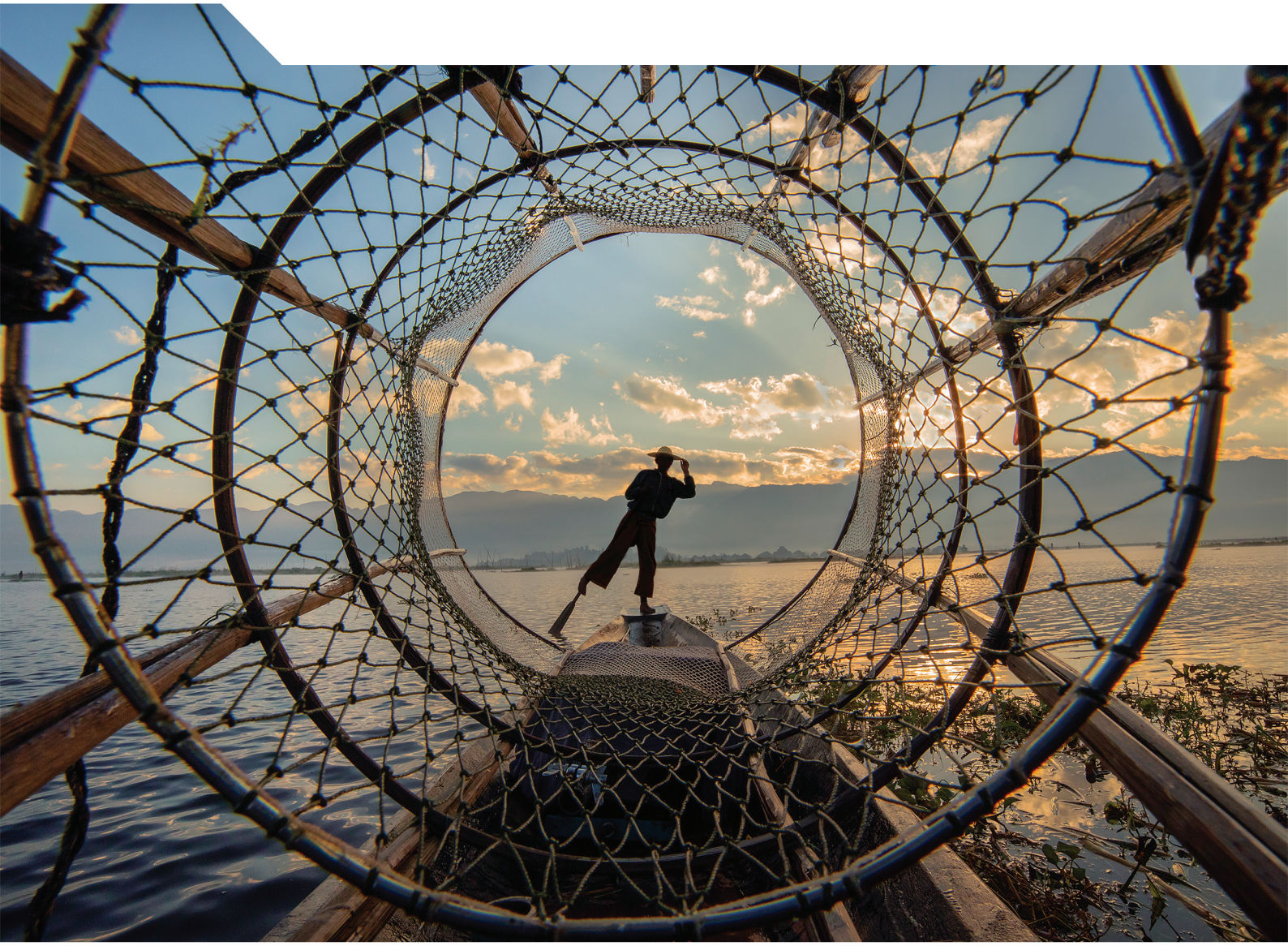
OECD Urban Studies

The Blue Economy in Cities and Regions

A TERRITORIAL APPROACH



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OECD
BETTER POLICIES FOR BETTER LIVES

Please cite this publication as:
OECD (2024), *The Blue Economy in Cities and Regions: A Territorial Approach*, OECD Urban Studies, OECD Publishing, Paris, https://doi.org/10.1787/bd929b7d-en.

ISBN 978-92-64-60115-4 (print)
ISBN 978-92-64-81852-1 (PDF)
ISBN 978-92-64-74062-4 (HTML)
ISBN 978-92-64-79105-3 (epub)

OECD Urban Studies
ISSN 2707-3432 (print)
ISSN 2707-3440 (online)

Photo credits: Cover design by Michele Romano.

Corrigenda to OECD publications may be found on line at: www.oecd.org/about/publishing/corrigenda.htm.

Preface

The OECD definition of the ocean economy accounts for the economic activities of ocean-based industries, as well as the assets, goods, and services provided by marine ecosystems. This report considers three additional factors. First, beyond ocean-based industries and marine ecosystems, it refers to freshwater-based industries and ecosystems, moving from “ocean” to “blue” economy at large. Second, because freshwater and seawater are intrinsically linked through the global water cycle, the report asserts that water security should be considered as a critical element for resilient blue economy sectors. Third, it emphasises the importance of a territorial approach to the blue or ocean economy, which implies tailoring policies to local challenges including through effective multi-level governance.

The report provides new data and evidence from the OECD Global Survey on Localising the Blue Economy, which collected responses from more than 80 cities, regions, basin organisations and small island developing states (SIDS) between July 2022 and September 2023. This unprecedented survey was jointly developed and disseminated by the OECD, the International Association of Cities and Ports (AIVP), Atlantic Cities, the International Network of Basin Organizations (INBO), ICLEI – Local Governments for Sustainability Southeast Asia Secretariat, the Ocean & Climate Platform, the Resilient Cities Network and United Cities and Local Governments Africa (UCLG Africa).

For the first time, this report offers a deep dive into the costs, benefits and governance structures of the blue economy in cities and regions. It provides practical recommendations and a self-assessment framework to help cities and regions bridge governance gaps towards resilient, inclusive, sustainable and circular blue economies. It builds on the Multi-Stakeholder Pledge on Localising the Blue Economy presented at the UN Water Conference (March 2023, New York City). The report also draws on extensive OECD knowledge on water governance, urban and regional development and the ocean economy.

Our organisations firmly believe that cities and regions can pioneer pathways towards resilient, sustainable, inclusive and circular blue economies, and we stand ready to support them further in this endeavour.

Lamia Kamal-Chaoui

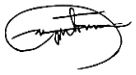
Director

OECD CFE

Bruno Delsalle

General Manager

AIVP



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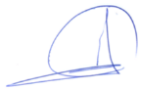

Jean-Pierre Elong Mbassi,

Secretary-General, UCLG-Africa

Foreword

The drive to develop sustainable blue economies and preserve marine, coastal and freshwater ecosystems is accelerating thanks to a number of major global commitments, including the Paris Agreement on climate change, the Sendai Framework for Disaster Risk Reduction 2015-2030, the United Nations (UN) 2030 Agenda for Sustainable Development Goals and the UN Decade of Ocean Science for Sustainable Development (2021-2030). However, despite numerous declarations, statements, principles and communications around the blue economy in recent years, a significant gap remains in addressing the territorial and water security aspects. Subnational governments typically have responsibilities in urban and regional planning, water and sanitation, waste management and climate resilience. Nevertheless, existing national blue economy strategies often lack a territorial approach that would leverage the role of subnational governments to integrate place-based considerations. Additionally, water security is a blind spot of national and subnational blue economy policy: only a few blue economy strategies consider the consequences of water risks on economies and people's wellbeing.

This report aims to bridge this gap by addressing these two dimensions. Regarding the territorial dimension, the report highlights the critical policy, spending and investment prerogatives of subnational governments in unlocking the potential of the blue economy to create value and jobs at the local level. Regarding the water security dimension, it underlines that saltwater and freshwater are intrinsically connected through the global water cycle, calling for a "whole of water" approach that fosters water security for thriving blue economies.

Drawing on over 80 responses to the OECD Global Survey on Localising the Blue Economy, the report achieves several objectives. First, it expands the conversation from ocean-based industries and marine ecosystems to incorporate the costs, benefits and practices of freshwater-based industries and ecosystems, thereby moving from the "ocean" to the "blue" economy. Second, the report delves into the multi-level governance of the blue economy. Third, it sets out a framework for building blue economies that are resilient, inclusive, sustainable and circular (RISC-proof) and suggests ways forward related to the design, coherence and implementation of blue economy strategies. The report concludes with a RISC Assessment Framework, a tool designed to help cities and regions self-evaluate their blue economies' resilience, inclusiveness, sustainability and circularity and the enabling governance conditions.

This work is a contribution to the OECD Programme on Cities and Regions for a Blue Economy, as part of the OECD-wide work on the ocean economy. The report leverages insights from the OECD Water Governance Programme, notably the OECD Principles on Water Governance, which provide 12 must-dos for governments to design and implement effective, efficient and inclusive water policies. It also draws on broader OECD work on urban policy and multi-level governance carried out by the Centre for Entrepreneurship, SMEs, Regions and Cities (CFE).

Earlier versions of this report were presented at the 30th and 31st sessions of the OECD Working Party on Urban Policy (WPURB) in May and November 2022 respectively. Revised versions were presented at the 18th and 19th meetings of the OECD Water Governance Initiative in July 2023 and March 2024 respectively. Preliminary survey results were presented at COP 27 (November 2022, Sharm El-Sheikh, Egypt), Tomorrow.Oceans (November 2022, Barcelona, Spain), InnovAzul (December 2022, Cadiz, Spain), the

World Ocean Summit (February 2023, Lisbon, Portugal), Green Rio (September 2023, Rio de Janeiro, Brazil) and Tomorrow.BlueEconomy at the Smart City Expo World Congress (November 2023, Barcelona, Spain). Twenty profiles of cities, regions and basins based on survey responses were launched at the UN 2023 Water Conference (March 2023, New York City, United States) alongside the New York City Multi-Stakeholder Pledge on Localising the Blue Economy.

Delegates of the WPURB approved the report by written procedure under cote [CFE/RDPC/URB(2024)3] on 3 April 2024.

Acknowledgements

This report was prepared by the OECD Centre for Entrepreneurship, SMEs, Regions and Cities (CFE) led by Lamia Kamal-Chaoui, Director, as part of the Programme of Work and Budget of the OECD Regional Development Policy Committee (RDPC). It is part of the OECD Programme on Cities and Regions for a Blue Economy within the OECD Water Governance Programme.

The report and underlying survey were led by Oriana Romano, Head of the Water Governance, Blue and Circular Economy Unit, and co-ordinated and drafted by Juliette Lassman, Policy Analyst, under the supervision of Aziza Akhmouch, Head of the Cities, Urban Policies and Sustainable Development Division in the CFE. Georges Laimé, Junior Policy Analyst, analysed survey results and contributed in particular to Chapters 1 and 2. María Ferrer, Junior Policy Analyst, provided substantial support and input to the survey and previous versions of the report. Ander Eizaguirre, Policy Analyst, and Mariam Fofana, former Junior Policy Analyst, provided comments on the survey and contributed to previous versions of the report. Nadim Ahmad, Deputy Director of the CFE, and Soo-Jin Kim, Deputy Head of the Cities, Urban Policies and Sustainable Development Division, provided comments on the draft report. The survey and report also benefitted from input from the OECD Environment Directorate and the OECD Directorate for Science, Technology and Innovation.

Special thanks are conveyed to the 81 cities, regions, basin organisations and small island developing states (SIDS) that responded to the OECD Global Survey on Localising the Blue Economy (see the full list in Annex A) and to Los Lagos, Chile; Korle-Klottey Municipal Assembly, Ghana; Porto, Portugal; and eThekwini, South Africa, that pilot-tested the self-assessment framework. Warm thanks are extended to the partner institutions that collaborated closely on the design and dissemination of the survey, namely: Martial Dubuisson, Théo Fortin, Anas Laani and José Sánchez (International Association of Cities and Ports, AIVP); Cátia Martins and Yvonne Piotelat (Atlantic Cities); Chris Aquitania, Chris Hidalgo and Ric Marfiga (ICLEI Southeast Asia Secretariat); François-Xavier Imbert and Eric Tardieu (International Network of Basin Organizations); Théophile Bongarts (Ocean & Climate Platform); Katrin Bruebach and Stewart Sarkozy-Banoczy (Resilient Cities Network); and Soumia Benlebsir and Mohamed Nbou (United Cities and Local Governments Africa, UCLG Africa).

The report was edited and formatted by Eleonore Morena, and Pilar Philip and Jack Waters prepared the manuscript for publication.

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Abbreviations and acronyms

AIVP	International Association of Cities and Ports
ASEAN	Association of Southeast Asian Nations
CZMP	Coastal zone management plans
EIB	European Investment Bank
EMFF	European Maritime and Fisheries Fund
EPR	Extended producer responsibility
ETS	Emissions Trading System
EU	European Union
GDP	Gross domestic product
GHG	Greenhouse gas
GVA	Gross value added
MPA	Marine protected area
MSP	Marine spatial plan
NbS	Nature-based solutions
NGO	Non-governmental organisation
ODA	Official development assistance
OECD	Organisation for Economic Co-operation and Development
PES	Payments for ecosystem services
R&D	Research and development
RBMP	River basin management plan
RBO	River basin organisation
RISC	Resilient, inclusive, sustainable and circular
RRP	Recovery and Resilience Plan
SDG	United Nations Sustainable Development Goal
SIDS	Small island developing state
SMEs	Small and medium-sized enterprises
UCLG	United Cities and Local Governments
UfM	Union for the Mediterranean
UK	United Kingdom
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UN-Habitat	United Nations Human Settlements Programme
US	United States

Executive summary

The OECD definition of the ocean economy accounts for the economic activities of ocean-based industries, as well as the assets, goods, and services provided by marine ecosystems. This report considers three additional factors. First, beyond ocean-based industries and marine ecosystems, the report refers to freshwater-based industries and ecosystems, moving from “ocean” to “blue” economy at large. Second, because freshwater and seawater are intrinsically linked through the global water cycle, the report asserts that water security should be considered as a critical element for resilient blue economy sectors. Third, this report emphasises the importance of a territorial approach to the blue or ocean economy, which implies tailoring policies to local challenges including through effective multi-level governance.

Cities and regions play a pivotal role in cross-sectoral policies and investments that affect blue economy sectors and ecosystems. Subnational governments typically have responsibilities in urban and regional planning, water and sanitation, waste management and climate resilience, which influence the level of water security. For instance, land use practices can have impacts on freshwater, coastal and marine ecosystems (e.g. wetlands and mangroves) and the ecosystem services they provide (e.g. flood mitigation and water purification). Similarly, subnational governments have overarching competencies in local and regional economic development, tourism and innovation, which can influence blue economy sectors in terms of productivity and competitiveness.

The blue economy can be a driver of sustainable territorial development

Drawing on 81 responses from cities, regions, basin organisations and small island developing states (SIDS) across OECD and non-OECD countries, the OECD Global Survey on Localising the Blue Economy (hereafter the OECD survey) shows that the most prevalent sectors of the blue economy in cities and regions are seafood (90%), water-related tourism (86%) and water passenger transport (70%). The top drivers for the blue economy at the subnational level are job creation (90%) and economic growth (88%). For example, the blue economy accounts for 4.3% of gross domestic product (GDP) in Barcelona, Spain, and 1.4% of the city’s workforce. In the state of California, United States, one in nine jobs connect to port-related activity. The blue economy in the region of Flanders, Belgium, grew from 4.5% of GDP in 2018 to 5.2% in 2021, and port activities in the region have a multiplier effect of 2, with 103 000 direct jobs and 230 000 related jobs.

Following job creation and economic growth considerations, 81% of respondents reported that conserving biodiversity and ecosystems is a significant driver for the blue economy. Indeed, freshwater, coastal and marine ecosystems (e.g. natural river systems, lakes, wetlands, mangroves and coral reefs) yield a number of non-market benefits, include provisioning services (e.g. seafood), regulating services (e.g. where coral reefs and mangroves serve as barriers against floods or carbon sinks), cultural services (such as recreational activities in freshwater ecosystems) and supporting services (with mangroves supporting fish nurseries, for example). In the European Union, on average, a 10-kilometre coastal zone is estimated to generate EUR 400 billion worth of ecosystem services annually.

While the blue economy offers major benefits, it can also raise environmental concerns. More than half of respondents (57%) identify waste generation as a significant environmental impact of blue economy sectors and 51% perceive the same for pollution from plastics and water pollution. For instance, resource-intensive activities such as tourism and coastal development can generate substantial amounts of waste, and ghost fishing gear contributes to around 10% of oceanic plastic pollution. In addition, climate-related factors are identified as the most prominent threat to the blue economy, with 86% of respondents deeming them significant. On average, both coastal and inland survey respondents view sea level rise (54%), floods (41%) and coastal erosion (35%) as the main climate-related threats to the blue economy, followed by droughts (28%), although differentiated trends emerge from disaggregated analyses. Sea level rise and floods can disrupt marine and freshwater ecosystems while damaging waterfront infrastructure and assets such as ports, shipyards and accommodation. Evidence shows that coastal erosion threatens to reduce land-based ecosystem services (i.e. provisioning, regulating, habitat and cultural services) in coastal areas by up to 5% in Europe by 2100, with damages to sectors such as tourism and port activities. In addition to the humanitarian crises that droughts and water scarcity can provoke, including on food security, they also have economic costs, including through impairing river navigation, port activities, and renewable energy generation and, in turn, energy security. Estimates and projections suggest that the most extreme water scarcity events can cost cities up to 12 percentage points in GDP growth and, globally, droughts could potentially cost up to 6% of GDP annually by 2050.

National and subnational governments use a range of tools to foster sustainable blue economies but governance gaps remain

Over the past few years, the international community has increasingly recognised the need for a sustainable blue economy that protects and conserves coastal and marine ecosystems. This shift is visible in initiatives ranging from the United Nations Sustainable Development Goal 14 on “Life below water”, which seeks to conserve and sustainably use oceans, seas and marine resources, to the Treaty on the High Seas (2023), which provides for the common governance of marine areas beyond national jurisdiction. Because subnational governments are competent in policy areas that influence the resilience and sustainability of the blue economy, such momentum underscores the need for concerted action across all levels of government.

However, subnational blue economy strategies and policies are still in their infancy compared to the national level. Only 7 out of 81 respondents to the OECD survey have adopted a formal strategy or policy on the blue economy, aiming to promote blue economic growth, protect blue ecosystems and foster blue innovation and skills. On the other hand, cities and regions leverage a range of tools such as capacity-building and awareness-raising initiatives, planning tools, innovation networks and regulatory and financing instruments. For example, over one-third of survey respondents directly support capacity-building initiatives on the blue economy for civil servants (36%), the private sector (35%), and civil society (32%).

The OECD survey highlights several factors hindering the development of a sustainable blue economy at the subnational level beyond technological challenges. A significant barrier is the lack of financial resources (83%). Indeed, blue economy related initiatives are mostly funded through national and subnational governmental sources (e.g. grants) (54%), while the uptake of more novel instruments (e.g. blue carbon credits) remains limited (3%). Insufficient data collection and information sharing, as well an unclear allocation of roles and responsibilities for blue economy policy making across levels of government (both 69%), are also important challenges. For instance, in cases where national and local blue economy strategies co-exist, they rarely align, including on basic aspects such as definitions. Furthermore, there can be discrepancies in the sectors covered in national and subnational strategies for the blue economy, indicating different priorities across levels of government and departments. Such gaps emphasise the need for a territorial approach to the blue economy, which responds to local specificities, concerns and priorities.

Fostering a resilient, inclusive, sustainable and circular (RISC-proof) blue economy in cities and regions calls for effective multi-level governance conditions

In response to the impacts of the blue economy on freshwater, coastal and marine ecosystems and given the impact that climate change can have on blue economy sectors, jobs and local communities, cities and regions need to develop RISC-proof blue economies that are: **resilient** to economic and climate-related shocks; **inclusive** of local communities and stakeholders; **sustainable** environmentally by limiting environmental impacts while protecting ecosystems and biodiversity; and **circular** by preventing waste (including plastics), fostering material efficiency and transforming waste into resources.

Achieving a RISC-proof blue economy requires ensuring a set of governance-related enabling conditions, which can be classified into three categories: policy making, policy coherence and policy implementation.

Policy making involves defining clear roles and responsibilities, institutional frameworks and leadership for blue economy policy, building and strengthening institutional capacities, and collecting and sharing adequate data, information and knowledge to feed into decision making for the blue economy. Currently, national blue economy strategies rarely integrate place-based considerations, with less than half of the national blue economy strategies analysed (9 out of 21) allocating concrete roles and responsibilities to subnational authorities. In a rare example of a territorial approach, France relies on county (*département*) strategies for managing the public maritime domain and on regional operators such as marine national parks to co-ordinate the central government's maritime policy with local authorities and related institutions.

Policy coherence means ensuring that mandates, policies and objectives are aligned across government institutions with a stake in the blue economy, acknowledging the interdependencies between blue economy sectors and ecosystems as well as related policy issues (e.g. climate change, water security and inequalities) and strengthening links between cities and regions and their basins. Some strategies address water-related risks, ranging from water shortages in Tunisia to sea level rise and flooding in the United States and plastic pollution in Indonesia. Some strategies set out measures to address these risks, such as Japan's steps to protect coastal areas from sea level rise and storm surges, and France's commitment to improving the quality of coastal waters by combatting land-based sources of marine pollution.

Policy implementation refers to the tools used to operationalise blue economy policies, including financing frameworks and economic incentives, regulatory frameworks and command-and-control tools, and fostering synergies within an "ecosystem" of local blue economy actors from business, science and civil society. For example, through its annual BluAct competition, the city of Matosinhos, Portugal, provides financial and capacity-building support to ten selected innovative business projects in the blue economy. In the city of Lisbon, Portugal, the Sea Hub (*Hub do Mar*) connects businesses with universities, the local scientific community and researchers to help blue economy businesses grow, focus on research and innovation, prototype and test activities. In the city of New Orleans, Untied States, the Office of Workforce Development works with businesses and higher education institutions to ensure that education programmes (e.g. Naval Architecture and Marine Engineering programme at the University of New Orleans) are tailored to the needs of the local blue economy.

The report concludes with an Assessment Framework for a RISC-proof blue economy in cities and regions. The framework, divided into three parts, aims to: i) help local and regional governments self-evaluate the resilience, inclusiveness, sustainability and circularity of their blue economy; ii) gauge the level of implementation of the nine enabling governance conditions relating to policy making, coherence and implementation to achieve a RISC-proof blue economy; iii) provide a "whole of water" checklist for local and regional governments to embed water security into their blue economies. Through multi-stakeholder dialogues following a five-step process, the framework can facilitate a comprehensive diagnosis of the blue economy and support a consensus on the needed governance improvements over time.

1 The benefits and costs of the blue economy at the territorial level

The blue economy has been gaining traction as a means of achieving sustainable economic growth while preserving coastal, marine and freshwater ecosystems. Because the blue economy takes place, creates value and provides jobs in cities and regions, subnational governments play a key but untapped role in the blue economy. Unlocking their potential calls for a territorial approach to the blue economy, which implies leveraging place-based policies to tailor measures to local challenges and accelerate efforts towards sustainable blue economies. This chapter provides an overview of the latest international developments in the blue economy before zooming in on the socio-economic and environmental benefits as well as the costs and threats to the blue economy at the subnational level, drawing from the results of the OECD Global Survey on Localising the Blue Economy.

Defining the blue economy

There is no single definition of the blue or ocean economy, which are often used interchangeably by international organisations and government institutions. The OECD definition of the ocean economy accounts for the economic activities of ocean-based industries, as well as the assets, goods, and services provided by marine ecosystems (2016[1]), while the sustainable ocean economy recognises the need to integrate economic, social and environmental dimensions of sustainability in line with the United Nations Sustainable Development Goals (SDGs) (OECD, 2020[2]).

However, national and subnational government strategies employ various terminologies, including economy of the sea and coast (e.g. France), blue economy (e.g. Portugal), ocean economy (e.g. South Africa), sustainable ocean economy (e.g. Norway), marine economy (e.g. United Kingdom), maritime industry (e.g. state of Washington, United States) or maritime economy (e.g. region of Catalonia, Spain). International definitions consistently highlight the role of economic activities associated with oceans, seas and coasts in contributing to economic growth and job creation, as well as the sustainable use and management of coastal and marine resources (Table 1.1). The OECD considers that any definition of the ocean economy is incomplete unless it also encompasses non-quantifiable natural stocks and non-market goods and services (OECD, 2016[1]; Jolliffe and Jolly, 2024[3]). Although challenges remain, measuring the value of the natural capital of marine ecosystems, in particular, is progressing at the international level (Jolliffe and Jolly, 2024[3]).

Table 1.1. Definitions of the blue or ocean economy across international organisations

Organisation	Definition	Established sector(s)	Emerging sector(s)
European Commission	The **blue economy** refers to all economic activities related to oceans, seas and coasts. It aims to achieve the objectives of the European Green Deal and ensure a green and inclusive recovery from the COVID-19 pandemic.	• Marine living resources • Marine non-living resources • Marine renewable energy • Port activities • Shipbuilding and repair • Maritime transport • Coastal tourism	• Ocean energy • Blue bioeconomy and biotechnology • Desalination • Marine minerals • Maritime defence, security and surveillance • Research and education • Infrastructure
OECD	The **ocean economy** refers to the economic activities of ocean-based industries, as well as the assets, goods, and services provided by marine ecosystems. It aims to conserve and sustainably use the oceans, seas and marine resources for sustainable development. As defined by the Sustainable Ocean for All initiative, the **sustainable ocean economy** emphasises the sustainable use and conservation of natural resources in the world's oceans, seas and coastal areas, in line with the 2030 Agenda for Sustainable Development and ocean-related SDGs.	• Capture fisheries • Seafood processing • Shipping • Ports • Shipbuilding and repair • Offshore oil and gas (shallow water) • Marine manufacturing and construction • Maritime and coastal tourism • Marine business services • Marine research and development (R&D) and education • Dredging	• Industrial marine aquaculture • Deep- and ultra-deep-water oil and gas • Offshore wind energy • Ocean renewable energy • Marine and seabed mining • Maritime safety and surveillance • Marine biotechnology • High-technology marine products and services

Organisation	Definition	Established sector(s)	Emerging sector(s)
United Nations	The **blue economy** comprises a range of economic sectors and related policies that determine whether the use of ocean resources is sustainable. It aims to improve human well-being and social equity while reducing environmental risks and ecological scarcity. UN-Habitat suggests expanding the **blue economy** concept to all waterbodies, including lakes, rivers and wetlands, arguing that inland cities are as affected by water-related risks as coastal or island cities. The UNDP defines the **blue economy** as the sustainable use of ocean resources for economic growth, jobs and social and financial inclusion. UNEP refers to the **blue economy** as a way to facilitate sustainable ocean-based economic, social and environmental benefits within the planetary boundaries of oceans and coasts. The UNCTAD refers to the **sustainable ocean economy** as economic sectors that sustainably use and contribute to the conservation of oceans, seas and coastal resources for the benefit of humanity in a way that sustains ocean resources.	• Fisheries • Secondary fisheries and related services • Trade of sea products • Tourism and recreation • Coastal development • Shipping and shipbuilding • Oil and gas • Maritime transport • Ports and related activities	• Renewables (e.g. offshore renewable energy) • Aquaculture • Seabed extractive activities • Marine biotechnology and bioprospecting • Desalination. Indirect supporting activities: • Carbon sequestration (blue carbon) • Coastal protection • Waste disposal • Biodiversity and habitat protection
World Bank	The **blue economy** refers to the sustainable use of ocean resources for economic growth, improved livelihoods and jobs, and ocean ecosystem and health. It aims to move beyond business as usual and make economic development and ocean health compatible.	Following the same co-elaborated framework as the United Nations.	Following the same co-elaborated framework as the United Nations.

Note: UN-Habitat: United Nations Human Settlements Programme; UNDP: United Nations Development Programme; UNEP: United Nations Environment Programme; UNCTAD: United Nations Conference on Trade and Development.
Source: Based on EC (2018[4]), *The 2018 Annual Economic Report on EU Blue Economy*, https://data.europa.eu/doi/10.2771/305342; EC (2021[5]), *The EU Blue Economy Report 2021*, https://op.europa.eu/en/publication-detail/-/publication/0b0c5bfd-c737-11eb-a925-01aa75ed71a1; OECD (2016[1]), *The Ocean Economy in 2030*, https://doi.org/10.1787/9789264251724-en; World Bank/UN (2017[6]), *The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries*, https://sustainabledevelopment.un.org/content/documents/15434Blue_EconomyJun1.pdf; UNEP (2018[7]), *Enabling Sustainable, Resilient and Inclusive Blue Economies*, https://www.unep.org/explore-topics/oceans-seas/what-we-do/enabling-sustainable-resilient-and-inclusive-blue-economies; UN-Habitat (2018[8]), "UN-Habitat background paper on Blue Economy and Cities", https://unhabitat.org/un-habitat-background-paper-on-blue-economy-and-cities; UNDP (2023[9]), *Action Brief: An Ocea of Opportunities - How the Blue Economy can Transform Sustainable Development in Small Island Developing States*, https://www.undp.org/sites/g/files/zskgke326/files/2023-02/UNDP-RBAP-Blue-Economy-Action-Brief-2023.pdf; World Bank (2017[10]), *What is the Blue Economy?*, https://www.worldbank.org/en/news/infographic/2017/06/06/blue-economy; OECD (2020[2]), *Sustainable Ocean for All: Harnessing the Benefits of Sustainable Ocean Economies for Developing Countries*, https://doi.org/10.1787/bede6513-en; UNCTAD (2020[11]), *Towards a Harmonized International Trade Classification for the Development of Sustainable Ocean-based Economies*, https://unctad.org/system/files/official-document/ditcted2020d4_en.pdf.

Ocean-based industries are often divided into "established" and "emerging" sectors (Table 1.1). The former refer to traditional sectors with a consolidated market presence, such as marine fisheries, shipping and port activities, while the latter refer to sectors in earlier stages of development characterised by innovation, rapid growth and the introduction of new technologies or business models, such as blue biotechnology. Sectors are often disaggregated differently across organisations: for instance, the trade of seafood is considered as a sector by the United Nations and as a sub-sector by the European Commission. Taxonomies also change over time to reflect evolving trends, as evidenced by changes in the European Commission's "established" sectors from 2018 to 2021, which now include marine renewable energy, previously considered an "emerging" sector.

Going beyond "established" and "emerging" sectors, the OECD (Jolliffe, Jolly and Stevens, 2021[12]) proposes a new list of 14 sectors (Table 1.2) to ensure the international comparability of ocean economy data. These sectors result from a precise scoping of ocean economic activities, defined as those that: take place on or in the ocean; produce goods and services primarily for use on or in the ocean; extract non-living resources from the marine environment; harvest living resources from the marine environment; use living resources harvested from the marine environment as intermediate inputs; or would likely not take place were they not located in proximity to the ocean.

Some definitions of the blue or ocean economy expand to cover freshwater, coasts and the ocean. For example, freshwater sources are considered integral parts of the ocean economy in Canada and the United States. Likewise, UN-Habitat suggests expanding the concept of blue economy to all waterbodies, including lakes, rivers and wetlands, arguing that urban centres on coasts and waterfronts play a pivotal role in the blue economy and that inland cities are affected by water-related risks as much as coastal or island ones (UN-Habitat, 2018[8]).

Table 1.2. OECD list of ocean economic activities for internationally comparable statistics

	Ocean-specific description
1	Marine fishing
2	Marine aquaculture
3	Maritime passenger transport
4	Maritime freight transport
5	Offshore extraction of crude petroleum and natural gas
6	Marine and seabed mining
7	Offshore industry support activities
8	Processing and preserving of marine fish, crustaceans and molluscs
9	Maritime ship, boat and floating structure building
10	Maritime manufacturing, repair and installation
11	Offshore wind and marine renewable energy
12	Maritime ports and support activities for maritime transport
13	Ocean scientific research and development
14	Marine and coastal tourism

Source: Jolliffe, J., C. Jolly and B. Stevens (2021[12]), "Blueprint for improved measurement of the international ocean economy: An exploration of satellite accounting for ocean economic activity", https://doi.org/10.1787/aff5375b-en.

This report considers three additional factors. First, beyond ocean-based industries and marine ecosystems, it refers to freshwater-based industries and ecosystems, moving from "ocean" to "blue" economy at large. Second, because freshwater and seawater are intrinsically linked through the global water cycle, the report asserts that water security should be considered as a critical element for resilient blue economy sectors. Third, it emphasises the importance of a territorial approach to the blue or ocean economy, which implies tailoring policies to local challenges including through effective multi-level governance. To shed light on the state of play, challenges and opportunities for the blue economy at the subnational level, the OECD has developed and disseminated a Global Survey on Localising the Blue Economy (Box 1.1), hereafter referred to as "the OECD survey".

Box 1.1. OECD Global Survey on Localising the Blue Economy

The OECD survey was developed as part of the OECD Cities and Regions for a Blue Economy programme, aiming to:

- Build knowledge on the scope and the state of play of the blue economy in cities and regions, including the main drivers, challenges, threats and impacts of the blue economy at the local level and formal blue economy initiatives across levels of government.
- Identify the governance landscape of the blue economy across levels of government.
- Inventory future priorities for the blue economy in cities and regions.

Launched in July 2022, the OECD survey was developed and disseminated in collaboration with the International Association of Cities and Ports (AIVP), Atlantic Cities, the International Network of Basin Organizations (INBO), ICLEI – Local Governments for Sustainability Southeast Asia Secretariat, the Ocean & Climate Platform, the Resilient Cities Network and United Cities and Local Governments Africa (UCLG-Africa).

By September 2023, the survey had collected 81 responses from subnational governments and river basin organisations from 41 countries (Figure 1.1). A total of 50 cities, 17 regions, 11 basins and 3 small island developing states (SIDS) (Comoros, Mauritius and Seychelles) completed the survey. Of these 81 responses, 27 came from Europe, 20 from Africa, 17 from Latin America and the Caribbean, 11 from Asia-Pacific and 6 from North America. More than half (51%) of the responses came from OECD countries. The survey participants comprised 51 coastal[1] and 30 inland cities, regions, basins and SIDS.

Figure 1.1. Geographical coverage of the OECD Global Survey on Localising the Blue Economy

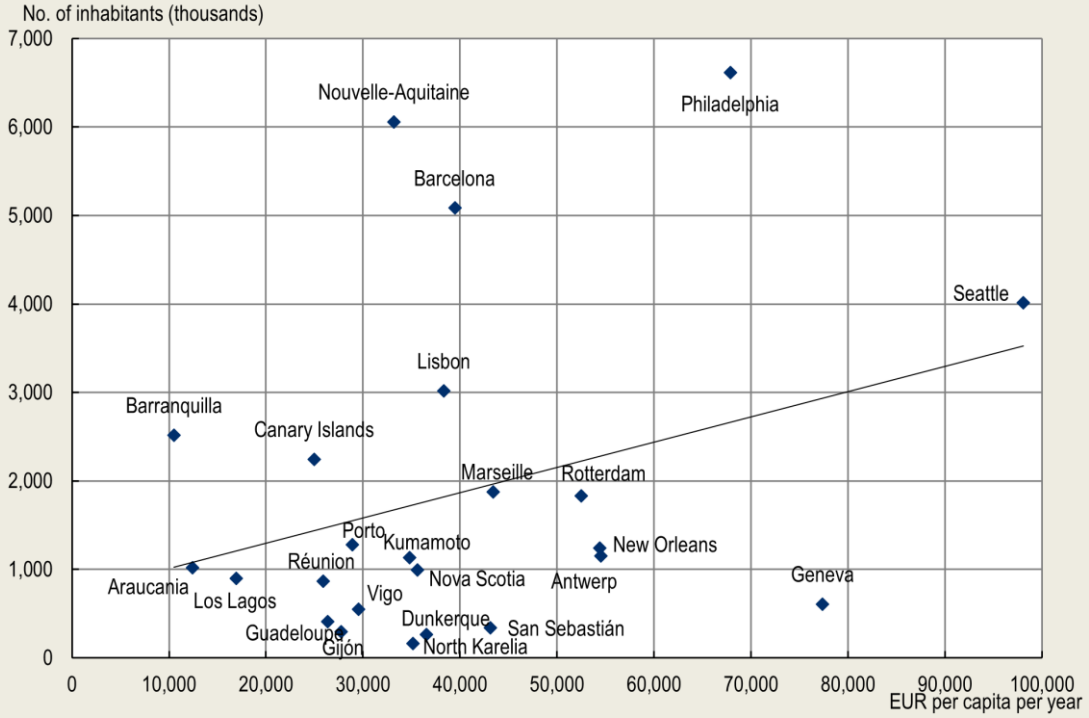
Note: Based on the 81 cities, regions, basins and SIDS that completed the OECD survey.

Targeted respondents were primarily officials from local and regional governments in charge of the blue economy, water or economic development. In addition, the OECD survey collected responses from river basin organisations, which are set up by political authorities or in response to stakeholder demands, to deal with water resource management issues in river basins, lake basins or aquifers, and by national

government officials from SIDS where the blue economy plays a crucial role in national economic development and the competencies of subnational governments are not as significant as in other countries. Respondents were invited to participate in the survey irrespective of their current stage of development in terms of blue economy strategies and initiatives. They had the opportunity to respond in English, French, Portuguese or Spanish.

Survey respondents from subnational governments in OECD countries represent cities and regions of all sizes (Figure 1.2): one-third (29%) have more than 2 million inhabitants, half (50%) have between 500 000 and 2 million, and 21% have fewer than 500 000 inhabitants. Figure 1.2 also illustrates the gross domestic product (GDP) per capita of OECD cities and regions that responded to the survey, showcasing a diverse sample with GDP per capita ranging from EUR 10 510 (Barranquilla) to EUR 98 051 (Seattle), with 68% of cities and regions below the average.

