed differently. Regardless of customers, port size or location, themes of sustainability, resilience and innovation converge at ports. Indeed, several SDGs can be connected with the role of ports, in particular SDG 9 (Industry and Infrastructure), SDG 13 (Climate Action), SDG 14 (Life Below Water) and SDG 17 (Partnerships). Green and resilient ports are vital for developing nations, as gateways for development—and as hubs for trade, fishing and tourism. As such, they are of central importance to the Sustainable Blue Economy Finance Principles.

Dominant Vessels		Public	Private	Typical Structure
1	Container	✓	✗	<ul style="list-style-type: none"> <li>Government owned</li> <li>Leased to private operator</li> <li>Public infrastructure finance</li> </ul>
2	Tanker	✓	✗	<ul style="list-style-type: none"> <li>Government or privately owned</li> <li>Leased to private operator</li> <li>Public infrastructure finance</li> </ul>
3	Cruise	✓	✓	<ul style="list-style-type: none"> <li>Government or privately owned</li> <li>Leased to private operator</li> <li>Cruise operators participate in finance</li> </ul>
4	Fishing	✓	✓	<ul style="list-style-type: none"> <li>Government or privately owned</li> <li>Leased to private operator or co-op</li> <li>Cruise operators participate in finance</li> </ul>
5	Pleasure	✗	✓	<ul style="list-style-type: none"> <li>Government or privately owned</li> <li>Leased to private operator</li> <li>Private finance by operator or club</li> </ul>

**Figure 6: Port types by vessels and primary financiers**

The world's top 50 ports control 70% of the global container business (IAPH 2018). Of the top 20 ports, 15 are located in Asia, with 40% of global market share (ibid). China's Maritime Silk Road is driving port investment and acquisitions across Asia, Europe and Africa (Huo *et al.* 2019). Given the high strategic and development value of ports, it is imperative that financial institutions pay close attention to the needs of this sector.

Port governance is a complex issue, as most ports are publicly owned, with operations leased to private companies. In Europe for instance, 87% of ports are under public ownership (ESPO 2016a). Furthermore, some 44% of European port authorities manage more than one port—and 59% are nationally owned, with 33% owned by municipalities (ibid).

The Covid-19 shock to global trade represents the latest challenge to port governance as managers try to adapt to fresh environmental and social challenges (Port Economics 2020). In light of the above, financial institutions must deal with several entities in a regulated environment. Regulations are imposed at several levels: local, national and international. Port State Control (PSC) is the inspection of foreign ships in national ports to verify compliance with International Maritime Organization (IMO)<sup>16</sup> regulations (IMO 2019a). Similar regulatory regimes, including national customs and environmental standards, require ports to inspect vessels involved in fishing, energy, mining and scientific research. This gives ports a key role in the monitoring and control of shipping activities and an opportunity to develop as sustainability leaders.

16 International Maritime Organization is the United Nations specialized agency with responsibility for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships.

The many challenges to ports today—decarbonisation, alternative fuels, resilience, vessel size, urban growth, inland transportation, digitalisation, security, waste management—translate into complex infrastructure demands that go far beyond simply increasing capacity. Global trade is forecast to decline by 9.2% in 2020, followed by a rise of 7.2% in 2021 (WTO 2020a). Prior to the Covid-19 pandemic, global port growth was estimated at 3.4% per annum for 2019–2024 (UNCTAD 2019).

Innovation is disrupting and improving many port functions, with trends including: artificial intelligence, autonomous vessels, cybersecurity, digitalisation and smart shipping (Lloyd's Maritime Academy 2019). Leaders like the Ports of Singapore and Rotterdam are supporting blue economy innovation with dedicated investment funds and technical assistance (PortXL 2020; TechStars 2020). Europe's DUAL Ports Initiative aims to decarbonise ports by integrating clean energy and digital systems—offsetting economic dependence on the fossil fuel industry (DUAL Ports 2020).

## Financing the sector

Financing these challenges is an equally complex array of stakeholders: banks, project financiers, insurers, private equity firms, infrastructure funds, development banks and industrial conglomerates. The long-term nature of most projects means that ESG issues must be anticipated, otherwise a project may run afoul of future regulations or industry needs. However, ports are tied to global trade cycles and a consolidating shipping industry (UNCTAD 2020). To reduce these risks, blended finance approaches are often used (Convergence 2020). Public finance often plays an important role, given the predominantly public ownership and strategic value of ports. The demand for asset classes where impact can be measured and multiplied across sectors, in fact, gives ports access to capital aligned with both sustainability and growth.

National policies towards port infrastructure finance vary. Research shows that the public sector funds 63% of the top container ports (Port Reform Toolkit 2021). Private finance is required for those whose governments do not consider ports as part of the nation's transportation infrastructure. As private sector interests have increased, so has private financing of a wide range of basic port assets and operations. However, climate resilience issues create the need for expensive, long-term projects that are difficult to finance in private markets due to the uncertain payback, exceeding the standard 20–to-30–year infrastructure horizon. Climate adaptation and resilience (CAR) guidelines have been developed, including natural (mangroves, reefs) and structural (seawalls, dock-yard elevations) solutions (CBI 2020a). Because the national economic benefits of such projects are compelling, multilateral banks and institutions with climate finance mandates are increasingly called upon to deliver long-term, blended finance solutions.

There are four types of port investments: basic infrastructure, operational infrastructure, port superstructure, and equipment. Each type appeals to a different mix of public (regional and national) and private (port operators and capital markets) investors. Each investment also presents different sustainability challenges and opportunities, which we shall consider in the next section.

## Key environmental and social impacts and dependencies

Ports and port operations impact the land, air and water. Human health, and land and marine ecosystems suffer from port-based pollution and infrastructure development. Financiers must be aware of whether or not these issues are addressed by local or national regulations.

Air pollution exposes people to serious health impacts. Port emissions come from a wide range of sources—directly or indirectly related to port operations—including: fuel-powered cargo handling equipment, ships, harbour craft, trucks, rail locomotives, port administration vehicles, and power plants providing energy for port operations. Emissions include greenhouse gases (GHGs), notably carbon dioxide (CO<sub>2</sub>), oxides of nitrogen (NO<sub>x</sub>), oxides of sulphur (SO<sub>x</sub>), methane (CH<sub>4</sub>) and particulate matter (PM). PM can travel long distances and contributes to an increasing prevalence of respiratory infections such as bronchitis and pneumonia as well as chronic lung and heart disease, cancer and premature deaths (WHO 2006). Ports are major players in the energy complex, with all the associated risks and pollution from transporting, storing and burning fossil fuels. There is great incentive, therefore, to increase the percentage of renewable energy used both dockside (e.g. for cold ironing) and in port yards (Safety4Sea 2019).

Marine pollution from ports includes poor land-based waste management, operational discharges from ships in harbour, as well as urban and industrial toxic chemical run-off. This directly damages marine ecosystems locally and, due to tides and currents, also impacts regional seas. Harm from pollution to fishing and tourism businesses compounds the costs to local economies. Inadequate water treatment systems, especially in developing nations, can further compound health impacts. Climate impacts, with more frequent storms and sea level rise, may overwhelm water treatment and waste management systems, especially in port areas. As part of the regulatory attempts to manage the negative impacts from pollution, MARPOL defines Emission Control Areas (ECAs) that protect special areas with tighter pollution standards, however these areas are limited at present.<sup>17</sup>

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17 The emission control areas established under MARPOL Annex VI for SO<sub>x</sub> are: the Baltic Sea area; the North Sea area; the North American area (covering designated coastal areas off the United States and Canada); and the United States Caribbean Sea area (around Puerto Rico and the United States Virgin Islands).

Climate resilience and adaptation issues place ports on the front line of risk, with an estimated USD 49bn alone needed to protect Asia's 53 largest ports from rising seas and storms (McCarron 2018). Port-side emissions are part of a global problem. Notably, the PM arising from incomplete combustion of fossil fuel primarily consists of black carbon (BC), a particle climate change agent that is second only to CO<sub>2</sub> in impact on climate change (surpassing that of CH<sub>4</sub>, CFCs, N<sub>2</sub>O, or tropospheric ozone) (WHO 2006).

Social impacts broadly fall into two categories, namely community health (as discussed above) and labour: safety, conditions and gender inclusion. The IMO has set standards for Port State Control, with input from the International Labour Organization (ILO), covering safety issues: from handling of hazardous materials to safely operating heavy machinery (ILO 2018). Regarding the Covid-19 response, the World Ports Sustainability Program has an information portal that underscores the important front-line role of ports in the pandemic. Several maritime initiatives are advancing gender and inclusiveness, such as Women's International Shipping & Trading Association (WISTA) and IMO's Women in Maritime (WISTA 2020).

These pressures and their impacts on environment and society are listed in Table 5 below.

## Relationship to other sectors of the blue economy

Within the blue economy, ports serve all other sectors. A few examples include:

- Shipping, of course, depends entirely on port services to load and unload cargo and passengers. The rating of ports by shipowners is a significant yardstick by which ports are compared and selected. Maritime digital technology is a high-growth segment of its own, enhancing the ability of ports to manage all aspects of shipping traffic, operations and even pollution controls.
- Fishing vessels dock, depart, return and unload their catch at ports. Each one of these operations, especially verification of the catch, requires expert assistance and monitoring by port authorities or fisheries managers. Cold storage facilities are located at or near ports. While floating seafood processing replaces some of these functions, the return to port of fishing and processing vessels provides the final opportunity to check for sustainability issues like IUU catch.
- Renewable energy facilities are often tested and operated at or near ports. Integrating renewables into the port energy mix is one of the major parts of the sustainability transition. The first exposure a ship captain may have to renewables is plugging into clean onshore power rather than running diesel fuel. Much of this clean onshore power is solar but, as the economics improve for marine renewables, ports are becoming early adopters.

Pressures	Impacts	
<b>Dredging and siting of port facilities</b>		Siting and expanding ports and offshore platforms without following environmental codes and protections may damage the marine environment, such as habitats, fisheries, corals, mangroves and coastlines.
		Port dredging disturbs the seabed, which may cause substantial harm to habitats, fisheries and natural coastal protections.
		Animal welfare in port areas may be reduced by dredging and siting that causes habitat destruction.
<b>Air pollution</b>		GHG emissions from ports and ships contribute to sea level rise, coastal erosion and storms, leading to reduced climate resilience.
		Particulate matter can travel long distances and contributes to an increasing prevalence of respiratory infections such as bronchitis and pneumonia as well as chronic lung and heart disease, cancer and premature deaths.
<b>Water and noise pollution</b>		Animal welfare in port areas may be reduced by pollution, including noise, toxic discharges and runoff.
		Pollutants from vessels and port operations may affect marine biochemistry and ecosystem balance.
<b>Labour policies and conditions</b>		Unfair port and shipyard labour practices may manifest as allocating high-risk tasks to indigenous workers and other disadvantaged groups.
		Workers may not be sufficiently protected or insured against high-risk activities in ports and shipyards.
		Ports and shipyards may unfairly exclude workers, or allocate risky tasks for social, gender or ethnic reasons.
<b>Economic volatility</b>		Global trade volatility may disrupt a port's workforce, with no safety net for dependent communities.
<b>Accidents</b>		Damages from storms and accidents may result in port layoffs and disruptions to local communities.

**Table 5: Pressures and impacts of ports**

## Outlining materiality

In common with all infrastructure sectors, port finance and insurance have long time-lines and involve high-value assets. Therefore, risk management plays a large role in making decisions.

Ports are regulated to ensure efficient and competitive functioning. Due to port sector reforms, many ports have evolved into a landlord port authority, with facilities leased to private operators (PPPLRC 2016). Financiers, therefore, must require accountability from port operators as well as owners to ensure regulatory compliance and, especially, social and environmental best practices. Broadly speaking there are two types of port regulations:

- **Economic:** These are set locally and nationally, governing the setting of tariffs, revenues, or profits; controlling market entry or exit; establishing the owner-agency relationship with port operators; and maintaining fair, competitive practices.
- **Non-Economic:** These are set locally and globally, governing environmental (air and water pollution), labour (health and safety) and physical (collisions, fires, storms) standards. Because of the role of IMO and industry bodies, it cannot be assumed that compliance with local regulations also covers global regulations. Port transparency and accountability is, therefore, essential.

The fortunes of ports are closely tied to global trade and commodity prices. Insurance, diversified capital sources and business diversification play vital roles in reducing these risks. As the port sector is exceedingly competitive, those who can minimise market risks hold a distinct advantage and are in a better position to support the workers and communities that depend on them.

Reputational risk may also be reduced by preventative actions. The IMO promulgated its Five Step Formal Safety Assessment (FSA) in 1996 after a US port was fined a record USD 4m in damages for an oil spill from an approaching tanker resulting from pilot error (Port Strategy 2015). Lax environmental and labour safeguards cause accidents that may seriously damage a port's reputation and competitiveness. In addition, a port's social license depends on these safeguards being enforced with the best interests of the community in mind. Port risk management is now a specialty function with systematic processes and software.

Physical risks stem from two broad causes:

- **Human error:** Collisions in harbour or dockside caused by pilot error, and land-based machinery damage from improper operation.
- **Natural disaster:** Extreme weather events damaging port assets and coastal ecosystems in the port area.

These can be mitigated with planning and safety protocols alongside investment in new technologies.

Modern systems and software anticipate operational risks. For example, the operational risk module of ABPmer's Port Assessment Toolkit (MarNIS) covers nautical safety, environmental protection, crisis management and port efficiency (Port Risk Management, 2020).

Table 6 outlines the relationship between the key drivers of port impacts, the pressures these place on society and the environment, and their most material risks.