Figure 1.2. Population size by GDP per capita of a selection of surveyed OECD cities and regions



Note: Data provided for 24 OECD cities and regions (data not available for 12 OECD cities and regions in the survey sample; Los Angeles considered as an outlier). They refer to the corresponding administrative level of the city or region responding to the survey. Average population: 1 851 837 inhabitants; Average GDP: EUR 39 483/capita/year. Data for population size refer to most recent available year, which ranges from 2019 to 2022: 2019 [Dunkerque (France), Marseille (France)], 2020 [Porto (Portugal), Lisbon (Portugal)], 2021 [San Sebastián (Spain), Guadeloupe (France), Vigo (Spain), Geneva (Switzerland), La Réunion (France), Los Lagos (Chile), Nova Scotia (Canada), Araucanía (Chile), Kumamoto (Japan), North Karelia (Finland), New Orleans (United States), Rotterdam (The Netherlands), Canary Islands (Spain), Seattle (United States), Barcelona (Spain), Nouvelle-Aquitaine (France), Philadelphia (United States), and 2022 [Barranquilla (Colombia)]. Data for GDP per capita refer to most recent available year, which ranges from 2019 to 2020: 2019 [Kumamoto (Japan), Dunkerque (France), Marseille (France)] and 2020 [Barranquilla (Colombia), Araucanía (Chile), Los Lagos (Chile), Canary Islands (Spain), La Réunion (France), Guadeloupe (France), Gijon (Spain), Porto (Portugal), Vigo (Spain), Nouvelle-Aquitaine (France), North Karelia (Finland), Nova Scotia (Canada), Lisbon (Portugal), Barcelona (Spain), San Sebastián (Spain), Rotterdam (The Netherlands), New Orleans (United States), Antwerp (Belgium), Philadelphia (United States), Geneva (Switzerland), Seattle (United States)].
Source: OECD (2023[13]), *OECD Regions and Cities Statistical Atlas*, https://www.oecd.org/cfe/regionaldevelopment/oecdexplorer.htm.

Socio-economic benefits of the blue economy

Considering only ten sectors as proxies, the OECD conservatively valued the ocean economy at USD 1.5 trillion annually in 2010 in global value added, accounting for around 2.5% of global GDP and 30 million direct jobs (OECD, 2016[1]). Offshore oil and gas accounted for one-third of total value added, followed by maritime and coastal tourism, maritime equipment and ports. In a business-as-usual scenario, in 2030, it was anticipated that these sectors would employ over 40 million people and grow to more than USD 3 trillion, maintaining the ocean economy's share of 2.5% of total global gross value added (GVA). Across almost all sectors, employment was expected to grow faster than the average for the world economy. For example, in the European Union (EU) alone, GVA and employment in offshore wind energy grew by 1 762% and 1 000% respectively between 2010 and 2020. EU port activities, which grew 25% over the same period, generate around 2.5 million direct and indirect jobs in related industries such as logistics, shipping and maritime services (Scholaert, 2020[14]). Since the first OECD estimates, much progress has been made in terms of measurement and new OECD preliminary indicators on the ocean economy show that ocean industries could represent more than 6% of global value added in 2020 (OECD, forthcoming[15]).

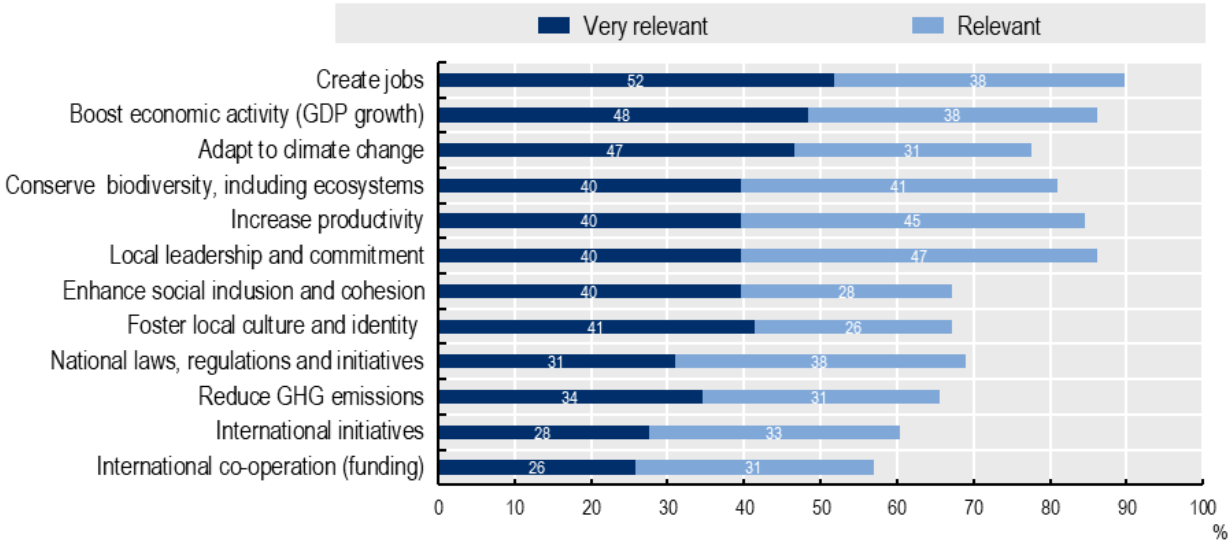
Some blue economy sectors can play a key role in unlocking the green transition. For example, water-based renewable energy (e.g. offshore wind power, floating solar panels or tidal energy) can power the clean energy transition; aquaculture solutions (e.g. oyster reefs) can mitigate coastal flood risks; and blue bioeconomy and biotechnology (e.g. seaweed farming) can capture carbon and nutrient pollution. The number of global ocean renewable energy inventions grew by 7% annually between 2000 and 2019 (OECD, 2023[16]). Offshore wind provided just 0.3% of global electricity supply in 2018 but has the potential to generate more than 420 000 terawatt-hours per year worldwide, representing 18 times the current global electricity demand (OECD, 2022[17]).

The blue economy can be a powerful driver of local and regional development. According to the OECD survey, job creation and economic growth are considered the most significant drivers for the blue economy at the subnational level, with respectively 90% and 88% of respondents deeming them "very relevant" and "relevant" drivers (Figure 1.3). For example, the blue economy represents 4.3% of the GDP of Barcelona, Spain, and 1.4% of the city's workforce (Ajuntament de Barcelona/Barcelona Activa, 2021[18]). In the state of California, United States, 1 in 9 jobs connects to port-related activity (Port of Los Angeles, 2022[19]) and, in the state of Louisiana, United States, the inland Port of South Louisiana is the first in the country in terms of dry bulk cargo and second in terms of tonnage handled (U.S. Department of Transportation, 2022[20]). Despite the COVID-19 pandemic, the blue economy in the region of Flanders, Belgium, grew from 4.5% of GDP in 2018 to 5.2% in 2021, and port activities in the region have a multiplier effect of 2, with 103 000 direct jobs in the ports of Flanders and 230 000 related ones (Blue Cluster, forthcoming[21]). In the city of Seattle, United States, cruise passenger spending benefits local businesses with nearly USD 900 million per year in local economic activity, supporting around 5 500 local jobs (Port of Seattle, 2022[22]). In SIDS, fisheries represent an important share of GDP, such as in Comoros (8% in 2017) (World Bank, 2019[23]) and the Seychelles (16% in 2019) (Seychelles Trade Portal, 2019[24]).

The OECD survey highlights that blue economy sectors have different levels of relevance across scales. Seafood (90%), water-related tourism (86%) and water passenger transport (70%) are the most common sectors of the blue economy cities and regions (Figure 1.4). On average, cities and regions report a similar number of blue economy sectors (5.7 out of the 8 considered), albeit with sectoral differences (Figure 1.4). Compared to other regions, cities recognise more prominently the presence of tourism (23 percentage points higher) and water passenger transport (+15 percentage points). Compared to cities, regions consider more prominently emerging sectors such as renewable energy (+21 percentage points) and blue bioeconomy, biotechnology, research and education (+4 percentage points). The divergence in sectors reported by cities and regions may be explained by the fact that local governments generally have the

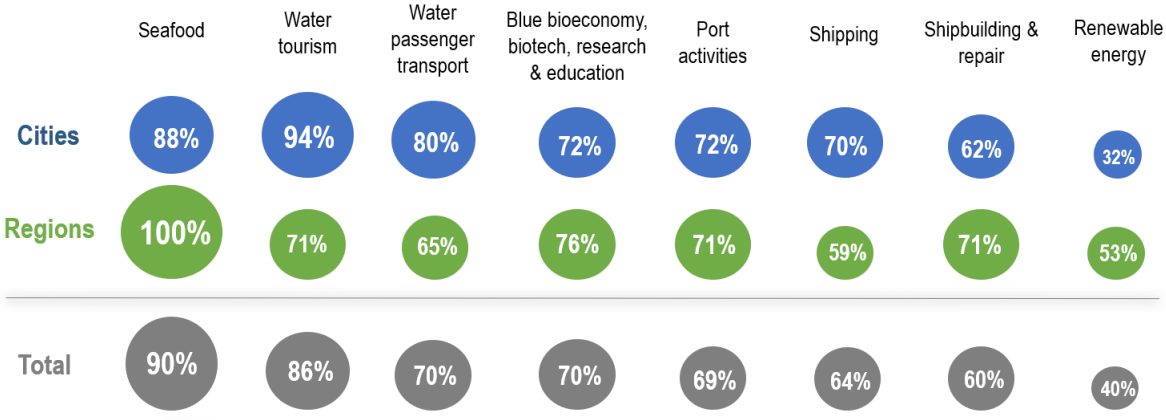
competency for local public transport and tourism, and that regional governments tend to be responsible for higher education and research (OECD, 2022[25]).

Figure 1.3. Drivers for the blue economy across survey respondents



Note: Based on 81 responses to the question: "1.2.1. What are the main drivers behind blue economy activities in your city/region?". Survey respondents were invited to select one of the following options: "very relevant", "relevant", "somewhat relevant", "little relevant" or "not relevant".
Source: OECD (2023[26]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

Figure 1.4. Blue economy sectors creating value and providing jobs in cities and regions



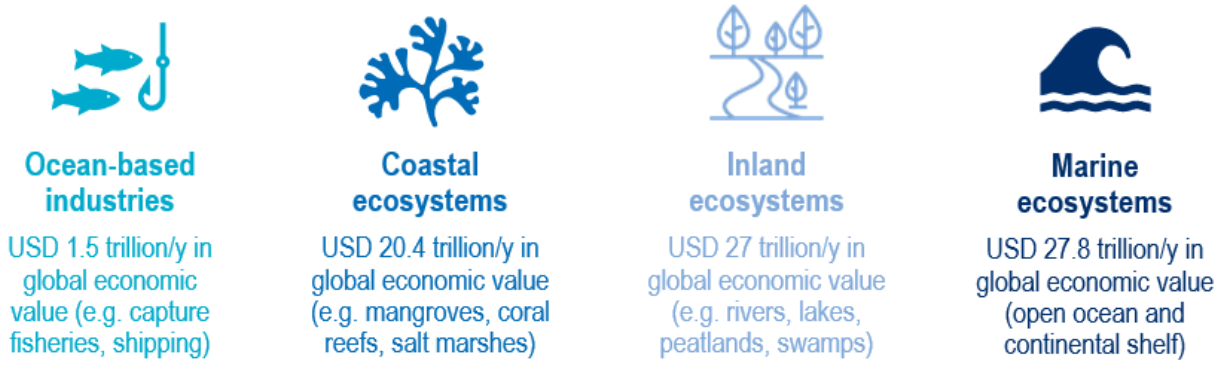
Note: The OECD survey focused on eight sectors (seafood; water-related tourism; water passenger transport and related services; blue bioeconomy, biotechnology, research and education; shipping; shipbuilding and repair; renewable energy), based on OECD and EU classifications of ocean economy and blue economy sectors respectively. Shares based on 67 responses from cities and regions only (basins and SIDS excluded, given they represent only 18% of the sample) to the question: "1.1.1 What blue economy sectors take place in your city/region?". Survey respondents were invited to select any of the eight sectors.
Source: OECD (2023[26]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

Non-market benefits of the blue economy

Conserving biodiversity and ecosystems is considered a major or important driver for a sustainable blue economy for 81% of respondents (Figure 1.3). The blue economy also includes non-market benefits provided by freshwater, coastal and marine ecosystems (e.g. natural river systems, lakes, wetlands, mangroves and coral reefs), such as provisioning services (e.g. seafood), regulating services (e.g. coral reefs and mangroves acting as flood protection barriers or carbon sinks), cultural services (e.g. recreational use of freshwater ecosystems) and supporting services (e.g. mangroves supporting fish nurseries) (Millenium Ecosystem Assessment, 2004[27]). In the European Union, an EUR 400 billion worth of ecosystem services are generated on average on a 10 km coastal zone (EC, 2021[5]). The ecosystem services provided by freshwater[2] (rivers, streams, lakes, inland wetlands and aquifers) have been valued at USD 58 trillion per year globally (WWF, 2023[28]). Other studies indicate that coastal and inland ecosystems (wetlands) and marine ecosystems (open ocean and continental shelf) have been estimated to provide ecosystem services worth over USD 47 trillion and USD 27 trillion per year respectively (Davidson et al., 2019[29]) (Figure 1.5).

Ecosystem services provided by freshwater, coastal and marine ecosystems include the provision of food and raw materials, water purification, carbon capture, biodiversity and recreation. For example, the global annual value of coral reefs, mangroves and peatlands has been estimated at USD 172 billion (OECD, 2022[30]), USD 2.7 trillion and USD 17.5 trillion respectively (Davidson et al., 2019[29]) (Table 1.4). Within the blue economy, investing in natural assets such as mangroves and coral reefs can pay a double dividend, benefitting economic activities (e.g. tourism) and ecosystem services (e.g. flood protection, carbon capture and biodiversity) alike. For example, in the framework of its Climate Action Plan, the city of Salvador, Brazil, considers natural assets such as mangroves and coral reefs beneficial for tourism and climate resilience. It aims to implement a coastal management system to protect these assets from environmental damage. More broadly, it has been estimated that investing USD 1 in mangrove conservation and restoration can generate a financial, environmental and health benefit of USD 3-17 over a 30-year period (Ocean Panel, 2020[31]).

Figure 1.5. The value of the ocean economy and related ecosystems

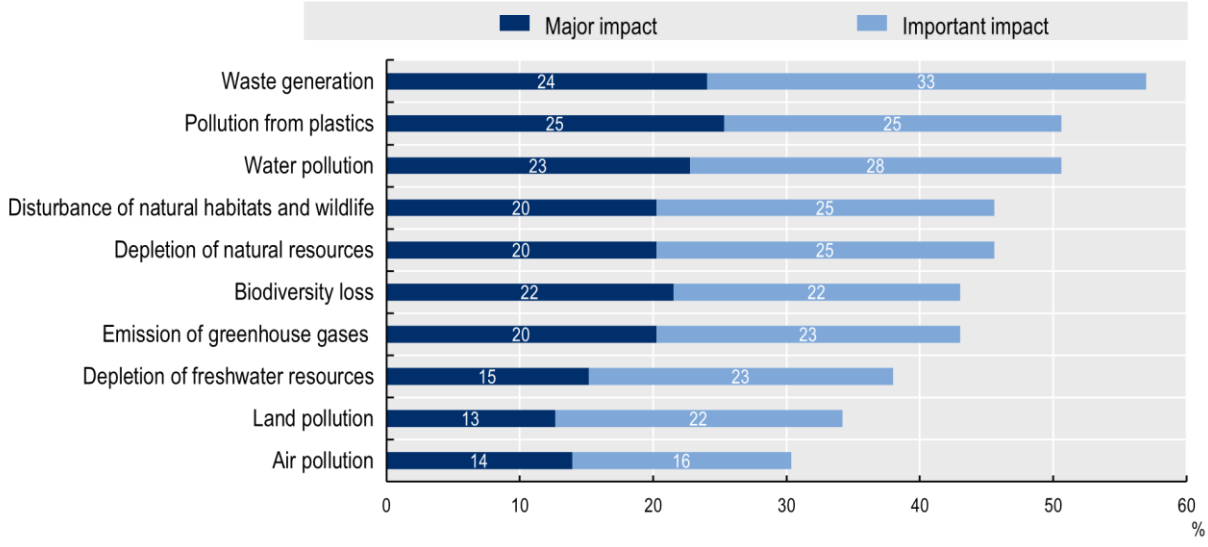


Note: The OECD estimated conservatively ten ocean-based industries' net direct contribution to the overall economy, using value added to avoid double counting. The global economic values of marine, inland and coastal ecosystems are measured by Davidson et al. (2019[29]) as the sum of ecosystem service values provided by inland and coastal wetlands (2011 base year) using the value transfer approach.
Source: OECD (2016[1]), *The Ocean Economy in 2030*, https://doi.org/10.1787/9789264251724-en; Davidson, N. et al. (2019[29]), "Worth of wetlands: Revised global monetary values of coastal and inland wetland ecosystem services", https://doi.org/10.1071/mf18391.

Costs of unsustainable blue economies

Despite the numerous socio-economic benefits of blue economy sectors and the non-market benefits of blue ecosystems, the blue economy is almost never sustainable. In fact, it can be a major source of carbon emissions and pollution in cities, regions and basins. According to the OECD survey, 57% of respondents see waste generation as a "major" or "important" environmental impact of the blue economy, and 51% perceive the same for pollution from plastics and water pollution (Figure 1.6). For instance, resource-intensive activities such as tourism and coastal development can drive waste generation, ghost fishing gear contributes to around 10% of plastic pollution in the ocean (OECD, 2021[32]; Greenpeace, 2019[33]) and aquaculture can introduce excess nutrients that overstimulate toxic algal growth (Jeanson et al., 2022[34]). In the absence of adequate wastewater treatment, all blue economy sectors contribute to water pollution, which can trigger toxic algal blooms and cause "dead zones" (oxygen depletion) in the ocean and coastal waters, which in turn can affect fisheries and marine tourism (OECD, 2022[30]). These environmental stressors affect the waterways, coastal and ocean's capacity to provide economic benefits such as seafood and ecosystem services that strengthen resilience[3] to the impacts of climate change and environmental degradation (OECD, 2022[30]).

Figure 1.6. Main environmental impacts generated by blue economy activities at the local level



Note: Based on 79 responses to the question: "1.2.4. What environmental impacts do blue economy activities generate in your city/region?". Survey respondents were invited to select one of the following options: "major impact", "important impact", "moderate impact", "small impact" or "no impact".
Source: OECD (2023[26]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

Survey respondents also flag the disruption of natural habitats and wildlife and the depletion of natural resources as major or important environmental impacts of the blue economy (both 46%). For instance, the discharge of ballast water[4] from ships can disrupt the balance of marine ecosystems by introducing non-native species or spreading diseases among local aquatic and marine organisms (Braathen, 2011[35]); deep-water fisheries (bottom trawling) can destroy natural habitats and facilitate the extinction of sensitive species (Falsone et al., 2022[36]); and offshore renewable energy infrastructure can affect marine fish behaviour and migration (Galparsoro et al., 2022[37]). Some ocean-based sectors, such as offshore oil and gas extraction and production, and sand extraction from the seabed and beaches, can significantly disrupt the functioning of the ecosystems in which they take place. For example, the state of Louisiana, United States, has lost nearly one-quarter of its coastal land in the past century due to several factors,

including the creation of canals for shipping and levees to stop the natural flooding cycles that originally built and maintained the land around the Mississippi River Delta. Other examples of the impacts of the blue economy on freshwater, coastal and marine ecosystems are presented in Table 1.3.

Table 1.3. Examples of impacts of blue economy sectors on blue ecosystems

Sector	Examples of impacts	C&M	F
Seafood	Overfishing can deplete fish stocks, disrupt marine food webs, and harm non-target species	✓	✓
	Use of aquafeed, fertiliser, and hormone use in aquaculture can stimulate algae growth	✓	✓
	The introduction of non-native species in open-water aquaculture can create ecological disruptions	✓	✓
	Bycatch poses challenges to fishermen, recovering fish populations and entire food webs	✓	✓
	Waste and ghost fishing gear damage the environment and disrupt habitats	✓	✓
	Destructive fishing practices (e.g. trawling, cyanide and dynamite fishing) damage ecosystems and habitats	✓	✓
	Seafood processing effluent discharges contaminate water bodies and disrupt ecosystems	✓	✓
Water-related tourism	Waterside tourist infrastructure can alter coastal landscapes, create soil erosion and loss of biodiversity	✓	✓
	Plastic waste influx affects marine and aquatic life (increased risk of death)	✓	✓
	Overtourism can lead to coral bleaching and disturb the balance of marine and aquatic life	✓	
	Water abstraction induces water stress in freshwater ecosystems		✓
Renewable energy	Infrastructure can disrupt ecosystems through noise pollution and collision risks	✓	✓
	Hydropower infrastructure can alter river flow and affect fish migration		✓
Blue bioeconomy, biotechnology, research and education	Release of pollutants and chemicals that contaminate water bodies and impact ecosystems	✓	✓
	Release of genetically modified organisms or invasive species into the marine/aquatic environment	✓	✓
Water passenger transport and shipping	Discharge of pollutants from vessels, such as oil spills, ballast water or sewage, can harm ecosystems	✓	✓
	Vessels can disrupt ecosystems through noise pollution and collision risks with wildlife	✓	✓
	Water abstraction for canals induces water stress in freshwater ecosystems		✓
Port activities	The release of sediments, chemicals and debris affects water quality and ecosystem health	✓	✓
	Infrastructure and dredging operations can alter river flow patterns	✓	✓
	Noise pollution and light pollution from port activities can disrupt coastal habitats	✓	✓
	The release of invasive species into the marine/aquatic environment can disrupt ecosystems	✓	✓
Shipbuilding and repai	The improper disposal of hazardous materials and waste can harm marine and aquatic life	✓	✓
	Run-off containing pollutants affects water quality and ecosystem health	✓	✓
	Dredging and construction lead to sediment discharge into freshwater, impacting habitats	✓	✓

Note: F = Freshwater ecosystems; C&M = Coastal and marine ecosystems.

Source: Based on Balint, P. et al. (1998[38]), "Risks and benefits of marine biotechnology: Conclusions and recommendations", https://doi.org/10.1007/978-1-4615-5431-8_7; Earth.org (2023[39]), "Coral reef degradation in Hawaii: Is overtourism to blame?", https://earth.org/coral-reef-degredation/; Galparsoro, I. et al. (2022[37]), "Reviewing the ecological impacts of offshore wind farms", https://doi.org/10.1038/s44183-022-00003-5; Guzmán-Luna, P., P. Gerbens-Leenes and S. Vaca-Jiménez (2021[40]), "The water, energy, and land footprint of tilapia aquaculture in Mexico: A comparison of the footprints of fish and meat", https://doi.org/10.1016/j.resconrec.2020.105224; Haraldstad, T. et al. (2019[41]), "Migratory passage structures at hydropower plants as potential physiological and behavioural selective agents", https://doi.org/10.1098/rsos.190989; Jeanson, A. et al. (2022[34]), "Inland fisheries management - Case studies of inland fish", https://doi.org/10.1016/b978-0-12-819166-8.00170-5; Kong, W. et al. (2023[42]), "Sediment and residual feed from aquaculture water bodies threaten aquatic environmental ecosystem: Interactions among algae, heavy metals, and nutrients", https://doi.org/10.1016/j.jenvman.2022.116735; Phillips, M. and A. Jones (2006[43]), "Erosion and tourism infrastructure in the coastal zone: Problems, consequences and management", https://doi.org/10.1016/j.tourman.2005.10.019; WWF (2019[44]), *Plastic Pollution in Greece - A Guide for Policy-makers*, https://wwfeu.awsassets.panda.org/downloads/05062019_wwf_greece_guidebook.pdf.

Beyond these direct impacts on ecosystems and biodiversity, blue economy sectors also contribute to greenhouse gas (GHG) emissions and air pollution, which drive climate change and harm health. Maritime transport alone accounted for almost 3% of global carbon dioxide (CO_2) emissions in 2018 and transport-related emissions from tourism represented approximately 5% of global GHG emissions in 2016 (UNWTO/ITF, 2019[45]). Ships generate around 5-10% of global emissions of sulphur, a GHG and air pollutant with important negative health impacts, and these shipping emissions can represent a large share of total emissions in port cities (ITF, 2016[46]). For example, the 75 cruise ships that docked in the Port of Marseille, France, in 2022 emitted twice as much sulphur oxide as the entire fleet of registered cars in the city (Transport & Environment, 2023[47]).

These impacts generate significant economic losses. For example, marine plastic pollution is estimated to cause global annual losses of 1-5% in the value of ecosystem services, resulting in an annual economic impact ranging from around USD 500 billion to USD 2.5 trillion (Beaumont et al., 2019[48]). In the Gulf of Thailand, plastic pollution has been estimated to cost fisheries around USD 23 million per year (IUCN, 2019[49]). The estimated economic losses due to overfishing amount to USD 83 billion annually at the global level (World Bank, 2016[50]). About 76% of fish species in the Lake Victoria Basin, Kenya, could go extinct (Sayer, Máiz-Tomé and Darwall, 2018[51]), putting at risk not only an industry valued at USD 840 million annually and contributing to more than 800 000 jobs but also a rich freshwater ecosystem (LVFO, 2016[52]).

Ecosystems and the services they provide are declining, with strong consequences of inaction, whereas ecosystem restoration can have a significant return on investment (Table 1.4). Overall, the degradation of six ecosystem services[5] (protection of coasts from flooding and erosion, supply of water, marine fisheries, carbon storage, pollination of crops and timber production) would cost the economy an estimated USD 9.87 trillion by 2050 (WWF, 2020[53]). Inaction has already led to the loss of one-third of the world's freshwater biodiversity (OECD, 2012[54]), 87% of wetland area (UNEP, 2021[55]) and the degradation of 60% of the world's major marine ecosystems (OECD, 2017[56]). At the local level, for example, the Mississippi River Delta in the United States provides ecosystem services worth up to USD 47 billion per year (Batker et al., 2014[57]) and the cost of inaction on land loss induced by erosion, land subsidence and sea level rise could damage ecosystem services, amounting to USD 190 billion over a 100-year period (Batker, Costanza and Day, 2010[58]). However, the literature shows a clear business case for investing in ecosystem restoration: for example, it has been estimated that every dollar invested in ecosystem restoration, including blue ecosystems, could create up to USD 110 in economic benefits including financial returns (e.g. ecotourism or carbon market revenues), savings (e.g. avoided costs of natural disasters) and non-market benefits (e.g. increased food security, recreation services, human health) for public, private and philanthropic investors (World Bank, 2022[59]).

Table 1.4. Estimated value and consequences of inaction on blue ecosystems

Ecosystems	Estimated value of ecosystem services	Status and projections	Examples of consequences of action or inaction
Rivers, streams, lakes, aquifers, inland wetlands (freshwater)	USD 58 trillion per annum or 60% of GDP (WWF, 2023[28])	One-third of global freshwater biodiversity has already been lost and further loss is projected by 2050 (OECD, 2012[54])	19% of global GDP comes from watersheds with high to very high physical water risk (WWF, 2018[60])
Peatlands (freshwater)	USD 17.5 trillion for 2011 (Davidson et al., 2019[29])	15% of the world's peatlands are currently drained and degraded (FAO, 2022[61])	Degradation at current rates will consume 41% of the remaining CO_2 emissions budget to keep global warming within +1.5 degrees Celsius (°C) (UNEP, 2022[62])
Mangroves (coastal)	USD 2.7 trillion for 2011 (Davidson et al., 2019[29])	7.6% of mangrove cover has been lost or degraded between 1996 and 2016 (Worthington and Spalding, 2018[63])	Without mangroves, flood damages globally would cost an additional USD 65 billion and 15 million more people would be at risk of floods each year (Menéndez et al., 2020[64])

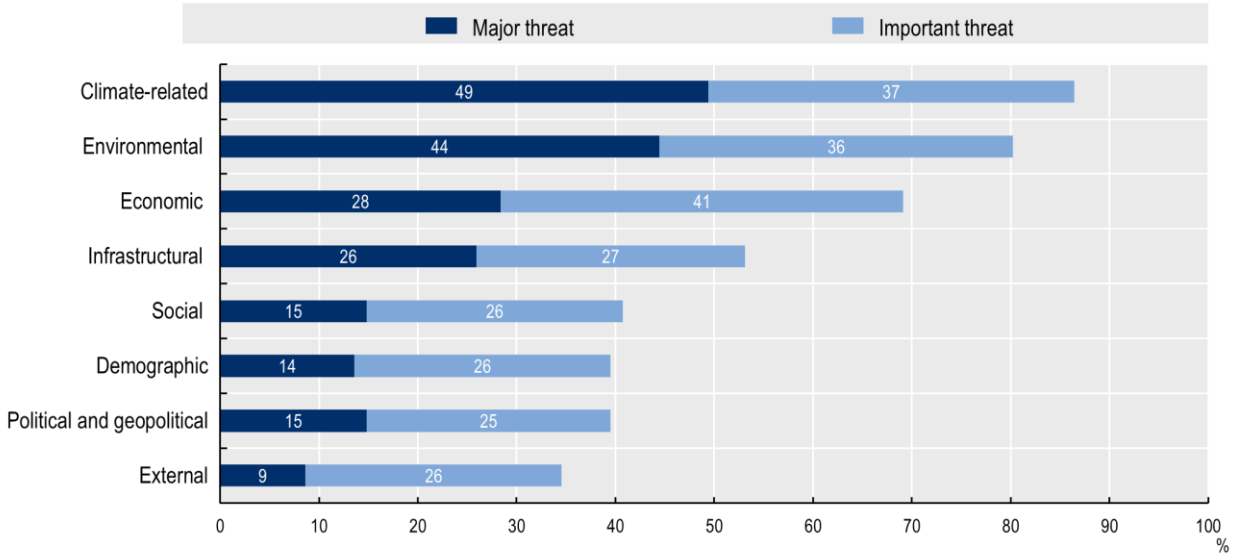
Ecosystems	Estimated value of ecosystem services	Status and projections	Examples of consequences of action or inaction
Salt marshes (coastal)	USD 1.1 trillion for 2011 (Davidson et al., 2019[29])	25-50% of historic global coverage has been lost (Mcowen et al., 2017[65])	The average overall restoration cost of salt marshes was estimated at USD 1 million (2010) per hectare (Bayraktarov et al., 2016[66])
Estuaries (coastal)	USD 1.9 trillion for 2011 (Davidson et al., 2019[29])	No data	Every USD 1 invested in mitigation saves USD 6 in recovery on estuaries (Rouleau et al., 2021[67])
Seagrass (marine)	USD 1.9 trillion per year (Waycott et al., 2009[68])	Loss rate of 7% per year (Waycott et al., 2009[68])	Global seagrass degradation emits 0.65 gigatonnes of CO_2 per year, equivalent to global shipping industry annual emissions (UNEP, 2020[69])
Coral reefs (marine)	USD 172 billion per year (OECD, 2022[30])	Likely to decline by 70-90% if the global temperature increases by 1.5°C compared to pre-industrial levels (IPCC, 2019[70])	Climate-related loss of coral reef ecosystem services is expected to cost at least USD 500 billion annually by 2100 (WWF, 2015[71])
Oyster reefs (marine)	USD 5 500-99 000 per hectare per year (Grabowski et al., 2012[72])	Around 85% of oyster reefs have been lost globally (Beck et al., 2011[73])	Ocean acidification costs around 6 billion USD annually (Narita, Rehdanz and Tol, 2012[74])
Kelp forests (marine)	USD 500 billion annually in global economic value (Eger et al., 2023[75])	Degradation of 40-60% of kelp forests over the last 50 years (Eger et al., 2023[76])	Restoring 1 million hectares of kelp forest will cost USD 40 billion between 2023 and 2040 (Kelp Forest Alliance, 2023[77])

Note: To assess the global value of ecosystem services, different classifications have attempted to categorise these freshwater and marine ecosystems either through biomes or wetland classes (de Groot et al., 2012[78]; Costanza et al., 2014[79]). Recent work defined 22 classes of marine or coastal and inland wetlands, where inland wetlands (representing 77% of total wetland surface) are dominated by peatlands, marshes, swamps, rivers and lakes, while marine or coastal wetlands are dominated by salt marshes, seagrass beds, coral reefs, estuaries and mangroves (Davidson and Finlayson, 2018[80]). The table presents a selection of ecosystems (two freshwater, three coastal, four marine) with available data.
Source: Citations in table.

Costs of environmental and socio-economic risks for blue economies

Climate change is considered a “major” or “important” threat to the blue economy at the local level by 86% of survey respondents (Figure 1.7). Disaggregated survey results indicate that cities and basins consider climate change threats the highest (90% and 82% respectively), while regions consider environmental threats the highest (82%). These threats include chronic and acute hazards related to water, wind, temperature and solid mass, such as droughts, heatwaves, floods and sea level rise (Table 1.5). In addition to generating 50% of the Earth’s oxygen, the ocean plays a critical role in regulating the global climate by absorbing 25% of all CO_2 emissions and 93% of the heat generated by these emissions (UN, 2022[81]). Resulting ocean warming and acidification cause damage to coastal and marine ecosystems, such as coral reef bleaching, which increases coastal flood risk and hinders reef-related tourism. In the state of Queensland, Australia, for example, the bleaching of the Great Barrier Reef could cause the loss of 1 million visitors to the region each year, equivalent to at least AUD 1 billion in tourism spending and 10 000 jobs (Australian Climate Council, 2017[82]). In Florida, United States, coral reef degradation could increase the coastal flood risk for more than 7 300 residents, costing USD 823 million every year (Storlazzi et al., 2021[83]). The frequency of marine heatwaves has doubled since the 1980s, causing potentially long-lasting or irreversible damage to many marine species, leading to mass mortality events and ultimately threatening food security (Ocean & Climate Platform, 2023[84]). Environmental threats cover different forms of pollution, including sewage, chemicals and plastics. In 2019, about 30 and 119 megatonnes of plastics had accumulated in oceans and rivers respectively (OECD, 2022[85]). Around 80% of wastewater flows back into the ecosystem without being treated or reused (UNESCO, 2017[86]). Global damage from marine litter was estimated at USD 21 billion in 2020 (McIlgorm et al., 2022[87]).

Figure 1.7. Main threats to the blue economy across survey respondents



Note: Based on 81 responses to the question: "1.2.2. What are the main threats to blue economy activities in your city/region?". Survey respondents were invited to select one of the following options: "major threat", "important threat", "moderate threat", "small threat" or "not a threat".
Source: OECD (2023[26]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

Table 1.5. Tentative EU classification of climate-related hazards

	Temperature-related	Wind-related	Water-related	Solid mass-related
Chronic	• Changing temperature (air, freshwater, marine water) • Heat stress • Temperature variability • Permafrost thawing	• Changing wind patterns	• Changing precipitation patterns and types • Precipitation and/or hydrological variability • Ocean acidification • Saline intrusion • Sea level rise • Water stress	• Coastal erosion • Soil degradation • Soil erosion • Solifluction
Acute	• Heatwave • Cold wave/frost • Wildfire	• Cyclone, hurricane, typhoon • Storm (including blizzards, dust and sandstorms) • Tornado	• Drought • Heavy precipitation (rain, hail, snow/ice) • Flood (coastal, fluvial, pluvial, ground water) • Glacial lake outburst	• Avalanche • Landslide • Subsidence

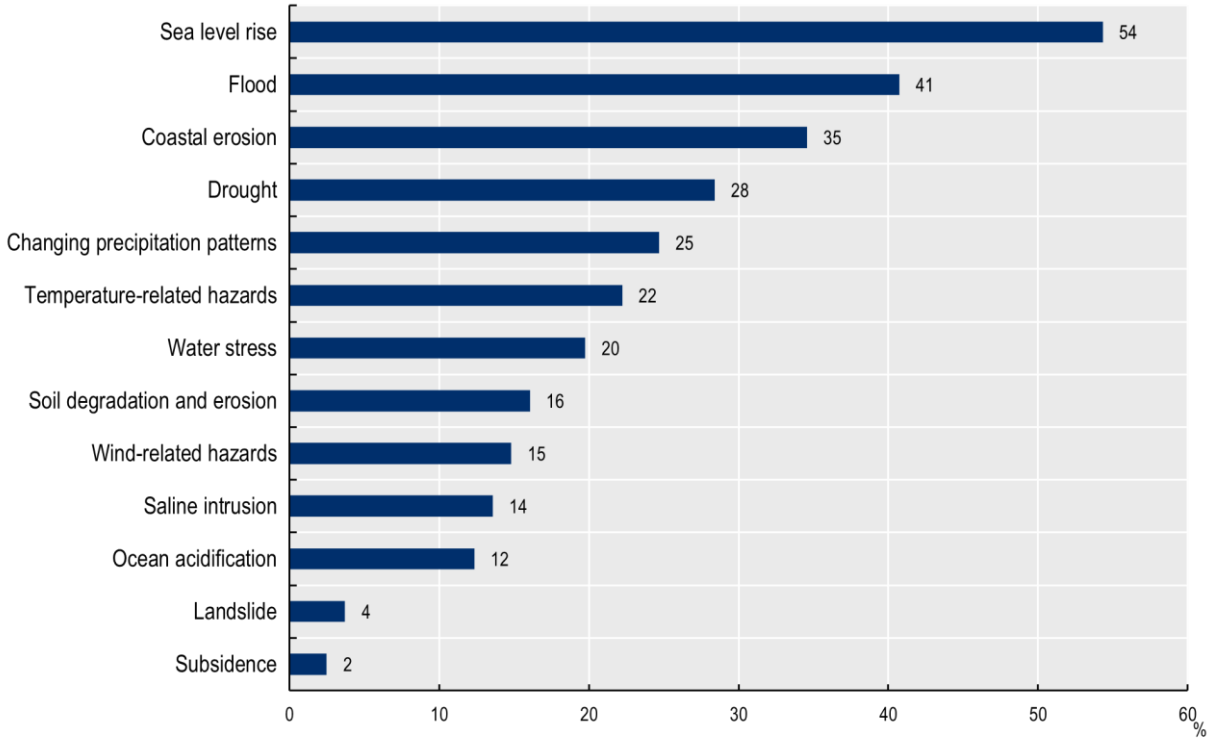
Source: EC (2023[88]), *Commission Delegated Regulation (EU) 2023/2486 of 27 June 2023 Supplementing Regulation (EU) 2020/852 of the European Parliament and of the Council by Establishing the Technical Screening Criteria*, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32023R2486.