**“We can only fulfill the potential of the Blue Economy if we ensure the harmony of its ecosystems. As providers of venture capital, these Guidelines are our sustainability blueprints for investing in the economic solutions emerging from the ocean.”**

**Stephan Morais, Managing General Partner, Indico Capital Partners**

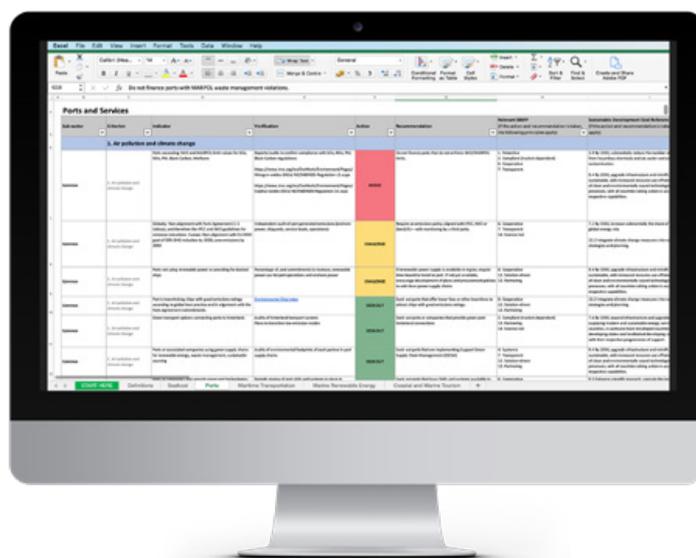
Pressures	Impacts	Risks	
<b>Dredging and siting of port facilities</b>		Regulatory	Regulatory and reputational risks from environmental code violations during dredging, port siting and shipyard operations. Extended Producer Responsibility (EPR) cases in logistics may drive new regulations (Pouikli 2020).
		Reputational	
		Regulatory	Reputational risk from citizen/NGO action concerning ecosystem damage may lead to loss of social license to operate.
		Reputational	Regulatory risk and liability from cost of damaged ecosystem services and use conflict with other industries (e.g. fishing, tourism).
<b>Air pollution</b>		Regulatory	Regulatory risk (fines) for violations of local pollution regulations and IMO sulphur oxides (SOx) emission regulations (MARPOL Annex VI).
		Physical	Physical risk to ports from storms caused by climate change.
		Market	Market risk from customers who avoid ports with poor environmental records.
		Regulatory	High risk to port staff and adjacent community of health problems and medical liability for SOx, nitrogen oxides (NOx) and carbon dioxide (CO <sub>2</sub> ) emissions.
<b>Water and noise pollution</b>		Regulatory	Risk of new regulatory action connecting ports with plastic pollution, oil spills and industrial run-off.
		Reputational	Reputational risk from disturbance suffered by customers and community.
<b>Economic volatility</b>		Regulatory	Loss of jobs and social license to operate may occur from economic volatility and business contractions.
		Market	
<b>Accidents</b>		Reputational	Market risk for harbour accidents causing vessel, crew and coastal damage.
		Regulatory	
		Market	
<b>Labour policies and conditions</b>		Physical	Port and shipyard operations involve physical and health risks to workers.

**Table 6: Overview of ports risks and materiality**

## Criteria for sustainable financing

Based on the impacts and their materiality outlined above, the attached Criteria Annex for the sustainable financing of the ports sector is proposed. This list of criteria and their associated indicators offer recommendations for financial institutions. These recommendations are to: **avoid** the worst scenarios, **challenge** areas for improvement, or **seek out** best practice.

Refer to the  
Criteria Annex  
for more detailed  
information



## From risk to opportunity

Ports and related services are part of the wave of innovation that is sweeping the maritime industry. Several areas of innovation are speeding the transition to more sustainable port operations, all of which represent strong business opportunities for financiers:

- **Digital applications** improve complex port tasks such as traffic management, allocating and measuring energy usage, piloting within harbours, docking, cargo verification, environmental compliance, storage and inland transport. Product development areas include: artificial intelligence, autonomous vessels, blockchain, cybersecurity, digitalisation and smart shipping (Lloyds Maritime Academy 2020). All offer benefits from resource efficiency to labour savings and risk reduction.
- **Maritime accelerators** leverage port facilities to support the growth of start-ups. Major and regional ports worldwide are seizing this opportunity. Ports may offer testing facilities, heavy equipment, business contacts, capital and production capabilities to maritime innovators (Port Technology 2020). In addition to sustainability gains, accelerators drive job creation and economic growth.
- **Clean onshore power** (or cold-ironing) projects from solar energy and wind turbines may be spurred by local regulations to protect communities and lower operating costs for ports (Safety4Seas 2019). This is a strong area of innovation for technology and delivery.

- **Production and storage of alternative fuels** (hydrogen, ammonia, methanol, biofuels) are capital-intensive but essential parts of the IMO emissions-reduction trajectory. Infrastructure for clean fuel supply chains, by one estimate, will take 85% of the total investment needed to support shipping decarbonisation (UMAS 2020a).
- **Clean auxiliary power for vessels**, from Flettner rotors to waste-heat capture systems, are being tested and installed on vessels in ports and shipyards.
- **Waste management** is increasingly important as ports and shipyards take on this servicing role behind verification of compliance with IMO-MARPOL regulations. Safe disposal of solid waste, ballast water, fuel residue and chemicals are functions also marked by innovation. Recycling innovations offer the ability to monetise some of this waste and create new revenue streams for ports.
- **Port expansion** is driven by larger vessels that require wider channels, larger docks and storage capacity. Port dredging and physical plant expansion, along with upgrades to power sources and digital equipment, are all part of the expansion trend. Respecting environmental codes in each of these functions, by definition, creates opportunities for innovation on the path to green and sustainable ports. With this comes the need for training of skilled workers and overall capacity building.

**“In the coming 20 years we will see the world’s next industrial revolution through the development of emission free transportation for ocean shipping. In addition, the development of the circular economy will change the nature of shipping waste. Given these significant changes, we welcome the collaboration between the investors who will fund these advances for a better tomorrow, achieved by this UNEP initiative for the Sustainable Blue Economy.”**

**Clyde Hutchinson, Partner, Journey Partners**

Global sustainability initiatives are needed, and quite a few are already underway:

- **UNEP’s Global Clean Ports Initiative**, aimed at reducing emissions at selected ports, helps to develop best practice and reduce maritime PM/BC emissions (UNEP 2020).
- **World Port Sustainability Program (WPSP)** was established in 2017 to encourage the industry to take steps to align with the SDGs (WPSP 2020).
- **Good Practices for Cruise and Ferry Ports**, promoted by the European Sustainable Ports Organisation (ESPO), may influence practices worldwide (ESPO 2016a).
- **The Climate Adaptation Tool for Ports**, developed by an industry body, helps ports strengthen climate resilience in existing facilities (Port Technology 2020a).

Financiers and insurers are encouraged to seek out opportunities to partner with relevant organisations to help reduce negative social and environmental impacts from ports. Investing in ports is an opportunity to decrease risks and increase returns by supporting important infrastructures in their journey towards sustainability. Green logistics is a prominent theme and financial opportunity today, especially for the maritime and port sectors that dominate global trade.

## Case studies

These case studies of financial initiatives demonstrate how targeted finance can drive progress in sustainable ports and services while addressing risks and impacts.

### Thames Green Scheme – Port of London Authority

The Thames Green Scheme is a Port of London Authority (PLA) project that has been developed in partnership with vessel operators (Green Port 2020a). Its focus is performance related to air quality, carbon emissions, energy use, water quality, litter and waste. Applicants to the scheme will be ranked in one of five tiers. This ranking system will recognise early adopters of new green technologies and allow customers to make more informed choices in connection with climate change and environmental impacts (ibid).

In addition to this scheme the PLA is also committed to cutting carbon emissions by more than 60% by 2025 and to achieving ‘net zero’ by 2040. (ibid). Victoria Chan, Air Quality Advisor to the PLA said, “We have introduced this new scheme to help the inland waterways community do their bit in achieving national Net Zero goals, improving air quality and reducing damaging carbon emissions”. We also note that the project includes financing early-stage technologies, which expands the opportunity set for port finance beyond the traditional emphasis on proven infrastructure assets.

#### Takeaway

Ports have high community visibility and control access for ships and cargo moving inland. Financiers, for both reputational and strategic reasons, should encourage the role of ports as gateways for sustainable maritime activity by engaging with and supporting initiatives like this one.

### Best Green Seaport Award – HAROPA

Asia Cargo News magazine awarded HAROPA (a French port complex), the ‘Best Green Seaport’ on behalf of the magazine’s 15,000 readers. These include Asian importers/exporters, logisticians, freight forwarders and shipping companies (Green Port 2020b). HAROPA is a member of the Getting to Zero Coalition (Global Maritime Forum 2020a), an organisation that supports the decarbonisation of the maritime industry, alongside companies from shipping, energy, infrastructure and finance. As Laurent Foloppe, HAROPA’s commercial and marketing director, notes, “This trophy illustrates recognition of our environmental policy. It proves that we can both be the premier French port complex and ensure the respectful development of our regions and ecosystems” (ibid).

#### Takeaway

Economic and environmental interests can be successfully aligned and balanced to allow ports to prosper. Additionally, joining the Getting to Zero Coalition and other industry initiatives will support the transition to green ports.

## Singapore's Maritime Accelerators

Netherlands-based Port XL, the world's oldest operator of maritime accelerators, was tapped by Singapore to run its first maritime accelerator. Local investment group, August One, partnered with Port XL to continue supporting and funding maritime innovators in Singapore. The focus is on digital technologies and sustainability solutions of all kinds, making Singapore a significant player on the world stage of port and shipping innovation (Port XL 2021).

Another Singapore green port initiative is led by ship management company Eastern Pacific Shipping (EPS) and entrepreneur network Techstars. The duo announced a joint-venture project to launch a global start-up accelerator, the "EPS MaritimeTech Accelerator Powered by Techstars". Digital technology is transforming the maritime space, making it possible to advance and monitor sustainability goals in everything from port operations to fuel efficiency and sustainable fishing. A shortlist of start-up companies was chosen for an intensive three-month programme of research and development, mentorship, and collaboration. The companies then pitched their business to an audience of venture capitalists, corporate innovation leaders and industry experts (Port Technology 2019).

Lastly, the Maritime Cluster Fund (MCF), launched by the Maritime and Port Authority of Singapore (MPA), is part of Singapore's commitment to an innovative, green port complex. There are three key components under MCF:

- The MCF-Manpower Development co-funds maritime companies in the development of manpower, training initiatives and capabilities.
- The MCF-Business Development supports eligible expenses incurred in the setting up of new maritime operations or expansion into new lines of maritime businesses in Singapore, and internationalisation efforts by maritime companies.
- The MCF-Productivity supports initiatives by the maritime industry that will lead to productivity gains. (Maritime and Port Authority of Singapore 2020)

### Takeaway

Ports are natural homes for maritime accelerators, supporting green technologies and employment opportunities for nations and communities. Financiers have the opportunity to participate in this relatively low-risk entry point for sustainable port and community growth.



# Maritime transportation

## Sector and financial overview

Maritime transportation comprises the vessels and infrastructure that drive global trade, the fishing industry, offshore and naval operations, passenger transport and tourism on the world’s seas. Financing this sector and its transition to sustainability is, therefore, an important and complex task. The scope of this guidance is the finance and insurance of all vessels (including offshore platforms and servicing vessels) through their complete lifecycle, from construction to recycling<sup>18</sup>.

The maritime transportation of goods, fuel and services—also referred to as shipping—carries 80% of global trade by volume, 70% by revenue, and is the most efficient means of moving goods on a CO<sub>2</sub>/tonne/km of cargo moved basis (Climate Bonds Initiative 2020). There are over 50,000 merchant ships trading internationally, transporting every kind of cargo. The world fleet is registered in more than 150 nations and manned by more than a million seafarers (International Chamber of Shipping 2020a).

Beyond the container, bulk and tanker segments of shipping, maritime transportation also includes vessels for fishing, passenger transport, naval and service functions. Table 7 presents a summary of the key segments of this broad industry with corresponding ownership and financier types.<sup>19</sup>

Vessel type	Ownership	Financier types
<b>Container ships</b>	Private/ Public	Banks and non-bank lenders, private equity funds, lessors, debt markets, trade financiers, insurance: vessel/cargo
<b>Bulk carriers</b>	Private	Banks and non-bank lenders, private equity funds, lessors, debt markets, trade financiers, insurance: vessel/cargo
<b>Oil/Gas tankers</b>	Private	Banks and non-bank lenders, private equity funds, lessors, debt markets, trade financiers, insurance: vessel/cargo
<b>Fishing vessels</b>	Private	Banks and non-bank lenders, trading conglomerates, commodity financiers
<b>Passenger (cruise, ferries, recreational)</b>	Private/ Public	Banks and non-bank lenders, lessors, debt markets
<b>Offshore platforms</b>	Private	Banks and non-bank lenders, lessors, debt markets, infrastructure funds
<b>Naval vessels</b>	Public	Public finance, debt markets
<b>Service vessels</b>	Private/ Public	Banks and non-bank lenders, lessors, debt markets

**Table 7: Maritime transportation segments: vessel types, ownership, financiers**

18 More detail on issues pertaining to fishing vessels and cruise ships may be found in the Seafood chapter and Marine and Coastal Tourism chapter of this guidance, respectively. Ports and related services are also treated in a separate guidance chapter.