In addition to prominent climate and environment-related issues, the blue economy is also vulnerable to a number of other challenges. These include: economic threats that affect the broader economy (e.g. inflation, cost-of-living crisis, supply chain disruptions), as well as ageing, lacking or insufficiently resilient infrastructure; social issues (e.g. territorial and rights issues between local fishers and larger international fishing companies, workers' strikes, conflicts with civil society organisations, etc.); ageing, booming or shrinking populations; and political and geopolitical threats. Regarding the latter in particular, systemic and smaller-scale corruption can threaten the integrity and inclusiveness of blue economy sectors

(e.g. fisheries, port activities and tourism) as well as through corruption in cross-cutting policies at the subnational level (e.g. land use planning and permitting, water supply and sanitation services, waste management, etc.). For example, countries with weak governance frameworks and insufficient capacity to police their waters – often developing ones – are particularly vulnerable to illegal, unreported and unprotected fishing (Hutniczak, Delpeuch and Leroy, 2019[89]). However, the issue is not limited to emerging economies: recognising the potential socio-economic impacts of such practices in the blue economy, in 2020, the European Union made a commitment to address "the negative impact of malpractices and corruption on the sustainable management of marine resources" (CFFA, 2020[90]).

Survey respondents report sea level rise (54%), floods (41%) and coastal erosion (35%) as the main climate threats to the blue economy, with droughts coming in at a close fourth place (28%) (Figure 1.8). About 90% of natural disasters and climate change impacts are water-related (UNISDR, 2015[91]). Sea level rise is projected to affect 800 million people living in the 570 cities exposed to sea level rise of at least 0.5 metres (C40 Cities, 2018[92]). Floods cause damage to urban property worth around USD 120 billion per year (Browder et al., 2019[93]). Sea level rise and floods can disrupt marine and freshwater ecosystems while damaging waterfront infrastructure and assets such as ports, shipyards and accommodation. Coastal erosion, which damages coastal ecosystems and impacts ecosystem services as well as coastal sectors (e.g. tourism, shipping), could be responsible for the loss of 5% of coastal ecosystem services in Europe by 2100 (Paprotny et al., 2021[94]). Droughts and water scarcity can make rivers too shallow for shipping, port activities and energy generation, with ripple effects beyond the blue economy. Droughts can cost the global economy up to 6% of GDP per year by 2050 (World Bank, 2016[95]) and can cost cities up to 12 percentage points in GDP growth (Zaveri et al., 2021[96]). The economic impacts and costs of inaction imposed by climate-related hazards have both global and local implications (Table 1.6).

Figure 1.8. Main climate-related threats to the blue economy at the territorial level



Note: Based on 81 responses to the mandatory question: "1.2.3. What are the three most significant climate-related threats to blue economy activities in your city/region?". Survey respondents were invited to select one of the following options: "yes" or "no".
Source: OECD (2023[26]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

Table 1.6. Economic impacts and cost of inaction of climate-related hazards

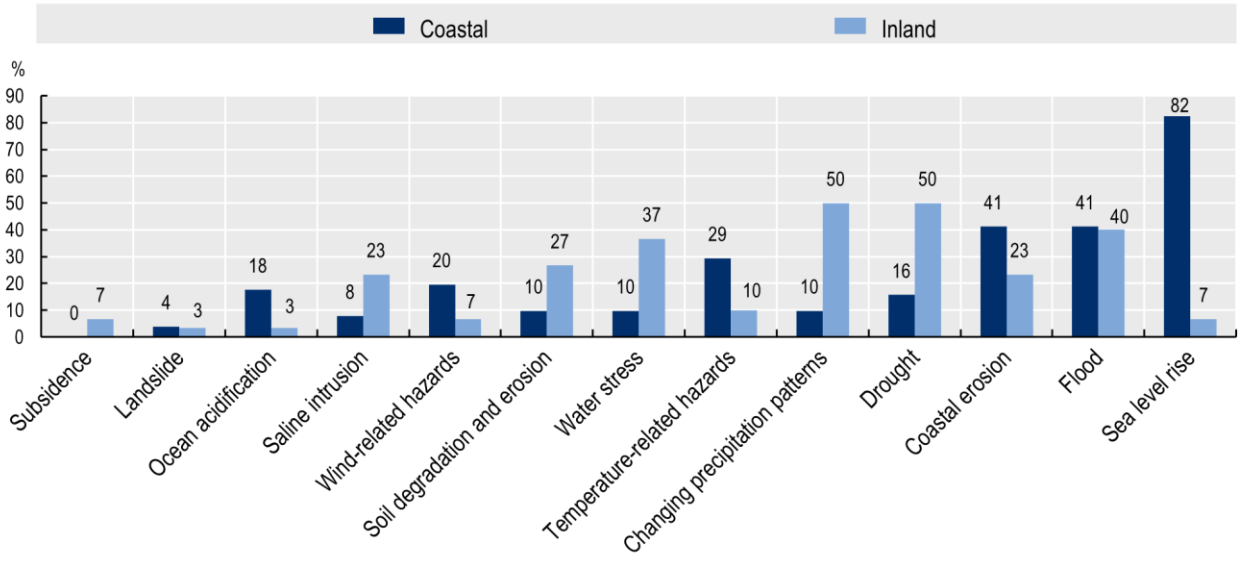
Climate-related hazard	Global economic impacts and projections	Example of local impacts on the blue economy
Sea level rise	Global annual adaptation costs due to sea level rise could reach up to USD 14 trillion by 2100 (NOC, 2018[97])	The cost of elevating the Port of Los Angeles, United States, above the projected sea level rise for 2100 is estimated to be around USD 100 million per year between 2021 and 2100 (RTI, 2022[98])
Coastal flooding	Coastal flooding annual adaptation costs could reach 2.9% of global GDP by 2100 (Kirezci et al., 2022[99])	6% of touristic beaches in Galicia, Spain, are at risk of coastal flooding (Toubes et al., 2017[100])
River flooding	River flooding has caused USD 1 trillion in losses globally since 1980 (WRI, 2020[101])	Floods cost USD 60-70 million on average in the Lower Mekong River Basin (MRC, 2019[102])
Storms	Storm adaptation costs could rise up to USD 2.7 trillion in GDP across 8 countries between 2022 and 2050 (Aquanomics, 2022[103])	Hurricanes Irma and Maria in 2017 caused USD 741 million in tourism revenue losses in the Caribbean region (WTTC, 2018[104])
Drought	The most extreme water deficit events can cost cities up to 12 percentage points in GDP growth (Zaveri et al., 2021[96])	Shipping on the Rhine River was down 27% in 2018 due to low water levels, leading German industrial production to fall by 1.5% and the production of chemicals and pharmaceuticals to drop by 10% for three months (OECD, 2023[105])
Ocean acidification	Ocean acidification could cost the global economy USD 1 trillion annually by 2100 (CBD, 2020[106])	Ocean acidification could cost the shellfish aquaculture industry in the state of Washington, United States, around USD 270 million and 3 200 jobs per year (Cooley et al., 2016[107])
Coastal erosion	Coastal erosion could incur an annual cost of USD 8 billion to global GDP (Sartori et al., 2019[108])	Coastal erosion causes losses of USD 500 million per year to coastal property in US coastal states (U.S. Climate Resilience Toolkit, 2021[109])

Note: i) Sea level rise is an increase in the level of the world's oceans because of global warming. ii) Coastal flooding refers to the inundation of low-lying coastal areas because of extreme weather events. iii) River flooding refers to an overflow of water onto normally dry land. iv) Storms refer to an extreme weather condition with very strong wind, heavy rain, often thunder and lightning. v) Drought refers to a long period with little or no rain. vi) Ocean acidification refers to an alteration of the chemical composition of seawater. vii) Coastal erosion refers to the gradual wearing away of the land or shoreline due to the action of natural forces such as waves, tides, currents and wind.

The disaggregated survey results reveal that cities identify sea level rise (79%) as the main threat; regions identify coastal erosion (35%) and basins drought (73%). Inland respondents primarily mentioned droughts and changing precipitation patterns (both 50%), while coastal respondents emphasised sea level rise (82%) (Figure 1.9).

Climate threats have different impacts across and between territories. For example, in 61 OECD regions spanning 38 countries, more than 30% of the population is at risk of river flooding. In some OECD regions, about 60% of the population is exposed to 100-year river flooding (e.g. Yukon [Canada]; Vaupés, [Colombia]; Tabasco [Mexico]) (Figure 1.10). The city of Rotterdam in the Netherlands is the most exposed OECD metropolitan area of more than 1.5 million inhabitants to river flooding, with more than 60% of its population at risk. Among the OECD survey respondents from OECD countries, Rotterdam and 4 other cities out of 28 (Quillota [Chile]; The Hague [Netherlands]; Geneva [Switzerland]; New Orleans [United States]) as well as the region of North Karelia, Finland, have more than 20% of their population exposed to river flooding. In terms of coastal flood hazard, the Netherlands is the country most at risk, with 55% of its population exposed to 100-year coastal floods. Population exposure is even higher than 90% in 4 out of 12 Dutch regions (Flevoland, Friesland, Groningen, Zeeland). Among the OECD survey respondents, the most exposed cities are all major European port cities: Antwerp [Belgium], Dunkerque [France], Rotterdam and the Hague, [Netherlands], with more than 30% of their population exposed to coastal flooding. By 2030, in the absence of effective adaptation policies, coastal flood risk is projected to increase by a factor of four, while fluvial flood risk could more than double.

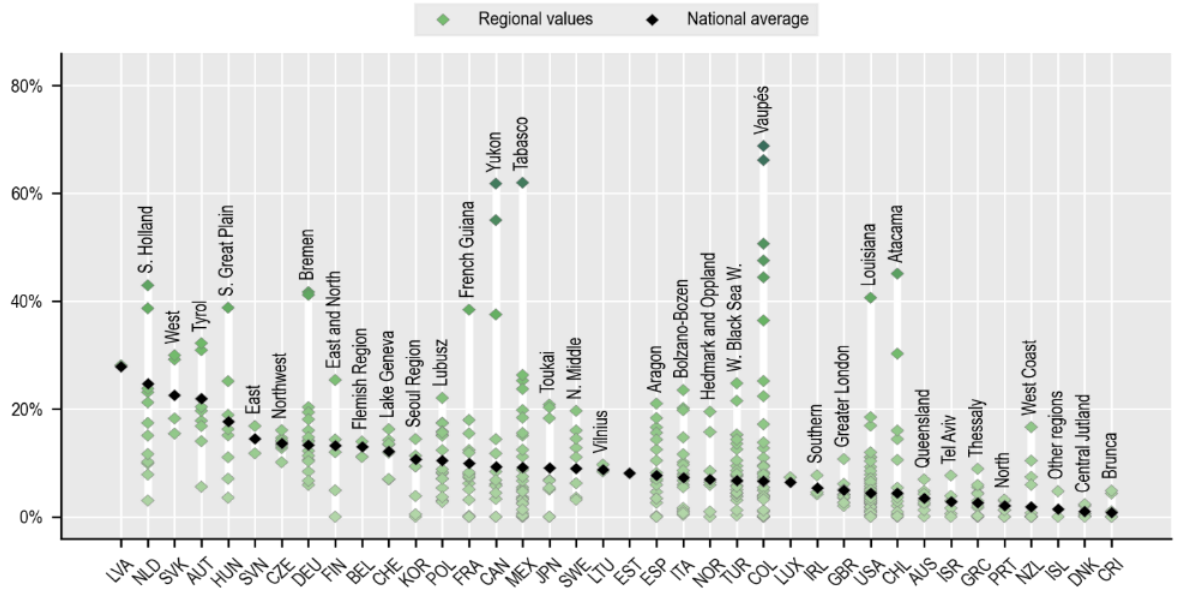
Figure 1.9. Main climate-related threats to the blue economy at the inland and coastal levels



Note: Based on 81 responses to the mandatory question: "1.2.3. What are the three most significant climate-related threats to blue economy activities in your city/region?". Survey respondents were invited to select one of the following options: "yes" or "no".
Source: OECD (2023[26]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

Figure 1.10. Large subnational disparities in exposure to river flooding

Population exposure to 100-year river flooding in OECD large regions (TL2), 2015



Note: The dataset is derived from river flood hazard maps with a 100-year return period, representing the average or estimated time within which a specific hazard is likely to recur.

Source: OECD (2022[17]), *OECD Regions and Cities at a Glance 2022*, https://doi.org/10.1787/14108660-en; Maes, M. et al. (2022[110]), "Monitoring exposure to climate-related hazards: Indicator methodology and key results", https://doi.org/10.1787/da074cb6-en based on Dottori, F. et al. (2021[111]), *River Flood Hazard Maps for Europe and the Mediterranean Basin Region (dataset)*, https://data.jrc.ec.europa.eu/dataset/1d128b6c-a4ee-4858-9e34-6210707f3c81; Florczyk et al. (2019[112]), *GHS Urban Centre Database 2015, Multitemporal and Multidimensional Attributes, R2019A (dataset)*, https://data.jrc.ec.europa.eu/dataset/53473144-b88c-44bc-b4a3-4583ed1f547e.

Within cities and regions, structural inequalities in exposure to climate risks mean that economically vulnerable groups (e.g. low-income groups, those living in sub-standard housing, women, children, the elderly, the disabled, Indigenous peoples and ethnic minorities) are likely to be hit the hardest by climate change impacts and have a lower capacity to recover from such shocks (OECD, 2023[113]). Informal settlements, home to approximately 29% of the global urban population, face significantly higher risks from floods and other water-related disasters, as many informal settlements sit on floodplains and riverbanks, and consist of very closely built structures that can disturb natural land drainage patterns and watercourses. Developed countries are not exempt: in the United States, 1.4% of the population and 11% of adults in the state of Louisiana were forced to evacuate their homes in 2022 due to hurricanes, floods and other extreme events, and evacuation rates were the highest for the lowest-income households. Women, who account for more than 75% of displaced persons from climate hazards, are often disproportionately affected and take longer to recover from climate shocks due to their comparatively vulnerable social and economic status.

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Notes

[1] Coastal areas are defined as the interface or transition areas between land and sea, including large inland lakes (FAO, 1998[116]), an area within a distance of 10 km from the coastline (OECD, 2023[114]). Coastal cities are a densely inhabited place within a coastal area with a population of 50 000 or more (Urban Ocean Lab, 2022[115]).

[2] The global economic value of freshwater ecosystems is measured by the World Wildlife Fund (WWF) in terms of direct freshwater use (including consumptive and non-consumptive industries as well as supportive water-related infrastructure and services) and indirect use (including biodiversity, extreme event protection and environmental regulation) benefits (2021 base year) using the total economic value framework.

[3] According to the OECD, resilience is about addressing the root causes of crises while strengthening the capacities and resources of a system to cope with risks, stresses and shocks (OECD, n.d[118]).

[4] Ballast water is seawater carried in ships' ballast tanks to improve vessel trim, manoeuvrability and stability (Braathen, 2011[35]).

[5] The six ecosystem services were selected based on their economic significance and availability of supporting evidence, with perspectives to add more services in future iterations of the estimation model.

2 Multi-level governance of the blue economy: The state of play and challenges

This chapter provides an overview of the governance of the blue economy at the national and subnational levels, looking into the institutional framework and tools (including planning, regulation, economic incentives, funding, capacity building, awareness raising, and data and information) for blue economy policy, as well as dedicated national and subnational blue economy strategies, plans and policies.

Who does what for the blue economy across levels of government

Blue economy policy is a shared responsibility across levels of government. Although there is no one-size-fits-all model across countries, national governments tend to have more responsibilities in blue economy sectors deemed strategic for national security interests, such as freshwater and marine fisheries, offshore wind and tidal energy, shipping, port activities, shipbuilding and naval activities, which relate to food security, energy security, trade and defence. Subnational governments tend to have greater prerogative in water-based passenger transport (e.g. ferries, water buses and taxis) and tourism due to their competencies in public transport, tourism affairs and local economic development (OECD, 2022[1]). Several levels of government are often involved in each sector: for example, in the city of New Orleans, United States, commercial and recreational fishing are governed by both state and federal laws and agencies, particularly the National Oceanic and Atmospheric Administration, the United States Fish and Wildlife Service and the Louisiana Department of Wildlife and Fisheries; additional regulatory decisions (e.g. business permits and recreational fishing licensing) are made by other state agencies. The state of Louisiana manages offshore wind energy leases in Louisiana waters that extend three nautical miles from its coastline and by the federal Bureau of Ocean Energy Management beyond that limit.

Cities and regions are responsible for cross-cutting policies and investments that affect blue economy sectors and ecosystems. Subnational governments often have competencies for urban and regional planning, water and sanitation, waste management and climate resilience that can affect the level of water security and quality, and, thus, the blue economy. For instance, land use practices can have impacts on freshwater, coastal and marine ecosystems (e.g. wetlands and mangroves) and the ecosystem services they provide (e.g. flood mitigation and carbon capture). Similarly, subnational governments have overarching competencies in local and regional economic development, tourism and innovation, which can affect blue economy sectors in terms of added value, jobs, productivity and competitiveness. Subnational governments also play a central role in addressing the environmental impacts of the blue economy, accounting for 63% of total climate-significant public expenditure and 69% of climate-significant public investment across 33 OECD and European Union (EU) countries in 2019 (OECD, 2022[2]).

Blue economy-related policies at national level are usually led by ministries or departments in charge of maritime or foreign affairs, economy, planning and transport. For example, the Philippine Maritime Administration, the Ministry of Foreign Affairs of Panama, the Ministry of Economy and Finance of Morocco, the National Planning Department of Colombia and the United Kingdom (UK) Department for Transport are responsible for national blue economy strategies. Some countries, such as France, Mauritius and Portugal, have dedicated ministries or state secretariats for the blue economy, as well as the sea and maritime affairs. At the subnational level, maritime or economic departments tend to take the lead. For example, the French region of Guadeloupe has a Directorate of the Sea (*Direction de la mer*) that depends on the prefect, a national government representative at the subnational level. The directorate is responsible for leading national policies relating to the sustainable development of the sea, managing marine resources, regulating maritime activities and co-ordinating regulatory policies for coastal and marine activities, excluding those relating to national defence and security and foreign trade. In the city of Lisbon, Portugal, blue economy policy is led by the Department of Innovation and Strategic Sectors, which is notably the lead institution for the city's Sea Hub (*Hub do Mar*), an initiative replicated in six other Portuguese cities as part of a national strategy for blue hubs within the EU-funded Portuguese Recovery and Resilience Plan (2021). The Office of Economic Development leads blue economy initiatives in the city of New Orleans, United States. In other cases, blue economy policy can be a shared responsibility across subnational government departments. In the region of Rio de Janeiro, Brazil, blue economy policy is led by the Department for Energy and the Marine Economy in co-operation with the Department of Environment and Sustainability and the Department for Agriculture, Livestock, Fisheries and Supply, who co-ordinate on a regular basis through working meetings.

To facilitate co-ordination across levels of government, national governments can set out contracts, deals or agreements to achieve specific goals with subnational governments. For example, the United States addresses water risks with “compacts” or agreements, such as the Colorado River Compact, focusing on water quantity, the Great Lakes Compact, seeking to ensure adequate water quality and avoid water diversion from the Lakes to other watersheds and the Chesapeake Bay Watershed Agreement on water quality and quantity to maintain fisheries and recreational activities.

In some cases, subnational governments have set up co-ordination mechanisms to engage with non-governmental blue economy players on a regular basis. For example, the Nautical Committee of the city of Salvador, Brazil, brings together members of public and private initiatives to foster nautical tourism in the city. In the Occitanie region of France, the Parliament of the Sea (*Parlement de la mer*), chaired by the region’s vice-president in charge of the Mediterranean Sea, federates and represents the regional maritime community. It brings projects and new ideas to the fore, encourages and organises dialogue, debate and mutual understanding, and lobbies national and European authorities. In Portugal, the national government designated the Ocean Forum as the entity responsible for the creation of the network of Sea Hubs (*Hub Azul*) in co-ordination with local governments and port authorities. In countries where they exist, river basin organisations (RBOs) offer a permanent stakeholder engagement mechanism on water issues. For example, the Seine-Normandie Basin Committee in France gathers representatives of national and subnational governments as well as stakeholders related to freshwater and marine environments. As a consultation body, it allows its 185 members to debate and reach a consensus on the main orientations of local water policy.

A number of sector-specific actors, such as port authorities, also play a role. National governments own most of the world’s 50 largest ports but over one-third are fully or partly owned by local governments (ITF, 2017[3]). According to the OECD Global Survey on Localising the Blue Economy (hereafter the OECD survey), for example, the Antwerp Port Authority, Belgium, is an independent, municipally-owned company, while the Port of Los Angeles in the United States is a city department and is governed by the Los Angeles Board of Harbor Commissioners, a panel appointed by the mayor. The port generates its own revenues from leasing and shipping service fees and is not supported by city taxes. Most countries have a hybrid model where some ports are owned jointly and others individually by national and subnational governments, depending on the categories of ports. For example, the region of Nouvelle-Aquitaine, France, is home to two state-owned ports (Bordeaux and La Rochelle), one port owned by the regional government (Bayonne) and another (Rochefort Tonnay-Charente) owned by the county (*département)* of Charente-Maritime. The regional government financially supports all three subnational ports. Beyond questions of ownership, local authorities generally participate in some form of representation in port authorities’ decision-making bodies. They are typically involved in appointing port presidents and board members, approving budgets and defining long-term strategy. In many ports, non-governmental stakeholders such as port users or chambers of commerce are also included in the decision-making bodies of port authorities (ITF, 2017[3]).

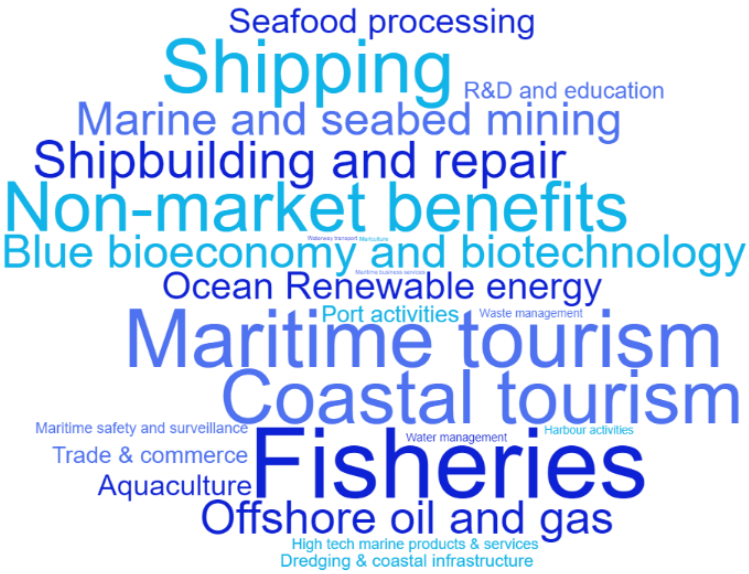
Publicly owned companies and agencies manage natural resources related to the blue economy. With the objective of ensuring food security, national governments tend to play an important role in managing fisheries. In Portugal, the state-owned company Docapesca, under the supervision of the Ministry of Agriculture and Food, is responsible for providing the public service of first sale of fish and for supporting the fisheries sector and its ports. In Mauritania, the National Fish Distribution Company (SNDP), supervised by the Ministry of Fisheries and Maritime Economy and the Ministry of Finance, aims to take advantage of the country’s fishery resources and combat malnutrition by distributing subsidised fish (up to 82% of the price) to the most remote regions of the country. National governments can also lead modernisation efforts for fishing fleets through publicly owned shipbuilding companies, such as Shipyards of Mauritania (*Chantiers Navals de Mauritanie*) or the ship repair infrastructure company (SIRN) of Senegal.

Blue economy strategies across levels of government

National blue economy strategies

A growing number of national governments have defined long-term visions for the blue economy as part of dedicated blue economy strategies, sectoral blue economy strategies or other strategies that include the blue economy. Out of the 41 countries represented in the OECD survey, 21 have developed or are preparing a dedicated strategy, policy, plan, roadmap, programme or law on the blue economy (Table 2.1). The most prominently featured sectors include fisheries, shipping and tourism and, in some cases, they refer to non-market benefits of the blue economy, such as carbon sequestration and coastal resilience (Figure 2.1). The timeframe of strategies varies, from 5 years in the United States to 22 years in Indonesia, with regular updates in some cases (e.g. every 5 years in Japan or 6 years in France). In some cases, blue economy strategies are given statutory status as part of laws on maritime policy (e.g. France and Japan) or enacted by regulatory decrees (e.g. Brazil, Panama and Peru). For example, in Japan, the Basic Act on Ocean Policy (Act No. 33 of 2007), enacted in July 2007, has led to the approval of the First Basic Plan on Ocean Policy (2008) as well as the two subsequent iterations (2013 and 2018). Sector-specific strategies may refer, for example, to fisheries (Kenya Fisheries Strategic Plan, 2023-2027), energy (US Powering the Blue Economy strategy, 2019) or shipping (Canada's National Shipbuilding Procurement Strategy, 2010). The blue economy can also be part of broader national strategies. For instance, China's 14th Five-Year Plan for National Economic and Social Development 2021-2025 promotes a sustainable marine economy and active global marine governance through a "blue partnership" with other coastal countries.

Figure 2.1. Blue economy sectors and non-market benefits included in national strategies



Note: This word cloud is based on the blue economy sectors and non-market benefits listed in the 21 national blue economy strategies analysed. The more frequently a word appears in the strategies, the larger it is in the visualisation. "Fisheries" is the most prevalent sector across the strategies (mentioned in 17 strategies), followed by maritime tourism (14) and coastal tourism (13).

Over the past few years, the international community has increasingly recognised the need for a sustainable blue economy, protecting and conserving coastal and marine ecosystems. As a result, a series of guiding principles for a sustainable blue economy, statements of intent or declarations and international treaties have been developed (Box 2.1).

Box 2.1. International principles, declarations and statements relative to the blue economy

Guiding principles

- The United Nations (UN) Sustainable Development Goal (SDG) 14 on Life below water (2015-30) to conserve and sustainably use the oceans, seas and marine resources (UN, 2015[4]).
- The United Nations Environment Programme Finance Initiative (UNEP-FI) Sustainable Blue Economy Finance Principles (2018[5]) to guide responsible investment in the blue economy.
- The Association of Southeast Asian Nations (ASEAN) Blue Economy Framework (2023[6]) to create value-added and a value chain of resources from oceans, seas and freshwater.
- The Chennai High-Level Principles on Sustainable and Resilient Blue/Ocean-based Economy (2023[7]), adopted by members of the Group of 20 (G20), which address marine pollution and biodiversity loss.

Statements of intent or declarations

- The Jakarta Declaration on Blue Economy (2017[8]) to harness oceans and maritime resources to drive economic growth, job creation and innovation.
- The Nairobi Statement of Intent on Advancing the Global Sustainable Blue Economy (2018[9]) to advance the principles of a sustainable blue economy on a global scale.
- The 'Blue' COP25 Declaration on Ocean and Climate (2019[10]), which recognises the ocean as a fundamental part of the climate system.
- The ASEAN Leaders' Declaration on the Blue Economy (2021[11]) to promote sustainable and inclusive economic growth in the maritime and marine sectors.
- The Union for the Mediterranean (UfM) Ministerial Declaration on Sustainable Blue Economy (2021[12]), which serves as a catalyst for the development of sustainable blue economy projects in the Mediterranean.
- The Communication on a New Approach for a Sustainable Blue Economy in the European Union (2021[13]) to facilitate the transition to a sustainable blue economy in the union and set measures to strengthen ocean protection.
- The COP28 Dubai Ocean Declaration (2023[14]), which calls on world leaders to intensify efforts in enhancing global ocean observations for improved understanding of natural and anthropogenic changes as well as for better planning of climate mitigation and adaptation strategies.

International treaties

- The ongoing meetings of the Intergovernmental Negotiating Committee, established to develop an international legally binding instrument on plastic pollution, including in the marine environment, under the auspices of the United Nations (2022-24) (UNEP, 2023[15]).
- The Treaty on the High Seas (2023[16]) adopted by the UN General Assembly's Intergovernmental Conference on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, also known as the BBNJ treaty.

Source: Based on box citations.

Table 2.1. Overview of national blue economy strategies

Country	Name	Year	Lead institution(s)	Objective(s)
Brazil	Brazil's National Maritime Policy and Decree No. 1.265 of 11 October 1994	1994 2021 (update)	Presidency of the Brazilian Republic	Guide the development of the country's maritime activities in an integrated way while achieving an effective, rational and full use of the sea and inland waterways.
Cambodia	Building a Blue Economy Roadmap for Cambodia	2023	Royal Government of Cambodia and World Bank	Support the transition towards a sustainable blue economy in which marine and coastal ecosystems are safeguarded while providing economic growth, improved livelihoods and jobs to coastal communities.
Canada	Engaging on Canada's Blue Economy Strategy (engagement report)	2022	Ministry of Fisheries, Oceans and the Canadian Coast Guard	Enable the country to grow its ocean economy in order to create jobs and opportunities for coastal communities while advancing conservation objectives. This report will guide the development of the final blue economy strategy.
Colombia	Colombia Sustainable Bio-Oceanic Power 2030	2020	National Planning Department and Colombian Ocean Commission	Position Colombia as a "bio-oceanic power" by 2030 through the integral and sustainable use of its strategic location, oceanic conditions and natural resources to contribute to the country's growth and sustainable development.
Finland	Finland's Strategy for the Baltic Sea Region	2017	Prime Minister's Office	Promote the Baltic Sea's good environmental status, safety and security and sustainable development, improve its competitiveness and ensure the country's prosperity.
France	National Strategy for the Sea and Coast 2030 and Law no. 2016-816 of 20 June 2016 for the Blue Economy	2017 2023 (update)	Ministry of Ecological Transition and Solidarity and Ministry of the Sea	Ensure the resilience of maritime and coastal territories and ecosystems, foster the well-being of maritime and coastal actors, support the competitiveness of the blue economy and provide means for achieving carbon neutrality by 2050.
Indonesia	Indonesia Blue Economy Roadmap 2023-2045	2023	Ministry of National Development Planning and National Development Planning Agency	Enhance the welfare of people in coastal areas and small islands, promote competitive marine economic and industrial growth, and protect the marine environment.
Japan	Third Basic Plan on Ocean Policy and the Basic Act on Ocean Policy (Act no. 33 of 2007)	2008 2013 2018 (update)	National Ocean Policy Secretariat	Fulfil the country's national interests by managing oceans comprehensively, promoting environmental protection and pursuing sustainable development through improved ocean science, technology and knowledge.
Mauritius	The Ocean Economy in Mauritius (study)	2017	Ministry of Blue Economy, Marine Resources, Fisheries and Shipping and World Bank	Assess the ocean economy's potential for the country's development and identify key challenges to ensure long-term sustainability, with a focus on environmental and climate change issues. This study is supporting the development of an ocean economy strategy.
Morocco	Blue Economy Program for Results (*Programme pour les résultats de l'économie bleue*)	2022	Ministry of Economy and Finance	Strengthen the country's institutional and financial framework for the sustainable development of coastal and marine activities. This programme is supporting the development of a national blue economy strategy.
Netherlands	Dutch Maritime Strategy 2015-2025	2015	Ministry of Infrastructure and Water Management	Position the country as an international leading sustainable maritime economy, achieved through co-operation between the national government and the maritime cluster, grounded in a mutually shared maritime strategy.
Norway	Blue Opportunities: The Norwegian Government's updated ocean strategy	2019	Ministry of Trade, Industry and Fisheries	Strengthen the country's maritime sector on the global stage by ensuring the international transport of raw materials and goods and securing access to maritime infrastructure.

Country	Name	Year	Lead institution(s)	Objective(s)
Panama	National Oceans Policy, Strategy and National Action Plan and Executive Decree no. 27 of 15 May 2022	2022	Ministry of Foreign Affairs and National Oceans Policy Commission	Serve national interests by promoting the peaceful use of oceans, co-ordinating multisectoral activities to benefit the population while ensuring the well-being and conservation of the marine environment.
Peru	Peru's National Maritime Policy 2019-2030 and Supreme Decree no. 012-2019-DE	2019	Multisectoral Commission for State Action in the Maritime Sphere	Establish a framework that can guide the planning of maritime activities in a sustainable manner for social and economic development.
Philippines	Philippine Maritime Strategy 2020-2024	2020	Philippine Maritime Administration	Establish the country as a leading maritime nation, prioritising maritime safety and preservation of the marine environment.
Portugal	National Strategy for the Sea 2021-2030 (*Estratégia Nacional para o Mar 2021-2030)*	2021	Ministry of the Sea	Boost the maritime contribution to Portugal's economy, prosperity and well-being, addressing challenges of the decade and strengthening its position as a maritime nation.
Seychelles	Seychelles Blue Economy Strategic Framework and Roadmap (2018-2030)	2018	Government of the Seychelles	Foster a blue economy by unlocking the nation's development potential through innovation and knowledge while safeguarding the marine environment and heritage for future generations.
South Africa	Operation Phakisa: Oceans Economy Programme	2014	Government of South Africa	Develop a comprehensive ocean governance framework for sustainable growth of the ocean economy to maximise socio-economic benefits while ensuring adequate ocean environmental protection.
Tunisia	The Blue Economy in Tunisia: Strategic framework (*L'économie bleue en Tunisie : Éléments de cadrage stratégique*)	2023	Ministry of Environment, General Secretariat for Maritime Affairs and World Bank	Promote economic growth in maritime activities, ensuring social inclusion, gender equality and the creation of jobs while preserving and improving livelihoods as well as the sustainability of natural resources and ecosystem services. This report constitutes the first phase of the establishment of a national blue economy strategy.
United Kingdom	Maritime 2050: Navigating the Future	2019	Department for Transport	Set a comprehensive framework for the long-term development of the country's maritime economy, considering economic, social and environmental aspects.
United States	Blue Economy Strategic Plan	2021	National Oceanic and Atmospheric Administration	Foster the growth and sustainability of the blue economy, enhance data, services and technological resources on the blue economy and grow blue sectors to accelerate the economic recovery.

Note: Out of the 21 strategies under consideration, 17 have already been published and 4 are currently under preparation (Canada, Mauritius, Morocco, Tunisia). For the strategies in preparation, official reports, studies or papers have been selected to document the ongoing process.
Source: OECD (2023[17]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris and desk research.

Lead institutions

A range of government institutions define blue economy strategies but ministries of economy and of the sea often play a leading role. In Portugal, the Ministry of Economy and Sea leads the National Strategy for the Sea (2021-2030); in France, the Ministry of the Sea is the lead institution for the National Strategy for the Sea and Coast. In Morocco, the Ministry of Economy and Finance leads blue economy policy in collaboration with other ministries such as the Ministry of Equipment and Water; the Ministry of Agriculture, Maritime Fisheries, Rural Development and Water and Forests; the Ministry of Energy Transition and Sustainable Development; the Ministry of Tourism, Handcrafts and Social Economy; and the Ministry of Equipment and Water.

In some cases, ministries collaborate through designated co-ordination bodies. For instance, in Portugal, the Ministry of the Sea works with the inter-ministerial Committee for Ocean Affairs to ensure adequate monitoring of cross-cutting policies and to supervise the implementation of the National Strategy for the Sea. France's Interministerial Committee for the Sea (*Comité interministériel de la mer*, CIMer) regularly convenes ministries with a stake in maritime affairs, under the chairmanship of the prime minister; more broadly, the national Green Economy Committee (*Comité pour l'économie verte*) gathers authorities and stakeholders concerned by energy, circular economy, water and biodiversity to provide recommendations on economic, budgetary and regulatory instruments can encourage the preservation of marine ecosystems, prevent coastal risks and support the development of maritime activities.

Objectives

National blue economy strategies typically strive to achieve three core objectives:

1. **Promote blue economic growth**. For instance, South Africa aims to grow blue economy gross domestic product (GDP) by 350% by 2030, as compared to 2010, and Indonesia aims for the blue economy to contribute to 12.45% of national GDP by 2045 compared to 6.4% in 2015. Finland's Strategy for the Baltic Sea Region aims to achieve sustainable economic growth by tapping into seas and internal waters and their natural resources. It relies on the private sector for maritime industry success and the public sector for establishing an enabling environment for their business activities.
2. **Reduce pollution and foster environmental conservation and resilience**. For example, Portugal aims to install 370 megawatts of offshore wind and wave energy capacity by 2030 to reduce greenhouse gas (GHG) emissions by 55% and 90% respectively, compared to 2005 levels. Similarly, Panama seeks to curb emissions in blue sectors to reach a 40% decrease in GHG emissions by 2030 and carbon neutrality by 2050 (baseline 2017). The US Blue Economy Strategic Plan aims to assess, restore and protect coral reef systems. It also aims to enhance the resilience of coastal and Great Lakes communities by using data to inform the marine economy and recovery efforts after storms, for instance, through the creation of a database for coastal wind and water events.
3. **Foster blue innovation and skills by creating spaces for collaboration, education and research**. For instance, the UK maritime strategy aims for the country's maritime schools, colleges and universities to continue providing high-quality programmes and qualifications to enable the advanced technological maritime skills required in the future. Colombia promotes marine training and research by fostering academic programmes, scientific publications and comprehensive vocational training for seafarers. Portugal strives to increase blue jobs by 30% by 2030 and South Africa to generate over 1 million new jobs, while Japan aims to provide marine education in all its municipalities by 2025 through the Nippon Platform for Marine Education.