19 The segmentation in Table 7 combines the segmental approaches used by Lloyds Register and IMO.

Growth for the largest segment—container shipping—is projected to continue at a compound rate of 8.3% to 2025, reaching USD 11bn annual revenues globally (Statista 2017). However, this is balanced by three trends: industry consolidation, alliances and vertical integration. Consolidation is reflected in the fact that 82% of the industry was operated by only 10 container shipowners in 2018, up from 50% in 2003 (UNCTAD 2019). Further consolidation appears to be likely, as a result of commodity trade flows, Covid-19 disruption and environmental regulations.

Additionally, vessel oversupply characterizes the container, bulker, tanker and fishing segments, speeding the trend towards oligopolies (UNCTAD 2018). Alliances between shipowners, of which there are currently three major examples, improve logistic efficiencies without changing corporate ownership (Mendoza 2020). Vertical integration, similarly, does not change the number of container ship players but enables them to acquire additional parts of the shipping value chain, from terminals to data services (Lloyds List 2020a).

Geographically, maritime transportation is diversified. Europe is home to almost 40% of the world's fleet (European Community Shipowners' Associations 2020), partly thanks to hosting the headquarters of five of the top ten container shipping companies (Mover DB 2016). Asia is home to the majority of shipping and shipyard companies, led by China, Japan and Korea (Norton Rose Fulbright 2018).

Ownership may be defined by company headquarters or flag of the vessel. Flags of Convenience (FoC) are used by almost 50% of the global fleet (SeaNews 2017). FoCs are a hotly debated and unique feature of the maritime transportation industry. Registering vessels in flag states such as Liberia, Panama, and the Marshall Islands reduces administrative costs and allows shipowners to circumvent stringent domestic regulations that protect the environment and employees (ibid). As such, they contribute significantly to the difficulty in regulating this global industry.

**“As the first marine insurance company to be a signatory of the Sustainable Blue Economy Finance Principles, we are delighted to participate in the development of the first guide to identify and mitigate ESG risks in the blue economy. We call on marine underwriters to embrace the Sustainable Blue Economy Finance Principles and address ESG risks in order to benefit industry and society.”**

**Ilias Tsakiris, CEO, American Hellenic Hull Insurance**

For offshore platforms, the global decommissioning market size is growing at almost 5% per year, and is projected to reach USD 8.9bn by 2027 (Markets & Markets 2019). Complete removal is the main activity in the sector; however, green transition options may include alternative fuel stations, marine energy and offshore wind production and conversion to marine habitats. Converting detoxed platforms to reefs may be controversial from a cost perspective—however it has strong environmental merit at a time when natural reefs are disappearing due to climate change (BSEE 2018).

Vessel lifecycles span design to construction and destruction to recycling. Each of these stages has impacts on the environment and on worker health and safety, with potential for many issues to be averted in the design stage. Circular economy principles are improving vessel design, as seen by Denmark's Circular Shipping Initiative (Danish Maritime Authority 2020).

For the shipbuilding stage, China controls more than 50% of the market and recently is seeing more orders for zero-emission vessels (Bureau Veritas 2020). Ship construction must include energy efficiencies and decarbonisation technologies because vessels built today must compete with vessels built in 10–20 years' time. Future standards must also be anticipated, even as technologies are still being tested and commercialised.

## Financing the sector

Bank loans have traditionally been the dominant form of shipping finance (Maritime London 2020). Capital sources have diversified since 2008, when some banks began to exit the shipping sector (Hellenic Shipping News 2019). Since then, a variety of other vehicles have filled the void: private equity funds, debt private placements, sale-lease-backs and bonds issued in the Norwegian capital markets (Marine Money 2020a). More than 80% of the world's shipping companies are privately owned and private equity funds own up to 70% of the listed shipping companies (UNCTAD 2018). Therefore, engagement opportunities via the public equity markets are limited.

Maritime transportation is a capital-intensive industry. Ships are technically sophisticated, high-value assets. Financing shipping—from vessels to cargo—requires, in aggregate, more than USD 200bn per year (ibid).

## Key environmental and social impacts and dependencies

Maritime transportation has substantial impacts on the marine environment, air quality, worker health, coastal communities and resilience. Key drivers of impacts may be considered in two broad categories: **Vessel operation** (including navigation, powering, and waste management) and **vessel lifecycle** (including construction, destruction, and recycling). Both categories play a role in most environmental and social impacts.

The environmental impacts of shipping range from air and water pollution to harming marine life and climate change. These impacts are especially associated with the operational drivers. Environmental impacts by maritime transportation operations include warming and acidification from emissions, habitat loss from vessel routes and dredging, biodiversity loss from emissions, oil spills, and collisions with marine life. A combination of regulation, renewable energy advances and customer demand has created an opportunity to make shipping more environmentally sustainable.

Decarbonisation is a major challenge for maritime transportation. Within the wider sector, shipping is responsible for approximately 3% of global greenhouse gas (GHG) emissions, and shipping would be the sixth largest GHG emitter if it were ranked as a country (Oceana 2008). Shipping emissions are not directly included in Nationally Determined Contributions (NDCs) under the Paris Climate Accords (UNFCCC 2016). The IMO, a branch of the UN that regulates the international shipping industry and all sea-going vessels, has set a trajectory for 50% decarbonisation of the global fleet by 2050, based on a 2008 emissions baseline. To meet this goal, an estimated USD 6tn of investment is needed over the next 50 years, with 85% of this figure projected as necessary to develop an alternative fuel supply infrastructure (UMAS 2020; Global Maritime Forum 2020).

Regulations developed by the IMO (notably MARPOL, the International Convention for the Prevention of Pollution from Ships) are globally enforceable. While these measures regulate activity in international waters, it's the responsibility of flag states to implement and enforce them. Successes like the Ballast Water Management Convention and MARPOL Annex VI (Regulation 16, Sulphur Air Emissions) are encouraging. However, progress toward decarbonisation has only just begun, with no enforceable scaling yet to the IMO's 2050 trajectory.

**“At SeaAhead, we see an acute need and opportunity for new, scalable technologies and ventures that improve ocean sustainability. This guidance will help investors identify impactful innovations and make smart financial decisions that have an outsized, positive influence on a rapidly changing ocean.”**

**Mark Huang, Managing Director, SeaAhead**

The final stages of ship lifecycles, ship destruction and recycling (or scrapping), are particularly associated with health impacts on workers and waste to the marine environment. The Hong Kong Convention of 2009<sup>20</sup> sets out standards and recommends best practices for ship recycling (IMO 2009). The average number of large ships being scrapped each year is about 500–700 but, taking into account vessels of all sizes, this number may be as high as 3,000 (ILO 2015; European Commission 2019). Ninety per cent of ship-breaking globally is carried out in Bangladesh, China, India, Pakistan and Turkey (IMO 2009). Additional safety and environmental requirements were added for EU-flagged ships in 2013 by the European Commission (EC-Environment 2013).

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20 The Hong Kong Convention was adopted in 2009 but has not yet entered into force at the point of writing.

Social impacts from operational and lifecycle drivers include safety, labour practices, gender, inclusiveness and the impact of Covid-19 on seafarers. The Neptune Declaration, signed by more than 400 organizations, outlines the main actions that need to be taken to resolve the pandemic crew change crisis (Global Maritime Forum 2020b). The International Labour Organization (ILO) and the International Maritime Organization (IMO) regulate labour conditions in maritime transportation (ILO 2013). Maritime leaders identify major social challenges: shortage of qualified seafarers and land-based talent, increased automation of tasks, employee retention and increased diversity of the workforce (IMO 2020c). The IMO and several national maritime organisations have made the advancement of women a priority, referencing SDG 5 (Gender Equality) and SDG 8 (Decent Work). Challenges remain for labour risk in the destruction/recycling stage, for which shipowners and their financiers remain responsible.

## Relationship to other sectors of the blue economy

In addition to the impacts outlined in Table 8, marine transport operations may have negative effects on other blue economy sectors, including:

- **Fishing:** Grounds disrupted by shipping routes, emissions, noise, invasive species, operational discharges, vessel groundings.
- **Tourism:** Marine ecosystems and coastlines may be damaged by vessel emissions to water, solid/plastic waste, noise/air pollution, and local economic/social disruption from cruise ships.
- **Energy:** Vessel routes may impede, or be disrupted by, siting of offshore platforms and wind installations.

Pressures	Impacts	
<b>Water pollution</b>		Vessels and shipping operations damage marine life with: fuel emissions, oil spills from tankers and platforms, hull residue, toxins, and discharge of waste and ballast water (invasive species).
		Toxic waste and emissions from ships burning fossil fuels (including LNG) change the chemical composition of the sea and the health of all marine life. Shipping pollutants that alter marine biochemistry include CO <sub>2</sub> , SOx, NOx, untreated ballast water and fuel residue.
<b>Air pollution</b>		GHG emissions from vessels contribute to global warming and acidification, resulting in storm surges, sea level rise, and coastline erosion.
		Air pollution from ships damages the health of people in coastal communities where ships sail and dock.
<b>Traffic and accidents</b>		Coastal ecosystem services and resilience may be disrupted by vessel routes and accidents that damage reefs and mangroves.
		Animal welfare may be reduced by collisions with vessels and noise pollution.
		Vessels damaged in storms, groundings or collisions result in layoffs. Conflict over vessel routes may harm livelihoods in other maritime industries and communities.
<b>Labour policies and conditions</b>		Unfair shipping labour practices may manifest by allocating high-risk tasks or unpaid overtime to indigenous workers and other disadvantaged groups.
		Volatile shipping and trade cycles may disrupt livelihoods in coastal communities. Covid-19 highlighted the vulnerability of seafarers who were infected or unable to return home (ILO 2020a; IMO 2020b).
		Workers may not be sufficiently protected or insured against disease or injury from high-risk activities. Air pollution from ships contributes to an increase in respiratory infections such as bronchitis and pneumonia; as well as chronic lung and heart disease, cancer and premature death (WHO 2006). Both employees and coastal communities suffer these impacts.
		Women or ethnic groups may be compensated less for the same tasks than more favoured groups. Flags of Convenience (FoCs) used by more than half of the global fleet may compromise accountability and best practices (SeaNews 2017).

**Table 8: Pressure and impacts of maritime transportation**

## Outlining materiality

The impacts noted above create a number of material risks to financial institutions, notably in the realm of policy and regulatory risk as well as reputational risk. Table 9 builds on the information set out in the previous section and summarises these risks.

Pressures	Impacts	Risks	
Air pollution		Regulatory	Climate change from GHG concentrations poses a risk to shipowners from new emission regulations.
		Physical	High risk to vessels, ports and coastal communities with sea level rise, storm surge, and coastline erosion.
		Regulatory	Vessels and companies may be fined for violations of sulphur emission regulations (MARPOL Annex VI). Damage to the health of local communities and crew.
Water pollution		Regulatory	Increased awareness of plastic pollution, oil spills, ballast water, hull coatings and heavy fuel oil emissions incites public action and calls for regulatory action/fines.
		Reputational	
		Regulatory	Moderate risk of citizen/NGO action. Higher risk for cruise segment due to disruption of marine life (e.g. banning of cruise ships which are not zero-emissions from Norwegian fjords (Marine Link 2019) and the Ballast Water Management Convention (2004) (IMO 2017)).
		Reputational	
		Regulatory	Moderate risk of fines from loss of marine habitats. Extended Producer Responsibility (EPR) cases in logistics may drive new regulations (Pouikli 2020).
		Reputational	Moderate risk of citizen/NGO action.
Traffic and accidents		Regulatory	Accidents may cost jobs and loss of community support. Vessel routes that impede unfairly on other marine activities may create fines for shipowners and loss of jobs for fishermen and tour operators.
		Market	
		Physical	High risk of vessel damage and seafarer injury from collisions with other vessels, obstacles or marine life. In addition, damage caused by solids, plastics or fishnets caught in propellers may harm vessel operations and crew.
		Operational	
Labour policies and conditions		Regulatory	Inadequate labour policies may result in fines, community actions or loss of productivity.

**Table 9: Overview of maritime transportation risks and materiality**

## Criteria for sustainable finance

Based on the impacts and their materiality outlined above, the attached Criteria Annex for the sustainable financing of the maritime transportation sector is proposed. This list of criteria and their associated indicators offer recommendations for financial institutions. These recommendations are to: **avoid** the worst scenarios, **challenge** areas for improvement, or **seek out** best practice.

Most criteria apply to all vessels, followed by specific criteria for four segments: fossil fuel tankers, offshore platforms, cruise/ferry/recreation vessels and ship construction/destruction.

## From risk to opportunity

In addition to preserving asset values, maritime industry players are constantly looking for cost and efficiency gains. Therefore, financing and insuring only sustainable practices helps shipowners to:

- **Reduce operating costs**, with renewable energy and efficiency improvements;
- **Maintain compliance** with emissions and waste regulations;
- **Gain market share** with charterers and customers seeking green logistics; and
- **Maximize the residual value** and operating integrity of vessels.

**“The Ocean Data Alliance is proud to have contributed to the “Turning the Tide” report by UNEP FI. This practical, hands-on guide provides valuable use-case examples that illustrate how financial organizations can invest in sustainable and profitable ocean projects in shipping, seafood, ports, coastal tourism and marine renewable energy. For more than a century, humans have withdrawn the natural capital of the ocean to fuel the growth of nations. With the ideas and examples in this report, we can plot a new course that balances returns for people and the biodiversity of the ocean that we govern.”**

Steven Adler, CEO, Ocean Data Alliance

However, ship and platform owners who acknowledge these benefits may not invest in green technologies unless they can do so without adding to current costs or debt levels. In practice this often means that financiers and charterers form partnerships with ship-owners to fund the transition to sustainability. Currently, the split incentives of owners and operators cause issue in the uptake of retrofitting sustainable technologies to vessels (Longarela-Ares, Calvo-Silvosa and Pérez-López 2020). However, there are attempts to decrease the incentive gap and to form partnerships in the industry in order to advance progress in sustainability. One example of this is the Sea Cargo Charter, which sets out a framework for assessing and disclosing the alignment of chartering activities with the aim of promoting decarbonisation of shipping (Sea Cargo Charter 2020).

**“With 90% of trade using sea routes and the ocean economy acting as an employer for millions, the shipping industry has a key role in protecting the future of our ocean and supporting sustainable growth. Lloyd’s Register welcomes the publication of ‘Turning the Tide’, which highlights the work underway to support a sustainable ocean economy, as well as the actions that banks, insurers and investors are collectively required to take in the decade ahead.”**

**Nick Brown, CEO, Lloyd’s Register**

The European Parliament, observing the IMO’s goal of at least 50% decarbonisation of the global fleet by 2050, encourages a series of solutions including:

- scaled regulation on both global and regional levels;
- shipowner-charterer partnerships;
- scaling of alternative fuel supply chains;
- installing clean auxiliary power systems; and
- operational efficiency measures. (Europarl 2020b).

Financial stakeholders may assist in many of these steps, which are consistent with this guidance. Sustainable finance and industry initiatives for shipping, such as the Poseidon Principles (Poseidon Principles 2020), have also been gaining attention.

Progress on decarbonisation is challenging because the external costs of maritime transportation—such as GHG emissions—are not internalised in its price and because of considerable national fossil fuel subsidies in shipping (Daniel and Yildiran 2019). Operational efficiency measures such as optimising ship speed and routes could cut CO<sub>2</sub> emissions by 5% (ibid). Energy efficiency improvements in ship design and wind assistance technology could deliver reductions of 30–55% (Energy Transitions Commission 2019). However, fully decarbonising shipping requires shipowners to move away from conventional heavy fuel oil to alternative power. Shipowners identify two main hurdles to adopting alternative fuels and green technologies—price and availability (Lloyds Register, UMAS 2020).

Charterers committed to green logistics are becoming an active lever for decarbonisation. From a financing standpoint, charterers are part of the solution when they help turn a capital expense (zero-emission technologies) into an operating expense (lower fuel costs) by, for example, financing the first years of green power installations. Investors, lenders and insurers may play a role by supporting these shipowner-charterer partnerships. Discussions are also underway regarding an industry-managed carbon fund for green shipping research and installations (Lloyds List 2020b). In fact, the IMO has agreed to pursue development of a green technology research fund, supported by a fuel levy from the industry that may reach USD 5bn (Tradewinds News 2020).

Shipowners bear the most risk in the transition to sustainability, as shown by the qualitative assessment below. Greater participation is required from the three other stakeholder groups (cargo owners, financiers and supply chains). Table 10 shows the risks and obstacles faced by each stakeholder in the move to decarbonize maritime transportation.

Risks/Obstacles	Shipowners	Cargo owners	Financiers	Supply chains
Capital investment	High	Low	High	High
Technological readiness	High	Low	Medium	High
Regulatory support	High	Low	High	Medium
Trade volatility	High	High	Medium	Medium

**Table 10: Risks and obstacles to decarbonisation by stakeholder**

For maritime insurers, discussions have traditionally focused on accidental oil spills, which can cause damage to physical property and assets, ecosystems and natural habitats. More recently, the focus has expanded to include the production of waste, air and ballast water pollution (IUMI 2020). A breach of regulations may give rise to fines and criminal charges against officers, crew and the company itself. Many insurers build sustainability criteria into underwriting contracts (UNEPFI PSI 2012; IUMI 2020). A vessel that does not comply with regulations is in breach of warranty and insurance capacity.

It is recommended that financiers and insurers to the maritime industry ensure that clients possess all relevant certificates and are in full compliance with the regulations, conventions and standards issued by the IMO, national and industry bodies pertaining to the asset or operation in question. Standards are always evolving and this guidance defers to the existing standards. Both financiers and their clients need to stay up-to-date on all compliance issues. It is also recommended that the guidance on Marine Transportation from the Sustainability Accounting Standards Board be reviewed (SASB 2021).

## Case studies

This section presents three case studies of financial initiatives that demonstrate how targeted finance can drive progress in sustainable shipping while addressing the risks and impacts discussed above.

### Sustainability Linked Loan (SLL) – Seaspan

In October 2020 Seaspan Corporation, a wholly owned subsidiary of Atlas Corp announced the closing of its USD 200m sustainability-linked loan ('SLL'), which is fully underwritten by Société Générale and BNP Paribas. This was the first green loan in the container shipping sector. Bing Chen, Chief Executive Officer of Atlas noted the deal "aligns Seaspan's long-standing commitment to sustainability with our capital structure strategy."

SLL pricing is adjusted based on Seaspan's achievements measured against two key performance indicators (KPIs). The first aims at measuring the alignment of the carbon intensity of the collateral vessels with the IMO's 2050 decarbonisation trajectory. The second looks to foster cooperation with charterers in order to advance the decarbonisation agenda, by seeking to include sustainability-linked provisions in future charter contracts, hence creating an innovative value chain approach to decarbonisation.

The loan itself was framed to align with the Poseidon Principles, which promote transparency, accountability and the decarbonisation of shipping through lending decisions (Poseidon Principles 2020). Using average efficiency ratio (AER) as a performance metric for ships, the Poseidon Principles project compliance will result in lower-risk loan portfolios, stronger cash flows and higher vessel asset values through more efficient ships (Marine Money 2020b).

This development highlights how financial instruments can support sustainability targets and that following the Poseidon Principles can align financial and corporate strategies.

### Rewarding sustainability performance – Maersk

In 2018 Maersk announced its commitment to becoming carbon neutral by 2050 (Financial Times 2018). In 2020 Maersk secured a USD 5bn revolving credit facility with a syndicate of 26 banks committed to green investments (Seatrade Maritime News 2020). The credit margin under the facility will be adjusted based on Maersk's progress to meet its target of reducing CO<sub>2</sub> emissions per cargo moved by 60% by 2030, which is more ambitious than the IMO target of 40% by 2030<sup>21</sup> (ibid). This new finance facility affirms Maersk's efforts to drive sustainability into its operations and supply chains.

21 Both targets are based on a 2008 baseline.

The new finance facility was substantially oversubscribed, reinforcing the opportunity for financiers to lead shipping's transition to sustainability (Marine Money 2020c). Based on Maersk's experience with the credit facility, rewarding shipowners with financing terms for outperforming IMO 2030 emissions reduction targets is a promising mechanism to drive sustainability progress in the industry and create new opportunities for green investments.

## **Green finance for multiple business units – Bonheur Shipping**

In 2020 Bonheur Shipping issued a NOK 700m green bond, in accordance with its Green Bond Framework, which sets out how the bond's proceeds are to be used in the promotion of the transition towards low-carbon and climate-resilient development. Proceeds from the issuance will be used for financing and refinancing renewable energy projects and offshore wind vessels and related equipment (Marine Money 2020d). DNB Markets and SpareBank1 Markets served as joint lead managers for placement of the bond issuance.

Separately, though building off of the same framework, which also applies to green lending, one of Bonheur's business units, Fred. Olsen Windcarrier, received an EUR 75m loan from DNB Bank and Sparebank 1 SR-Bank for three wind turbine service vessels. This was used to refinance an existing debt facility as well as for upgrading one of the service vessels (Renewables Now 2020).

### **Takeaway**

This case study shows that aligning a green corporate strategy with finance improves capital access, and may be applied to benefit several business units.

## **Circular Economy Finance – Navigar Capital**

Leasing strategies are not new to shipping finance, since most vessel types have a reliable depreciation history on which to model the financing. However, new technologies that speed the transition to green shipping do not have such documentation. This makes Denmark's Navigar Capital one of the financial innovators that are bringing leasing, with the help of major pension funds, to support shipowners who are committed to sustainability.

In 2017 Navigar Capital launched the Maritime Investment Fund I, which generated USD 450m for the leasing of shipping equipment with a focus on green technologies. In 2020 this was followed by Fund II with USD 300m, again from Danish pension funds, to continue green shipping investments.

### **Takeaway**

Leasing is a circular economy strategy, permitting shipowners to install and test green technologies without making a large capital expense. As such, leasing can increase the financial viability of green technology installations and offer an approach to closing the owner-operator incentive gap discussed above.



# Marine renewable energy

## Sector and financial overview

Marine renewable energy refers here to the production of renewable energy in the marine environment. It includes a broad range of possible sub-sectors, including offshore wind, wave, tidal, floating solar, ocean thermal energy conversion (OTEC) and a number of other more conceptual technologies. Different renewables technologies are at different stages in their growth cycle. While offshore wind is a mature technology, wave and tidal energy remain closer to the proof-of-concept stage. The most mature of these sectors—and subject of the majority of this guidance—is offshore wind.

Favourable regulation continues to be a key factor in the contribution of marine renewables to the energy mix. In northern Europe offshore wind is increasingly competitive with non-renewable energy (Jansen *et al.* 2020), but in other markets worldwide there is a continued reliance on favourable regulation to enable investment and overcome the high costs of capital associated with development of marine renewables. This creates a clear role for public institutions in providing favourable conditions for renewables to thrive—notably in the context of subsidies for renewable energy generation.

### A note on floating offshore wind, tidal and wave energy

While fixed offshore wind continues to dominate the investment landscape for marine renewable energy, other forms are growing in prominence. The guidance below distinguishes between fixed offshore wind and these other sources of renewable energy.

Particularly noteworthy here is floating offshore wind. While it shares many features with fixed offshore wind from a planning point of view, there are some important differences in impacts on seabed disturbance, pollution and wildlife disruption (notably with respect to anchorage disrupting seabed and entanglement endangering wildlife). As a result, floating and fixed offshore wind are split out and discussed separately in the criteria for marine renewable energy.

Tidal and wave energy are particularly early-stage sectors, and while it is reasonable to assume they will share some common impacts from ancillary structures (cabling, anchoring) and construction/decommissioning impacts with offshore wind, limited information is available on further impacts. A precautionary approach, based on a transparent, collaborative and science-led effort, is strongly advised for the sustainable development of these nascent sectors. As new sectors of marine renewable energy (including tidal and wave energy, as well as ocean thermal energy conversion (OTEC) and floating solar) mature, additional guidance and criteria may be developed for their sustainable financing.

Offshore wind projects can be either fixed installations (which are piled or bored into the seabed, and viable in water up to ~50m deep) or floating installations (which are anchored to the seabed but float on the surface, and viable in water <200m deep). Because offshore wind development to date has been largely focused on the relatively shallow North Sea basin, fixed installations are the more common (generating approximately 22,000 MW in Europe) and receive the majority of investment.

Floating offshore wind (currently generating 45 MW [WindEurope 2019]) is likely a source of significant future growth due to its greater worldwide applicability. IRENA, the International Renewable Energy Agency, projects installed capacity for global offshore wind and other marine renewables to reach 231 GW and 9 GW per annum, respectively, by 2030 (IRENA 2014). The technical potential for offshore wind, including both fixed and floating farms, is vast, with the International Energy Agency (IEA) estimating 36,000 TWh per year in water less than 60m deep and less than 60km from shore—in comparison with the 23,000 TWh consumed globally in 2019 (IEA 2019).

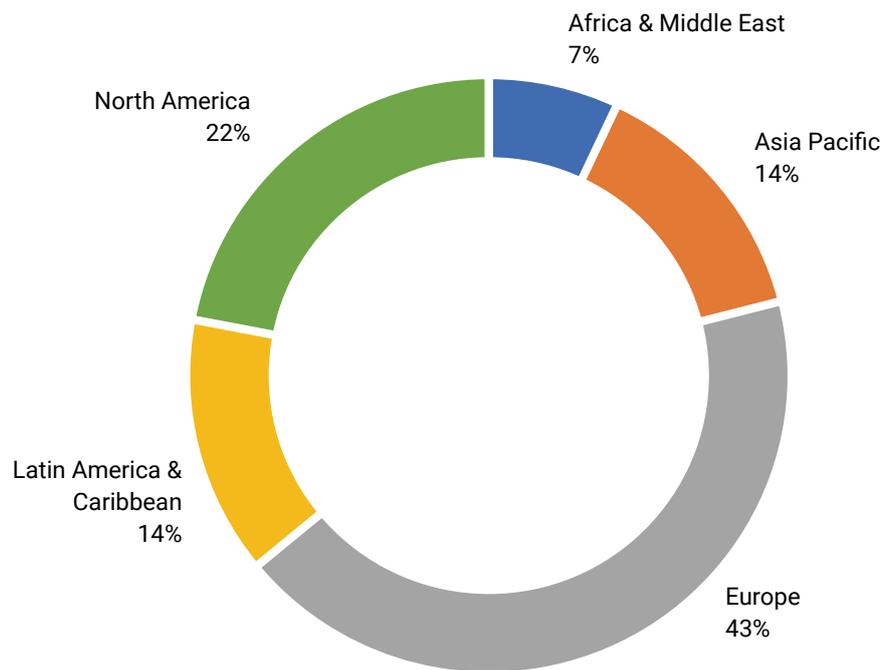
While Europe will continue to be a hotspot for offshore wind development, of additional note as particularly promising geographies for offshore wind installations are China, South-East Asia, the Gulf States, India, Canada, the Caribbean and off the coast of East Africa (IEA, 2019) where wind speeds are reliably high. Although less commercially attractive and at an earlier stage, opportunities to develop newer technologies persist—notably tidal energy and floating solar, which appear closest to commercial viability, alongside less advanced developments in wave energy and ocean thermal energy conversion (OTEC).