Implementation

Half of the strategies analysed have defined governance measures (11 out of 21). These measures relate to capacity building (e.g. training seafarers for shipping in Japan), government co-ordination (e.g. inter-institutional meetings to develop an action plan for the control, surveillance and prevention of coastal and marine pollution in Panama), financing and investment (e.g. as specified under the 2024 Finance Act, France plans to mobilise EUR 2.6 billion in its maritime policy by paying special attention to retirement and social security for seafarers as well as maritime security, while Indonesia plans to invest in offshore energy transmission infrastructure and smart grid technologies to integrate ocean-based renewable energy into national energy grids), research and innovation (e.g. Colombia leverages scientific expeditions to enhance knowledge of oceans), education and awareness raising (e.g. Portugal has prioritised ocean literacy through its Blue School programme, which rewards and guides schools working

on ocean literacy), partnerships (e.g. Indonesia develops “fair and feasible” partnerships between small-scale fishers and medium-large businesses, while Colombia promotes conservation and sustainable use of marine resources through the Eastern Tropical Pacific Marine Corridor regional initiative), and data and monitoring (e.g. the United States aims to curate a database of microplastics to monitor the effects of microplastics on the ocean, recreation and fisheries).

National blue economy strategies use a range of stakeholder engagement mechanisms, especially in the design phase. Stakeholders were mobilised via consultative meetings (e.g. Morocco), public consultations (e.g. Portugal), focus group discussions (e.g. Indonesia), working groups (e.g. United Kingdom) and cross-sectoral workshops (e.g. Cambodia) to develop a shared vision of the blue economy, understand needs, set priorities and lines of action, identify solutions and alternatives and define roles and responsibilities. Some processes, notably in Canada and the United States, paid particular attention to including traditionally unheard voices, such as Indigenous peoples and women.

National governments fund most strategies but some mobilise international loans (e.g. from the World Bank), supra-national funds (e.g. from the European Union) and sustainability financing (e.g. bonds). For example, Indonesia issued its first blue bond in 7-year and 10-year tenures for a total of JPY 20.7 billion on the Japanese bond market in 2023. Strategies mobilise an array of economic instruments, such as investments in strategic sectors (e.g. the Portuguese Ministry of the Sea invested EUR 78 million in 2013-20 in ocean research, technological development and innovation, and the state-owned Enova company in Norway invested NOK 3 billion in green shipping in 2020), grants (e.g. to co-operative fishery societies in Mauritius and for marine aquaculture in the United States) and fiscal instruments (e.g. tax deductions for ocean industries under the SkatteFUNN tax incentive scheme in Norway and the Research and Development Allowance and tax credits in the Netherlands to foster innovation in the maritime cluster). Out of the 21 strategies reviewed, only 4 define a budget for implementation. For instance, Panama expects to finance the implementation of the “blue economy and logistics” objective of its strategy (USD 1.1 billion for the period 2021-30) through contributions from each involved institution (institutional budget), along with funding from multilateral development agencies.

The majority of strategies (12 out of 21) have or plan to have a monitoring framework to track progress. For instance, the monitoring framework defined by Panama’s Commission for the Formulation, Development and Monitoring of the National Ocean Policy specifies an overall objective, a performance indicator (e.g. number of workshops conducted) or an impact indicator (e.g. number of incubators and accelerators created), the frequency of monitoring, the baseline and the remediation measure in case the target is not met for each of its 114 measures, to ensure transparency and accountability. The Seychelles plans to establish a monitoring and evaluation framework that leverages global indicators, including SDG ones, and to carry out a mid-term review to adapt measures.

Subnational blue economy strategies

Compared to the national level, subnational blue economy strategies and policies are still emerging. The OECD survey reveals that 7 of the 81 survey respondents have adopted a formal strategy or policy on the blue economy (Table 2.2). Five of the seven strategies are at the regional level (Nouvelle-Aquitaine, [France]; Canary Islands and Catalonia [Spain]; Scotland, [United Kingdom]; Washington, [United States]), with the remaining two at the city level (Barcelona and Vigo [Spain]). Nevertheless, the blue economy can also form part of broader economic and environmental strategies at the subnational level. For instance, innovation in the blue economy is one of the pillars of the Smart Specialisation Strategy of the region of the Canary Islands, Spain. In the United States, the Los Angeles Sustainability Plan, known as L.A.’s Green New Deal, aims to expand the use of shore power and other emissions-capturing technologies to 100% of ships by 2028 as part of a suite of emission reduction measures for ocean-based transport. The Regional Climate, Air and Energy Plan (*Schéma régional climat air énergie*, SRCAE) of the Sud region in France outlines a range of measures for the sustainable development of ports and fisheries in the region.

Table 2.2. Regional and local blue economy strategies

Country	City or region	Name	Year	Lead institution(s)	Objectives
France	Region of Nouvelle-Aquitaine	**Sharing the Ocean Ambition. Future Strategy for the Region** (*Partageons l'ambition océan. Stratégie d'avenir pour la Nouvelle-Aquitaine*)	2019	Nouvelle-Aquitaine Regional Council	Make the region a key national and international maritime player while ensuring the sustainable development of its maritime activities. The strategy has seven lines of action: improving knowledge of marine ecosystems; promoting territorial balance; enabling the sustainable use of resources and preserving biodiversity; securing the management of ocean commons; supporting maritime economic attractiveness; and enhancing innovation (biomimicry).
Spain	Region of Catalonia	**2030 Maritime Strategy of Catalonia** (*Estratègia marítima de Catalunya 2030*)	2018	Government of Catalonia and Catalan Maritime Co-management Council	Support the integrated development of economic activities that take place in Catalonia's maritime space to achieve the sustainable and robust development of the blue economy by 2030. The strategy has four areas of action: the sustainable development of the blue economy; the resilience of marine ecosystems; improving well-being; and promoting innovative governance.
	Region of the Canary Islands	**Canary Islands Blue Economy Strategy 2021-2030** (*Estrategia Canaria de Economía Azul 2021-2030*)	2021	Economic-Administrative Board of the Canary Islands and Vice-Ministry of Economy and Internationalisation	Improve the competitiveness and sustainability of the marine environment, its resources and activities. The strategy builds on six strategic pillars: governance; research and development (R&D); training and qualification; marine ecosystems and climate change; competitiveness; and marine heritage.
	City of Barcelona	**Government measure. Boosting the Blue Economy in Barcelona** (*Medida de gobierno. Impulso de la Economía Azul en Barcelona*)	2021	Barcelona City Council and Barcelona Activa	Boost the blue economy in Barcelona, fostering socially responsible development aligned with the Green Deal and the 2030 Agenda. Eight lines of action including concrete projects are set out: the creation of a blue economy hub; linking the blue economy with the city; employment and training; preservation of the local marine ecosystem; innovation; local and international promotion; development of sectors, and public-private governance.
	City of Vigo	**Blue Growth Plan Port of Vigo 2021-2027** (*Plan Blue Growth del Puerto de Vigo 2021-2027*)	2021	Port Authority of Vigo	Promote competitiveness, efficiency and sustainability in all maritime and coastal activities, facilities and services of the Port of Vigo by 2027. The strategy has four objectives: connectivity, innovation, green development and inclusiveness.
United Kingdom	Scotland	**A Blue Economy Vision for Scotland** (Complemented by Delivering Scotland's Blue Economy Approach)	2022	Scottish Government and Marine Scotland Directorate	Achieve shared stewardship of Scotland's marine environment by 2045, to support ecosystem health, improved livelihoods, economic prosperity, social inclusion and well-being. The strategy defines four areas of focus: a natural capital approach to decision making; infrastructure development (ports and harbours); data and decarbonisation in the blue economy; and future skills and lifelong learning.
United States	Washington	**Washington Maritime Blue Strategy**	2022	Washington State Department of Commerce and Maritime Innovation Advisory Council	Position Washington as the hub of a globally competitive, flourishing and environmentally sustainable maritime industry by 2050. To this end, the strategy sets five strategic goals: deep decarbonisation; blue innovation; working waterfronts; workforce development; and cluster co-ordination.

Source: OECD (2023[17]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris and desk research.

Subnational blue economy strategies consider freshwater and water security to varying degrees. Some (e.g. Catalonia [Spain] and Scotland [United Kingdom]) include freshwater fisheries and recreational fishing. Water-related risks are mentioned in some strategies, such as water shortages in the Canary Islands, Spain, sea-level rise in Catalonia, Spain, and plastic pollution in Washington, United States. Other strategies recognise the importance of water security for a healthy ocean and blue economy. For example, Scotland, United Kingdom, acknowledges the interconnectedness of freshwater, coastal and marine ecosystems, while Barcelona, Spain, emphasises the relation between marine and aquatic ecosystems and economic activities.

Subnational strategies widely differ in terms of sectors covered (Table 2.3). They consider a mix of traditional and emerging sectors, with the most represented being seafood, shipbuilding and repair, blue bioeconomy, biotechnology, research and education. A number of different sectors are considered, from 25 in Scotland, United Kingdom, to 6 in Vigo, Spain, and Washington, United States). Three out of seven strategies consider non-market benefits such as carbon sequestration (e.g. Scotland [United Kingdom]) or history and culture (Vigo [Spain]).

Table 2.3. Sectoral coverage of national and subnational blue economy strategies

Blue economy sectors and supporting activities	National			Subnational						
	FR	UK	US	NA	CA	CI	BA	VI	SC	WA
OECD survey sectors considered across blue economy strategies										
Seafood	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Shipping	✓	✓	✓	✓		✓	✓	✓	✓	✓
Water passenger transport and related services	✓		✓	✓		✓	✓	✓	✓	✓
Port activities	✓	✓	✓	✓		✓	✓	✓	✓	✓
Shipbuilding and repair	✓	✓		✓	✓	✓	✓	✓	✓	✓
Water-related tourism	✓	✓	✓	✓	✓	✓	✓	✓		
Renewable energy	✓	✓	✓	✓	✓		✓	✓	✓	✓
Bioeconomy and biotechnology	✓		✓	✓	✓	✓	✓	✓	✓	
Research and education	✓	✓	✓		✓	✓	✓	✓	✓	✓
Other sectors considered across blue economy strategies										
Offshore oil and gas (shallow water)	✓	✓		✓		✓			✓	
Marine business and support services									✓	✓
Dredging		✓							✓	
Marine and seabed mining	✓	✓	✓	✓		✓				
Maritime safety, surveillance and security		✓		✓						
Freshwater fisheries									✓	
Desalination and salt extraction						✓				
Water treatment and abstraction							✓			
Waste disposal		✓								
Non-market benefits considered across blue economy strategies										
Carbon sequestration	✓								✓	
History and culture							✓	✓		
Social attitudes to the sea									✓	
Health and well-being									✓	
Production of oxygen									✓	
Marine protected areas	✓	✓							✓	
Sustainable food									✓	

Note: This table includes three national strategies France (FR), United Kingdom (UK), United States (US), five regional strategies Nouvelle-Aquitaine (NA), Catalonia (CA), Canary Islands (CI), Scotland (SC) and Washington (WA) and two city-level strategies Barcelona (BA) and Vigo (VI).

Source: OECD (2023[17]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris and desk research.

Lead institutions

No single subnational authority is in charge of the development, implementation and monitoring of blue economy strategies. Subnational government departments for economic development, innovation and maritime affairs tend to be in the lead, but they use a range of governance models to implement blue economy strategies. Three main models emerge:

- **Cross-government model**: This model involves multiple groups, committees or organisations responsible for different aspects of a strategy. For instance, the strategy of the Canary Islands, Spain, is governed by a steering group, an advisory group, a management group and six working groups related to the six pillars of the strategy. The management group, led by the Vice-Ministry of Economy and Internationalisation, and responsible for developing and monitoring the strategy, co-ordinating the work plan and providing the steering group with information and proposals for its evaluation, is composed of regional departments related to sustainable development, education, employment, energy, European funds, industry, R&D, the environment, maritime spatial planning, fisheries and aquaculture, ports, transport and tourism. The strategy of Scotland, United Kingdom, led by the Marine Directorate is co-ordinated by eight other directorates on agriculture and rural economy, early learning and childcare, economic development, energy and climate change, environment and forestry, equality, inclusion and human rights, the EU and external affairs. These directorates oversee the progress made on the 35 activities and 6 outcomes set out by the strategy. The Maritime Innovation Advisory Council of Washington, United States, oversees the implementation of the strategy with the support of the Department of Commerce. Barcelona, Spain, plans to have a Municipal Executive Committee on the Blue Economy formed by departments with a stake in the strategy.
- **Multi-stakeholder model**: Catalonia, Spain, made the Catalan Maritime Co-management Council responsible for validating, monitoring and adapting its maritime strategy, further supported by the Fisheries Local Action Groups, the creation of the Laboratory of Sustainable Maritime Initiatives and the consolidation of a territorial management model for the coast of El Baix Emporda.
- **Public-private partnerships**: Barcelona, Spain, relies on the Blue Economy Table, a public-private governance entity representing key blue economy players in the city, to co-design the strategy and drive its implementation through consultations, debates and new proposals.

Objectives

While being place-based and related to the local economy, subnational blue economy strategies also align with three sets of objectives that are similar to those set out in national blue economy strategies:

1. **Promote blue economic growth**: For example, Nouvelle-Aquitaine, France, aims to boost existing maritime, coastal and port activities as well as new ones to promote the attractiveness and sustainable development of the region, while Washington, United States, aims to build a strong business climate and attract investment to support the sustainable economic growth of the maritime sector. The city of Vigo, Spain, strives to become a "green port city" growing in a sustainable and competitive manner by 2027.
2. **Protect freshwater, coastal and marine ecosystems**: For instance, Barcelona, Spain, recognises that increased marine resource exploitation and land-based activities have led to a 50% reduction in marine biodiversity and, as such, aims to maintain the excellence of the bathing waters at more than 98% during the high tourist season as well as a good ecological status of reef parks. Catalonia, Spain, aims to achieve a 100% renewable energy system by harnessing the power of

deep-water offshore wind energy, while Barcelona, Spain, aims to halve its CO_2 emissions by 2030 compared to 2017. Many strategies consider emission reduction measures for shipping and port activities (e.g. Canary Islands, Catalonia, Vigo [Spain], Washington [United States]), while only one considers waste management measures (e.g. Canary Islands [Spain]). Scotland, United Kingdom, aims to designate at least 10% of its sea area as a Highly Protected Marine Area by 2026 and ensure that 81% of its waterbodies achieve at least a "good" classification by 2027.

3. **Foster blue innovation and skills**: For example, Barcelona, Spain, has a reskilling programme to help workers acquire the knowledge and competencies needed across blue economy sectors based on a prior assessment of needs, while Catalonia, Spain, aims to assess the needs for qualified jobs in the maritime sector to facilitate training for these professions. Through its strategy, Vigo, Spain, aims to create 14 000 new jobs, train 3 000 people in "blue skills" and implement 25 social innovation actions (e.g. roundtables with vulnerable groups) by 2027.

Implementation

Subnational strategies foresee several governance measures. Examples include capacity building (e.g. Washington [United States] aims to increase maritime-specific training, education and workforce development, including expansion of registered apprenticeships and youth programmes, while the Canary Islands [Spain] seek to develop training and technological specialisations on blue biotechnology and marine renewable energy), awareness raising (e.g. Scotland [United Kingdom] supported Argyll University in designing an aquaculture pilot programme for secondary school pupils to raise the attractiveness of "blue careers", while Catalonia [Spain] aims to promote education on the marine environment in all stages of compulsory education), partnerships (e.g. Washington [United States] aims to develop regional partnerships that promote competitiveness and reduce environmental impact) and data and monitoring (e.g. the Canary Islands [Spain] have a blue economy observatory that systematises the collection of data to support decision making in the framework of the strategy).

Innovation networks are a key feature of all subnational strategies (see "Innovation networks" in the next section). Through the creation of clusters, hubs and accelerators, subnational governments seek to facilitate connections between businesses and knowledge institutions to boost sustainable blue economy growth. Six of the seven blue economy strategies leverage existing blue economy clusters (e.g. Maritime Cluster of the Canary Islands [Spain], the *Clúster Nàutic* of Barcelona [Spain]), or aim to create new ones (e.g. the Blue Growth Cluster of Nouvelle Aquitaine [France], the Maritime Cluster of Catalonia [Spain], Washington Maritime Blue [United States]) to promote either innovation, specialisation or knowledge enhancement by creating a business environment conducive to synergies. Other measures include the blue economy entrepreneurship programme of Barcelona, Spain; supporting the Blue Economy Cluster Builder for small and medium-sized enterprises in Scotland, United Kingdom; and the Blue Accelerator programme in the Canary Islands, Spain, which supports start-ups in the blue economy with technical assistance, networking, training and financing.

Most strategies (six out of seven) involved some degree of stakeholder engagement during the design or implementation phase. In the design phase, Barcelona, Spain, consulted more than 70 actors to assess the state of play of the blue economy in the city, while the Canary Islands, Spain, held an open consultation process (including on line) with working groups (including economic and social agents, universities, research centres and the rest of the public administration) to improve the internal coherence of the strategy and build synergies across sectors. Similarly, the strategy of Washington, United States, was elaborated through collaboration with industry, government, Indigenous peoples, research universities and non-governmental organisations (NGOs). Other strategies have or aim fto facilitate stakeholder engagement during the implementation phase. For example, since the publication of its Blue Economy Vision, Scotland, United Kingdom, has delivered virtual information sessions, four workshops on blue economy delivery mechanisms, a blue economy survey and four engagement events. Catalonia, Spain, aims to establish

and implement a work plan for maritime spatial planning with stakeholders within the Catalan Maritime Co-management Council.

Strategies either define a budget for implementation or specify funding sources. In the first case, Barcelona, Spain, projects a EUR 40.5 million investment from 2020 to 2025 for the execution of its 43 strategic actions, while Vigo, Spain, outlines a budget of EUR 293 million over the 2021-27 period for the implementation of the 44 measures and 47 projects set out in its strategy. The Canary Islands, Spain, foresee a combination of EU and regional funding to implement the 61 proposed measures, while the strategy of Washington, United States, is funded exclusively by the federal Department of Commerce. Scotland, United Kingdom, aims to achieve its Blue Economy Vision by mobilising grant funding from the Marine Fund Scotland and benefitting from the planned GBP 580 million investment by the government of Scotland, United Kingdom, in vessels and ports as part of its Infrastructure Investment Plan, among other funding sources.

Two of the seven strategies considered have defined indicators to track progress on implementation. The Canary Islands, Spain, defines outcome indicators for its 6 strategic pillars as well as 40 general outcome indicators aligned with each of the 17 SDGs (e.g. gross value added [GVA] of the blue economy, number of blue economy businesses, weight of waste collected from beach, coastline and seabed clean-up campaigns, for SDGs 8, 9 and 13 respectively). The strategy of the city of Vigo, Spain, includes indicators for each of its 4 main objectives as well as the targets to be achieved by 2027 (e.g. 40% of public investment mobilised in innovative projects, 30% reduction of energy consumption in port facilities and 14 000 new jobs created by 2027 for the innovative, green, connected and inclusive goals respectively) and maintains an online platform providing real-time updates on the progress toward these targets.

The enabling environment for the blue economy at the subnational level

Beyond defining formal blue economy strategies, national and subnational governments use a range of tools to foster sustainable blue economies. The results of the OECD survey, complemented with desk research, shed light on the main instruments used across levels of government, notably relating to capacity building and awareness raising, data and information, planning tools, economic and environmental regulation and incentives, funding and financing instruments and innovation networks.

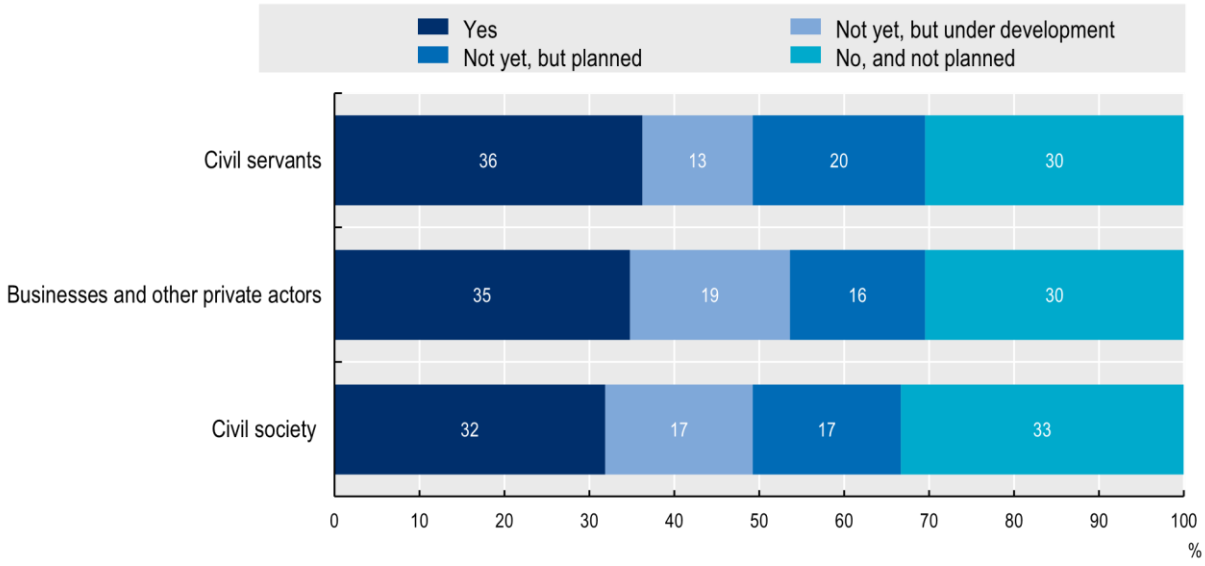
Capacity building and awareness raising

Over one-third of OECD survey respondents directly support capacity-building initiatives on the blue economy for civil servants (36%), businesses and other private sector players (35%) and civil society (32%) (Figure 2.2).

Government-led capacity-building activities for civil society tend to target people who are unemployed or looking to reskill in the blue economy and local communities in a broad sense. At the national level, Spain's *Empleaverde* programme aims to boost employment and entrepreneurship in the blue and green economy by connecting labour and environmental policies, with a focus on bringing currently unemployed people to the labour market; in Portugal, the Blue School (*Escola Azul*) is an educational programme led by the Ministry of the Economy and Maritime Affairs aiming to improve ocean literacy in schools. It distinguishes and guides schools that work on ocean literacy and creates a community of schools, businesses, municipalities and NGOs related to the blue economy. Given their proximity to citizens, subnational governments are well-placed to raise awareness of the blue economy and water security issues. In this sense, the region of the Basque Country in Spain co-finances Blue Point, a centre that raises awareness on plastic pollution in waterbodies and builds capacity for entrepreneurs related to marine plastic, as well as the "house of the sea" (*Kofradia-Itsas Etxea*), a knowledge centre on local fisheries aiming to promote fishing in the region by providing information and techniques on fishing in the Bay of Biscay. The French

Sud region has several awareness-raising initiatives targeting different groups and objectives, such as secondary school students on blue economy jobs (Calypso programme), sailors on reducing their environmental impact (*Écogestes méditerranée* programme) and beachgoers and holidaymakers on protecting the marine environment (*Inf'eaumer* and Eco Attitude programmes).

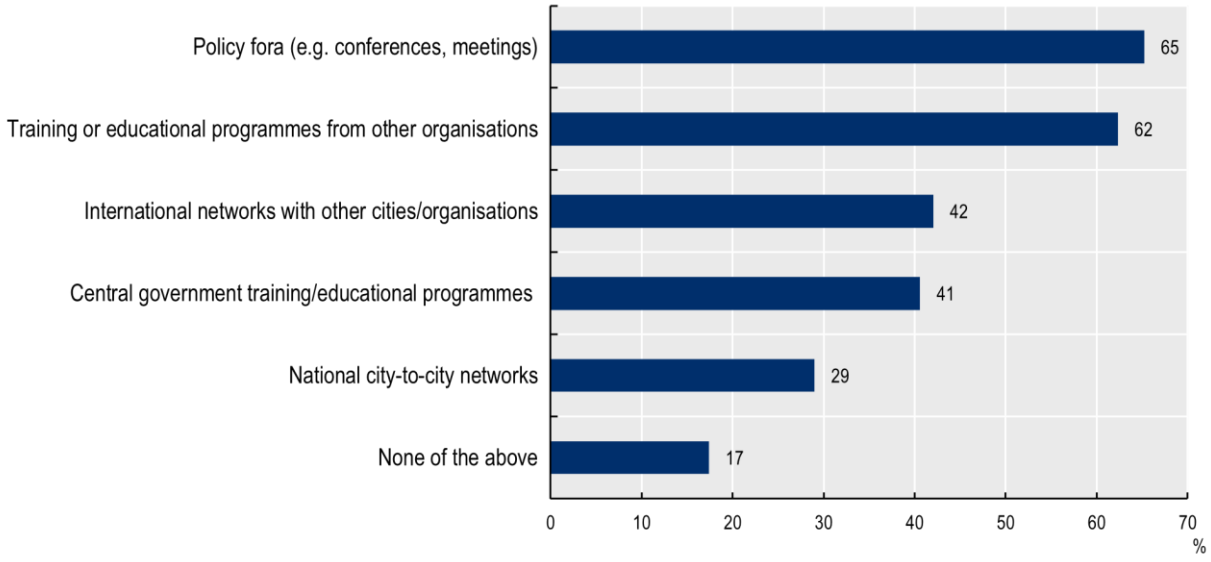
Figure 2.2. Capacity-building initiatives on the blue economy across survey respondents



Note: Based on 69 responses to question: "2.4.2. Does your city/region directly support capacity-building programmes for blue economy actors with a view to enhancing the resilience, inclusiveness, sustainability and/or circularity of blue economy sectors?". Survey respondents were invited to select one of the following options: "yes", "not yet, but under development", "not yet, but planned" or "no, and not planned".
Source: OECD (2023[17]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

National and subnational governments also contribute to building civil servants' capacity in the blue economy. For instance, in Colombia, the National Planning Department has developed a diagnosis tool to support the blue economy, set up an information system and carried out 32 workshops to share information and build capacities among coastal municipalities. The Nouvelle-Aquitaine region, France, supports local authority capacity building for preventing and valuing waste. The OECD survey highlights that around two-thirds of respondents report taking part in at least one form of capacity-building activity related to the blue economy (Figure 2.3), such as international networks and city-to-city partnerships. For example, the city of Puerto Montt, Chile, collaborates with the city of Piraeus, Greece, through the International Urban Regional Co-operation to exchange knowledge and good practices around nature-based solutions, the development of integral urban strategies around the blue economy and the development of marine-related conservation technologies through private sector and academia collaboration.

Figure 2.3. Subnational government participation in capacity-building activities



Note: Based on 69 responses to the question: "2.4.1. Does your city/region take part in capacity-building programmes on the blue economy or blue economy sectors related to enhancing their resilience, inclusiveness, sustainability and/or circularity?". Survey respondents were invited to select one of the following options: "yes" or "no".
Source: OECD (2023[17]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

Governments also support capacity building for businesses and entrepreneurs. For instance, the region of Western Cape and the city of Cape Town in South Africa are founding partners of the BlueCape initiative that aims to develop marine manufacturing (e.g. boats and related equipment, equipment for marinas and harbours), superyachts and ocean sports in the Western Cape region by supporting skills development, networking and events, as well as sharing market intelligence, providing policy and regulatory advocacy and support, facilitating market access. In the city of New Orleans, United States, the Office of Workforce Development works with businesses and higher education institutions to ensure that education programmes (e.g. Naval Architecture and Marine Engineering programme at the University of New Orleans) are tailored to the needs of the local blue economy. At the national level, the government of Kenya supports entrepreneurs and county government officials through the Aquaculture Business Development Programme, which aims to foster the development of smallholder aquaculture development as well as the broader development of the aquaculture value chain in 15 counties with high aquaculture potential.

Data and information

The OECD survey reveals that some subnational governments collect, share or use socio-economic and environmental data on a regular basis to inform blue economy decision making. For instance, the region of Basque Country, Spain, collects socio-economic data (e.g. GDP, number of businesses, number of employees, etc.) for all economic sectors that are sufficiently disaggregated to give an overview of blue economy GVA, businesses and jobs. In addition, it has a permanent satellite account for tourism, as does the Canary Islands region, Spain. Other subnational governments (e.g. Rotterdam [Netherlands] and Seattle [United States]) share municipal-level environmental data on indicators such as CO_2 emissions disaggregated by sector of economic activity, which would allow the calculation of CO_2 emissions from blue economy sectors.

In some cases, subnational governments conduct or commission studies that quantify the economic and social benefits of the blue economy in their jurisdiction, often to inform a blue economy strategy. For example, as part of their respective blue economy strategies, the cities of Barcelona and Gijón, Spain,

have commissioned studies to provide estimates of the blue economy's contribution to GVA, employment as well as the number of businesses within the blue economy. In the city of Lisbon, Portugal, the Department for Innovation and Strategic Sectors of the General Directorate for Economy and Innovation put together a Blue Economy Insight document (2019) assessing the number of businesses, jobs and GVA generated by the blue economy at the municipal level (Lisbon City Council, 2019[18]). The government of the region of Flanders, Belgium, took part in the Compendium for Coast and Sea (2018), a collaborative report by more than 150 experts containing socio-economic statistics on the blue economy in the region, published by the Flanders Blue Cluster (Devriese et al., 2018[19]). An updated document was published in 2023, highlighting an increase in the share of GDP and jobs related to the blue economy in the region despite the economic consequences of the COVID-19 pandemic (Mees et al., 2013[20]).

Subnational entities, especially river basin organisations (RBOs), also collect data on water quality indicators in basins and their coasts (e.g. Seine-Normandie Water Agency, France). The state of Rio Grande do Sul, Brazil, has several programmes in place to monitor water quality, sediment quality, effluents, aquatic biota and underwater noise and vibration. As part of the Life LEMA project, the region of Basque Country and its partners have used new technologies to detect, monitor and forecast hotspots of floating marine litter on the surface of the Bay of Biscay, allowing increased collection rates with a lower carbon footprint as well as a better understanding of local pollution levels (Life LEMA, 2020[21]).

Planning tools

National and subnational governments use several planning tools to preserve and conserve natural ecosystems while achieving territorial development goals (Table 2.4). When it comes to blue economy sectors and ecosystems, planning for freshwater, coasts, marine ecosystems and land can enhance water security to benefit the blue economy.

Table 2.4. Freshwater, coastal, marine and land-related plans

Type of plan	Role of national governments	Role of subnational governments
Coastal zone management plan (CZMP)	• Define the framework for the formulation and implementation of CZMPs. • Identify an agency responsible for coastal (and sometimes river basin) management at the national level and set environmental standards. • Collect and use coastal mapping data.	• Provide guidelines for local initiatives based on national guidelines. • Foster co-ordination of local plans for integrated coastal zone management. • Collect or use coastal mapping data from state and local agencies.
Marine spatial plan (MSPs)	• Elaborate the policy framework for MSPs. • Support the monitoring and evaluation of the implementation of MSPs with data gathered by national agencies. • Ensure adequate resourcing and support from different levels of government, including local governments.	• Contribute to MSPs by capturing the characteristics of coastal communities and ecosystems at the subnational level. • Federal countries can devolve powers for MSPs to subnational governments.
Land use plan	• Provide the regulatory framework for the development of land use plans at regional and municipal levels. • Approve subnational plans.	• Regions prepare strategic plans to address land use decisions. • Municipalities adopt detailed land use plans containing zoning regulations, use ordinances and permits to regulate land use. • Align with national planning directives.
River basin management plan (RBMP)	• Define water quality laws, policies and regulations to allow for the possibility of more stringent state or local standards. • Establish RBOs with national and subnational government representatives. • Ensure collaboration among agencies across levels of	• Ensure and take part in the implementation of RBMPs on the ground. • Oversee the collection of water tariffs, irrigation fees and pollution fees and can also be involved in the revenue collections associated with local and catchment level water

	government for effective watershed planning.	markets.

Source: Coccossis (2004[22]), "Integrated coastal management and river basin management", https://doi.org/10.1023/b:wafo.0000044814.444388.81; IWRM (2023[23]), *Local Authorities*, https://www.iwrmactionhub.org/learn/iwrm-tools/local-authorities; OECD (2016[24]), *The Ocean Economy in 2030*, https://doi.org/10.1787/9789264251724-en; OECD (2017[25]), *Land-use Planning Systems in the OECD: Country Fact Sheets*, https://doi.org/10.1787/9789264268579-en; OECD (2023[17]), Marine Spatial Planning: Assesssing Net Benefits and Improving Effectiveness, https://www.oecd.org/greengrowth/GGSD_2017_Issue%20Paper_Marine%20Spatial%20Planning.pdf.

Coastal zone management plans (CZMPs) are used to identify coastal resources, different user perspectives and competing land use interests with a view to successfully co-ordinating the management of coastal zones (IWRM, 2023[26]). CZMPs are often prepared by subnational governments in collaboration with coastal actors (e.g. land developers, port authorities, fishermen, etc.). For example, Brazil's National Coastal Management Plan (NCMP) mandates coastal municipalities to formulate and implement their own municipal coastal plans in accordance with the NCMP and state coastal plan guidelines. CZMPs also contribute to water security by preserving coastal wetlands, safeguarding the inflow of freshwater into coastal environments.

Marine spatial plans (MSP) are an integrated, place-based approach to the regulation, management and protection of the marine environment (OECD, 2017[27]). Central government departments and agencies (e.g. those relating to planning, environment, fisheries or infrastructure) are typically responsible for MSPs, except for federal governments, where the authority may be devolved to subnational states or regions. For example, Spain has adopted MSPs for five marine subdivisions, for which regional governments, in collaboration with the national government, are responsible for: identifying zones of interest for aquaculture activities; research, development and innovation; and new marine protected areas (MPAs). By allocating marine space to different activities including fisheries, aquaculture, energy and shipping routes, MSPs address the multiple, cumulative and potentially conflicting uses of the sea. Their co-ordinated approach maximises the use of maritime space while minimising environmental impacts, fostering a sustainable blue economy. A key instrument of MSPs, MPAs define specific areas managed to achieve conservation objectives. Protecting areas of environmental and recreational interest, such as coral reefs, can boost tourism activity while protecting valuable ecosystems.

Land use plans describe the recommended location and intensity of development for public and private land uses, such as residential, commercial, industrial, recreational and agricultural (OECD, 2017[25]). Land use plans can foster the blue economy while mitigating water risks. For instance, the Municipal Master Plan of the city of Matosinhos, Portugal, aims to boost socio-economic development, including by promoting coastal tourism and fishing, and improving the quality of water ecosystems (e.g. preservation of bathing areas and dune ecosystems) (City of Matosinhos, 2019[28]). As part of land use plans, environmental impact assessments are often required to mitigate the negative impacts of new developments. Several respondents of the OECD survey reported that environmental impact assessments are relevant to the blue economy. For example, in the United States, the National Environmental Policy Act requires federal agencies to assess the environmental impacts of their proposed actions before making decisions.

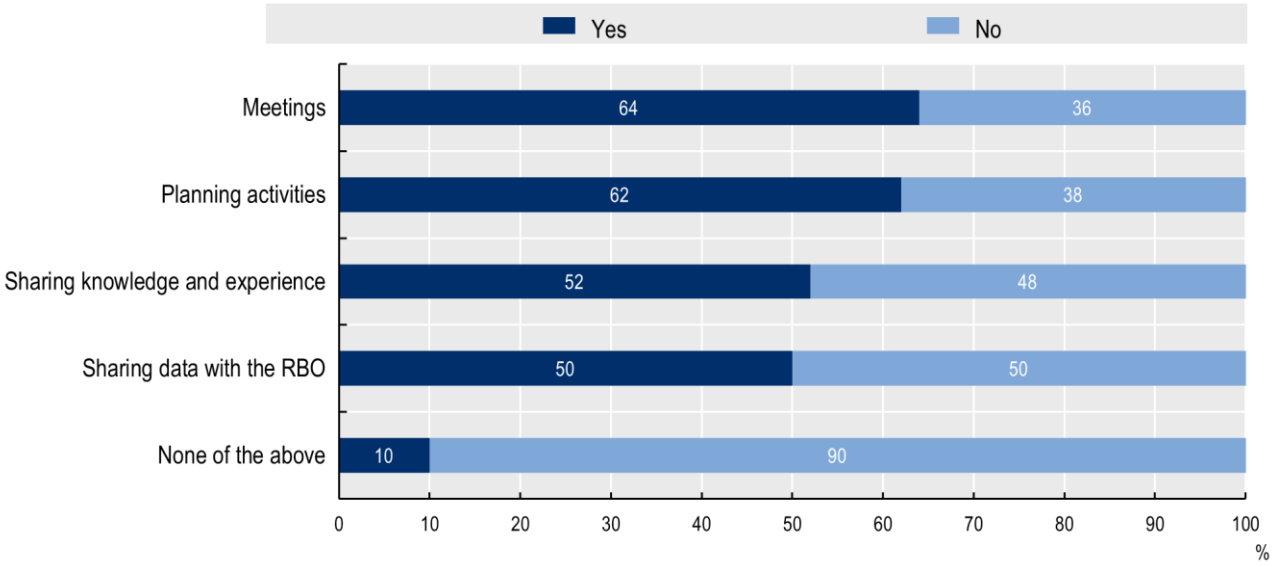
River basin management plans (RBMPs) are action-oriented framework documents that describe how water and related land resources should be developed and managed in a specific catchment area. RBMPs are often designed and implemented through RBOs, committees or councils formed by national governments, where subnational authorities are often represented. For example, in France, the Water Law (1964) established six water agencies for each main river basin, which formulate Water Development and Management Plans (*Schéma directeur d'aménagement et de gestion des eaux*, SDAGE) (OECD, 2013[29]). Out of the 50 cities and regions responding to the OECD survey, 32 report interacting with their RBO, whether by taking part in meetings (64%), taking part in joint planning activities (62%), sharing information and knowledge with other stakeholders in the RBO (52%) or sharing data (50%) (Figure 2.4). Cities and regions with an RBO recognise the main benefits of integrated water management at the basin level:

raising awareness on water resources management (74%), mitigating the risks of flooding and water scarcity or drought (66%), preventing pollution from rivers to seas (64%), allowing the efficient use of water resources (60%) or enhancing the impacts of investments at scale (34%) (Figure 2.5).