**“The ocean offers enormous potential to provide food, create jobs, and produce renewable energy. It’s our responsibility to rebuild ocean prosperity—and the UNEP FI guidance gives us the tools to do so in an equitable, sustainable, and restorative way.”**

**Jennifer Morris, Chief Executive Officer, The Nature Conservancy**

## Financing the sector

As indicated by the results of the sustainable blue economy finance survey undertaken in September 2020, most renewable energy financiers are European (Figure 7). This is unsurprising given the relative development of renewable energy in the European market, particularly in northern Europe where offshore wind has taken hold, in comparison to most of the world.<sup>22</sup> In Europe, development rights for farm designations are auctioned off<sup>23</sup> to wind developers, notably Danish multinational Ørsted, New York-based infrastructure investment fund Global Infrastructure Partners (GIP), Swedish multinational Vattenfall, and British energy company Scottish Power Renewables, a subsidiary of the Spanish utility company Iberdrola, itself a major wind investor.



**Figure 7: Where do institutions financing marine renewable energy come from?**

Based on reported location of respondents financing marine renewable energy. For more detail on survey results, please see the accompanying report 'Rising Tide: Mapping Ocean Finance for a New Decade' (UNEP FI 2021).

22 The first commercial offshore wind farm (sometimes referred to as a wind park), Vindeby was installed in Denmark in 1991 and has since been decommissioned after reaching its commercial end-of-life in 2017. During that time and since, the sector has grown significantly, at a rate of 24% per year since 2013 (GWEC 2020).

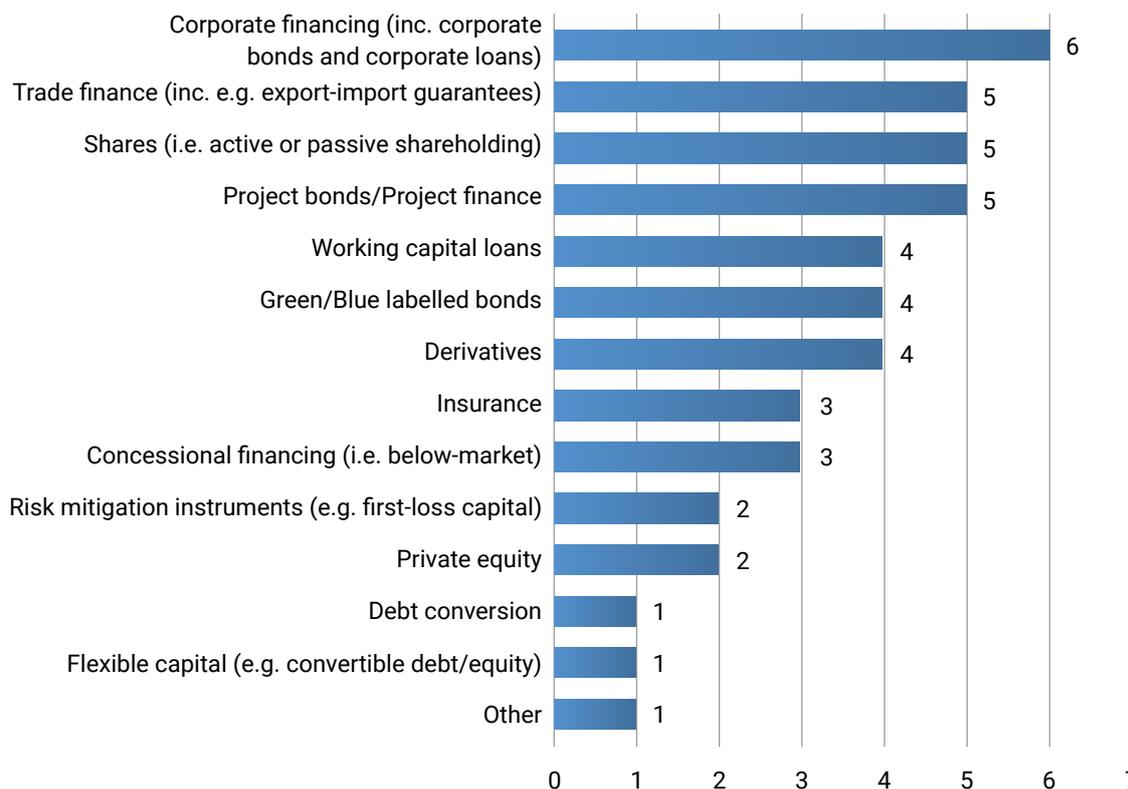
23 Often with state support through subsidies to make offshore wind more competitive with non-renewable energy, though these subsidies are shrinking as the sector becomes more mainstream.

In addition, although limited by sample size, the survey suggests that corporate finance features strongly alongside shares, trade finance and project finance in financing marine renewable energy (Figure 8). This points to the large scale of capital required to finance marine renewable energy development, notably offshore wind.

Other studies have emphasized in particular the importance of project finance for marine renewable energy due to the large scale of investment required and the limited number of developers able to finance the high capital requirements of offshore wind farms on their own balance sheets (WindEurope, 2019).

Although not featured in the survey, sovereign wealth funds play a prominent role in offshore wind financing, notably through Norway’s Norges Bank Investment Management (NBIM) (NBIM 2018). Green- and blue-labelled bonds feature also more prominently, reflecting the wider trend for green bond issuances for renewable energy investment,<sup>24</sup> as well as the growing prominence of marine ‘blue bonds’ (green bonds tailored towards the blue economy).

### Most common financial instruments in marine renewable energy sector



**Figure 8: Chart of investment in marine renewable energy by financial instrument (UNEP FI 2021)**

The bars indicate the number of financial institutions expressing the use of an instrument to finance this sector. Each financial institution was able to select up to three instruments per sector, out of a pool of 14 respondents. For more detail on survey results, please see the accompanying report ‘Rising Tide: Mapping Ocean Finance for a New Decade’ (UNEP FI 2021).

24 In 2018 more than half of green bond proceeds were earmarked for energy projects (Climate Bonds Initiative 2018).

## Key environmental and social impacts and dependencies

Renewable energy sets out to reduce significantly the greenhouse gas emissions associated with the production of energy, and on average its climate footprint is significantly lower than non-renewable energy (Pehl *et al.* 2017). Wind energy in particular carries the lowest impact in terms of carbon emissions. Thus renewables have a clear and vital role to play in the energy transition and powering a decarbonised economy. However, despite benefits for reduced carbon emissions, there are a number of pressures exerted on society and the environment that are important to consider in developing guidance for marine renewable energy financing.

This and subsequent sections will focus predominantly on offshore wind installations, where the majority of investment and development of marine renewable energy currently lies.

For offshore wind, key drivers of impact are the **planning, construction, operation and decommissioning stages** of offshore wind farms. Across these drivers, four types of pressure are exerted on society and the environment. Table 11 highlights the most significant impacts from each of these pressure categories. Note that for each of these, secondary impacts in related areas (for example, pollution will also affect ecosystem health in addition to animal welfare) may exist.

Pressures	Impacts	
<b>Seabed disturbance and disruption of habitat</b>		During construction, operation and decommissioning of wind farms the seabed is disturbed by heavy equipment, which makes the ecosystem less resilient due to habitat degradation and loss. Impacts arise mainly due to suspended sediment, which can affect sensitive habitats and nearby organisms.
		Siting a wind park in an area of high biodiversity or with a fragile habitat will have a deleterious effect on both biodiversity and habitats.
<b>Pollution</b>		Ongoing sources of noise will disrupt and distress marine animals, notably marine mammals. Ongoing pollution stemming from regular maintenance activities and service vessels will also contribute to reductions in animal welfare. Excess heat and electromagnetic field generation from undersea cables will affect animal welfare at a local scale. This also covers potential pollution from waste treatment associated with wind farms, particularly at decommissioning.
<b>Disruption of wildlife</b>		There is potential for impact from collisions between turbines and birds and bats, especially during migratory events. Turbine blades are not readily identifiable to flying birds and bats, increasing the risk of collision causing injury or loss of life. There is also the risk of entanglement of wildlife in mooring lines and anchorage associated with floating offshore wind.
<b>Use conflict</b>		Social conflict may arise between stakeholder groups in crowded marine environments, where established industries, such as fishing, may object to wind parks being built in existing fishing grounds. Use conflict can lead to potential impacts on livelihood security and cultural identity for affected groups.

**Table 11: Pressures and impacts of marine renewable energy**

## Regional example: Offshore wind development in the North Sea

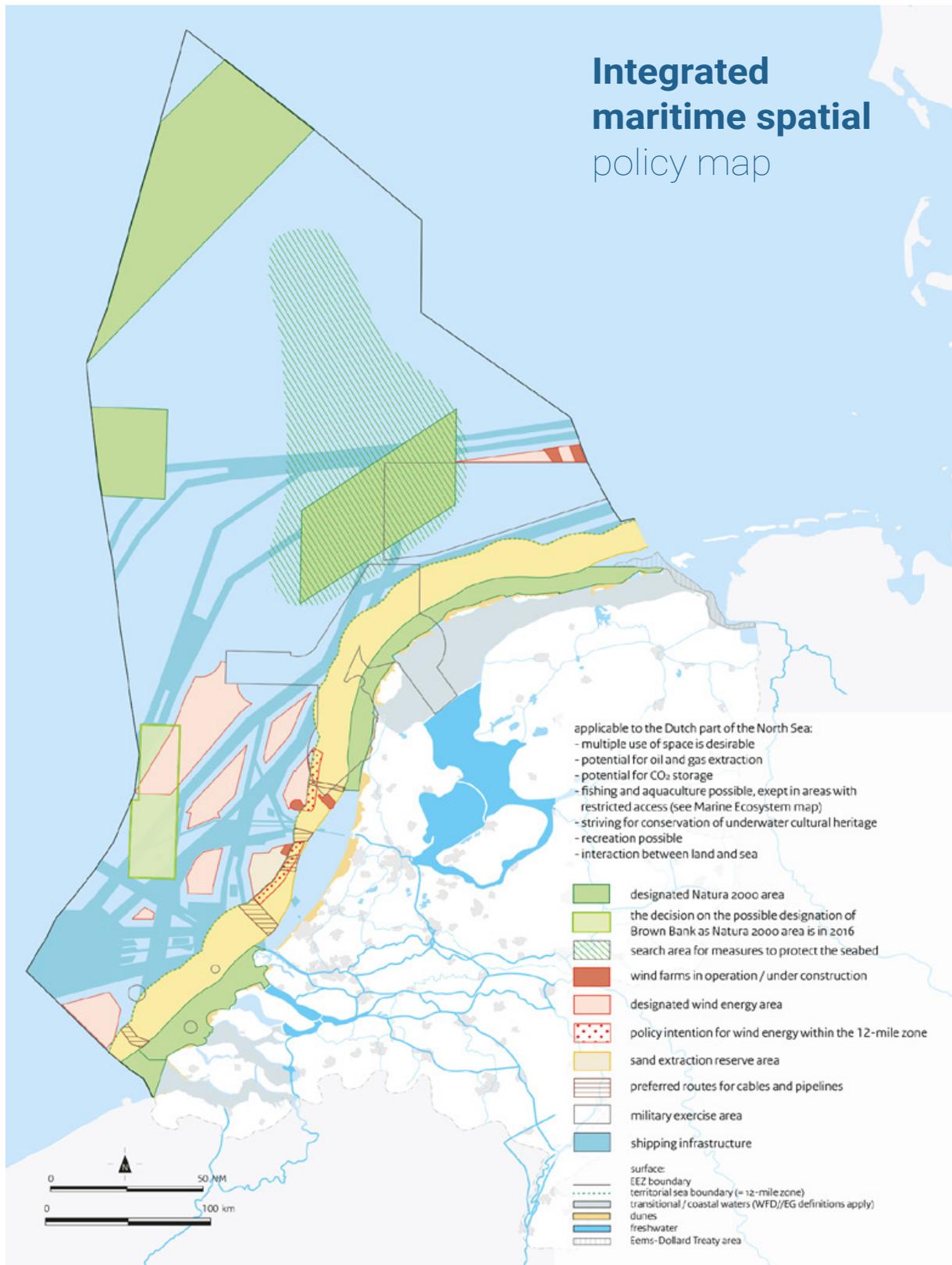
Among the most developed markets for offshore wind worldwide is in Europe's North Sea basin, a relatively shallow marginal sea of the Atlantic Ocean between the United Kingdom, Scandinavia, the Netherlands and Germany. The economic development of its surrounding countries, high average wind speeds, and the large area of shallow (<50m) seabed make it an ideal location for the development of extensive offshore wind farms in the exclusive economic zones of its coastal states.

As a result, extensive investment in offshore wind has taken place, notably in Germany, the United Kingdom and Denmark, with substantial developments planned in the Netherlands. Current installed capacity across the basin is estimated at over 16,900 MW (WindEurope 2019). As a heavily-trafficked marginal sea home to Europe's three largest ports as well as a sizeable fishing presence, the North Sea is a particular example of some of the challenges facing economic development and the need for spatial planning to avoid use conflict between stakeholders and minimise habitat disruption.

Figure 9 demonstrates some of the existing territories earmarked for specific uses in the Dutch EEZ. Bright, pale and dotted red areas denote current, under construction and future wind farm development respectively, woven in and around shipping lanes (blue), sand extraction areas (yellow), Natura 2000 protected areas (green boxes) and military training grounds (clear boxes).

The map makes it clear that an integrated and coordinated approach to the development of marine spaces is essential in areas as densely developed as the North Sea, with similar levels of coordination and integration required in similarly crowded marine spaces worldwide. Note that this map does not include oil and gas activities, sand extraction, telecommunications cables or common fishing grounds, the latter of which are the source of greatest likely conflict as these are not as spatially fixed as the other sectors.

To date, tension between wind farm developers and fishing interests have emerged across the North Sea (Politico 2017). As a result of this complexity, the pressures highlighted in Table 11 above are particularly sensitive for financial institutions looking to the North Sea or any other crowded marine space for opportunities.



**Figure 9: Integrated maritime spatial policy map of the Dutch North Sea EEZ (Government of the Netherlands, 2016)**

## Relationship to other sectors of the blue economy

Marine renewable energy is closely linked to a number of other sectors of the blue economy, notably seafood and shipping, both of which operate in and around offshore wind farms and may have their operations affected throughout the lifecycle of a wind farm:

- Interactions with seafood may be both positive and negative. While the siting of wind farms in or near traditional fishing grounds may significantly impact fishing operations and lead to conflict between stakeholder groups, positive impacts are also possible, notably for aquaculture, in contexts where new wind farms may provide substrate for e.g. oyster beds or other static organisms that may be farmed.
- Wind farms may also have a minor impact on shipping where farms are sited on or near major shipping lanes, resulting in the drawing up of new lanes and potential additional costs for merchant vessels through greater fuel use.

## Outlining materiality

The above impacts create a number of material risks to financial institutions, notably in the realm of policy and regulatory risk as well as reputational risk. Table 12 builds on the information set out in the previous section and summarises these risks.

**“For nearly a decade, Rockefeller Asset Management has focused on blue economy investing in our pursuit of alpha in tandem with positive environmental and social outcomes. We expect the Turning the Tide report to provide a clear framework that can guide business and investment decisions. We look forward to serving our clients long-term investment objectives while helping to advance progress toward sustainable development goal 14 (Life under water).”**

**David Harris, CFA. Chief Investment Officer and President,  
Rockefeller Asset Management**

Pressures	Impacts	Risks	
<b>Seabed disturbance and disruption of habitat</b>		Reputational	Wind park siting in areas of high biodiversity and/or critical habitat may become a significant source of civil society campaigning and public pressure.
		Regulatory	In the context of marine spatial planning, regulatory risk exists where development conflicts with designations of protected habitats and vulnerable species, though instances in which these designations shift after significant investment has already been made (as opposed to during the mapping or auctioning phases of development) do not appear to be likely.
<b>Pollution</b>		Reputational	No major campaigns are underway related to pollution from renewable energy. However, marine mammals are strongly favoured by the public and public pressure regarding their welfare may emerge in future.
<b>Disruption of wildlife</b>		Reputational	Biodiversity is one of the most likely issues for sustained campaigning from civil society around offshore wind. Unless mitigated, public opinion may be swayed to such an extent that operations or the attractiveness of offshore wind in the market is impacted.
		Regulatory (where there are legal limits on animal mortality)	Already there are limitations on operations during peak migratory periods for birds and bats in Northern Europe. Any future development of wind parks will likely be subject to regulatory limits on bird and bat mortality that may curtail development.
<b>Use conflict</b>		Reputational	Conflicts between users of the marine environment already exist. Campaigning from fishing interests is likely, and unless managed through an inclusive MSP process is likely to grow as more wind parks are established. While the environmental and social impact is limited, the fishing industry is traditionally well organised and loud when it comes to campaigning.

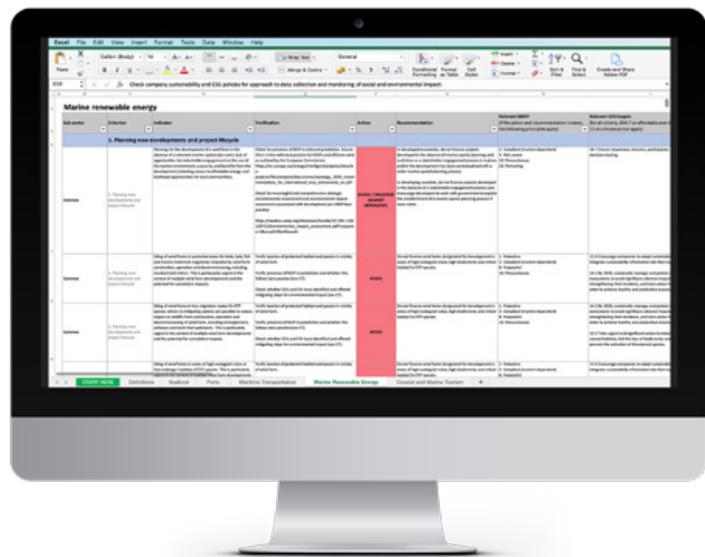
**Table 12: Overview of marine renewable energy impacts and materiality**

# Criteria for sustainable financing

Based on the impacts and their materiality outlined above, the attached Criteria Annex for the sustainable financing of the marine renewable energy sector is proposed. This list of criteria and their associated indicators offer recommendations for financial institutions. These recommendations are to: **avoid** the worst scenarios, **challenge** areas for improvement, or **seek out** best practice.

For ease of organisation, these criteria have been structured on the basis of their application—be it common across marine renewable energy, fixed offshore wind, floating offshore wind, wave or tidal energy.

Refer to the  
Criteria Annex  
for more detailed  
information



## From risk to opportunity

Despite the significantly lower carbon footprint of marine renewable energy, there are nevertheless a number of social and environmental impacts from the development of marine renewables.

As marine renewables grow in prominence, there is a clear need for greater clarity on their impacts on society and the environment as well as how they interact with other users of the marine environment. Increasing the level of knowledge and understanding of the environmental impact of, for example, installing new wind turbines on the seabed, is vital to ensuring that best practice can be developed. Further, utilising integrated planning processes, notably Marine Spatial Planning (MSP), to create a clear framework for dividing up marine spaces among multiple users is another beneficial step to take in scaling up marine renewables. Fortunately, best practice for what constitutes sustainable renewable energy development is emerging, particularly with regard to the interaction between marine renewables and well-implemented MSP processes and sensitivities around biodiversity and protected habitat.

Here, governments as well as civil society and academia have a clear role to play in creating a sustainable approach to development of marine renewables, to be complemented by institutions looking to finance new and existing developments. To date, given the advanced state of offshore wind development, the European Union has led the way in producing such guidance, for example publishing recommendations for the interplay between offshore wind and marine spatial planning best practice (Jacques *et al.* 2011).

# Case study

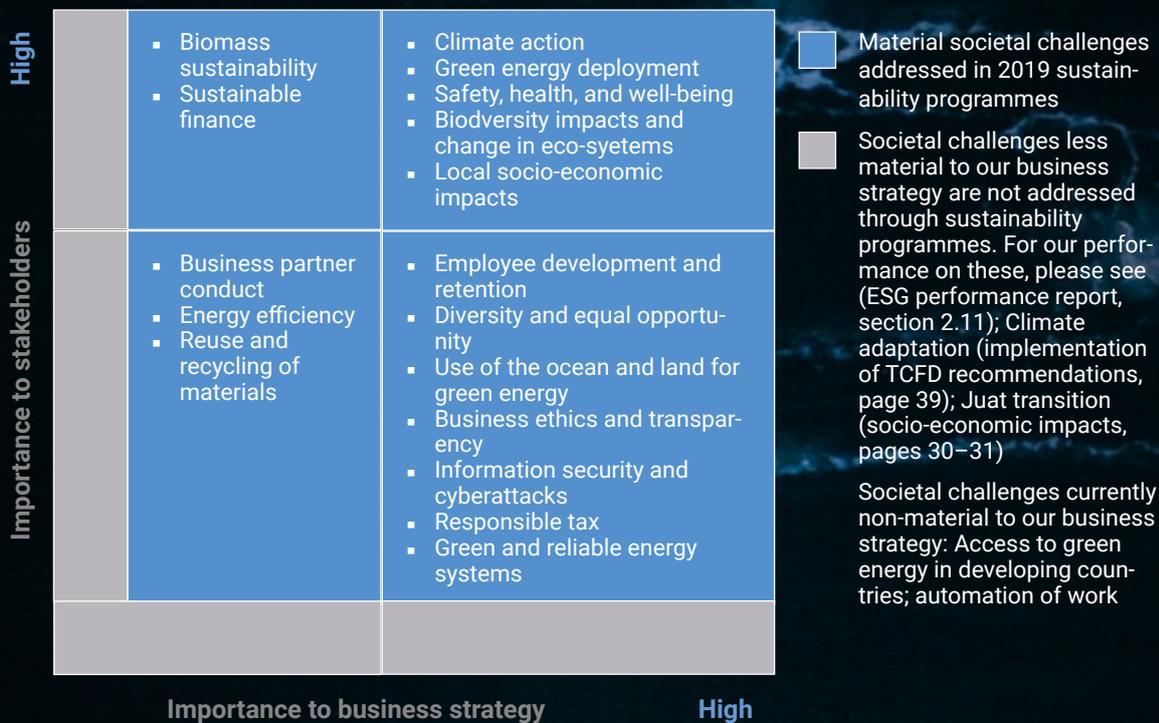
## Sustainability policy and reporting – Ørsted

A specific example of an offshore wind developer proactively assessing and communicating the sustainability considerations around marine renewable energy is Danish energy company Ørsted, whose sustainability policy and subordinate policies such as the offshore wind biodiversity policy,<sup>25</sup> are specifically tied to the implementation of the Sustainable Development Goals (SDGs).

Ørsted has developed a systematic, matrixed approach to identifying key sustainability challenges that are material to both to their business operations and stakeholders (including political stakeholders, regulators, investors, NGOs, local communities, suppliers and employees) (Figure 10) to address in their operations (Ørsted 2019). This provides a clear sense both of how Ørsted can prioritise its actions for sustainability and what may drive action from their shareholders. Three key areas of focus have been developed:

1. Aligning business with climate science;
2. Addressing the potential impacts of the green energy transformation, and
3. Ensuring responsible business practices.

Ørsted has developed specific programmes under each heading, and reports progress annually, linking specific milestones to SDG targets and the Paris Agreement.



**Figure 10: Ørsted matrix of societal challenges (Ørsted 2019)**

Under the second focus area and in the context of offshore wind, Ørsted places particular emphasis on wind farm siting and stakeholder consultation during the planning phase representing a best practice approach as outlined in Criterion 1 of the marine

renewable energy guidance, and demonstrating a systemic approach to exploring materiality as outlined in Criterion 6. Ørsted has identified the protection of marine biodiversity as a key programme, and has developed an approach to stakeholder engagement in the context of wind farm development as an activity to limit and mitigate their impact on marine biodiversity.

Ørsted developed their offshore wind biodiversity policy and have partnered with WWF Denmark to understand and develop mitigation strategies for offshore wind development on marine biodiversity. The resulting areas of focus for the company in the context of marine biodiversity are (Ørsted 2018):

- Potential noise impact on marine mammals from installation of wind turbine foundations (directly relevant for meeting Criteria 3 and 4);
- Potential impact on birds' migration routes and feeding grounds from wind turbines (Criterion 4); and
- Potential impact on seabed ecosystems and coastal environments from installation of transmission cables (Criterion 5).

## Takeaway

In this context and in light of their sustainability approach, Ørsted's financing of new offshore wind developments through green-labelled bonds (for example through the recent announcement of new issuances in Taiwan<sup>26</sup>) can be considered best practice examples of finance for the sustainable blue economy.

26 [orsted.com/en/company-announcement-list/2020/11/2119924](https://orsted.com/en/company-announcement-list/2020/11/2119924)



# Coastal and marine tourism

## Sector and financial overview

Worldwide, tourism is a substantial contributor to the global economy, representing approximately 10.3% of global GDP in 2019 from direct, indirect and induced impact,<sup>27</sup> and providing one in ten jobs (World Travel and Tourism Council [WTTC] 2020). Tourism has grown steadily for more than half a century, and was expected to continue to expand to 1.8 billion tourist arrivals by 2030 (up from 1.4 billion in 2018) (OECD 2020a). In 2019 alone, tourism accounted for USD 948bn in capital investment, 4.3% of total investment worldwide that year. Pre-Covid-19, in 2019 tourism growth exceeded annual GDP growth by 40% and represented 25% of all new net jobs over the previous five years (WTTC 2020). It is clear from these global figures that tourism is of enormous significance to the global economy and development. Regionally, growth has been most significant in the Asia Pacific and Middle East regions, with China dominating tourism spending at 19% of total global tourism spend (ibid).

While it is difficult to estimate the precise scale of coastal and marine tourism as a proportion of tourism overall, it is a substantial component, with WWF suggesting that 80% of all tourism takes place in coastal areas (WWF 2020). As a result, coastal and marine tourism is a significant part of the blue economy for much of the world, with particular importance in small island developing states (SIDS), which are especially reliant on tourism—in two thirds of SIDS, tourism accounts for more than 20% of GDP (OECD 2018).

For emerging markets, particularly those with coastlines that may be attractive to tourists, coastal and marine tourism thus represents a significant source of foreign exchange, income and livelihoods, as well as a potential source of economic development. In developed economies, coastal and marine tourism can similarly play a prominent role—within the European Union, coastal and marine tourism is responsible for EU 183bn in gross value added in 2011 and represents over one third of the overall maritime economy (Ecorys 2013).