Economic and environmental regulation and incentives

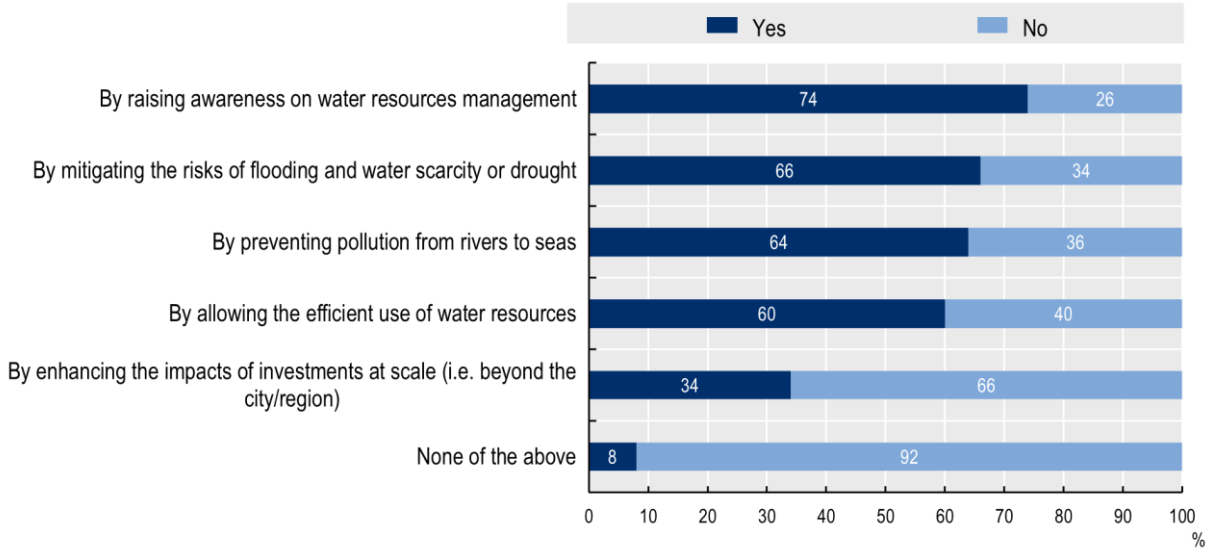
Regulation and economic instruments provide the framework and incentives for the blue economy and water security across levels of government. As part of regulatory frameworks, "command and control" tools such as caps, quotas, bans, standards, licensing and permitting can limit the negative environmental impacts of blue economy sectors, while economic instruments such as taxes, fees and subsidies can incentivise behavioural changes and generate revenue.

Figure 2.4. Interaction with the local RBO or committee



Note: Based on 50 responses from cities and regions to the question "2.3.1. Does your city/region interact with its local RBO or committee?". Survey respondents were invited to indicate for this question "yes", "no" or "not applicable". In total, 21 responses were excluded from the overall sample of 71 responses received for this question, including those from small island developing states (SIDS) (2), RBOs (9) and cities and regions reporting an absence of RBOs (10).
Source: OECD (2023[17]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

Figure 2.5. Benefits of integrated water management at basin level



Note: Based on 50 responses from cities and regions to the question: "2.3.2. How does integrated water management at basin level affect the resilience, inclusion, sustainability and circularity of the blue economy in your city/region?". Survey respondents were invited to indicate for this question "yes", "no" or "not applicable". In total, 21 responses were excluded from the overall sample of 71 responses received for this question, including those from SIDS (2), RBOs (9) and cities and regions reporting an absence of RBOs (10).
Source: OECD (2023[17]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

Governments can regulate and limit natural resource use and pollution by allocating licenses and permits and setting caps and quotas. Licenses and permits are legal authorisations to carry out economic activities, use a specific resource (e.g. land, water) or emit some form of pollution, helping to strike a balance between blue economy activities (e.g. fishing, aquaculture, energy and recreational fishing) and environmental protection (e.g. pollution permits). Caps and quotas place a hard limit on potentially harmful activities: for example, fishing quotas or total allowable catch limits, which apply to 76% of fish stocks,[1] place caps on the quantity of individual fish stocks that can be harvested in a given area (OECD, 2022[30]) and governments can set limits on the quality and volume of discharge to waterbodies with permits (OECD, 2017[31]). Subnational government entities are often responsible for authorising events and activities in compliance with regulations: for instance, the Portuguese city of Porto's utility company issues authorisations for events and services on beaches to ensure compatibility with the criteria of the national Blue Flag programme, which monitors bathing water quality. As with all regulatory tools, enforcement and compliance ensured through inspections and penalties are key to giving regulatory tools full force (OECD, 2014[32]).

Under cap-and-trade or tradable permit systems, permits can be traded between permit holders. Cap-and-trade schemes for GHG emissions are increasingly widespread and can affect several sectors of the blue economy, especially shipping and port activities. For example, the EU Emissions Trading System (ETS) has been extended to cover maritime transport emissions from 2024 (EC, 2023[33]). Several subnational governments have cap-and-trade schemes in place, such as the joint cap-and-trade programme of the state of California, United States, and the province of Quebec, Canada, which covers electricity production, industry and transport. Tradable permit systems can also apply to water pollution: for instance, water quality trading has allowed regulated entities in the Chesapeake Bay, United States, to meet permit requirements at a lower cost than with a simple cap and credit generators (e.g. farmers) to generate additional revenue through the sale of credits (OECD, 2017[31]). Similarly to tradable permit systems for pollution, biodiversity offsets can help new developments (e.g. port authorities, tourism infrastructure) compensate for unavoidable biodiversity damage by investing in biodiversity restoration elsewhere in order

to meet the overall biodiversity targets set by governments (typically “no net loss” or “no net gain”) (OECD, 2016[34]). For example, to comply with regulatory biodiversity compensation programmes at the federal level, the Port of Los Angeles has invested in several environmental restoration projects to compensate for its expansion, channelling millions of USD into restoring blue ecosystems such as lagoons, wetlands and eelgrass. A key issue for biodiversity offsets is ensuring equivalence between the biodiversity loss at the development site and the biodiversity gain at the offset site. Other important design and implementation features that should be considered to ensure effectiveness include: thresholds and coverage; equivalence; additionality; permanence; monitoring, reporting and verification; transaction costs; and compliance and enforcement (OECD, 2016[34]).

In some cases, restrictions or bans are in place to safeguard health and natural resources. Within the blue economy, restrictions are commonly placed on certain types of fishing gear and water-going vessels. Subnational governments (e.g. Barcelona [Spain]) are notably increasingly restricting cruise ships from docking at city-centre ports to reduce air pollution in densely populated areas. Limits on water use during droughts (e.g. in Barcelona [Spain] and California [United States]) and bans on harmful substances in water (e.g. on certain chemicals or single-use plastics) can be used to enhance water security. For example, several types of single-use plastic items (e.g. plates, cutlery and straws) have been banned from being placed on the markets of EU member states since 2021 and Ireland’s Department of Housing, Local Government and Heritage ultimately aims to eliminate all beach litter from these items (OECD, 2022[35]). The city of Seattle, United States, has local ordinances banning polystyrene foodservice containers and single-use plastic bags, requiring that all shopping bags, foodservice containers and utensils be reusable, recyclable or compostable.

Taxes and subsidies can be used to “tip the playing field” in favour of more sustainable practices or sectors, i.e. incentivising desirable behaviours and disincentivising undesirable ones. Environmentally driven taxes (e.g. on carbon emissions or plastic bags) place an additional cost on natural resource use or pollution to reflect negative environmental externalities, compensate associated costs and incentivise behavioural change. For example, trucks entering the Port of Los Angeles, United States, pay a USD 10 rate per 20-foot equivalent, while zero-emissions trucks are exempt from the rate. Fees, which users pay in exchange for a service, can be used to control access to natural resources (e.g. fishing license fees, royalties for seabed mineral extraction), recover the costs of environmental impacts (e.g. waste disposal fees) or the provision of a service (e.g. port docking fees). On the other hand, tax exemptions or subsidies are applied to desirable outcomes. For example, Kenya exempts equipment for wastewater treatment plants for hotels from paying customs duty, incentivising the hotel industry to invest in wastewater treatment and limiting the negative impact of hotels on freshwater and coastal water quality (OECD, 2020[36]). Nevertheless, many subsidies provided across economic sectors (e.g. fuel tax rebates or exemptions, support measures for fisheries) are potentially environmentally harmful and should be reviewed and eliminated or reformed (Matthews and Karousakis, 2022[37]).

Governments and industry bodies can define standards and voluntary instruments (e.g. labels, certificates and charters) to further incentivise sustainability and circularity in the blue economy. For example, emissions standards can reduce GHG and air pollution emissions for vessels, eco-design standards for plastics can support the use of bio-based alternatives, including from seaweed, and minimum technological standards for wastewater treatment plants can enhance water quality. In addition, “soft regulation” such as labels, certifications and industry charters can help signal sustainable practices (e.g. avoiding overfishing) and businesses and justify price premiums to citizens and consumers. For example, the Sud region of France signals professional, local and sustainable seafood products with the Regional Certificate for Fishing and Aquaculture Activities (*Certificat regional d’activités professionnelles pêche et aquaculture*). Additionally, the region’s Clean Ports initiative aims to improve the environmental management of marinas and fishing ports, notably by improving the treatment of run-off and wastewater from boats and waste collection, with a view to obtaining the homonymous EU certification.

Applying the “polluter pays” principle, extended producer responsibility (EPR) schemes make waste producers financially or organisationally responsible for taking back used goods and waste for adequate sorting and treatment. They incentivise eco-design and shift the responsibility for dealing with pollution and waste upstream towards producers and away from local governments (Brown, Laubinger and Börkey, 2023[38]). Existing EPR schemes apply to a range of products such as consumer electronics, packaging, tyres and batteries (OECD, 2016[39]), all of which can adversely affect freshwater, coastal and marine ecosystems through chemical, plastic and microplastic pollution. Residues from pharmaceutical products are particularly problematic for the blue economy, with traces of oral contraceptives causing the feminisation of fish and residues of psychiatric drugs altering fish behaviour (OECD, 2019[40]). National and subnational governments have implemented public collection schemes funded by EPR to tackle this issue, such as Canada, which has four regional EPR schemes regulated by different jurisdictions, and France, which has a national EPR scheme for pharmaceuticals. The industry funds both schemes, with retail pharmacies acting as collection sites.

With payments for ecosystem services (PES), governments can also compensate ecosystem managers (e.g. landowners, local communities) for the additional cost of enhancing ecosystem services. For instance, the Seine-Normandie Water Agency and the water operation of the city of Paris, France, provide technical and financial support to farmers that limit the use of fertilisers and other inputs, which helps improve water quality and reduces the cost of water treatment downstream. Other examples of PES in the blue economy include schemes paying for the restoration of blue ecosystems (e.g. mangroves, coral reefs or wetlands) to enhance coastal resilience to water risks and capture carbon. The latter refers to blue carbon projects, which demonstrate emissions removals or avoidance through restoration activities to generate carbon credits, which are sold to compliance (e.g. Clean Development Mechanism under the Kyoto Protocol) or voluntary (i.e. voluntary carbon compensation schemes offered to individuals and businesses) markets to generate revenue. Under robust rules and sustainability criteria, blue carbon projects can generate co-benefits that contribute to several SDGs, such as alleviating poverty by generating revenue streams for local communities.

Funding and financing instruments

The qualitative information provided by OECD survey respondents highlights that subnational governments tend to invest in three main areas when it comes to the blue economy: in boosting businesses, jobs and innovation (see examples in the section on innovation networks), in infrastructure (e.g. ports, coastal defence infrastructure) and in environmental protection. Regarding infrastructure investment, the city of Barcelona, Spain, is refurbishing the Olympic Port to allocate space for maritime and recreational activities; the city of Salvador, Brazil, is investing BRL 5 million in the recovery of public piers and the region of Nouvelle-Aquitaine, France, is funding part of a private sector SEENEOH tidal energy test site in the estuary of the Gironde River. The city of Rotterdam, Netherlands, invests in green infrastructure to prevent urban flooding, including green roofs, which reduce urban water treatment costs by preventing stormwater from entering the combined sewage system. Subnational governments are investing in innovative environmental protection projects, such as the Smith Cove Blue Carbon Pilot Project in the Port of Seattle, which is exploring ways to trap carbon through aquaculture and vegetation within port waters. The Infrastructure Investment Authority in the state of Pennsylvania, United States, is providing funding to the Partnership for the Delaware Estuary, an NGO leading collaborative and science-based efforts to improve the Delaware River and Bay, to plan, design and build a mussel hatchery to improve water quality, collect new data and raise awareness of mussels as a nature-based solution to improve water quality.

Among the funding and financing instruments suggested in the OECD survey (Box 2.2), national and subnational government funds are the main sources of funding for the blue economy at the subnational level, according to the OECD survey (Figure 2.6). More than half of respondents reported receiving subnational and national funds for blue economy activities (both 54%). In a few cases, national governments have specific funding mechanisms for the blue economy. This is the case in Portugal, where

the Directorate-General for Maritime Policy's Blue Fund (Fundo Azul) supports the blue economy with sectoral (e.g. seafood, renewable energy, pollution prevention) and cross-cutting (e.g. capacity building, digitalisation) grants and loans for private and public entities. Broader national financing sources for climate action and innovation can also be leveraged for the blue economy. For example, the city of New Orleans and the state of Louisiana in the United States both pursue federal funding for resilient and green projects, jobs, training and other opportunities arising from new climate-oriented legislation like the Infrastructure Investment and Jobs Act and the Inflation Reduction Act passed in 2022. In addition, contracts can help set common objectives and facilitate co-ordination across levels of government: for instance, the city of Sète, France, receives national government funds and loans relative to the blue economy through national-regional planning contracts (*Contrats de plan État-Région*), national-local contracts for the ecological transition (*Contrats pour la réussite de la transition écologique*) and regional-local contracts *(Contrats Territoriaux Occitanie*).

Box 2.2. Funding and financing sources for the blue economy at the subnational level

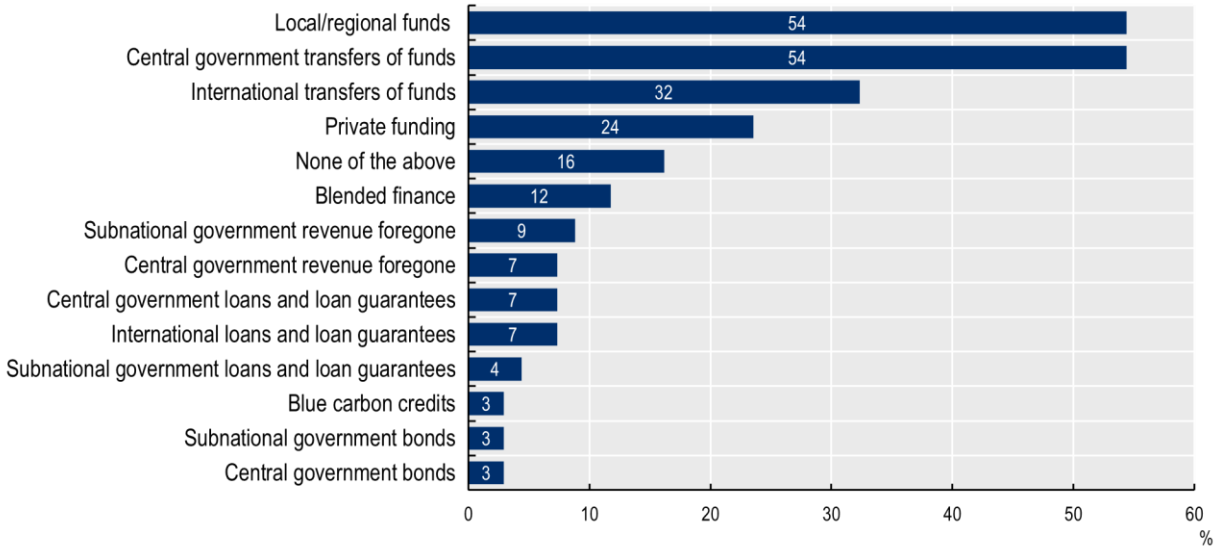
The OECD survey suggested a selection of funding and financing instruments for the blue economy. Funding refers to the money used to pay for an investment, operations and maintenance expenses, which may come from various sources such as grants and subsidies, taxes, user charges and fees, reserves, property income, etc. Financing refers to money from private or public financiers, which comes with an obligation for future repayment. This includes debt (loans, bonds) or equity, particularly in the case of a public-private partnership. Financing is repaid from funding sources.

These instruments include:

- Subnational, central government, international and private funds (e.g. subsidies and grants) directly received by subnational governments.
- Subnational, central government and international loans and loan guarantees, referring to money lent to subnational governments and loan guarantees where governments act as guarantors for subnational governments to obtain market loans with lower interest rates.
- Subnational and central government revenue foregone, partially or fully exempting subnational governments from paying certain taxes or fees to higher levels of government (e.g. value added tax exemptions on specific products or services).
- Blended finance, referring to the strategic use of development finance, such as official development assistance (ODA), to leverage additional sources of financing finance for sustainable development.
- Blue carbon credits, or the sale of emissions credits from blue carbon projects, which demonstrate emissions removals or avoidance through restoration activities, sold to compliance (e.g. Clean Development Mechanism under the Kyoto Protocol) or voluntary (i.e. voluntary carbon compensation schemes offered to individuals and businesses) markets to generate revenue.
- Subnational and central government bonds to raise money for specific projects (e.g. infrastructure development).

Source: OECD (2023[17]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris. and OECD (2022[41]), *G20-OECD Policy Toolkit to Mobilise Funding and Financing for Inclusive and Quality Infrastructure Investment in Regions and Cities*, https://doi.org/10.1787/99169ac9-en.

Figure 2.6. Funding mechanisms for the blue economy for subnational governments



Note: Based on 68 responses to question: "2.5.2. Through which mechanisms does your city/region government receive funds to finance activities towards the implementation of a resilient, inclusive, sustainable and circular blue economy?". Survey respondents were invited to select one of the following options: "yes" or "no".
Source: OECD (2023[17]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

Source: OECD Global Survey on Localising the Blue Economy (July 2022–September 2023).International transfers from supranational governments, international and non-governmental organisations are also a significant source of funding for the blue economy at the subnational level (32%). In many cases, national governments receive these funds before allocating them to subnational ones. The European Union is a major funder of blue economy projects at the national and subnational levels (Box 2.3): for example, the city of Lisbon, Portugal, financed part of its Sea Hub (*Hub do Mar*) with EU Recovery and Resilience Facility funds and the region of Guadeloupe, France, is part of the Sargassum Algae Co-operation Programme funded by EU Interreg Caribbean funds, which aim to strengthen the preparedness and resilience of Caribbean territories to natural disasters, in this case the invasion of Sargassum algae. Some developing countries (e.g. Kenya, Mauritius and Morocco) receive technical and financial support from international organisations such as the World Bank and United Nations Educational, Scientific and Cultural Organization (UNESCO) to develop blue economy strategies and maritime spatial planning frameworks. At the subnational level, the Go Blue project, supported by the European Union, the United Nations Human Settlements Programme (UN-Habitat), UNEP and the national development agencies of France, Germany, Italy and Portugal, aims to advance the blue economy in Kenya's six coastal counties. Non-government (non-profit) organisations also play an important role in funding projects that do not generate revenue, such as the Resilient Cities Network, which works with city leaders to solve interrelated problems around waste management and ocean plastic pollution through its Urban Ocean programme in Panama City, Panama, amongst other cities.

Box 2.3. Selection of EU funding and financing mechanisms and instruments for the blue economy

The European Union has several funding and financing instruments directly or indirectly related to the blue economy, providing investment opportunities for national and subnational governments.

EU funding and financing mechanisms with relevance for the blue economy

- **Horizon Europe** is the EU's flagship programme for research and innovation, which provides funding for a wide range of research and innovation activities, including those related to the blue economy. Funding opportunities may include research projects, innovation actions and collaborative initiatives addressing challenges in marine and maritime research, technology and development. For example, the Magpie project, funded with a EUR 30 million Horizon Europe grant and supported by major European ports, including the Haropa Port, France, the DeltaPort association, Germany, Rotterdam, Netherlands, and Sines, Portugal, aims to accelerate the green energy transition in ports and logistics sectors between 2021 and 2026.
- The **LIFE** programme is the EU's funding instrument for environmental and climate action initiatives. It offers funding across four key areas of focus (nature and biodiversity, circular economy and quality of life, climate action and clean energy transition), through action grants (e.g. technical assistance projects) and operating grants for NGOs. Under its sub-programme on "Circular economy and quality of life", it supports projects promoting sustainable marine and coastal management. In 2020, the programme granted EUR 2 million to the LIFE ECOREST project, aimed at restoring marine habitats within existing no-take areas along the Catalan continental margin in Spain, which have been impacted by fishing activities.
- The **Cohesion Fund** aims to reduce development disparities between EU regions. It brings together several EU funding streams to support projects in less developed regions. For instance, Spain received EUR 37.3 billion from the fund to support its green transition and a fair and competitive economy, including the development of a sustainable blue economy in both mainland Spain and its outermost region, the Canary Islands, Spain, for the period 2021-27.
- The **Interreg Europe** programme promotes co-operation among subnational governments to share innovative and sustainable solutions to regional development challenges, which can include the blue economy. In 2019, the Port of Hamburg, Germany, represented by the Ministry of Economy and Innovation (BWI) of the city of Hamburg, joined forces with local authorities from four other European port cities in Bulgaria, France and Italy under the Interreg Europe project Smooth Ports to develop solutions to improve traffic flow within ports and mitigate CO_2 emissions.
- The **Connecting Europe Facility (CEF)** provides funding for the development of trans-European transport, energy and digital infrastructure networks, such as maritime transport and port infrastructure. In 2023, the CEF launched a call for cross-border renewable energy projects, contributing to the cost-effective generation and deployment of renewable energy from offshore wind and ocean energy technologies.

EU funding and financing mechanisms on the blue economy

- The **European Maritime and Fisheries Fund (EMFF**) supports the EU Common Fisheries Policy and aims to promote sustainable fisheries, aquaculture and the development of coastal communities. Funding is allocated through loans, guarantees, equity and blended finance for investments in fishing and aquaculture activities and their resilience to climate change.
- The **BlueInvest** platform, launched in 2019 by the European Commission, facilitates access to finance and supports investment readiness for start-ups, SMEs and scale-ups in the blue economy. Funded by the EMFF, the platform provides support in the form of assistance programmes, a project pipeline database, investor reports, coaching, events and community engagement. For example, the platform facilitates access to financing for the Green City Ferries project in Stockholm, Sweden.
- The **EU Blue Champions** scheme, launched in 2023 by the European Commission in collaboration with the European Investment Bank (EIB), aims to support innovative projects

across the European Union, helping to restore marine and freshwater ecosystems and biodiversity, mitigate pollution and decarbonise the blue economy. Supported by the BlueInvest platform and EIB Advisory Services, it will provide financial advisory to 20 selected projects in the blue economy.

- The **InvestEU Blue Economy** instrument aims to support EU blue economy businesses by facilitating research, development, demonstration, upscaling, commercialisation and scaling of clean technologies and environmental sustainability solutions. Gathering the EMFF, EIB and InvestEU funds, the instrument mobilises EUR 500 million of EU funds between 2022 and 2027 for financial intermediaries investing in the blue economy.

Source: Based on BlueInvest (2023[42]), *Investor Report: An Ocean of Opportunities*, https://oceans-and-fisheries.ec.europa.eu/system/files/2023-03/Blueinvest-Investor-report-An-ocean-of-opportunities_0.pdf; CINEA (2023[43]), "LIFE Calls 2023 Sub-programmes and types of projects funded", https://cinea.ec.europa.eu/system/files/2023-05/01%20EU%20Info%20Days%202023_Intro_AB-AR-final.pdf; EC (2021[44]), *Life Ecorest: Ecological Restoration of Human-impacted Benthic Marine Ecosystems through Active Strategies and Participatory Approach*, European Commission, https://webgate.ec.europa.eu/life/publicWebsite/project/LIFE20-NAT-ES-001270/ecological-restoration-of-human-impacted-benthic-marine-ecosystems-through-active-strategies-and-participatory-approach; EC (2021[45]), *Horizon 2020: sMArt Green Ports as Integrated Efficient Multimodal Hubs*, https://cordis.europa.eu/project/id/101036594; EIF (2022[46]), "BlueInvest: Commission and EIF agree to mobilize €500 million with new equity initiative for blue economy", https://www.eif.org/what_we_do/equity/news/2022/commission-and-eif-agree-to-mobilize-500-million-with-new-equity-initiative-for-blue-economy.htm; Interreg Europe (2019[47]), *Smooth Ports - Reducing CO2 Emissions in Ports*, https://projects2014-2020.interregeurope.eu/smoothports/; EC (2022[48]), "EU Cohesion Policy: €37.3 billion for Spain to support its green transition and a fair and competitive economy", https://ec.europa.eu/commission/presscorner/detail/en/IP_22_6964.

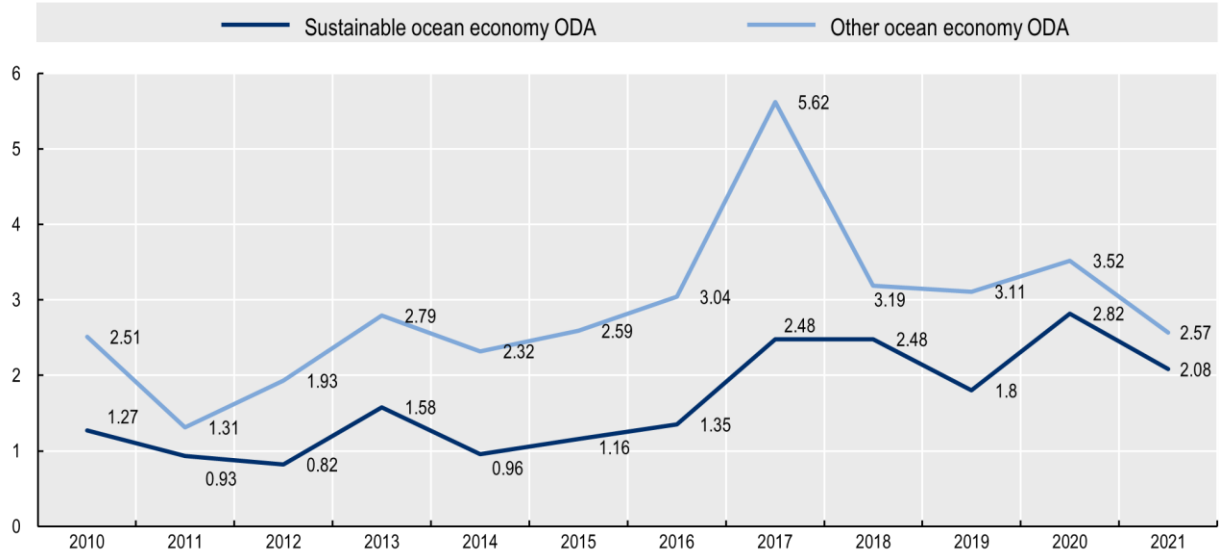
Governments fund blue economy sectors and projects at the subnational level by providing grant funding. Funding can be allocated through the organisation of competitions or selective calls for funding. For example, the Spanish city of Gijón's Municipal Business Centre (*Gijón Impulsa*) supports innovative projects through annual funding calls for different thematic areas, including the blue economy, while the city of Matosinhos in Portugal provides financial and capacity-building support to ten selected innovative business projects in the blue economy through its BlueAct competition. Governments can also directly allocate funds to specific innovative blue economy projects or businesses. For instance, the city of Rotterdam, Netherlands, reports using local funds to boost innovation, for example through the Blue City hub, which fosters circular and blue economy entrepreneurship, and the region of Nouvelle-Aquitaine, France, is one of the funding partners of a private sector tidal energy test site in the estuary of the Gironde River.

Blue economy activities also benefit from private and not-for-profit sector funding from businesses, venture capital and philanthropy, with 24% of survey respondents reporting the use of such funds at the subnational level. The city of Barcelona, Spain, highlights that private capital for the blue economy has increased considerably in recent years with the proliferation of venture capital funds such as Blue Oceans Partners, Ocean Capital or the funds of Credit Suisse or BNP Paribas, amongst others. Often, financing for the blue economy at the subnational level is not exclusively private but mixed with public funds, as is the case of AltaSea, a public-private ocean institute and partnership at the Port of Los Angeles (US). Regarding philanthropy, the Greater New Orleans Foundation's Southeast Louisiana Voices of Impacted Communities and Environments (SELA VOICE) initiative, a coalition of community-based and environmental organisations, works with the most vulnerable coastal communities in southeast Louisiana, United States, to provide a collective voice on issues of coastal restoration, protection and adaptation.

In developing countries, blue economy activities can be funded through blended finance (12% of survey respondents) and ODA. Blended finance is the strategic use of development finance to leverage additional finance for sustainable development, in line with the SDGs, in developing countries (OECD, 2023[49]). ODA is direct government aid that targets the economic development and welfare of developing countries (OECD, 2022[50]). Another key difference is that blended finance is intended to be time-bound and catalytic

to spur the replication and scaling up of projects and change the underlying market conditions, i.e. it should not be a permanent feature of private investments. OECD data on global development finance (including grants, loans and equity investments) related to the ocean economy show that, on average, ODA for the sustainable ocean economy grew at almost twice the rate of that of the ocean economy per year (12.6% and 7.4% respectively) and the gap between the two has narrowed in recent years (Figure 2.7).

Figure 2.7. ODA for the ocean economy, 2010-21



Note: ODA for the ocean economy (referred to as "other ocean economy ODA") consists of ODA in support of ocean-based industries and marine ecosystems, irrespective of whether the support explicitly takes sustainability considerations into account. ODA for the sustainable ocean economy is a subset of ODA for the ocean economy, for which certain sustainability criteria are fulfilled (OECD, 2024[51]).
Source: OECD (2023[52]), *Ocean Economy and Developing Countries*, www.oecd.org/ocean/topics/developing-countries-and-the-ocean-economy/.

According to the OECD survey, other government transfers such as revenue foregone (9% and 7% for subnational and national governments respectively) and government loans and loan guarantees (7%) play a relatively smaller role in financing the blue economy. Emerging sources of funding, such as blue carbon credits as part of payments for ecosystem services (see previous section) and government bonds, are not yet widespread (3% each). As an emerging subset of green bonds, which commit funds to "green" projects, businesses or assets, blue bonds raise capital to finance ocean-related projects with environmental, economic and climate benefits (World Bank, 2018[53]). Additionally, green bonds can have a "blue" component by funding blue economy and water security projects. In most unitary OECD countries, subnational government bond issuance is limited or non-existent, but cities and regions in federal countries such as the United States have increasingly been issuing green bonds to fund climate-related infrastructure (OECD, 2019[54]). For example, the District of Columbia Water and Sewer Authority in the city of Washington DC, United States, issued in 2016 the country's first-ever environmental impact bond, which funded green infrastructure projects to absorb and slow stormwater and prevent combined sewer overflow (EPA, 2017[55]).

Innovation networks

With the objective of strengthening innovation and sustainable growth in the blue economy, several subnational governments have designed and implemented or supported ocean economy innovation networks[2] with different sectoral focuses and network characteristics (e.g. number of actors, maturity and

size of businesses targeted, etc.). Beyond designing and managing innovation networks (e.g. defining the network's membership and structure, managing network activities), subnational governments also provide physical infrastructure (e.g. office and workshop spaces, coastal areas) for network members to meet, access research facilities and specialised knowledge, receive dedicated support and carry out pilots and experiments.

Broadly speaking, subnational blue economy innovation networks tend to be either mixed (i.e. business-science) or business-oriented. Many subnational innovation networks for the blue economy connect businesses and science to spur innovation, particularly in emerging blue economy sectors such as renewable energy and blue biotechnology. For example:

- In the Port of Los Angeles, United States, AltaSea is a waterfront campus for ocean-inspired scientific collaboration, job creation and education. Its research and business hubs act as a "marine Silicon Valley", nurturing scientific breakthroughs and emerging technologies, creating new products and services and supporting local jobs. Regenerative aquaculture, renewable energy, blue technology and underwater robotics are the focus areas.
- In the city of Lisbon, Portugal, the Sea Hub (*Hub do Mar*) project approved in 2023 aims to connect businesses and start-ups with universities, the local scientific community and researchers to help blue economy businesses grow, focusing on research and innovation, prototyping and testing activities. The Sea Hub was set up through a concession between the Port Administration and the City Council of Lisbon for the private use of public land.
- The maritime cluster of the state of Rio Grande do Sul's, Brazil, strives to mobilise and develop local productive arrangements for offshore oil, gas and naval activities. It is co-ordinated by the state's Ministry of Development, Industry and Foreign Trade and the Federal University of Rio Grande. In Brazil, industry clusters (*Arranjos Produtivos Locais*, APLs) are the main federal and state-level policy for local business development, supported since 2004 by an APL Permanent Working Group (OECD, 2020[56]).
- In the region of Flanders, Belgium, the non-profit Blue Cluster organisation, a group of over 150 private businesses, public sector organisations and knowledge institutions, is recognised by the regional government as a spearhead cluster for innovation in the blue economy.
- The Port of Antwerp in the region of Flanders, Belgium, is setting up the NextGen District within the port to support the establishment of companies focusing on the circular economy and the energy transition, including zones for demonstrations and testing new technologies. Besides the space itself, NextGen also aims to offer guidance for start-ups and financial support. The four key domains to apply for the NextGen District are Waste-to-X (chemicals/fuels), carbon capture and utilisation, bio-based technologies and renewable energy storage and hydrogen technologies.
- The city of Sète, France, aims to create a Nautical Industries Economic Zone as a business park accommodating companies, as well as R&D activities, manufacturing, services and training and apprenticeships in connection with the future Polytechnic Sea Centre.

Other innovation networks are more business-oriented, facilitating pilot testing, providing incubation services and helping start-ups scale up.

- Fomento San Sebastian, Spain, the municipal department responsible for the city's socio-economic development strategy, has set up a Surf City Cluster as a network of businesses, institutions and other actors promoting initiatives and projects for the surf sector through entrepreneurship, innovation and marketing.
- The Barcelona Port Innovation Foundation is a public-private initiative of the Port of Barcelona, Spain, which hosts 400 companies, to test new port-related innovations. The foundation's majority private ownership (51%) gives it more flexibility to carry out experiments than a majority port-owned structure would, as the port sector is heavily regulated.

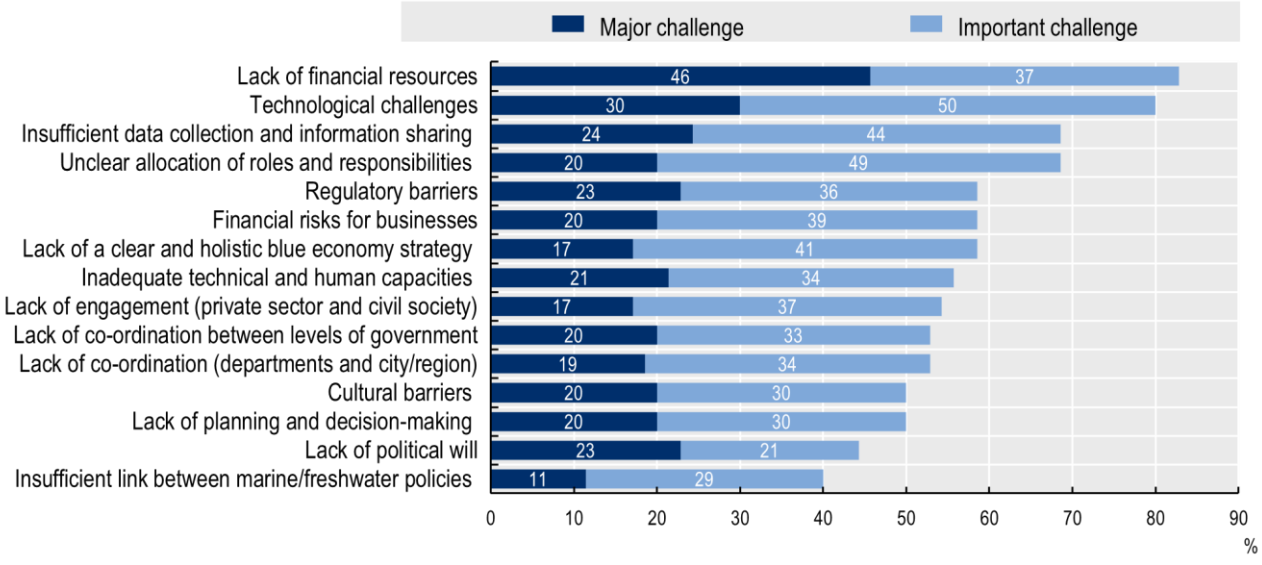
- The port of Rotterdam, Netherlands, is leading EU research projects focusing on greening ports, such as the Magpie project, which tests different solutions from offshore charging buoys for electric vessels to ammonia bunkering and smart energy systems.
- The city of The Hague and the region of South Holland, Netherlands, have created Campus@Sea as a network for blue economy businesses. It notably provides a testing ground in the North Sea, just off the city's coast, allowing technology developers to test new concepts and provide evidence to future customers and licensing authorities.
- The city of Rotterdam and the region of South Holland, Netherlands, are strategic partners of Blue City, an incubator that is home to 55 entrepreneurs in the blue and circular economy, providing workspaces and business capacity-building programmes.

Main challenges and future priorities for the blue economy at the subnational level

According to OECD survey respondents, beyond technological challenges, the main gaps towards a sustainable blue economy at the subnational level are the lack of financial resources (83%), insufficient data collection and information sharing, and an unclear allocation of roles and responsibilities for blue economy policy making across levels of government (both 69%) (Figure 2.8). Other important challenges relate to regulatory barriers, financial risks for businesses and the lack of a clear and holistic blue economy strategy (all 59%).

Future priorities can also help understand current challenges. According to respondents, the top priorities for the future are for the blue economy to create new jobs and business opportunities (74%), foster collaboration to leverage synergies between blue economy sectors and other sectors such as urban planning, water, waste, and energy, and enhance the resilience of the blue economy to climate change (both 68%) (Figure 2.9). Although respondents point to technological challenges as significant in terms of future priorities, boosting technology use and uptake ranks lowest according to respondents (34%).

Figure 2.8. Main challenges for the blue economy at subnational level



Note: Based on 70 responses to the question: "2.1.5. What are the main challenges to the development of a resilient, inclusive, sustainable and circular (RISC-proof) blue economy in your city/region?". Survey respondents were invited to qualify each challenge as a "major challenge", "important challenge", "moderate challenge", "small challenge" or "not a challenge".

Source: OECD (2023[17]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

Figure 2.9. Priority actions for the blue economy at the subnational level

Note: Note: Based on 65 responses to the question: "3.1. Which level of priority are the following actions for the development of a resilient, inclusive, sustainable and circular blue economy in your city/region in the next five years?". Survey respondents were invited to qualify each challenge as a "top priority", "medium priority", "low priority", "not a priority" or "not applicable".
Source: OECD (2023[17]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

The OECD survey responses and the multi-level governance analysis above point to several gaps related to policy making, coherence and implementation. Policy making relates to "who does what at which level", i.e. the institutional framework for blue economy policy and other related policies (e.g. freshwater and ocean) across levels of government. Policy coherence refers to the alignment of mandates, policies and sectoral objectives across government institutions. Finally, policy implementation is about the tools used to operationalise policies, including financing, regulation, data and information and capacity development. Building on evidence from the OECD survey and the multi-level governance analysis, notably the review of national and subnational blue economy strategies, the following sub-sections look into these challenges in more detail.

Policy making challenges

Subnational governments point to the unclear allocation of roles and responsibilities for blue economy policy making, with 69% of respondents reporting it as a major or important challenge (Figure 2.8). The blue economy consists of a range of sectors depending on freshwater, coastal and marine ecosystems, for which all levels of government have varying levels of involvement. As a result, responsibilities for blue economy sectors, as well as water, coasts and seas, are unevenly distributed and fragmented across levels of government. For example, subnational governments tend to have a bigger say in freshwater and coastal planning than they do in marine spatial planning and decision making related to the ocean, which tends to be more of a national government prerogative; and national port policy can undermine local government involvement in ports and contradict subnational government policies (ITF, 2017[3]). This landscape can lead to gaps, overlaps, conflicts of interest and economic inefficiencies in blue economy policy, highlighting the need for effective co-ordination mechanisms.

Existing national blue economy strategies often lack a territorial approach that would leverage the role of subnational governments to integrate place-based considerations. In fact, subnational authorities are not

systematically considered in national blue economy strategies: less than half (9 out of 21) allocate concrete roles and responsibilities for subnational authorities. For example, France relies on county (*département*) strategies for managing the public maritime domain and on regional operators such as marine natural parks to co-ordinate the central government's maritime policy with local authorities and related institutions; and Panama supports capacity building of local governments for the development of self-managed community projects. When national and local blue economy strategies co-exist, they lack co-ordination, even regarding fundamental issues such as definitions. For instance, the blue economy strategy of the city of Barcelona, Spain, highlights that estimates of the value of the blue economy are not comparable between the city, the region and the central government because all three levels of government have different definitions of the scope of the blue economy. Furthermore, the sectoral scope of national and subnational strategies is not always aligned, highlighting different priorities for the blue economy across levels of government and departments, and strengthening the case for a territorial approach to the blue economy that considers local concerns and priorities. For example, while the United States' Blue Economy Strategic Plan considers water-related tourism, the state of Washington's maritime strategy does not.

Subnational government capacity is another key obstacle to blue economy policy making. Inadequate technical and human capacities are a major or important obstacle for 56% of survey respondents. Only around one-third (36%) of survey respondents directly support capacity-building programmes for civil servants on the blue economy and a similar share (41%) report taking part in such programmes delivered by national governments. Instead, policy fora such as conferences and meetings (65%) and training or educational programmes from other organisations (62%) are the most widespread forms of capacity-building activities in which subnational governments participate. This echoes the findings of the OECD survey on water governance in cities, which highlighted that capacity is often the Achilles' heel of subnational governments, especially in the context of unstable or insufficient revenues exacerbated by financial crises (OECD, 2016[57]).

Data collection and information sharing, which are key to inform policy making, also rank prominently as both current challenges and priorities for the future (69% and 65% respectively). Collecting and sharing timely, consistent and comparable data and information relative to the blue economy is key to informing policy making and implementation. However, many blue economy sectors are not readily visible in official statistics and there is no international standard to measure the value of the blue economy and allow cross-country comparisons (Jolliffe and Jolly, 2024[58]). Statistics are often insufficiently disaggregated at subnational and sectoral levels to inform local decision making. Similarly, although information on the environmental impact of blue economy sectors (e.g. CO_2 emissions, waste generation) can be inferred from national datasets on environmental impacts per sector of activity when they exist, the level of sectoral and subnational disaggregation is not always granular enough to feed into local decision making. Data on water security, including the quality of freshwater and seawater, are often collected and shared at the subnational level but tend to be fragmented across collecting organisations (e.g. subnational governments, water operators, RBOs, etc.). Effective data collection and sharing is crucial for implementing blue economy policies as well as freshwater, coastal, marine and land use plans.

Policy coherence challenges

Despite the strong interdependence between the blue economy and water security, freshwater and seawater governance are often fragmented and poorly co-ordinated at the national and subnational levels, making the link between the two inconsistent and inadequate to deal with current and future shocks and stresses. Water security is a blind spot of national and subnational blue economy policy. Blue economy policy is often assimilated to marine policy and marine and freshwater decision making is often siloed across government departments. While 14 out of 21 national strategies consider freshwater ecosystems (e.g. rivers and lakes) in their definition of the blue or ocean economy, around 12 consider freshwater sectors (e.g. freshwater fisheries), with only 9 considering both simultaneously. Water-related risks are considered in some strategies, ranging from water shortages in Tunisia to sea-level rise and flooding in

the United States and plastic pollution in Indonesia. However, few strategies set out measures to address these risks. Noteworthy examples include Japan's measures to protect coastal areas from sea-level rise and storm surges, and France's commitment to improving the quality of coastal waters by combatting land-based sources of marine pollution.

At the subnational level, several strategies recognise the impacts of climate change on the blue economy (e.g. the Canary Islands and Catalonia [Spain] and Scotland [United Kingdom] highlight ocean warming and acidification as major threats) and associated water-related risks (e.g. the Canary Islands' water shortages [Spain], sea level rise in Catalonia [Spain] and plastic pollution in Washington [United States]). However, only three strategies spell out measures to tackle water-related risks. In response to water challenges, Vigo, Spain, emphasises its discharge and water quality monitoring project; Barcelona, Spain, promotes water treatment; and Washington, United States, foresees the development of incentives and finance mechanisms for maritime innovation on water quality. Only two subnational strategies consider freshwater sectors and ecosystems simultaneously. For instance, Scotland, United Kingdom, is committed to promoting freshwater fisheries while striving to achieve a "good" or better classification for at least 81% of its waterbodies by 2027, in line with the EU Water Framework Directive requirements.

Although freshwater, coastal, marine and land use planning should be connected in theory (Chapter 3), given their strong interdependencies, they are often disconnected from one another as they are designed and implemented by a range of different authorities and depend on different institutional and legal frameworks, environmental delineations and implementation timeframes. For example, while the EU Water Framework Directive requires RBMPs to be updated every six years, the EU Marine Spatial Planning Directive mandates the review of MSPs at least every ten years. Government entities responsible for ocean health are often not the decision-makers or regulators of many of the activities that threaten its well-being in freshwater and on land (SIWI, 2020[59]). RBMPs rarely consider the consequences of water management on blue economy sectors and most blue economy strategies do not consider water security as a strategic objective or measure to achieve the goals of their blue economy strategy, nor do they consider the impacts of the blue economy on water security. Yet enhancing the resilience of the blue economy to climate change and water risks (68%) and protecting the most vulnerable from the impacts of the blue economy (65%) are significant future priorities for OECD survey respondents.

More broadly, a fragmented approach to the blue economy prevails at the subnational level. Subnational governments without a formal blue economy strategy have implemented a wide array of initiatives that tend to focus on a single sector (e.g. seafood, tourism or renewable energy), falling short of a holistic approach to the blue economy that would leverage synergies between sectors and help manage trade-offs between sectors (e.g. between tourism and shipping, or between aquaculture and fisheries). Furthermore, several respondents stress the absence of an overarching regulatory framework for the blue economy at the national or subnational levels that would unite patchwork regulations corresponding to different policy areas as an obstacle to policy coherence at the subnational level and the lack of consistency across different sectoral laws and regulations affecting the blue economy (e.g. urban planning, transport and energy) can lead to conflicts of interest across government departments and agencies. Fostering collaboration to leverage synergies between the blue economy and other policy areas (e.g. energy, urban planning, water, waste) is identified as the second-most important priority going forward by respondents (68%) (Figure 2.9).

When subnational blue economy strategies exist, they are poorly connected to other policy areas. Out of the seven strategies analysed, just three align with environmental and climate mitigation and adaptation plans, two with pollution and waste management plans, and one with water management and supply plans. Strategies do not systematically consider leveraging subnational competencies such as waste management, spatial and urban planning, MPAs and water and sanitation. In relation to climate change, tools like MPAs, spatial plans and water management systems are often too fragmented across administrative boundaries and sectors to provide integrated responses to the increasing and cascading risks from climate-related changes in the ocean (IPCC, 2019[60]). By acknowledging the interdependencies

between issues such as climate change, inequalities and resilience, governments can avoid decisions made in one sector having unintended consequences in another (OECD, 2017[61]). Defining a subnational blue economy strategy could help overcome some of these challenges: in fact, the lack of a clear and holistic blue economy strategy ranks among the most significant challenges to the blue economy (59%) (Figure 2.8). Nevertheless, designing a blue economy strategy is not a panacea and will not resolve issues related to policy coherence by itself. Governments should aim to ensure that blue economy policy objectives are aligned with economic and environmental objectives across other policy areas and embed blue economy considerations into other strategies and policies (e.g. climate mitigation and adaptation, environmental protection and economic development).

The lack of dialogue between cities and their basins or watersheds exacerbates challenges related to the mismatch between hydrological and administrative boundaries, which call for a "city-basin" approach to water resources management. RBOs or committees are seldom involved in decision making for economic activities in rivers, lakes or coasts, and reflections on sustainable cities often focus on urban specificities without considering the basin in which they sit, missing opportunities to achieve water security, resilience and biodiversity conservation. This is echoed by the OECD survey results, which show that respondents see the insufficient link between freshwater and marine policies as the least important challenge to a resilient and sustainable blue economy.

Policy implementation challenges

Financial obstacles are the most prominent at the subnational level, with the lack of financial resources ranking as the number one challenge to the blue economy (83%) (Figure 2.8). The survey results point to local, regional and central government funds as the main source of funding for the blue economy at the subnational level, with a comparatively lower prevalence of private funding and blended finance and a very limited use of emerging instruments such as blue carbon credits. This is exacerbated by constraints in the financing sources subnational governments can leverage to fund blue economy policy implementation. Notably, unitary countries are subject to the "golden rule", which restricts subnational borrowing to finance long-term investment in infrastructure and large equipment. Issuing bonds is forbidden at the subnational level in most unitary OECD countries and, globally, many local governments are deprived of access to any form of loans due to poor fiscal capacity, creditworthiness and strict borrowing rules (OECD, 2019[54]). Several OECD survey respondents report challenges in accessing international financing, which national governments often receive before being allocated to subnational ones. These rules and constraints can limit subnational public investment in infrastructure and measures (e.g. capacity-building programmes) to implement blue economy policy. Furthermore, respondents (59%) consider financial risks for businesses a significant challenge. Subnational governments can play a role in supporting them directly (e.g. with grants) or indirectly (e.g. with capacity-building programmes) but they have limited resources to do so. Finally, despite the widely recognised imperative to diversify sources of blue economy financing and leverage innovative instruments such as blue bonds and blue carbon credits, the transparency and integrity of such forms of financing – which are generally subject to fewer regulations than more established instruments, and can suffer from the absence of a "universal" definition of the sustainable blue or ocean economy – is not always guaranteed.

Barriers related to regulation are designated as significant challenges by 59% of respondents, who point to the poor implementation of existing regulations as challenging for the blue economy. According to respondents, implementation is lagging for a number of reasons, notably the lack of awareness of national regulations at the subnational level, of clarity in the allocation of roles and responsibilities for implementation, of co-ordination of national with subnational governments, of concrete regulations implementing newly-approved legislation and policies; and of financial resources and capacity to implement regulatory requirements at the subnational level. Several cities and regions also report overlapping regulations across levels of government as an obstacle: for example, in the city of New Orleans, the permitting process for some major coastal rehabilitation projects has been challenging

because it is subject to a number of laws from different areas of local, state and federal government, slowing down the permitting process. Several respondents from the European Union report complex and even contradictory regulatory frameworks at the EU, national and regional levels, hampering the co-ordination of blue economy activities at the regional and local levels. Furthermore, regulation does not always keep up with the pace of technological developments in emerging blue economy sectors (e.g. offshore wind energy), creating regulatory "grey areas" that can hamper their development. Such grey areas, overlaps and lack of enforcement of existing regulations can also favour corruption and malpractice, jeopardising the integrity of the blue economy.

Finally, the top future priority for respondents is to continue boosting GDP and jobs (74%) but capacity-building initiatives for businesses are limited: around one-third of survey respondents (35%) report directly supporting capacity-building programmes for businesses and other private actors in the blue economy. Technological challenges, which rank second (80%), can also be linked to capacity challenges: within each blue economy sector, technological capacities can vary widely across businesses, exacerbating market entry barriers in sectors with high capital costs and technological needs such as industrial fisheries, port activities and shipping.

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Notes

[1] The OECD Review of Fisheries 2022 includes the following countries in the dataset: Australia, Canada, Chile, Colombia, Denmark, Estonia, Finland, France, Germany, Greece, Italy, Japan, Korea, Latvia, Lithuania, the Netherlands, Norway, New Zealand, Poland, Slovenia, Spain, Sweden, Türkiye, the United Kingdom and the United States, as well as Argentina, Brazil, China, Peru and Chinese Taipei.

[2] The OECD defines ocean innovation networks as initiatives that bring together a diversity of players (e.g. public research institutes, large businesses, SMEs, universities and other public agencies) into flexibly organised networks working on a range of scientific and technological innovations across different sectors (e.g. aquaculture, biotechnology, underwater robotics) (OECD, 2019[62]).

3 Towards resilient, inclusive, sustainable and circular blue economies in cities and regions

Building on the assessment of benefits and costs of the blue economy at the subnational level (Chapter 1) and the multi-level governance and gap analyses of the blue economy (Chapter 2), this chapter sets out the framework for resilient, inclusive, sustainable and circular (RISC-proof) blue economies in cities and regions. It identifies the ways forward to bridge gaps towards RISC-proof blue economies, which relate to policy making, policy coherence and policy implementation.

A framework for resilient, inclusive, sustainable and circular (RISC-proof) blue economies in cities and regions

As part of a green and just transition, this chapter argues that cities and regions should foster blue economies that are:

- **Resilient** to economic and climate-related shocks and risks.
- **Inclusive** of local communities and stakeholders.
- **Sustainable** environmentally by limiting environmental impacts while protecting ecosystems and biodiversity.
- **Circular** by preventing waste (including plastics), fostering material efficiency and transforming waste into resources.

By enhancing adaptation to climate change impacts and mitigating the impacts of the blue economy on the climate and environment, a RISC-proof blue economy would contribute to climate adaptation and mitigation (Figure 3.1).

According to the self-assessment questions in the OECD Global Survey on Localising the Blue Economy (hereafter the OECD survey), where respondents were invited to express their level of agreement with a set of statements relating to the resilience, inclusiveness, sustainability and circularity of their blue economy (Table 3.1), respondents feel more advanced in sustainability and inclusiveness than in circularity and resilience (Figures Figure 3.2 and Figure 3.3). When it comes to sustainability, respondents show that limiting pollution from blue activities is a strong point but decarbonising blue economy sectors and protecting freshwater, coastal and marine ecosystems require further attention. Regarding inclusiveness, while respondents point to engaging local communities, more can be done to boost local employment in the blue economy and protect the most vulnerable from the consequences of water risks. Respondents convey that their blue economies are slightly more resilient to economic shocks and risks than climate-related ones. Finally, all three dimensions of circularity – preventing waste production, using resources efficiently and transforming waste into secondary materials – show lower rates of advancement compared to resilience, inclusiveness and sustainability. This chapter sheds further light on these results and provides concrete examples of what cities, regions and basins are already doing to foster a RISC-proof blue economy.

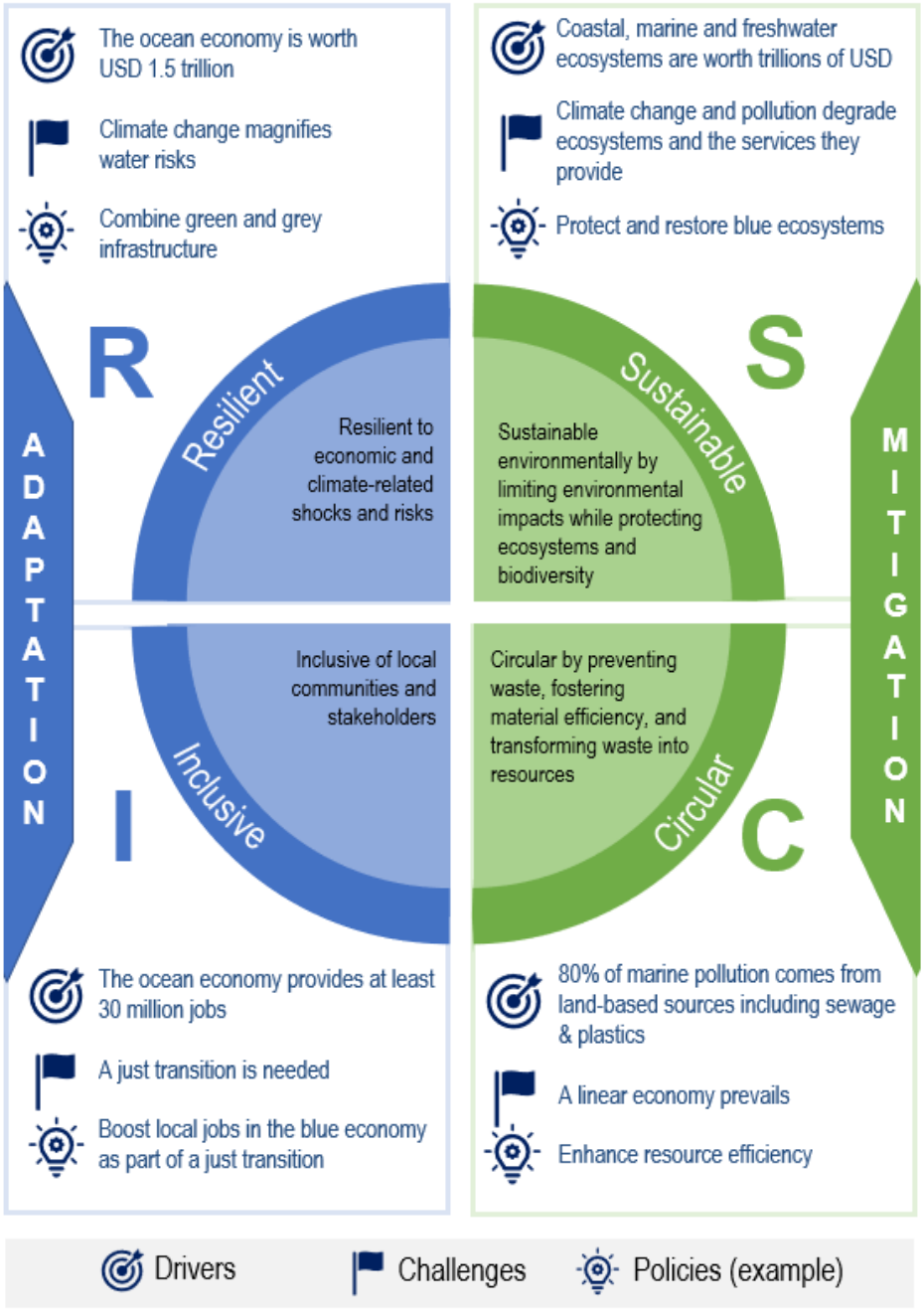
Table 3.1. Survey statements for assessing the resilience, inclusiveness, sustainability and circularity of the blue economy

Dimension	Statements
Resilient	The blue economy in my city/region is resilient to economic shocks and risks (e.g. economic crises, inflation)
	The blue economy in my city/region is resilient to extreme weather events exacerbated by climate change (e.g. floods, storms, cyclones, landslides or droughts, among others) through the use of tools such as disaster risk management, nature-based solutions, etc.
Inclusive	The blue economy in my city/region is inclusive by protecting the most vulnerable (e.g. those living in informal settlements or sub-standard housing) from water-related risks of “too much”, “too little” or “too polluted water”, and of disruption to freshwater systems.
	The blue economy in my city/region is inclusive and just by providing job opportunities.
	The blue economy in my city/region is inclusive by engaging with the local community and relevant stakeholders.
Sustainable	The blue economy in my city/region is sustainable by decarbonising blue economy activities (e.g. by shifting to renewable energy).
	The blue economy in my city/region is sustainable by limiting water, air and/or land pollution from economic activities.
	The blue economy in my city/region is sustainable by sustainably managing coastal, marine and freshwater resources (e.g. fish, minerals) and conserving freshwater, coastal and marine ecosystems (e.g. wetlands), including through the use of nature-based

Dimension	Statements
	solutions.
Circular	The blue economy in my city/region is circular, using resources efficiently and keeping them in use for as long as possible.
	The blue economy in my city/region is circular by preventing waste.
	The blue economy in my city/region is circular by transforming waste and/or by-products into resources.

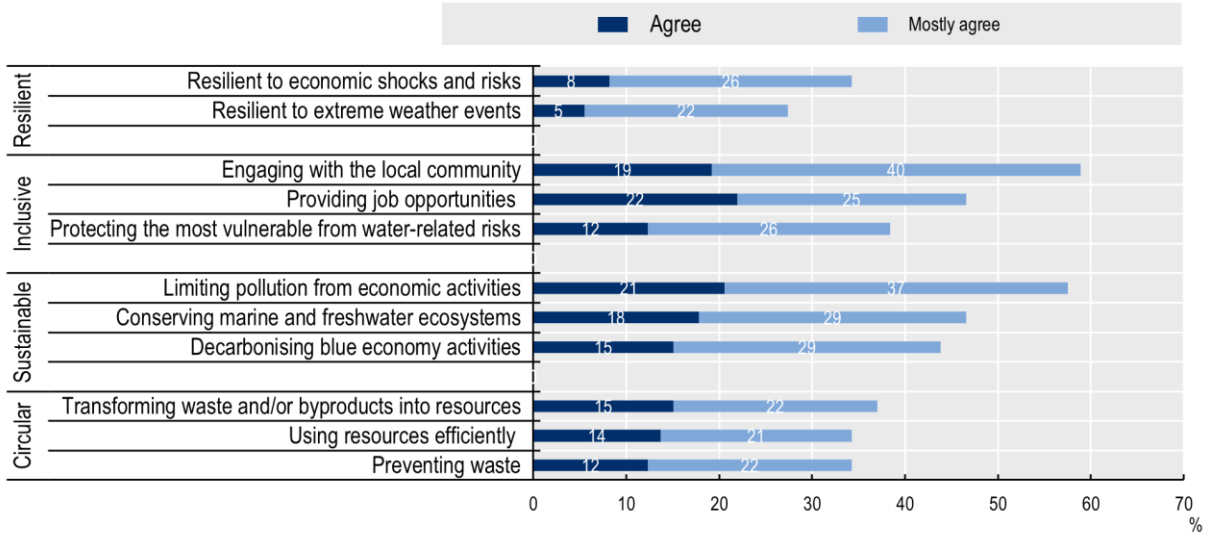
Note: For each of these statements, survey respondents were invited to select one of the following options: “agree”, “mostly agree”, “somewhat agree”, “mostly disagree”, “disagree”, “neither agree nor disagree" or “not applicable”.
Source: OECD (2023[1]), “OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)”, Unpublished, OECD, Paris.

Figure 3.1. Drivers, challenges and measures for RISC-proof blue economies in cities and regions



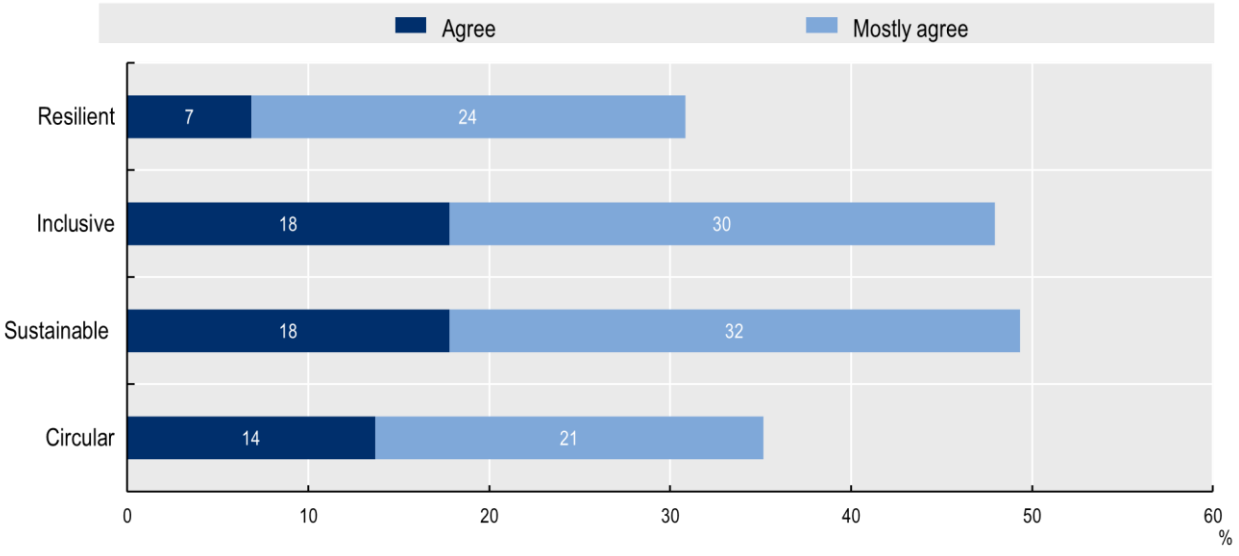
Source: Author's elaboration

Figure 3.2. Self-assessment of the resilience, inclusiveness, sustainability and circularity of the blue economy



Note: Based on 73 responses to questions 2.1.1; 2.1.2; 2.1.3; and 2.1.4, further detailed in following sections. Survey respondents were invited to select one of the following options: "agree", "mostly agree", "somewhat agree", "mostly disagree", "disagree", or "neither agree nor disagree" for each of the actions specified for the RISC dimensions.
Source: OECD (2023[1]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

Figure 3.3. Self-assessment of the resilience, inclusiveness, sustainability and circularity of the blue economy (averages)

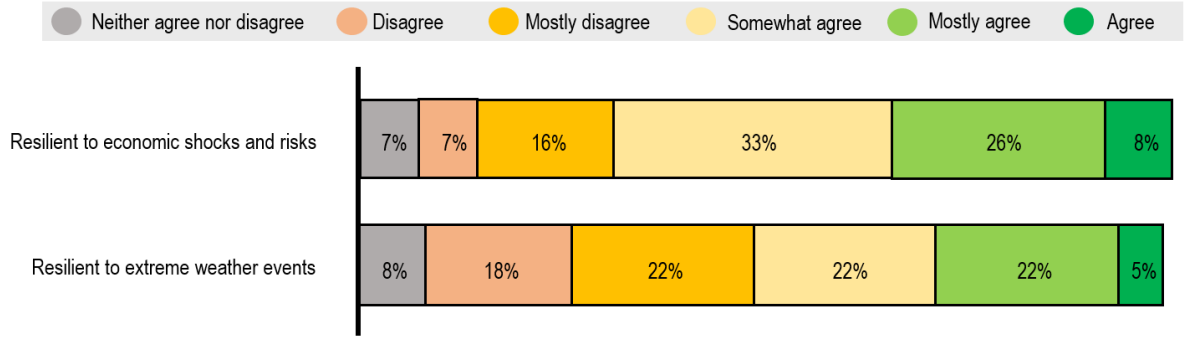


Note: Based on 73 responses to questions 2.1.1; 2.1.2; 2.1.3; and 2.1.4 further detailed in following sections. The average was calculated for each RISC dimension based on the responses selected to "agree" or "mostly agree" for the respective actions.
Source: OECD (2023[1]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

Resilience

Resilience reflects the ability of blue economies to prepare, absorb and recover from a range of shocks, risks or threats, in particular economic shocks and risks (e.g. economic crises, inflation) and extreme weather events (e.g. floods, storms or droughts) exacerbated by climate change, which particularly affect water-dependent blue economies. In total, 34% of respondents to the OECD survey agree or mostly agree that their blue economies are resilient to economic shocks and risks that can arise from demographic, social, financial, political, geopolitical or health-related threats (Figure 3.4). For example, government-imposed lockdowns to curb the spread of the COVID-19 pandemic in 2020 led to a sharp decline in the trade of goods (OECD, 2022[2]), significantly affecting shipping, which accounts for around 90% of traded goods. To support recovery from the COVID-19 pandemic, the European Union (EU) Recovery and Resilience Facility deployed EUR 724 billion in loans and grants to support the reform and investment packages put forward by member states in their national Recovery and Resilience Plans (RRPs), which foresee investments in blue economy sectors (Box 3.1).

Figure 3.4. Self-assessment of the resilience of the blue economy



Note: Based on 73 responses to question: "2.1.1. To what extent is the blue economy in your city/region resilient?". Survey respondents were invited to select one of the following options: "agree", "mostly agree", "somewhat agree", "mostly disagree", "disagree", "neither agree nor disagree" or "not applicable" for each of the following statements: "The blue economy in my city/region is resilient to economic shocks and risks (e.g. economic crises, inflation)" and "The blue economy in my city/region is resilient to extreme weather events exacerbated by climate change (e.g. floods, storms, cyclones, landslides or droughts, among others) through the use of tools such as disaster risk management, nature-based solutions, etc". Responses selecting "not applicable" have been excluded from the chart.
Source: OECD (2023[1]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

Box 3.1. The blue economy as part of EU member states' Recovery and Resilience Plans

As part of its national Recovery and Resilience Plan (RRP) France Recovery (*France Relance)* (2021), France invested EUR 650 million in the maritime sectors of the blue economy, with the aim of supporting and developing blue economy sectors (such as fishing, aquaculture, ports and maritime industries, tourism and research), to strengthen coastline resilience and preservation, to promote seafaring professions and to disseminate maritime culture. The mobilisation of funds is tangible at the local level, mainly in coastal cities, through contracts between the central government and coastal regions and municipalities. Examples of measures at the local level include the decarbonisation of maritime transport and adaptation to sea level rise and coastal erosion.

Several dimensions of the blue economy are included in the RRP of Spain, Spain Can (*España Puede)* (2021). One of the objectives of the urban and rural agenda is to transform and digitalise the fisheries and agri-food supply chain to promote quality, sustainability and the circular economy, ecological production and seasonal and local consumption, the reduction of food waste, and value and job creation with a focus on rural areas. Tourism is seen as a strategic sector requiring digitalisation, modernisation and competitiveness to become sustainable and resilient. Regarding energy, the RRP features a roadmap for offshore wind energy and related support programmes for the development of new renewable energy technologies in the marine field. Finally, the plan seeks to conserve and restore marine and terrestrial ecosystems by mobilising investments in green infrastructure and preserving the coast and water resources through investments to reduce the vulnerability of coastal areas and water resources facing the effects of climate change. It includes actions to boost integrated water management, focusing on nature-based solutions (NbS) for water purification, sanitation and reuse, optimisation of water infrastructure, river restoration and aquifer recovery.

The RRP of Portugal, Recovering Portugal, Building the Future (*Recuperar Portugal, Construindo o Futuro*) (2021) focuses on resilience, climate and digitalisation, with EUR 252 million for the blue economy across 4 key investments. These include the creation of a Blue Hub as a "network of infrastructures for the blue economy" to incubate and promote companies in the blue bioeconomy and other emerging sectors (EUR 87 million) and the Azores Blue Economy Cluster to foster research and development in traditional and emerging sectors (32 million). The Green and Digital Transition and Security in Fisheries programme strives to reduce greenhouse gas (GHG) emissions from maritime economy activities by 2030 by fostering energy efficiency, modernisation, marine waste management and circularity of companies and organisations in the fisheries sector (EUR 21 million). The Atlantic Defence Operations Centre and Naval Platform contributes to ecosystem preservation and ocean health while protecting the value chains of various ocean sectors from pollution and illegal activities by implementing emergency operations, surveillance, scientific and technological research, as well as environmental and meteorological monitoring (EUR 112 million).

Source: EC (2022[3]), *Recovery and Resilience Plans*, https://reform-support.ec.europa.eu/what-we-do/recovery-and-resilience-plans_en; Ministère de l'Économie, des Finances et de la Souveraineté industrielle et numérique (2021[4]), *Plan de relance*, https://www.economie.gouv.fr/plan-de-relance#; Government of Spain (2021[5]), *España Puede*, https://dipucordoba.es/wp-content/uploads/2020/12/PNRTR-ESPANA-PUEDE.pdf; Government of Portugal (2021[6]), *Plano para a Recuperação e a Resiliência: Recuperar Portugal, Construindo o future*, https://www.portugal.gov.pt/download-ficheiros/ficheiro.aspx?v=%3d%3dBQAAAB%2bLCAAAAAAABAAzNDQzNgYA62SpeQUAAAA%3d; and inputs from the 31st meeting of the OECD Working Party on Urban Policies (9 May 2022).

Relative to other dimensions, the resilience of subnational blue economies to extreme weather events fares poorly, with 27% of respondents agreeing or mostly agreeing with the statement. Nevertheless, some cities and regions report combining infrastructure and governance measures to enhance the climate resilience[1] of their blue economies. For instance, in the region of Basque Country, Spain, the Urban Klima climate action project foresees adaptation measures and NbS in coastal areas, ports and river basins to enhance the resilience of urban and natural coastal areas as well as resilience to extreme weather. The city of Sète in France has implemented NbS (e.g. beach nourishment operations and sand-filled geotextile bags to mitigate wave impacts) to strengthen beach and dune systems and tackle erosion on the barrier beach from Sète to Marseillan. Combined with grey infrastructure, NbS[2] can reduce adaptation costs while contributing to flood control and coastal protection (IPCC, 2022[7]). National governments can provide the framework and the enabling conditions for the deployment of NbS at the local level, including funding (Box 3.2).

Box 3.2. The role of national and subnational governments in fostering the uptake of nature-based solutions for climate resilience

OECD work on scaling up NbS to tackle water-related climate risks finds that key national policy documents, such as national adaptation plans or biodiversity strategies, often promote NbS as a means to address climate risks. In some cases, NbS feature as both mitigation and adaptation measures in nationally determined contributions to the Paris Agreement on climate. Although among the 35 OECD member countries with national adaptation plans, the majority mention the importance of NbS in addressing water-related climate risks, few include concrete implementation measures (e.g. monitoring systems), and none have defined quantitative targets for NbS implementation. At the national level, the OECD suggests:

- Integrating targets and actions for NbS into overarching national policies (e.g. on climate mitigation and adaptation) as well as sectoral ones (e.g. agriculture, infrastructure, disaster risk management, tourism, water, housing, etc.).
- Promoting and co-ordinating NbS across a wide range of actors, such as national flood and drought management agencies, public works or infrastructure agencies, infrastructure operators, regional and local authorities, as well as non-government players.
- Reforming regulations such as land use planning, building codes and public procurement to unlock the potential of NbS.
- Collecting and sharing data and information on good practices and performance of NbS.
- Overcoming fragmentation in the funding landscape for NbS.
- OECD work on implementing NbS at the subnational level highlights four common challenges and recommendations for municipal governments:
- Examining project selection and public procurement criteria to better capture the indirect benefits of NbS over the project lifecycle.
- Strengthening spatial planning frameworks to take an integrated approach to land, water and soil management.
- Exploring options to broaden the funding base to ensure sufficient resources for infrastructure maintenance, potentially including taxes on negative externalities and revised service charges.
- Building capacity for NbS through integration in professional education, peer learning between municipalities and creation of a platform for sharing data and good practices.

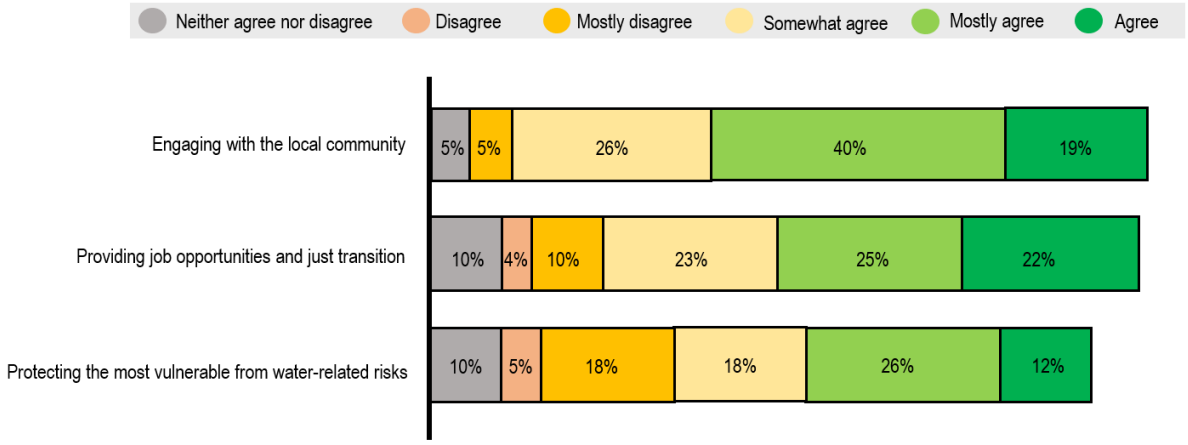
Source: OECD (2021[8]), *Scaling up Nature-based Solutions to Tackle Water-related Climate Risks: Insights from Mexico and the United Kingdom*, https://doi.org/10.1787/736638c8-en; OECD (2023[9]), "Promoting nature-based solutions in municipalities in Hungary", https://doi.org/10.1787/d81fb09f-en.