Regardless of location, nature and biodiversity are crucial to the popularity and success of tourism. Several studies and efforts in recent years have attempted to articulate the value of nature to tourism and visitors and the importance of ensuring a healthy environment to the long-term sustainability of the sector (TEEB 2010; Natural Capital Coalition 2016). For example, some 30% of the world's coral reefs are of value to the tourism sector, with a total value of USD 36bn (Spalding *et al.* 2017).

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27 Where direct impact refers to direct spending from e.g. visitor expenditure, indirect impact refers to e.g. capital investment in industries directly involved in travel and tourism. Induced impact refers to the broader contribution to GDP and employment of spending by those who are directly or indirectly employed in tourism (WTTC 2020).

However, tourism is particularly vulnerable to global economic shocks. This was the case in the aftermath of the 2008 global financial crisis and again through the global consequences of the Covid-19 pandemic, which has significantly impacted the tourism sector in particular, with substantial uncertainty around the recovery and long-term future of the sector at the time of writing. The OECD has estimated that international tourism will fall by 80% in 2020 as a result of the pandemic (OECD 2020b).

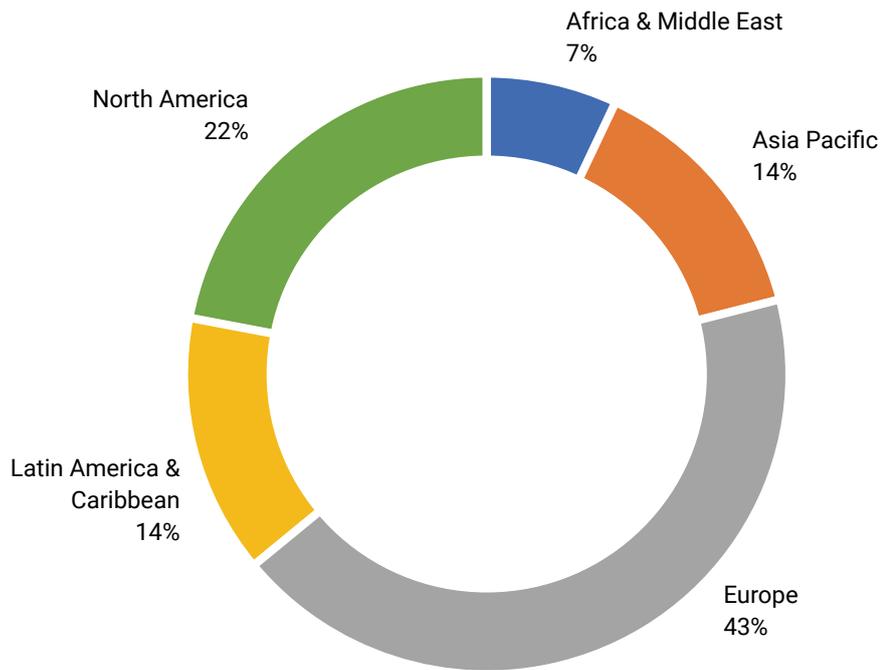
As a result, both to ensure the long-term viability of the sector and its resilience to external shocks and climate change, the transition towards sustainable tourism has been identified as a megatrend for the sector (OECD 2018b). The challenges and impacts resulting from the pandemic may present an opportunity to reconsider the role tourism has to play in the context of a sustainable economy generally, and a sustainable blue economy in particular. Sustainable tourism is a particular focus of development cooperation for tourism in emerging markets, which provided annual average support of USD 9.7 million per year in the period 2013–2018 (OECD 2020c).

## Financing the sector

The sustainable blue economy finance survey undertaken in September 2020 by UNEP FI showed coastal and marine tourism financing is dominated by institutions based in Europe with 43% of total respondents, followed by North America with 22% (Figure 11). However, as a percentage of overall finance for the sustainable blue economy, Latin America focuses on tourism the most with 18% of the region's blue economy financing, compared with Europe's 14% (Figure 12).

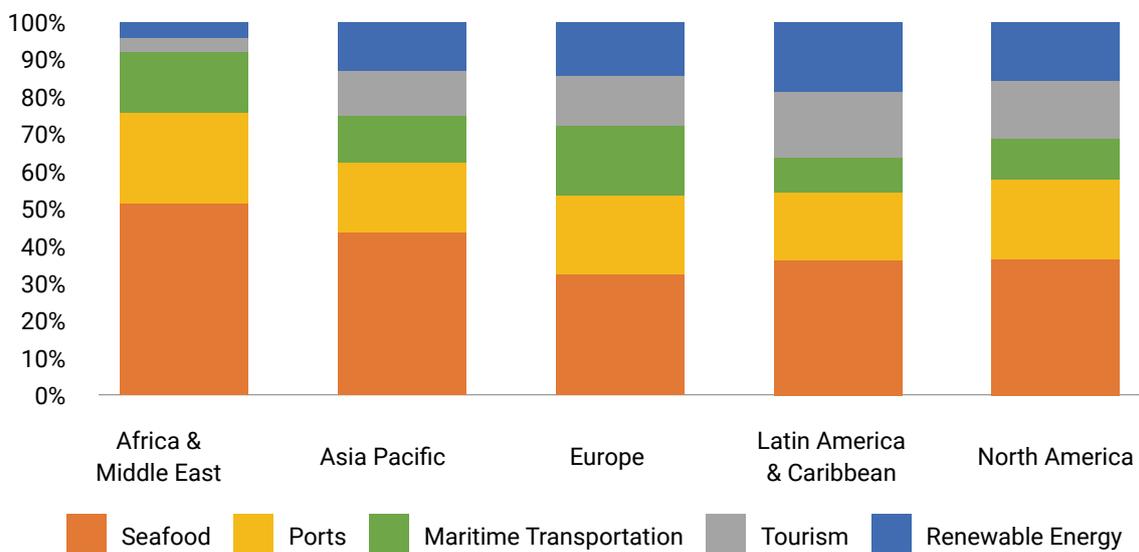
**A healthy ocean can provide us with healthy food, materials, solutions to climate change, biodiversity loss and decent jobs. Over two thirds of the ocean's direct economic value relies on its good health—this is one of the reasons why we need to catalyse more capital into the sustainable blue economy.**

**Maren Hjorth Bauer. Managing Partner & Founder, Fynd Ocean Ventures**



**Figure 11: Where do institutions financing coastal and marine tourism come from? (UNEP FI 2021)**

Based on reported location of respondents financing coastal and marine tourism

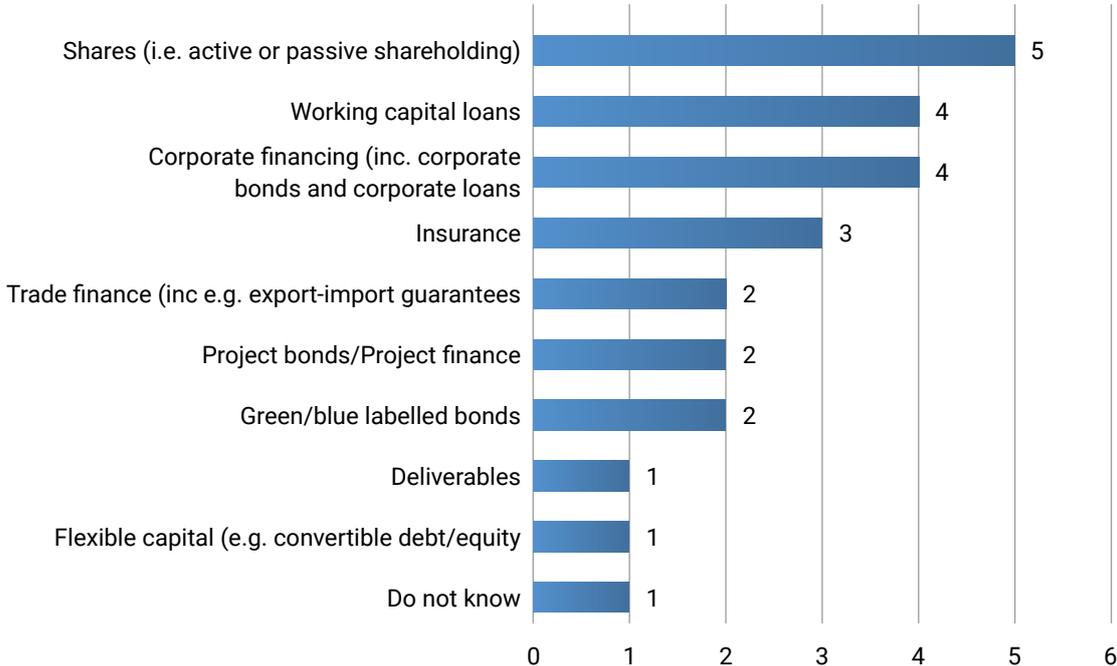


**Figure 12: How active are FIs across the world in different sectors?**

Based on reported activity in blue economy financing by survey respondents. For more detail on survey results, please see the accompanying report 'Rising Tide: Mapping Ocean Finance for a New Decade' (UNEP FI 2021).

Survey respondents could select up to three instruments typically used for financing coastal and marine tourism. On the basis of their replies, it is apparent that tourism is financed predominantly through shares, working capital loans and corporate financing (combined 52% of total, Figure 13), reflecting the dominance in tourism of large corporations and multinationals. Insurance also features prominently, reflecting the exposure of tourism to a number of risks, notably physical risks. These are particularly acute in tourism due to its vulnerability to climate-linked extreme weather events in low-lying coastal areas. As a result, more innovative insurance approaches such as parametric insurance feature more prominently in the coastal and marine tourism sector.

**Most common financial instruments in coastal and marine tourism sector**



**Figure 13: Investment in coastal and marine tourism by instrument (UNEP FI 2021)**

The bars indicate the number of financial institutions expressing the use of an instrument to finance this sector. Each financial institution was able to select up to three instruments per sector, out of a pool of 14 respondents. For more detail on survey results, please see the accompanying report ‘Rising Tide: Mapping Ocean Finance for a New Decade’ (UNEP FI 2021).

# Key environmental and social impacts and dependencies

Coastal and marine tourism creates a number of significant pressures on marine and coastal environments as well as society. To assess these, this document follows a modified DPSIR<sup>28</sup> framework to categorise and organise the relationship between tourism and environmental and social impact.

Tourism is here broken down into four key categories that act as drivers of key impacts on the environment. These are:

- **Destination development:** e.g. the planning and construction of new tourism destinations, including accommodation, infrastructure and attractions;
- **Destination management:** the operation of the aforementioned developments;
- **Visitors:** the tourists visiting the destination; and
- **Vessel operations:** cruise ships.

## A note on cruising

Cruising, which is of particular relevance to the blue economy, is noteworthy for its substantial environmental footprint, though due to the variety of vessels and operations within the sector, it is difficult to generalise their impact. Nevertheless, on the basis of both case study reviews and media coverage, some clear trends can be identified.

Cruising is particularly carbon-intensive, with an average 3000-passenger vessel emitting approximately 1,200 kg of CO<sub>2</sub> per kilometre (Caric 2011). In addition, hull discharges of anti-fouling paint as well as vessel noise during operations are significant sources of pollution. Waste and wastewater production and disposal are other notable sources of concern, with cruise ships producing up to 40 litres of sewage and 340 litres of grey water per passenger per day (ibid).

While significant regulations in this space exist (US DoJ 2016), and substantial fines have been handed to cruise operations in violation of existing regulations, cruise lines remain a source of significant pressure on the environment.

Within these drivers, a number of key pressures emerge with distinct and significant impacts on coastal and marine environments, as well as society more broadly. While some pressures are more prominent for certain drivers (e.g. invasive species and vessels), others such as physical damage to habitat may result from a number—or all—of the drivers.

<sup>28</sup> Drivers, pressures, states, impacts and responses constitute a typical DPSIR framework. Here, these are simplified to drivers, pressures and impacts.

Table 13 highlights the most significant impacts from each of these pressure categories. Note that for each of these, secondary impacts in related areas may exist (for example, pollution will also affect ecosystem health in addition to animal welfare).

## Relationship to other sectors of the blue economy

Coastal and marine tourism features a number of linkages with other sectors, particularly through cruising, which is governed by many of the same regulations as shipping. Thus, guidance for this sub-sector should be viewed as complementary to, and in concert with, shipping guidance.

Through their sourcing policies, hotels and other forms of accommodation also relate closely to seafood guidance, and sector-specific guidance here should be consulted on best practice related to wider sustainability issues in seafood.

Pressures	Impacts
<b>Physical damage to habitat</b>	 Tourism is a source of activity in habitats that causes damage from construction as well as traffic—whether from pedestrians or large ocean-going vessels, which put pressure on natural habitats. This is particularly prominent from siting tourism development in areas of high biodiversity, ETP species habitat or protected areas.
	 Especially the loss of vital ecosystem services such as flood defence or nursery grounds for biodiversity in critical areas such as mangrove forests or dunes.
<b>Invasive species and endangerment</b>	 Both terrestrial and marine species face pressures of endangerment due to a reduction in available habitat and habitat degradation, vessel collisions (in the case of marine mammals and cruise ships) and mistreatment by tourists. On the latter, visitors and vessels can accidentally introduce invasive species, especially from cruise ship ballast water. Invasive species can out-compete indigenous species, resulting in potential biodiversity losses and consequent reductions in ecosystem resilience.
<b>GHG emissions</b>	 Tourism in all its forms is a source of GHG emissions, though cruise ships in particular are a significant source of GHG emissions within tourism.
<b>Physical damage to wildlife</b>	 Particularly associated with visitor traffic in critical habitats as well as collisions by cruise ships with large animals.