Inclusiveness

In the framework of the RISC-proof approach to the blue economy, inclusiveness refers to the ability of cities and regions to: i) engage local communities and relevant stakeholders in the blue economy; ii) boost job creation and consider the distributional impacts of green policies in the blue economy as part of the just transition; and iii) protect local communities, especially vulnerable groups, from climate and water-related risks. Analysis of blue economy strategies and international declarations points to inclusiveness as the weakest dimension, lagging behind economic and environmental ones (Bennett et al., 2022[10]). Some recent (e.g. Norway and Scotland, United Kingdom) and upcoming (e.g. Canada) national blue economy strategies highlight the importance of equity, gender considerations or involving Indigenous peoples but

further action is needed to implement these principles (e.g. diversity requirements for hiring, capacity building and social impact assessments). Examples of how cities and regions are making their blue economies more inclusive are given below.

Figure 3.5. Self-assessment of inclusiveness of the blue economy



Note: Based on 73 responses to the question: "2.1.2. To what extent is the blue economy in your city/region inclusive?". Survey respondents were invited to select one of the following options: "agree", "mostly agree", "somewhat agree", "mostly disagree", "disagree", "neither agree nor disagree" or "not applicable" for each of the following statements: "The blue economy in my city/region is inclusive by protecting the most vulnerable (e.g. those living in informal settlements or sub-standard housing) from water-related risks of "too much", "too little" or "too polluted water", and of disruption to freshwater systems", "The blue economy in my city/region is inclusive by providing job opportunities and ensuring a just transition" and "The blue economy in my city/region is inclusive by engaging with the local community and stakeholders". Responses selecting "not applicable" have been excluded from the chart.
Source: OECD (2023[1]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

More than half (59%) of respondents report involving local communities and stakeholders in blue economy activities (Figure 3.5). For example, the county government of Kisii, Kenya, invites local communities from all nine sub-counties to make proposals on blue economy programmes and projects as part of the development of the County Integrated Development Plan. In the state of Rio Grande do Sul, Brazil, the Port Authority (Portos RS) and the Federal University of Rio Grande developed a strategic socio-environmental project through dialogue with stakeholders, generating scenarios to be considered within future plans for the port and waterway operations, and eventually leading to the establishment of guidelines for the port. The level and channel of engagement depend on objectives, which should be specified upfront, and stakeholder engagement mechanisms should avoid consultation capture from over-represented groups (OECD, 2015[11]). For instance, coastal property owners typically have a stake in influencing coastal decision making and can potentially block measures that reduce the value of their property, while vulnerable groups are often less engaged in decision-making processes.

Some cities and regions pay particular attention to involving disadvantaged groups. In the Glasgow City Region, Scotland, United Kingdom, the Climate Ready Clyde cross-sectoral initiative[3] for climate adaptation recognises coastal adaptation as a question of social justice and fosters participative and inclusive decision making by integrating and mobilising stakeholders, including the most vulnerable, such as young and elderly populations (Ocean & Climate Platform, 2022[12]). The region of Los Lagos, Chile, compensates Indigenous communities in designated coastal areas administrated by Indigenous peoples (*Espacios Costeros Marinos Pueblos Originarios*, ECMPO) for conserving and making sustainable use of blue carbon ecosystems (e.g. algae), thereby contributing to the country's nationally determined contribution and the region's carbon neutrality objective.

Almost half (47%) of survey respondents agree or mostly agree that the blue economy provides job opportunities as part of a just transition (Figure 3.5). For example, the city of Barcelona, Spain, studied new occupations in the blue economy, analysing opportunities for the creation of quality employment and the corresponding upskilling and reskilling needs of workers. In the Philippines, the Council for Agriculture, Aquatic and Natural Resources Research and Development together with the local government unit of Los Baños launched a programme focused on enhancing gender-sensitive, science and technology-based livelihood enterprises in organic vegetable and tilapia fish production through capacity development. The blue economy should be just by ensuring that existing practices in blue economy sectors do not adversely impact small-scale businesses and local communities. For instance, in many countries, industrial and foreign fleets have overfished resources, undermining the livelihoods of small-scale fishers (OHCHR, 2022[13]). The maritime strategy of the Catalonia region in Spain prioritises inclusive collaboration to develop community-led fishing management structures based on co-management. Each stakeholder interested in achieving sustainable fishing with an ecosystem approach can participate with equal decision-making power and take on shared responsibilities in the co-management process.

Finally, around one-third (38%) of respondents agree or mostly agree that the most vulnerable local communities are adequately protected from water-related risks. For instance, the resilience strategy of the city of Salvador, Brazil, includes a plan to develop two parks around recovered riverbanks, one of which runs through the low-income peri-urban area of Suburbio Ferroviário, enhancing flood resilience while providing riverside recreational equipment for children and sports equipment for adults. River basin organisations also engage stakeholders to address water scarcity and flooding issues: for example, the Seine-Normandie Water Agency in France organised Water Stakeholder Fora in 2022 to discuss the implementation of the Water Development and Management Plan (*Schéma directeur d'aménagement et de gestion des eaux*, SDAGE) for 2022-2027 with close to 900 local stakeholders.

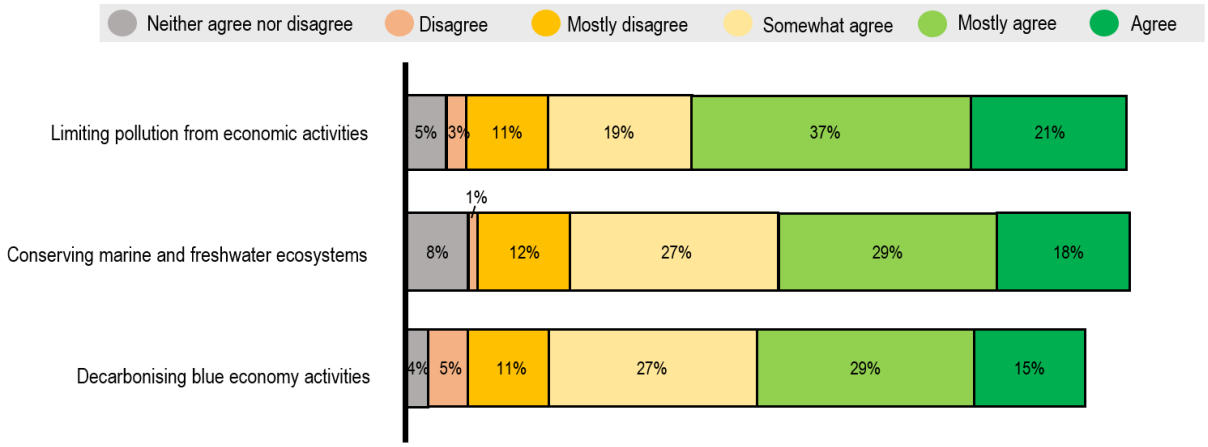
Sustainability

Within the RISC-proof approach, sustainability refers to the ability of cities and regions to limit the adverse environmental impacts of the blue economy while protecting blue ecosystems and biodiversity. The results of the OECD survey suggest that respondents have a relatively positive perception of their efforts to limit pollution from blue economic activities but that more efforts are required to conserve freshwater and marine ecosystems and decarbonise blue economic activities (Figure 3.6). Examples from cities and regions taking action on each of these three dimensions – decarbonisation, pollution limitation and ecosystem conservation – are provided below.

More than half of respondents (58%) agree or mostly agree that their blue economies make efforts to limit water, air and land pollution. For instance, the zero-emission multiservice port energy barge in the Port of Sète, France, provides energy to all ships in the port through a “green” hydrogen fuel cell, eliminating the emission of harmful air pollutants close to human settlements onshore.

In many cases, measures taken to decarbonise the blue economy have co-benefits for pollution, with 44% of respondents agreeing or mostly agreeing that their blue economies take action to reduce GHG emissions. For example, the Spanish city of San Sebastian is purchasing new boats for public transport and tourism routes with photovoltaic panels and electric motors, simultaneously reducing GHG emissions, air and noise pollution. The city of New Orleans and state of Louisiana, United States, both have Climate Action Plans to reduce GHG emissions to net zero by 2050. Water-based renewable energy (e.g. hydropower, offshore wind power and tidal energy in oceans, deltas and rivers) has great potential for reducing GHG emissions from energy use. For instance, the electricity supply of Seattle, United States, is largely based on hydropower, and the Port of Seattle is decarbonising its activities by using cleaner energy sources, among other measures. The survey highlights that ports are often important actors in innovative projects to limit pollution and GHG emissions within the blue economy (Box 3.3).

Figure 3.6. Self-assessment of sustainability of the blue economy



Note: Based on 73 responses to the question: "2.1.3. To what extent is the blue economy in your city/region sustainable?". Survey respondents were invited to select one of the following options: "agree", "mostly agree", "somewhat agree", "mostly disagree", "disagree", "neither agree nor disagree" or "not applicable" for each of the following statements: "The blue economy in my city/region is sustainable by decarbonising blue economy activities (e.g. by switching to renewable energy)", "The blue economy in my city/region is sustainable by limiting water, air and/or land pollution from economic activities" and "The blue economy in my city/region is sustainable by sustainably managing coastal, marine and freshwater resources (e.g. fish, minerals) and conserving ecosystems (e.g. wetlands), including through the use of nature-based solutions". Responses selecting "not applicable" have been excluded from the chart.
Source: OECD (2023[1]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

Box 3.3. Port-led initiatives to foster sustainability in the blue economy

Ports are key elements in global supply chains. Connecting water and land, their strategic locations on coasts or rivers place them on the spearhead of climate change impacts as well as the development of solutions. Their role as connectors can help them multiply action for sustainable development, particularly in the energy transition. Furthermore, ports are often at the interface of different ecosystems and port authorities are responsible for the sustainable management of vast territories of more than 10 000 hectares, making port authorities strategic actors for biodiversity protection.

The OECD survey reveals that port authorities often lead or take part in innovative initiatives to reduce environmental degradation from the blue economy or restore blue ecosystems surrounding ports. For example, the Port of Seattle is using NbS to restore blue ecosystems and capture carbon emissions from its operations, for example by mapping kelp forests with the Seattle Aquarium and through the Smith Cove Blue Carbon Pilot Project, which traps carbon with aquaculture and vegetation. As part of a consortium of four partners, the Port of Vigo in Spain is hosting the Living Ports project, which aims to shift away from grey infrastructure in ports, including through seawalls with innovative concrete that fosters the regeneration of local marine biodiversity. Through its 15-year environmental plan Cáyoli started in 2016, the French Port of Guadeloupe aims to protect and restore the mangroves, coral reefs and seagrass ecosystems present in the port, including through the development of mangrove and coral nurseries, the restoration of nesting areas for different species, and awareness-raising campaigns with local students.

The ports of Antwerp in Belgium, Rotterdam in the Netherlands and Seattle, amongst others, have clean energy initiatives underway. The Port of Antwerp, which aims to become climate-neutral by 2050, has launched the world's first tugboat powered by combustion engines that burn hydrogen in combination with traditional fuel. As part of its ambition to become a hydrogen hub by 2050, the Port of Rotterdam

has implemented a range of projects to produce climate-neutral (i.e. "blue and green") hydrogen in the port, import hydrogen and becoming a central platform in the new hydrogen market, support new bunker stations for hydrogen-based fuels for inland vessels, trucks and aviation and support the energy transition of the industries associated to the port. The Port of Seattle is working with partners to assess the viability of a "green corridor" to expedite the use of zero GHG emission ships and operations connecting the Canadian and United States regions of Alaska, British Columbia and Washington, primarily focusing on cruise ships.

Source: External contribution from the International Association of Cities and Ports (AIVP); OECD (2023[1]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

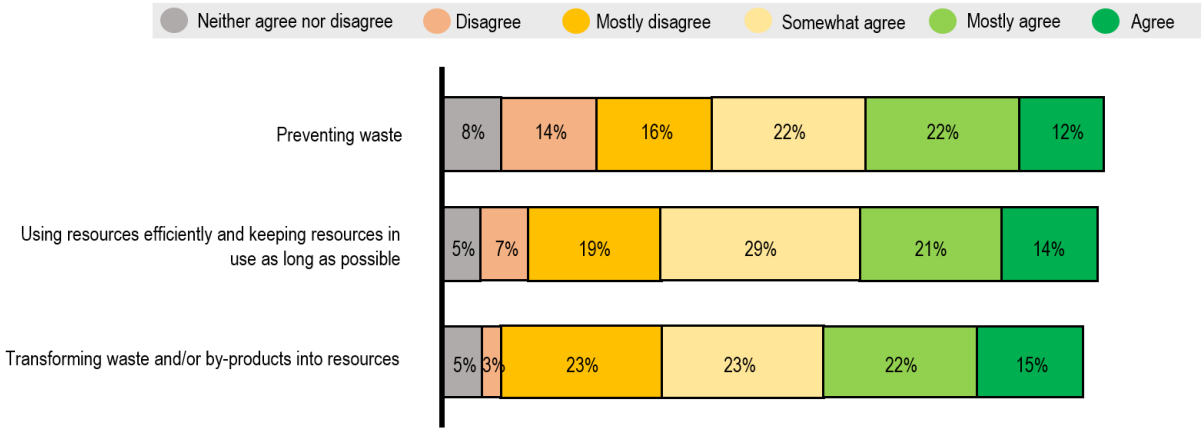
A total of 47% of survey respondents report managing coastal, marine and freshwater resources in a sustainable way and taking action to conserve blue ecosystems, e.g. through planning, stakeholder engagement and NbS. Sustainable land use planning rules can help limit the impact of waterfront economic development on freshwater and marine ecosystems. For instance, the Netherlands' Environment and Planning Act, which entered into force in January 2024, will integrate, modernise, harmonise and simplify current rules related to land use planning, environmental protection, nature conservation, construction of buildings, protection of cultural heritage, water management, urban and rural redevelopment, development of major public and private works and mining and earth removal into a single legal framework (Government of Netherlands, 2023[14]). The city of Sète, France, interacts with the union formed around the Thau Basin, which was created in 2005 to preserve the Thau Lagoon and its fishing and marine culture activities. Part of its activities aims to co-ordinate and evaluate local policies to ensure the protection of water, species and natural areas. The Infrastructure Investment Authority in the state of Pennsylvania, United States, supports the Partnership for the Delaware Estuary in building a mussel hatchery to improve water quality in the estuary, collect new data and raise awareness on mussels as an NbS to improve water quality.

Subnational and national governments have also carried out freshwater rehabilitation projects with positive implications for the blue economy. For example, the capital city of Manila, Philippines, is a coastal and fluvial city with the Pasig River at its centre, a major transport route for passengers and goods. Following decades of pressure from unregulated river use and human activity, national authorities are leading a rehabilitation project. The Metropolitan Manila Development Authority, the Pasig River Rehabilitation Commission and the Greater Paris Sanitation Authority have set out an action plan. Through wastewater treatment and solid waste collection, the rehabilitation project has led to the decrease of various pollutants, including heavy metals (mercury, arsenic, etc.) in one branch of the river and an overall increase in water quality. Improved water quality and access to the riverbanks have, in turn, allowed a revival of fish farming activities as well as recreational activities for inhabitants of Manila.

Circularity

Within the RISC-proof approach, circularity refers to the ability of cities and regions to prevent waste, to use resources efficiently and keep them in use for as long as possible and to transform waste and/or byproducts into resources. By doing so, the circular economy can reduce waste and create new materials and goods that reduce the need for resource extraction, production and associated pollution. Additionally, the shift to a circular economy is needed to help tackle the 45% of GHG emissions associated with the production, use and disposal of products, as improving energy efficiency and switching to renewables will only address 55% of current emissions (Ellen MacArthur Foundation, 2022[15]). Responses to the OECD survey reveal that around one-third of respondents are starting to apply circular economy principles to the blue economy (Figure 3.7).

Figure 3.7. Self-assessment of circularity of the blue economy



Note: Based on 73 responses to the question "2.1.4. To what extent is the blue economy in your city/region circular?". Survey respondents were invited to select one of the following options: "agree", "mostly agree", "somewhat agree", "mostly disagree", "disagree", "neither agree nor disagree" or "not applicable" for each of the following statements: "The blue economy in my city/region is circular by using resources efficiently and keeping resources in use for as long as possible", "The blue economy in my city/region is circular by preventing waste" and "The blue economy in my city/region is circular by transforming waste and/or byproducts into resources". Responses selecting "not applicable" have been excluded from the chart.
Source: OECD (2023[1]), "OECD Global Survey on Localising the Blue Economy (July 2022- September 2023)", Unpublished, OECD, Paris.

Around one-third (35%) of respondents agree that their blue economy uses resources efficiently and keeps them in use for as long as possible. Several opportunities for efficient resource use within the blue economy exist, especially regarding port, shipbuilding and repair activities. For example, the nautical and naval industries in the cities of Puerto Montt, Chile, and Nouadhibou, Mauritania, and the regions of Nouvelle-Aquitaine, France, and the state of Washington, United States, carry out repair activities in order to maintain existing commercial and recreational vessels.

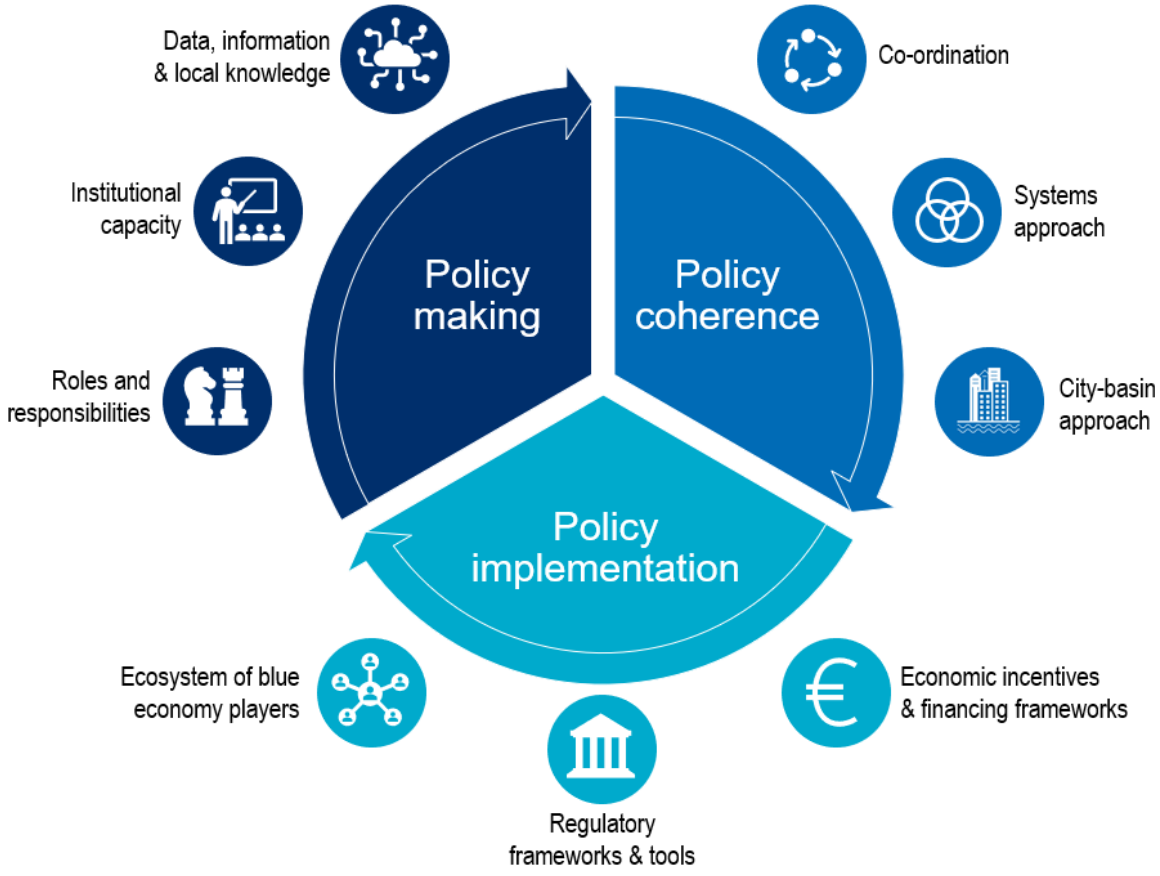
A similar share (34%) of respondents agree that they prevent waste production within the blue economy. For example, the city of Seattle engages in a number of plastic pollution prevention efforts (e.g. the U.S. Plastics Pact) and passed some of the first local ordinances in the country banning foam food service ware and single-use plastic bags. It was the first major United States city to ban plastic straws. The city of Rotterdam, the Netherlands, has launched BlueCity, a platform and accelerator for circular entrepreneurs that contribute to reducing waste and pollution by reusing existing products and materials.

Finally, 37% of respondents agree that their blue economies support the transformation of waste and/or byproducts into resources. Numerous applications are possible within the blue economy: waste from seafood processing can be recovered to produce new materials (e.g. packaging materials), and food waste from waterfront tourism accommodation can be redistributed or recycled. For example, the city of Rotterdam, the Netherlands, aims to have a fully circular and climate-resilient water system by 2050, building on current projects that reuse wastewater and recover phosphate, cellulose, bioplastic and energy from wastewater. Depending on national legislative developments, these materials could potentially be sold to local farms as fertilisers. Panama City, Panama, converts plastics recovered from beach and river cleaning into raw materials for the production of urban furniture installed in municipal parks. In the county of Kisii in Kenya, aquaculture effluents rich in nutrients are reused to irrigate kitchen gardens across the county; in Gijón, Spain, oyster waste is being analysed for subsequent use as fertiliser. The city of Salvador, Brazil, supports innovative businesses such as Gbcycle, a start-up using a biorefinery with a microalgae-based process to eliminate and transform pollutants into high-added-value biomass and bioproducts, preventing waste and pollutants from entering the city's coast and ocean.

The enabling conditions for RISC-proof blue economies in cities and regions

Reaching a RISC-proof blue economy requires certain enabling conditions related to governance to be in place. Drawing from the OECD Multi-level Governance Framework "Mind the Gaps, Bridge the Gaps" (Charbit and Michalun, 2009[16]), the OECD Principles on Water Governance (OECD, 2015[17]) and the OECD Scoreboard on the Governance of the Circular Economy (OECD, 2020[18]), the following sections set out recommendations for nine ways forward for a RISC-proof blue economy, clustered in three groups: policy making, policy coherence and policy implementation (Figure 3.8). Policy making relates to establishing clear roles and responsibilities, holding the right institutional capacities and basing decisions on data and information. Policy coherence refers to the alignment of mandates, policies and sectoral objectives across government institutions. Finally, policy implementation is about the tools used to operationalise policies, including financing, regulation and facilitating synergies within an ecosystem of local blue economy actors. These recommendations are based on the New York City Multi-Stakeholder Pledge on Localising the Blue Economy, presented by the OECD and partners at the United Nations (UN) 2023 Water Conference in New York City, United States (Box 3.4).

Figure 3.8. The enabling conditions for RISC-proof blue economies in cities and regions



Source: Adapted from OECD (2020[18]), *The Circular Economy in Cities and Regions: Synthesis Report*, https://doi.org/10.1787/10ac6ae4-en.

Box 3.4. The New York City Multi-Stakeholder Pledge on Localising the Blue Economy

The Multi-stakeholder Pledge on Localising the Blue Economy was co-developed by the OECD and survey partners, including the International Association of Cities and Ports (AIVP), Atlantic Cities, ICLEI – Local Governments for Sustainability Southeast Asia Secretariat, the International Network of Basin Organizations, the Ocean & Climate Platform, the Resilient Cities Network and United Cities and Local Governments Africa. It sets out ten commitments for the partners to foster a territorial approach to the blue economy. The pledge was launched at the UN 2023 Water Conference side event "Localising the blue economy: A city-basin approach" held on 24 March 2023 at the United Nations in New York City. The partners commit to:

1. Acknowledge the role of cities, regions and basins in fostering RISC-proof blue economies that are: *resilient* to economic and water-related shocks and risks exacerbated by climate change; *inclusive* of local communities and stakeholders, especially the most vulnerable; *sustainable environmentally*, to maximise economic benefits while limiting GHG emissions, pollution, ecosystem degradation and biodiversity loss; and *circular*, to limit resource extraction and tackle associated waste and pollution, including from plastics.
2. Promote a "city-basin" approach to water resources management beyond administrative boundaries and across relevant institutions, from source to sea, to tackle water risks and pollution and unlock the potential of the blue economy through stakeholder engagement, planning, co-ordination, data collection and monitoring.
3. Encourage greater co-ordination across local and national government departments in charge of oceans, freshwater and aquifers for coherent responses to current and emerging environmental, economic and social challenges magnified by climate change, population, economic growth and unsustainable land use practices.
4. Nurture a systems approach to the blue economy, involving all blue economy sectors and players, such as seafood, tourism, transport, port activities and water-based renewable energy, to make the most of synergies across water, climate mitigation, climate adaptation, waste, industrial policy and land use planning, among others.
5. Call on national and subnational governments to set sound incentives and frameworks to catalyse investments needed for sustainable blue economies at the local level to avoid and reduce waste generation, GHG emissions, water and land contamination, depletion of natural resources and biodiversity loss.
6. Encourage meaningful engagement of local communities in knowledge-sharing and bottom-up learning, striving to ensure equal access to marine resources and freshwater sources, acknowledging local specificities, histories and heritage and fostering inclusiveness and gender equality of traditional and emerging blue economy sectors.
7. Explore the opportunities of a sustainable blue economy for job creation, innovation and environmental protection, particularly through emerging sectors (e.g. blue bioeconomy, biotechnology), while ensuring a just transition.
8. Support the collection, analysis and disclosure of granular socio-economic and environmental data that can be used to inform blue economy decision making.
9. Promote capacity development and ocean literacy, and ensure that educational programmes, especially for youth, are tailored to local sustainable blue economy needs.
10. Strive to support governments at all levels to foster RISC-proof blue economies by providing guidance, sharing international best practices and providing new data and measurement tools.

Source: OECD (2023[19]), *New York City Multi-stakeholder Pledge on Localising the Blue Economy*, https://www.oecd.org/water/regional/NYC_Multi-stakeholder_Pledge_Localising_Blue_Economy.pdf.

Policy making

Clarify roles and responsibilities for blue economy policy

Cities and regions should clarify roles and responsibilities for RISC-proof blue economy policy across departments and agencies in terms of policy making, implementation and operational management. In addition, governments should ensure regular communication and co-ordination across levels of government to avoid gaps, overlaps and inefficiencies. As part of a territorial approach, national governments should acknowledge the role of cities and regions in blue economies and local specificities, contexts and heritage in the design of policies affecting subnational governments.

Match the level of institutional capacity to blue economy policy needs

Governments should match the level of institutional capacity to RISC-proof blue economy policy needs to ensure effective policy making, policy implementation and operational management. To strengthen government capacity, national and subnational authorities can promote the education and training of civil servants, provide them with technical support and guidelines, and implement policies to attract and retain talent with merit-based, transparent processes that are independent of political cycles. Where relevant, national governments can build capacities and empower subnational governments through regional development contracts, delegating responsibilities or providing support to subnational governments against the achievement of specific objectives or conditions (Charbit and Romano, 2017[20]). At the subnational level, cities and regions should make the most of existing capacity-building programmes and technical support tools (e.g. guidance) provided by national governments. Furthermore, they can engage in peer-to-peer learning and exchange good practices through national and international networks of cities and regions.

Collect, analyse and share data and information and local knowledge

Governments should support the collection, analysis and disclosure of sufficiently timely and granular socio-economic and environmental data that can be used to inform, assess and adjust RISC-proof blue economy policy when needed. This would involve mapping existing indicators and data sources (including private, public and civil society ones), identifying gaps, as data are often available but fragmented across different sources, and collecting data on new indicators where needed. Examples of such indicators at the subnational level are given in Table 3.2. Guidelines and regulatory frameworks to ensure data privacy and security can help build trust and encourage data sharing from third parties that might otherwise be reluctant to do so (OECD, 2023[21]). Governments should ensure that timely and regularly updated data and information on the blue economy is publicly available, preferably on a single platform, and that data and information effectively feed into policy making, including by periodically reviewing data collection, use and sharing methods to identify overlaps and synergies and track unnecessary data overload. In addition, governments should engage in local knowledge-sharing and bottom-up learning, including indigenous knowledge, to feed into blue economy policy and acknowledge local specificities, histories and heritage.

Table 3.2. Examples of indicators to measure the blue economy at the subnational level

Indicator	Unit of measure
Gross value added from the blue economy	Local currency (e.g. USD, EUR)
Jobs in the blue economy	Number of full-time equivalent jobs (FTE)
Trade in goods and services in the blue economy	Local currency (e.g. USD, EUR)
Foreign direct investment in the blue economy	Local currency (e.g. USD, EUR)
Official development assistance flows into the blue economy	Local currency (e.g. USD, EUR)
GHG emissions from blue economy sectors	Tonnes of carbon dioxide (CO_2)-equivalent
Share of water-based renewable energy in the local energy mix	Percentage
Concentration of key pollutants (e.g. nutrients, heavy metals, plastics) in rivers, lakes, coasts and seas	Milligrams per litre (mg/l) or micrograms per litre (µg/l)
Coastal and marine protected areas	Square kilometres or share (%) of exclusive economic zone area
Total material use (e.g. raw materials, energy) in blue economy sectors	Tonnes
Total waste (municipal and non-municipal) generated by blue economy sectors	Tonnes
Hazardous waste generated by blue economy sectors	Tonnes
Share of waste from the blue economy reused or recycled	Percentage
Connection rates of blue economy entities (private, public, non-profit) to wastewater treatment	Percentage

Policy coherence

Ensure effective co-ordination across water and marine ecosystems

Governments should foster effective horizontal and vertical co-ordination across government departments and agencies in charge of oceans and freshwater to ensure a RISC-proof blue economy from source to sea. National and subnational governments alike can consider: i) creating ad hoc co-ordination bodies, such as committees, commissions, agencies or working groups; ii) organising ad hoc meetings for co-ordination; iii) drawing up cross-sectoral plans with jointly designed and implemented measures benefitting both entities; and iv) sharing data, knowledge and best practices to enhance understanding of the interconnectedness of freshwater and marine systems and support evidence-based decision making. Governments can also consider bringing water and marine decision-making under a single roof. For example, the Swedish Agency for Marine and Water Management is the entity responsible for protecting, restoring and ensuring the sustainable use of freshwater and marine resources, including fisheries; similarly, one of the departmental mandates of Fisheries and Oceans Canada is to protect oceans, freshwater and aquatic ecosystems through science, in collaboration with indigenous communities.

Nurture a systems approach to blue economy policy

Governments should nurture a systems approach to RISC-proof blue economy policy to overcome fragmentation, manage trade-offs between sectors and align blue economy policy objectives with economic and environmental ones. Systems approaches aim to solve policy issues that cut across administrative and territorial boundaries by taking a holistic view (OECD, 2017[22]). They involve developing a vision for a desired future outcome, defining principles according to which the future system should operate and implementing a set of interventions to get there. By acknowledging the interdependencies between sectors of the blue economy, between blue economy sectors and ecosystems, and with policy issues related to the blue economy (e.g. climate change, water security and inequalities), governments

can create synergies between different dimensions of the blue economy and avoid decisions made in one policy sector having unintended consequences in another.

Because they focus on outcomes, systems approaches require collaboration between multiple actors across levels of government and from private, public and non-profit sectors. Governments should strive to meaningfully engage with public, private and non-profit blue economy players from all sectors (e.g. seafood, tourism, transport, port activities and energy). They can do so by mapping actors with a stake in the blue economy, defining the expected use of stakeholder inputs, and adapting the type and level of stakeholder engagement to needs. Particular attention should be paid to involving under-represented groups (e.g. low-income and informal workers, women, youth, etc.) and mitigating risks of consultation capture from over-represented or overly vocal categories. For example, Canada and the United States paid particular attention to including women and Indigenous communities in the design of their respective blue economy strategies.

A systems approach can involve defining a formal long-term strategy for the blue economy in co-ordination with relevant departments and stakeholders involved in both the design and implementation phases. Setting long-term objectives and priorities for the blue economy can help manage trade-offs between sectors, create synergies across government departments and blue economy players, and allocate human and financial resources more efficiently. In fact, survey respondents point to the lack of a clear and holistic blue economy strategy as one of the most significant challenges to the blue economy (59%). Nevertheless, designing a blue economy strategy should not be considered a panacea for resolving policy coherence issues in and by itself. Another way to ensure coherence and foster synergies with related sectoral policies (e.g. water, marine, climate mitigation and adaptation, waste, energy and land use planning) would consist of identifying, assessing and addressing barriers to policy coherence (e.g. using monitoring, reporting and reviews) and using cross-departmental co-ordination mechanisms.

Promote a "city-basin" approach to water resources management

Governments should promote a "city-basin" approach to water resources management to enhance water security (i.e. maintain acceptable levels of the risks of too much, too little, too polluted water and disruption to freshwater systems) from source to sea, to the benefit of the RISC-proof blue economy (Box 3.5). The basin is usually the scale at which it is recommended to integrate physical, environmental, social and economic aspects of water resources management. The governance model of hydrological units is increasingly widespread, providing opportunities to engage stakeholders across catchment areas, including urban areas, and involve them in actions to preserve water resources. At the national level, governments can define legislative frameworks that are conducive to the involvement of cities in basin organisations or committees. Subnational governments can consider: i) integrating the governance structure of basin organisations, from simply taking part in meetings to sitting in and/or advising executive committees, voting or taking decisions; ii) taking part in planning with basin organisations, including consultations and other forms of engagement for designing, implementing and monitoring river basin management plans; iii) exchanging data and information relative to water security in the basin (e.g. monitoring indicators for bathing water quality); and iv) jointly funding projects upstream or downstream to improve water security in the basin, city and/or region, for instance, by providing support to farmers to reduce pesticide or fertiliser use. For example, the Seine-Normandie Basin Committee in France gathers 185 representatives of national and subnational governments as well as freshwater and marine-related stakeholders to debate and reach consensus on the main orientations of water policy at the basin level, affecting freshwater and coastal ecosystems alike.

Box 3.5. Implementing the source-to-sea approach

A source-to-sea system is defined as a land area drained by a river system, comprising its lakes and tributaries (the river basin), which is connected to aquifers and downstream recipients, including deltas, estuaries, coastlines, near-shore waters, the contiguous sea and continental shelf, as well as the open ocean. As such, the source-to-sea approach seeks to address the interconnected dynamics of freshwater, coastal and marine ecosystems to foster holistic natural resources management and facilitate economic development. It is a systematic process that guides the design, planning, implementation and evaluation of projects and programmes, with the overarching objective of reducing the alteration of key flows (water, pollution, sediment, materials, biota and ecosystem services) that connect freshwater sources to the sea. Characterised by its relative expediency and adaptability, this approach capitalises on existing governance, planning and management frameworks, resulting in varied manifestations across different locations. Overall, the approach aims to define measures to mitigate disruptions in key flows while generating economic, social and environmental benefits.

Source: Mathews, R. et al. (2019[23]), *Implementing the Source-to-sea Approach: A Guide for Practitioners*, https://www.siwi.org/wp-content/uploads/2019/07/Source-to-sea-guide_webb.pdf.

Policy implementation

Set sound economic incentives and financing frameworks

Governments should set sound economic incentives and financing frameworks to catalyse financial resources for the RISC-proof blue economy and allocate them efficiently, and to "tip the playing field" in favour of more sustainable blue economy sectors or practices and more resilient freshwater, coastal and marine ecosystems. This involves:

- **Mobilising financial resources efficiently while achieving environmental objectives** by exploring and implementing economic tools that foster sustainable blue economy sectors and resilient blue ecosystems while also raising revenues. For example, instruments applying the polluter-pays principle aim to generate behavioural change (reduce pollution) while internalising the cost of negative environmental externalities. Economic instruments to foster sustainable blue economies can include taxes, charges, fees and payments for ecosystem services. Subnational governments can liaise with national ones to clarify existing financing opportunities at the national (e.g. subsidies, grant funding, loans, loan guarantees, tax credits, etc.) and international (e.g. international loans and grant funding) levels, considering that some transfers of international funds to subnational governments must bypass national ones. Subnational governments should seek to diversify sources of blue economy financing and leverage innovative instruments (e.g. blue bonds, blue carbon credits, blended finance, etc.). Adequate monitoring and reporting mechanisms for blue financing instruments should be in place and enforced to prevent corruption while enhancing integrity and transparency.
- **Channelling funding and financing to public entities, businesses and civil society** through a range of instruments, such as grants, subsidies, loans, loan guarantees and local tax exemptions. For example, through its annual BlueAct competition, the city of Matosinhos, Portugal, provides financial and capacity-building support to ten selected innovative business projects in the blue economy. Beyond providing financial resources, subnational governments can support blue economy start-ups and small and medium-sized enterprises (SMEs) by launching customers,

facilitating access to public and private funds (e.g. through awareness raising, training and having a single window for such information), implementing green public procurement and making public tenders more accessible to start-ups and SMEs (e.g. by dividing tenders into smaller lots or explicitly prioritising SMEs).

- **Allocating funds efficiently**, by clearly defining financing priorities or a financing strategy for the blue economy (in line with a longer-term vision for the blue economy if it exists), and removing counter-productive, environmentally harmful subsidies (e.g. fossil fuel subsidies, subsidies harmful to biodiversity, etc.).

Leverage regulatory frameworks and command-and-control tools

Governments should leverage regulatory frameworks and command-and-control tools to balance RISC-proof blue economy activity with environmental and social protection. Governments at all levels can use the regulatory tools and incentives under their jurisdiction**,** such as licenses, authorisations, permits and permit trading schemes, restrictions, extended producer responsibility, environmental impact assessments and offsetting requirements, to limit the negative environmental externalities of blue economy sectors (e.g. pollution, overfishing) on water and marine ecosystems. As with all regulatory tools, governments should ensure adequate enforcement and compliance through inspections and non-compliance penalties to give regulatory tools full force, as per the OECD Recommendation of the Council on Regulatory Policy and Governance (OECD, 2012[24]). Effective regulations, enforcement and compliance are also pivotal in preventing corruption and ensuring integrity in the blue economy.