<b>Pollution</b>		In addition to GHG emissions, tourism is a source of other pollutants, notably plastic and other forms of waste (from visitors, accommodation and other businesses), sewage (from accommodation and cruise ships), NOx and Sox (from cruise ships), as well as noise and light pollution.
<b>Sourcing and consumption</b>		Tourism introduces new demand for products, both for consumption and souvenirs. How these are sourced, particularly when from ETP species, as well as from overfished fish stocks, can create pressure on biodiversity.
<b>Land grabbing and displacement</b>		Developers may participate in coerced resettlement or land grabbing of areas that may form attractive tourism destinations. This results in a loss of access to livelihoods for local communities, creates significant inequality in opportunities and constitutes a human rights violation. This category of pressures is especially concerning in the context of displacement of already-marginalised minority groups and impacts on women and children.
		This follows as a result of new development displacing local communities and their economic opportunities. This also covers the consequences of price discrimination in tourism destinations.
<b>Cultural influence</b>		Tourism may introduce practices or pressures that outnumber local and indigenous customs, values and rights. If not managed, this may result in violation of the rights of indigenous communities. This also includes the consequences of over-tourism on destinations and their cultural heritage.
<b>Workforce exploitation</b>		Tourism can introduce unethical or unsustainable labour practices in destinations by exploitation of local populations, migrant workers and abuse of the workforce through underpayment or exclusion from opportunities. Exploitation of local labour pools by the tourism industry may include inadequate pay or respect of worker's rights, with consequences for poverty alleviation, particularly in developing countries.

**Table 13: Pressure and impacts of coastal and marine tourism**

## Outlining materiality

The above impacts create a number of material risks to financial institutions, notably in the realm of operational, regulatory as well as reputational risk. Table 14 builds on the information set out in the previous section and summarises these risks.

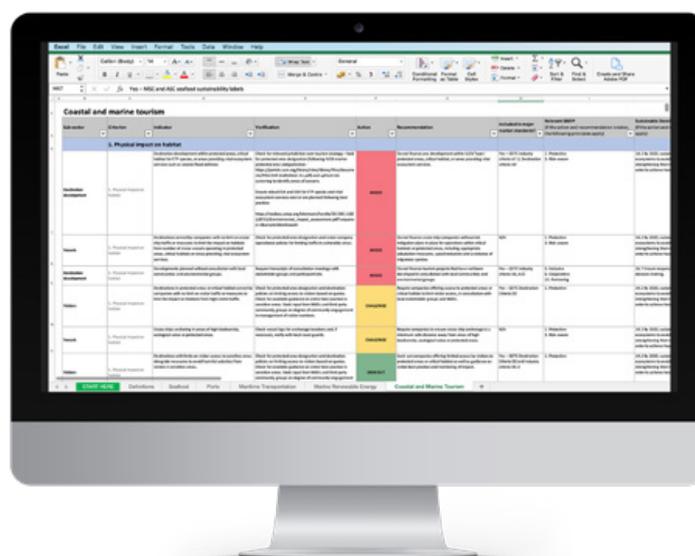
Pressures	Impacts	Risks	
<b>Physical damage to habitat</b>		Physical	A key determinant of the risks associated with tourism is where tourism development is planned (in the case of immovable assets such as hotels) or scheduled (in the case of vessels) in the context of critical habitats, resilience and ecosystem services. These decisions may impact physical assets (e.g. in the event of reduced resilience to weather impacts) as well as impact on operations for accommodation and destinations (e.g. in the event of a reduction in the long-term viability and attractiveness of a destination).
		Operational	
<b>Invasive species and endangerment</b>		Operational	Potential for long-term decline in destination value through erosion of quality.
<b>GHG emissions</b>		Regulatory, Physical, Operational	GHG emissions are a source of regulatory risk as policy responds to climate change, physical risk to assets as impacts of climate change become more severe, and reputational risk as the public's awareness of climate change and its impacts grows.
<b>Physical damage to wildlife</b>		Reputational, Regulatory	Reputational fallout, as evidenced by a cruise ship collision with a coral reef in Indonesia in 2017, may be severe, though such events are rare. Regulatory and reputational risks apply in the context of physical damage related to construction of new developments (e.g. resorts).
<b>Pollution</b>		Reputational, Regulatory	As plastics continue to dominate the environmental agenda, new and additional legislation penalising waste in different markets is likely to emerge, with potential impacts on operations. Further reputational risks will remain likely as public awareness of plastic pollution remains high and tourists avoid polluted destinations.
<b>Sourcing and consumption</b>		Market, Reputational	As consumers become increasingly aware of sustainable sourcing they may choose alternative service providers on this basis.

<b>Land grabbing and displacement</b>		Reputational	There is reputational risk associated with the visibility of negative social impact of tourism operations on local communities, both in the context of displacement as well as local resistance to tourism development and over-tourism.
<b>Cultural influence</b>		Reputational	Potential for fallout from reputational risk, but the issue is less tangible than for livelihoods.
<b>Workforce exploitation</b>		Reputational	Substantial potential for fallout from reputational risk from exposure of malpractice to potential customer base.

Table 14: Overview of coastal and marine tourism impacts and materiality

## Criteria for sustainable financing

Refer to the  
Criteria Annex  
for more detailed  
information



Based on the impacts and their materiality outlined above, the attached Criteria Annex for the sustainable financing of the coastal and marine tourism sector is proposed. This list of criteria and their associated indicators offer recommendations for financial institutions. These recommendations are to: **avoid** the worst scenarios, **challenge** areas for improvement, or **seek out** best practice.

Within the guidance, reference is also made to how these criteria meet the specific Sustainable Blue Economy Finance Principles, the SDGs, as well as the standards of the Global Sustainable Tourism Council (GSTC), a market-leading certification framework for sustainable tourism.<sup>29</sup>

## From risk to opportunity

Despite the scale of the challenges facing tourism, there are opportunities for positive impact. However, unlocking these opportunities often requires innovation and risk financing to surface approaches to sustainability in tourism that are effective and scalable. At the same time, the impact of the Covid-19 pandemic has created an opportunity to pause and reassess the ways in which tourism develops, and work to transition the sector as a whole to a more sustainable model. There are opportunities, when built upon sound stakeholder engagement and sustainable development principles, for tourism to raise awareness of environmental issues with visitors from across the globe, as well as help finance conservation efforts (notably through protected area financing) and support sustainable development through stimulating local, regional and national economies (OECD 2020a).

**“A healthy and prosperous ocean is foundational to the global economy, and investments in our blue future are more important than ever to combat climate change, stop the dramatic decline of aquatic biodiversity, fortify food security and human health, and safeguard coastal community resilience and livelihoods. Blue finance is important to strengthen resilience of coastal communities and ocean nations to address and cope with compounding risks. Together with our member countries, ADB is investing in ocean health and strengthening the enabling environment for blue economy growth. This guidance provides much-needed standardisation for blue investments to build investor confidence and support rigorous and transparent reporting.”**

**Ingrid Van Wees, Vice President, Asian Development Bank**

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29 The GSTC criteria for destinations and industry can be found [here](#) and [here](#), respectively.

## Case study

### Beyond Tourism Innovation Challenge – Inter-American Development Bank

Inter-American Development Bank (IDB)'s 'Beyond Tourism Innovation Challenge' (IDB 2020a), in collaboration with the United Nations World Tourism Organisation (WTO), was established to identify new business models for tourism that introduce innovations for environmental sustainability and workforce development in 15 Caribbean and Central American IDB member countries. Tourism is particularly important in this context, comprising on average 16.4% of GDP in the 15 selected countries and 17.9% of employment (Figure 14, [IDB 2020b]).

The Tourism Sector's contribution to the economy					
Total contribution to Employment %			Total contribution to GDP %		
Country	2018	2019	Country	2018	2019
Bahamas	50.5	52.2	Bahamas	41.9	43.3
Belize	38.0	39.3	Belize	35.9	37.2
Barbados	30.7	33.4	Jamaica	29.7	31.1
Jamaica	31.4	32.8	Barbados	28.5	30.9
Dominican Republic	17.4	17.3	Dominican Republic	16.4	16.3
Panama	14.9	14.7	Panama	13.8	13.6
Honduras	12.8	12.2	Costa Rica	11.8	12.0
Costa Rica	11.5	11.7	Honduras	12.2	11.7
El Salvador	11.1	11.6	El Salvador	10.5	11.0
Nicaragua	10.3	10.4	Nicaragua	10.1	10.1
Trinidad and Tobago	9.5	9.9	Haiti	9.5	8.4
Haiti	9.6	8.6	Trinidad and Tobago	7.6	7.8
Guatemala	6.5	6.5	Guatemala	6.2	6.2
Guyana	4.5	4.7	Guyana	4.3	4.4
Suriname	3.6	2.8	Suriname	3.4	2.6

Developed with World Travel and Tourism Council data

**Figure 14: Tourism sector's contribution to the economy in 15 Caribbean states (IDB 2020b)**

The Challenge sits within IDB's Lab, the bank's innovative finance facility with a greater tolerance for risk than traditional development bank lending, financing early-stage ventures, investing in venture capital and offering debt finance to its projects.

Closed in July 2020, the Challenge sought out new business models from entrepreneurs which—in addition to demonstrating innovative approaches—also demonstrated financial sustainability and made some contribution to their country's economic, social and environmental development in a post-Covid-19 context. On winning the Challenge, applicants gained access to grants (up to USD 500,000) and loans (up to USD 2m) to implement their innovations for sustainable tourism, on the provision that they raise 50% co-financing.

Successful applicants have included projects with a strong blue economy focus, including the Green Fins Global Hub. This business platform is initially focused on the Dominican Republic and Costa Rica, and will provide support to marine tourism enterprises (particularly around coral reefs) to comply with existing environmental standards for sustainable tourism and measurably improve their sustainability performance (Green Fins, 2020). Elsewhere, the Caribbean Natural Resources Institute (CANARI) was successful with 'Experience Nariva', an effort to transform eco-tourism development in Trinidad and Tobago's largest coastal swamp, the Ramsar-protected Navira Swamp. Experience Nariva will focus on developing small and medium-sized enterprises (SMEs) that benefit local communities through coaching and small grant financing.

## Takeaway

The Challenge offers an example of the role that development finance can play in supporting the sustainable blue economy. In the context of tourism, it shows how the unique circumstances presented by the Covid-19 pandemic offer an opportunity to reassess business-as-usual by financing higher-risk, more innovative approaches through co-financing to allow for investment from private finance.

# Concluding remarks

This guidance provides a first-of-its kind practical framework to consider finance for the sustainable blue economy across five key sectors. It offers a voluntary framework for sustainable financing activity that builds on the Sustainable Blue Economy Finance Principles and sets the stage for additional development and refinement of sustainable financing for practitioners, policymakers and the stakeholders of the sustainable blue economy. In addition to identifying practices to avoid or challenge in areas of improvement, the guidance also aims to shine a light on current best practice for sustainability in the blue economy, both in the context of the Principles and through meeting the SDG targets.

In this regard, the guidance sets out a framework designed to work in tandem with established sustainability frameworks such as the SDGs and encourage their implementation to 2030. It also seeks to support other sustainable finance frameworks currently under development, including the EU's sustainable finance taxonomy as well as the Taskforce on Nature-related Financial Disclosures (TNFD), offering an ocean-focused perspective on the further development of sustainable finance into the 21<sup>st</sup> century.

**“The ocean is a life source. It sustains us, stabilises the climate, and leads to greater prosperity. A healthy ocean is essential for everyone. Further, the ocean is an enormous economic asset, an engine of livelihoods, transport, commerce, energy production. But today, the ocean’s health is off track. A reorientation of capital, toward investments that help conserve and restore marine ecosystems, is critical if we are to transform to a sustainable ocean economy. “Turning the Tide” represents an important chapter in the story of sustainable finance and its relations to the ocean. Building on the Sustainable Blue Economy Finance Principles, this guidance provides granular detail on how the Principles should be interpreted and—crucially—implemented. Instead of business as usual, this guidance should contribute towards a triple win for people, nature, and the economy, where effective ocean protection, sustainable production and equitable prosperity go hand in hand.”**

**Andrew Steer. President and CEO, World Resources Institute**

It is clear from this guidance that in addition to changing the ways in which financial institutions engage with ocean-linked sectors, there is an important role for regulators and policy makers in ensuring standards are in place in different markets worldwide to underpin best practice. The role of the public sector in setting the tone for what constitutes sustainability at a legal level and in governing how financial institutions engage through regulation is critical to the transition to a more mainstream consideration of sustainability by the financial sector.

While some markets lead in sustainability across different sectors and can offer an example of effective regulation around this topic, it is also clear that at a global scale, more coordination is required to parameterise sustainability. There is a related need here for coordination and harmonisation of standards, regulations and best practice at an international level across the sustainable blue economy to create a consistent and predictable financing environment.

Despite this need, it is also important to recognise the diversity and heterogeneity of the global ocean and the needs and challenges of different countries and regions, understanding the unique and complex development challenges facing least developed countries (LDCs) and small island developing states (SIDS). Ensuring that development finance for such countries considers the opportunities presented for sustainable development by the blue economy and aligning the incentives of development finance with commercial finance wherever possible will be of significant benefit to all stakeholders.

This call for coordination and harmonisation equally applies to financial institutions themselves, who are encouraged to do more by sharing information and approaches among peers alongside fostering the mainstreaming and increasing rigour of sustainability considerations across markets and stakeholders. Financial institutions play a leading role in shaping how sustainability is implemented across the blue economy. They also have a key role to play in strengthening understanding among their peers of how sustainability considerations and approaches are important to core business. It is hoped that this guidance provides a framework to foster such coordination and collaboration.

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