Build an "ecosystem" of blue economy players

Governments should strive to facilitate connections and create ecosystems of blue economy players including businesses, research and knowledge institutions, universities and public entities, as well as civil society, to drive sustainable growth and innovation within the RISC-proof blue economy. To do so, governments can create innovation networks for the blue economy, i.e. initiatives that bring together a diversity of players (e.g. public research institutes, large businesses, SMEs, universities and other public agencies) into flexibly organised networks working on a range of scientific and technological innovations across different sectors (e.g. aquaculture, biotechnology, underwater robotics) (OECD, 2019[25]). For example, in the city of Lisbon, Portugal, the Sea Hub (*Hub do Mar*) connects businesses with universities, the local scientific community and researchers to help blue economy businesses grow, focusing on research and innovation, prototyping and testing activities. By facilitating collaboration between blue economy players and granting them access to facilities (e.g. spaces for pilot testing new projects, research labs in universities), such networks can help boost innovation and job creation in the blue economy.

To further boost innovation and job creation in the blue economy, governments should also ensure local education and training programmes match the needs of the blue economy. For example, in the city of New Orleans, the Office of Workforce Development works with businesses and higher education institutions to ensure that education programmes (e.g. Naval Architecture and Marine Engineering programme at the University of New Orleans) are tailored to the needs of the local blue economy. The blue economy can also be mainstreamed into broader entrepreneurship, innovation and job creation programmes. For example, Spain's *Empleaverde* programme aims to boost employment and entrepreneurship in the green and blue economy by connecting labour and environmental policies, with a focus on bringing currently unemployed people to the labour market.

More broadly, governments can create a favourable environment for the blue economy by raising awareness of the blue economy to enhance ocean literacy, especially among youth, through targeted communications, such as awareness-raising campaigns, events, employment fora and activities in schools. For example, the Sud region of France has several awareness-raising initiatives targeting different groups and objectives, such as secondary school students on blue economy jobs (Calypso programme),

sailors on reducing their environmental impact (*Écogestes Méditerranée* programme) and beachgoers and holidaymakers on protecting the marine environment (*Inf'eaumer* and Eco Attitude programmes). Scotland supported Argyll University to design an aquaculture pilot programme for secondary school pupils to raise the attractiveness of "blue careers".

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Notes

[1] The OECD uses the Intergovernmental Panel on Climate Change definition of climate resilience, which refers to "the capacity of human and natural systems to learn, adapt and transform in response to risks induced or exacerbated by climate variability and change" (IPCC, 2022[27]).

[2] The OECD defines nature-based solutions (NbS) as "measures that protect, sustainably manage or restore nature, with the goal of maintaining or enhancing ecosystem services to address a variety of social, environmental and economic challenges" (OECD, 2020[26]).

[3] The initiative is supported by the government of Scotland and 15 members including the 8 local authorities of the city region, the University of Glasgow, the University of Strathclyde, the Strathclyde Partnership for Transport, the Scottish Environment Protection Agency, the British gas distribution company SGN and the Scottish nature agency NatureScot.

4 An Assessment Framework for resilient, inclusive, sustainable and circular (RISC-proof) blue economies in cities and regions

This chapter presents an Assessment Framework for resilient, inclusive, sustainable and circular (RISC-proof) blue economies in cities and regions. The framework is a tool for subnational governments to self-evaluate the resilience, inclusiveness, sustainability and circularity of their blue economy and the level of implementation of the enabling governance conditions (policy making, policy coherence and policy implementation) to get there. Through bottom-up, multi-stakeholder dialogues, the framework aims to facilitate a comprehensive diagnosis of the blue economy and support a consensus on the governance improvements required over time.

Methodology

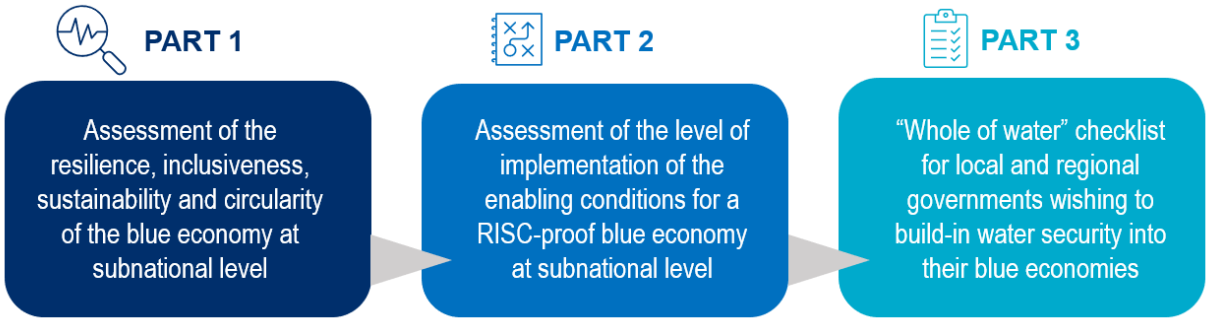
Building on Chapter 3, this chapter presents an Assessment Framework for the RISC-proof blue economy in cities and regions (hereafter RISC Assessment Framework) as a tool for governments to self-evaluate the resilience, inclusiveness, sustainability and circularity of their blue economy, and the level of implementation of the enabling governance conditions to get there. The tool can be used to evaluate the state of play of the blue economy and the existence of enabling governance conditions in cities or regions, identify the main gaps and define priorities and actions to bridge them. The process provides an opportunity to collect data on the blue economy and information on the perception of non-government stakeholders to feed into decision making. Ultimately, the assessment could support the development of a local or regional blue economy strategy or feed into other related plans (e.g. coastal management plans, economic development plans, etc.).

The framework builds extensively on the multi-stakeholder approaches developed as part of existing OECD self-assessment frameworks for water governance and the circular economy, namely the OECD Water Governance Indicator Framework (OECD, 2018[1]) and the OECD Checklist for Action and Scoreboard on the Circular Economy in Cities and Regions (OECD, 2020[2]). The RISC Assessment Framework was pilot-tested in four OECD and non-OECD cities and regions: the region of Los Lagos in Chile, Korle-Klottey Municipal Assembly in Ghana, the city of Porto in Portugal and the city of eThekwini in South Africa. Cities and regions were asked to pilot-test the three-part framework by carrying out the five-step methodology and reporting on its validity, practicality and relevance. Pilot testers found the questions clear and accessible, and all three parts were useful and coherent in terms of sequencing. Their suggestions to finetune the framework have been integrated into the final version.

The RISC Assessment Framework is based on a bottom-up and multi-stakeholder approach rather than a reporting, monitoring or benchmarking perspective since the RISC and enabling conditions of the blue economy in cities and regions are highly place-based, thus requiring a territorial approach. The framework is designed for local and regional governments to engage in multi-stakeholder dialogues that facilitate a comprehensive evaluation of the RISC and enabling conditions of the blue economy at local or regional level and support a consensus on the improvements needed over time. It can help governments and blue economy stakeholders identify strengths, weaknesses and opportunities for improvement, thereby guiding strategic decision making and supporting RISC-proof blue economies.

The RISC Assessment Framework consists of three parts (Figure 4.1) and is carried out using a five-step multi-stakeholder methodology (Box 4.1).

Figure 4.1. RISC Assessment Framework building blocks



In Part 1, subnational governments are invited to assess the level of resilience, inclusiveness, sustainability and circularity (RISC-proof) of the blue economy in their city or region. Part 1 contains:

- **What?** A definition of each dimension (resilience, inclusiveness, sustainability and circularity).
- **Why?** A rationale for each dimension and examples of potential benefits for blue economy sectors and ecosystems.
- **How?** Questions for the assessment of the level of resilience, inclusiveness, sustainability and circularity of the blue economy in the city or region, followed by additional questions to foster discussions and examples of indicators from the OECD and other sources to help assess how the city or region is doing on each dimension.

In Part 2, local and regional governments can assess the level of implementation of the enabling governance conditions for a RISC-proof blue economy in their city or region. This assessment consists of nine assessment questions (one for each of the "ways forward" identified in Chapter 3) for policy making, policy coherence and policy implementation.

In Part 3, local and regional governments wishing to build water security into their blue economies can use the "whole of water" checklist as a brainstorming tool. Recognising that water security is often a blind spot of subnational blue economy strategies, the checklist proposes a non-exhaustive list of actions for subnational governments to consider when designing blue economy strategies and policies.

Box 4.1. How to use the RISC Assessment Framework

To carry out the assessment, the following steps are recommended (Figure 4.2): i) identify the lead team within the local or regional government to co-ordinate the assessment; ii) define the objectives and scope of the assessment; iii) map stakeholders to participate in the assessment; iv) organise targeted workshops with key stakeholders to perform the assessment; and v) repeat the process regularly.

Figure 4.2. A five-step self-assessment methodology

Source: OECD (2020[2]), *Synthesis Report: The Circular Economy in Cities and Regions*, https://doi.org/10.1787/10ac6ae4-en.

- **Identify the lead team to co-ordinate the assessment**. To ensure the success of the assessment process, the local or regional government should appoint a lead team (e.g. within a government department or agency) to co-ordinate the process. The lead institution should have the convening power to gather stakeholders and thoughtfully plan and manage the entire assessment process. In addition to having the human, financial and technical capacity to carry out the assessment process, the lead institution should be motivated and able to promote and put in practice the proposals for change resulting from the assessment.
- **Define the objectives and scope of the assessment**. Several objectives can trigger the use of the RISC Assessment Framework, which is intended as a tool for dialogue among stakeholders to see where the government is performing well and where adjustments are needed. More specifically, the assessment can be carried out to promote collective thinking

among stakeholders, share knowledge and address asymmetries of information across governments and stakeholders, identify gaps in existing institutional, legal, regulatory, financing frameworks and policies, and establish a consensus on the ways forward with stakeholders.

- **Map stakeholders**. Stakeholder mapping should start with other government departments and agencies with a stake in the blue economy, including departments related to economic development, environmental protection and climate mitigation and adaptation, as well as water agencies, utilities, regulators, basin organisations, etc. Beyond government departments, public, private and non-profit actors in the blue economy can improve the representativeness and legitimacy of the assessment process. Once the lead team has mapped stakeholders and considered their responsibilities, core motivations and interactions between them, the lead team should engage with stakeholders in the assessment.
- **Organise targeted workshops with key stakeholders to perform the assessment**. The workshops bring together blue economy stakeholders to vote on the RISC dimensions and the enabling conditions, share their views and compare them to those of other stakeholders, and build a consensus on the adjustments needed to blue economy policy. The number of workshops may change depending on the opportunities for stakeholders to provide input between workshops and to build consensus on the assessment and actions needed.
- During each workshop, the lead team and stakeholders should:
  - Allow time to present the OECD RISC Assessment Framework and key concepts.
  - Vote and discuss on the score around:
    - The level of resilience, inclusiveness, sustainability and circularity (RISC-proof) of the blue economy in the city or region (Part 1).
    - The level of progress towards implementing the enabling governance conditions for a RISC-proof blue economy in their city or region (Part 2).
  - In Parts 1 and 2, respondents should indicate their assessment by ticking the corresponding box in each table with a score. The potential scores range from Levels 1 to 4, listed in Table 4.1.

Table 4.1. RISC Assessment Framework scoring process

Scoring	Assessment of the resilience, inclusiveness, sustainability and circularity of the blue economy at the subnational level (Part 1) *(4 categories with 11 questions in total)*	Assessment of the level implementation of the enabling governance conditions for a RISC-proof blue economy at the subnational level (Part 2) *(3 categories with 9 questions in total)*
Level 1	Not resilient, inclusive, sustainable and/or circular	Poor level of implementation of the enabling governance condition
Level 2	Moderately resilient, inclusive, sustainable and/or circular	Fair implementation of the enabling governance condition
Level 3	Mostly resilient, inclusive, sustainable and/or circular	Good level of implementation of the enabling governance condition
Level 4	Highly resilient, inclusive, sustainable and/or circular	Excellent level of implementation of the enabling governance condition

  - Collect additional information (e.g. examples and sources) from stakeholders to document the responses further. Consider expanding the scope of data collection by integrating insights from diverse external indicators, such as blue economy sector trends and expert analyses.

- To reflect the diversity of opinions, the lead organisation reports the level of consensus among stakeholders during the voting process for each question by selecting the answer that corresponds to the level of agreement (Table 4.2).

Table 4.2. Assessing the level of consensus among stakeholders

Do the assessment results show a consensus among stakeholders?		
★	★★	★★★
Weak consensus	Acceptable consensus	Strong consensus

- **Consider repeating this process regularly (e.g. annually)**. Progress towards a RISC-proof blue economy can be measured using the first RISC Assessment Framework as a baseline against which to compare a second assessment. Repeating the evaluation regularly (e.g. annually) can help engage stakeholders in the blue economy over time. However, it should be noted that changes in the enabling conditions may take more than one year to be implemented and reflected in the assessment results.

The pilot testers flagged three points of attention for subnational governments using the framework:

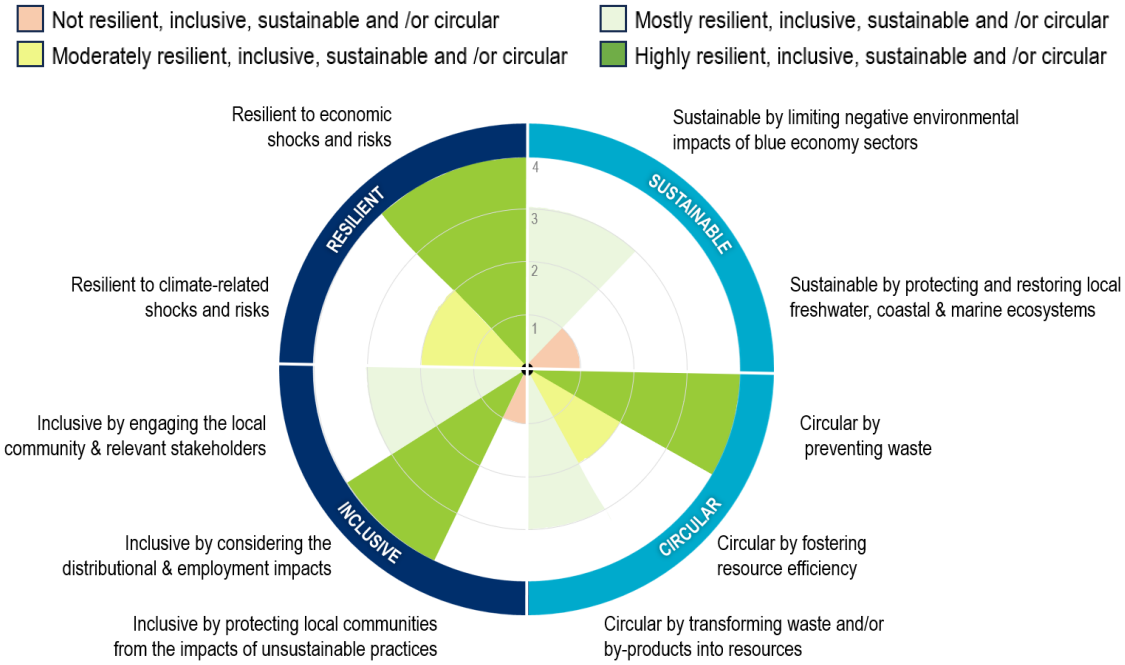
1. **Allow enough time to identify, map and convene blue economy stakeholders adequately** since the blue economy involves a plethora of government and non-government actors. Pilot testers suggested involving government entities linked to cross-cutting issues (e.g. regional or local economic development and planning, coastal, basin and water and stormwater management, natural resources and biodiversity, forestry and parks) as well as blue economy sectors themselves (e.g. fisheries, ports, tourism, etc.). Non-government stakeholders would include blue economy businesses and players such as fishers, local communities, Indigenous communities, non-governmental organisations (NGOs), knowledge and research institutions, academia and media to support transparency and accountability.
2. **Involve national governments if possible**. Several pilot testers suggested that this would increase the relevance of the assessment given that responsibilities for blue economy sectors and governance are shared across levels of government. According to pilot testers, relevant ministries or departments would include those related to: local and regional development; finance; environment; water and sanitation; science, technology and innovation; transport; fisheries; and related entities (e.g. environmental protection agencies, port and harbour authorities, water authorities and resources commissions, and national statistical services).
3. **Allow enough time to collect relevant data and information**, which is often scattered across different government entities and non-government actors. Pilot testers suggested collecting data and information from existing policies, strategies and plans, as well as regional and national climate projections (e.g. ARClim and *Futuros Territoriales* platforms in Chile), geospatial data and other government departments and stakeholders.

Source: Based on OECD (2020[2]), *Synthesis Report: The Circular Economy in Cities and Regions*, https://doi.org/10.1787/10ac6ae4-en.

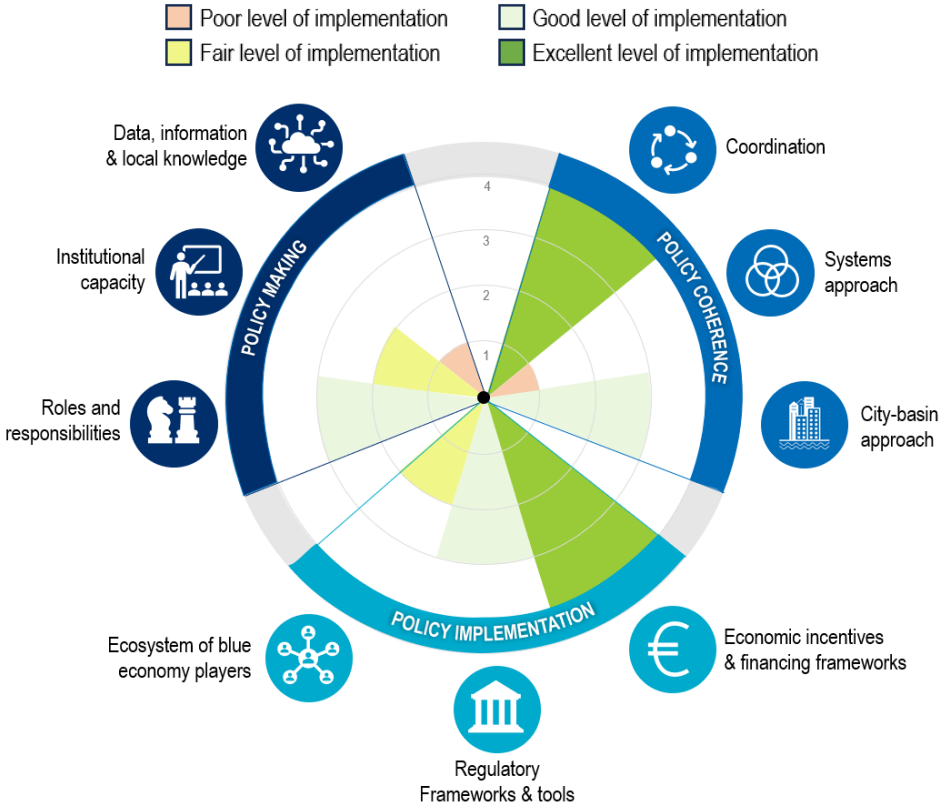
A visual representation of the results obtained with the RISC Assessment Framework is provided in Figure 4.3. It allows an overview of the RISC-proof level of the blue economy in the city or region (Panel A) and the level of implementation of the enabling governance conditions for a RISC-proof blue economy in the city of region (Panel B). This helps visually identify on which dimensions the city or region is performing best and where improvements are needed.

Figure 4.3. Example of a visualisation of the RISC Assessment Framework results

A. Assessment of the RISC of the blue economy at the subnational level (Part 1)



B. Assessment of the level of implementation of the enabling conditions for a RISC-proof blue economy at the subnational level (Part 2)



Source: Based on OECD (2020[2]), *Synthesis Report: The Circular Economy in Cities and Regions*, https://doi.org/10.1787/10ac6ae4-en.

Part 1. Assessment of the resilience, inclusiveness, sustainability and circularity of the blue economy at subnational level

Resilience

<table>
<tr><td>What?</td><td>Definition</td><td colspan="3">Resilience reflects the ability of blue economies to prepare, absorb and recover from a range of shocks, risks or threats, in particular economic shocks and risks (e.g. economic crises, inflation) and climate-related events (e.g. floods, storms or droughts), which particularly affect water-dependent blue economies</td></tr>
<tr><td>Why?</td><td>Rationale and selected examples of benefits</td><td colspan="3">Economic and social shocks and stresses can negatively impact local gross domestic product (GDP) and jobs tied to the blue economy (e.g. shipping and tourism during the COVID-19 pandemic), and disruptions to strategic blue economy sectors (e.g. seafood, shipping or water-based energy) can have implications for food and energy security. Additionally, because they take place in and depend on freshwater, coastal and marine ecosystems and the services they provide, blue economy sectors are particularly vulnerable to climate-related shocks and stresses. For example, floods on land can introduce pollutants and invasive species into freshwater and coastal ecosystems, droughts and storms can generate changes in ocean salinity, disrupting marine biodiversity, and water scarcity can concentrate pollutants in rivers and lakes.
A resilient blue economy can:
• Favour the stability and growth of local GDP and jobs tied to the blue economy by avoiding disruptions to activity due to economic and water-related shocks and stresses (e.g. a disruption to coastal tourism due to poor bathing water quality or water scarcity).
• Enhance food security, energy security and trade tied to fisheries, aquaculture, shipping and port activities; and promote energy security tied to water-based energy sources (e.g. hydropower, offshore wind energy, etc.).</td></tr>
<tr><td rowspan="3">How?</td><td>Assessment questions</td><td colspan="3">1. In your view, to what extent is the blue economy in your city/region resilient to economic shocks and risks (e.g. economic crises, inflation, supply chain disruptions, etc.)?
2. In your view, to what extent is the blue economy in your city/region resilient to climate-related shocks and risks (e.g. floods, storms, cyclones, landslides or droughts, etc.)?
Please select one of the following options:
Highly resilient | Mostly resilient | Moderately resilient | Not resilient</td></tr>
<tr><td>Additional questions for discussion</td><td colspan="3">In your city, region or basin:
• What are the main threats to the blue economy (e.g. climate, environment, economic, social, infrastructural, demographic, political and geopolitical, external)? What are the main climate-related threats to the blue economy (e.g. floods, droughts, water stress, sea level rise, water pollution, water acidification, etc.)? How do these threats interact with each other, and what are the potential cascading effects on the blue economy and the economy at large?
• Does horizontal and vertical co-ordination across government help to prevent and/or address the impacts of economic and climate-related shocks and risks?
• Are these environmental impacts considered in blue economy policy? How are economic and climate-related threats assessed and by whom? Are they evaluated simultaneously or in isolation?
• What policy measures (e.g. regulations, incentives, monitoring, awareness-raising programmes) are currently in place or planned to increase resilience to these shocks?
• What infrastructure tools (e.g. coastal flood defences, nature-based solutions, early warning systems) are currently in place to increase resilience to these shocks?
• Are projections available or feasible to generate for climate-related threats for scenario planning? How might projected trends for climate-related risks affect the blue economy?
• What are the obstacles hindering resilience to economic shocks? What are the obstacles hindering resilience to climate-related shocks?</td></tr>
<tr><td>Additional sources of information
(selected examples of indicators available online)</td><td>Indicator</td><td>Source</td><td>Scale</td></tr>
<tr><td></td><td>Regions and Cities Statistical Atlas
• Share of built-up area exposed to river flooding
• Share of built-up area exposed to coastal flooding</td><td>OECD</td><td>Regional, local</td></tr>
<tr><td></td><td>Copernicus Climate Data Store
• Percentage change in soil moisture</td><td>OECD</td><td>National, regional</td></tr>
</table>

		Aqueduct Water Risk Atlas • Drought risk • Water stress • Water depletion	WRI	National, regional, local
		Global Resilience Index	Resilient Planet	National, regional, local

Note: The resilience-related indicators presented in this table are additional and non-exhaustive sources of information at the national, regional and local levels that can be considered by subnational governments.

Inclusiveness

What?	Definition	Inclusiveness refers to the ability of cities and regions to engage with local communities and relevant stakeholders in decision making related to the blue economy and water security, consider the distributional and employment impacts of green policies on the blue economy and protect local communities (especially vulnerable groups) from the impacts of unsustainable blue economy practices.
Why?	Rationale and examples of benefits	The voices of local communities (especially vulnerable groups, such as low-income groups, women, children, the elderly, the disabled, migrants, ethnic minorities and Indigenous peoples, depending on local context) are often poorly considered in decision-making processes, potentially leading to suboptimal policy outcomes. For example, nature-based solutions can be planned in ways that exacerbate inequality, especially when designed with a focus on economic development and return on investment, which can lead to the neglect of social benefits and drive social exclusion. Additionally, because the digital and green transitions can have adverse impacts on local jobs in the blue economy (e.g. driving down jobs in sectors such as port activities or offshore oil and gas), considering the impacts of green policies on the local blue economy and workers is vital to ensure that digital and green transitions are just. Similarly, the impacts of unsustainable blue economy practices (e.g. overfishing, illegal fishing, unsustainable coastal development, lack of wastewater treatment, water pollution, etc.) on local communities, especially the most vulnerable, should be considered in blue economy policies to avoid costs related to well-being and health. An inclusive blue economy can: • Create job opportunities in “greener” blue economy sectors (e.g. water-based renewable energy, blue bioeconomy, etc.) as part of a just transition. • Improve the outcomes of the local blue economy and related policies (e.g. water security and climate resilience) by considering potential negative policy impacts on local communities. • Foster a just transition by considering the unintended negative consequences of green and digital policies on blue economy jobs and workers. • Enhance the well-being and health of local communities by protecting them from the adverse environmental impacts of blue economy sectors.
How?	Assessment questions	1. In your view, to what extent is the blue economy in your city/region inclusive by engaging the local community and relevant stakeholders in blue economy policy making and implementation? 2. In your view, to what extent is the blue economy in your city/region inclusive by considering the distributional and employment impacts of green policies on the blue economy? 3. In your view, to what extent is the blue economy in your city/region inclusive by protecting local communities (especially the most vulnerable) from the impacts of unsustainable blue economy practices (e.g. overfishing, illegal fishing, unsustainable coastal development, lack of wastewater treatment, water pollution, etc.)? *Please select one of the following options:* Highly resilient | Mostly resilient | Moderately resilient | Not resilient

	Additional questions for discussion	In your city, region or basin: • To what extent are stakeholders involved in the design and implementation of blue economy policy, including water security? To what extent do inputs collected from local communities, especially the most vulnerable, inform the blue economy and related policies? • Are policy measures related to the green and/or digital transition in place? What implications do they have for the blue economy and those working in it? • What are the main risks and threats created or exacerbated by the blue economy at the local level? How do these risks and threats affect local communities, especially vulnerable groups? • What policy measures are in place to promote job creation in the blue economy (e.g. innovation networks or hubs, capacity-building programmes, support to entrepreneurs)? Do these measures support a just transition within the blue economy? Are there measures in place to support those affected by the green and/or digital transition in the blue economy, such as low-skilled workers? • What are the main obstacles to effective and meaningful stakeholder engagement in the blue economy?		
	Additional sources of information (selected examples of indicators available online)	Indicator	Source	Scale
		Regional Income Distribution and Poverty Database • Gini coefficient • Ratio of the average income of the 20% richest to the 20% poorest (S20/S80 ratio) • Poverty rate	OECD	National, regional
		Regional Economy Database • Income per capita • Regional gross value added per worker	OECD	National, regional

Note: The resilience-related indicators presented in this table are additional and non-exhaustive sources of information at the national, regional and local levels that can be considered by subnational governments.

Sustainability

What?	Definition	Sustainability refers to the ability of cities and regions to limit the adverse environmental impacts of the blue economy, while protecting blue ecosystems and biodiversity.
Why?	Rationale and examples of benefits	Blue economy sectors and related practices risks (e.g. overfishing, unsustainable fishing practices, oil spills, ballast water discharge from ships and the discharge of untreated wastewater) can have adverse impacts on blue ecosystems, including the depletion of fish stocks, habitat destruction and biodiversity loss. For example, unsustainably designed energy infrastructure, such as hydropower dams, can prevent fish migration and the flow of sediments, and offshore energy infrastructure can damage natural habitats. The blue economy can also hinder blue ecosystem services such as food provision, storm surge mitigation and water purification. Additionally, most blue economy sectors contribute to air pollution and greenhouse gas emissions and, thus, climate change, further exacerbating disruptions to the water cycle. A sustainable blue economy can: • Contribute to local climate mitigation targets by reducing greenhouse gas emissions. • Protect and recover blue ecosystems and the services they provide (e.g. food provision, flood protection and leisure opportunities). • Create business and employment opportunities in “greener” (i.e. more sustainable) blue economy sectors and activities.

<table>
<tr><td rowspan="4">How?</td><td>Assessment questions</td><td colspan="3">1. In your view, to what extent is the blue economy in your city/region sustainable by limiting negative environmental impacts of blue economy sectors (e.g. greenhouse gas emissions, overfishing, untreated sewage discharge or air pollution) through policy measures (e.g. regulations, standards, incentives, investments, capacity-building programmes, etc.)?
2. In your view, to what extent is the blue economy in your city/region sustainable by protecting and restoring local freshwater, coastal and marine ecosystems (e.g. natural river systems, wetlands or mangroves) through policy measures (e.g. regulations, standards, incentives, investments, capacity-building programmes, etc.)?
Please select one of the following options:
Highly sustainable | Mostly sustainable | Moderately sustainable | Not sustainable</td></tr>
<tr><td>Additional questions for discussion</td><td colspan="3">In your city, region or basin:
What are the main negative environmental impacts (e.g. greenhouse gas emissions, overfishing, untreated sewage discharge, air pollution, etc.) stemming from blue economy activities?
Are these environmental impacts considered in blue economy policy? To what extent are these environmental impacts assessed and by whom?
What policy measures (e.g. taxes, charges, subsidies, licenses, bans, quotas, regulations, etc.) are currently in place or planned to limit the greenhouse gas emissions and other negative environmental impacts of the blue economy?
What policy and infrastructure measures (e.g. funding and financing instruments, green infrastructure and nature-based solutions, marine protected areas, river basin management planning, coastal zone management planning, etc.) are currently in place or planned to protect and restore blue ecosystems?
What are the main obstacles to decarbonising and limiting the negative environmental impacts of blue economy sectors? What are the main obstacles to conserving blue ecosystems?</td></tr>
<tr><td>Additional sources of information
(selected examples of indicators available online)</td><td>Indicator</td><td>Source</td><td>Scale</td></tr>
<tr><td></td><td>Regions and Cities Statistical Atlas Database
Greenhouse gas emissions per capita
Carbon intensity of electricity
Share of fossil fuels in electricity generation
Green area per capita in functional urban areas</td><td>OECD</td><td>Regional, local</td></tr>
<tr><td></td><td>Green Growth Database
Patents in environment-related technologies</td><td>OECD</td><td>National</td></tr>
<tr><td></td><td>Sustainable Ocean Economy Database
Ocean-related technologies inventions
Total marine protected areas
Percentage of fish stocks assessed
Threatened marine fish species</td><td>OECD</td><td>National</td></tr>
<tr><td></td><td>Data Platform on Development Finance for the Sustainable Ocean Economy
Official Development Assistance for the sustainable ocean economy
Private finance mobilised for the ocean economy</td><td>OECD</td><td>National</td></tr>
<tr><td></td><td>Water Database
Total discharge of wastewater to inland waters
Total discharge of wastewater to the sea</td><td>OECD</td><td>National</td></tr>
</table>

Note: The resilience-related indicators presented in this table are additional and non-exhaustive sources of information at the national, regional and local levels that can be considered by subnational governments.

Circularity

<table>
<tr><td>What?</td><td>Definition</td><td colspan="3">Circularity refers to the ability of cities and regions within the blue economy to prevent waste, to use resources (e.g. natural resources, materials) efficiently and keep them in use for as long as possible, and to transform waste and/or byproducts into resources.</td></tr>
<tr><td>Why?</td><td>Rationale and examples of benefits</td><td colspan="3">Blue economy sectors can be major consumers of materials and disposers of waste, thus contributing to the depletion of natural resources (including freshwater) and damaging freshwater, coastal and marine ecosystems through waste generation and pollution.
A circular blue economy can:
• Protect blue ecosystems by preventing potentially harmful waste from entering water bodies.
• Enhance the competitiveness of blue economy sectors by generating material and economic savings for blue economy businesses and contributing to supply chain resilience.
• Contribute to local circular economy and climate mitigation targets by preventing waste generation and greenhouse gas emissions related to resource extraction and virgin material use.</td></tr>
<tr><td rowspan="3">How?</td><td>Assessment questions</td><td colspan="3">1. In your view, to what extent is the blue economy in your city/region circular by preventing waste through policy measures (e.g. regulations, standards, incentives, investments, capacity-building programmes, etc.)?
2. In your view, to what extent is the blue economy in your city/region circular by fostering efficient resource use and keeping resources in use for as long as possible through policy measures (e.g. regulations, standards, incentives, investments, capacity-building programmes, etc.)?
3. In your view, to what extent is the blue economy in your city/region circular by transforming waste and/or by-products into resources through policy measures (e.g. regulations, standards, incentives, investments, etc.)?
Please select one of the following options:
Highly circular | Mostly circular | Moderately circular | Not circular</td></tr>
<tr><td>Additional questions for discussion</td><td colspan="3">In your city, region or basin:
• What are blue economy sectors' most used and demanded resources (e.g. natural resources such as living or biological resources, materials such as minerals)? What are the most resource-intensive blue economy sectors? Has a material flow analysis been carried out for the blue economy?
• To what extent is waste being prevented for these resources and materials? To what extent are these resources and materials being efficiently used and kept in use for as long as possible? To what extent are waste and/or byproducts being transformed into resources?
• To what extent are circular economy challenges for the blue economy assessed and by whom?
• What policy measures (e.g. green public procurement, extended producer responsibility, circular supply chain incentives, performance-based contracts, circular economy regulations, monitoring) are currently in place or planned to increase circularity in the blue economy?
• What infrastructure tools (e.g. waste management facilities, material recovery facilities, remanufacturing and refurbishment facilities) are currently in place to increase circularity, including in the blue economy?
• What are the main obstacles to fostering efficient use of resources within the blue economy? What are the main obstacles to preventing waste? What are the main obstacles to transforming waste or byproducts into resources?</td></tr>
<tr><td>Additional sources of information
(selected examples of indicators available online)</td><td>Indicator</td><td>Source</td><td>Scale</td></tr>
<tr><td></td><td>Regions and Cities Statistical Atlas
• Municipal waste per capita
• Share of municipal waste recycled
• Share of municipal waste used in controlled landfilling</td><td>OECD</td><td>Regional, local</td></tr>
<tr><td></td><td>Circular Economy Database
• Consumption footprint
• Material footprint
• Material import dependency</td><td>Eurostat</td><td>National</td></tr>
</table>

		• Resource productivity • Circular material use rate • Gross value added of circular economy-related sectors • Persons employed in circular economy sectors		
		Environment - Cities and Greater Cities Database • Total water use • Share of urban wastewater load treated according to the applicable standard	Eurostat	Local

Note: The resilience-related indicators presented in this table are additional and non-exhaustive sources of information at the national, regional and local levels that can be considered by subnational governments.

Part 2. Assessment of the implementation of the enabling conditions for a RISC-proof blue economy at the subnational level

Policy making

Clarify roles and responsibilities for blue economy policy

What and why?	Governments should clarify roles and responsibilities for RISC-proof blue economy policy (including water and marine policy) in legal and institutional frameworks, and co-ordinate across levels of government to avoid gaps, overlaps and inefficiencies.	
How?	Assessment question	Does the local or regional government clearly define roles and responsibilities for RISC-proof blue economy policy?
	Level 1	There is no clear allocation of roles and responsibilities for blue economy policy in the local or regional government.
	Level 2	Roles and responsibilities for blue economy policy are defined in legal and institutional frameworks but not implemented in practice. There is a lack of clarity and understanding of roles and responsibilities among the entities concerned.
	Level 3	The responsibility for blue economy policy is clearly assigned to a lead department and several other departments and agencies are involved but there is a lack of effective communication and co-ordination.
	Level 4	The local or regional government demonstrates clear leadership in blue economy policy. Roles and responsibilities are clearly defined in legal and institutional frameworks, and government departments and agencies co-ordinate effectively with one another.
	Examples of suggested actions	Clearly define roles and responsibilities in legal and institutional frameworks in terms of blue economy policy making, implementation and operational management. .
		Where gaps and overlaps are identified, clarify the roles and responsibilities of local and regional governments with national ones.
		Ensure that government departments and agencies co-ordinate effectively with one another and communicate updates regularly through co-ordination mechanisms.
		Acknowledge local specificities, contexts and heritage in the design of policies that affect the blue economy

Match the level of institutional capacity to blue economy policy needs

What and why?	Governments should match the level of government capacity to RISC-proof blue economy policy needs to ensure effective policy design and implementation.	
How?	Assessment question	Do relevant government departments and entities (e.g. regulatory, water or environmental agencies) have adequate capacities and skills for RISC-proof blue economy policy making and implementation?
	Level 1	There is a low level of awareness, human resources and technical capacities on the blue economy and related policies within the lead department for blue economy policy and across the local or regional government.
	Level 2	The lead department for blue economy policy has a fair level of capacity for blue economy policy making

		and implementation, but other departments and agencies with a stake in the blue economy (e.g. water or environmental agencies) are lagging. Some capacity-building activities (e.g. creation of guidance, training) for the local or regional government are planned.
	Level 3	The local or regional government has good capacities and skills for blue economy policy making and implementation. It takes part in capacity-building activities (e.g. training and education programmes, peer learning networks).
	Level 4	The local or regional government has strong capacities and skills for blue economy policy making and implementation and is recognised as an example to follow at the national and international levels.
	Examples of suggested actions	Promote the education and training of civil servants on the blue economy through dedicated training programmes (e.g. from higher levels of government, international associations or NGOs) and peer-to-peer learning (e.g. international networks of cities and regions and policy fora on the blue economy).
		Provide civil servants with technical support and guidelines for implementing blue economy policy.
		Implement policies to attract and retain talent with merit-based, transparent processes that are independent from political cycles.

Collect, analyse and share data and information and local knowledge

What and why?	Governments should support the collection, analysis and disclosure of sufficiently timely and granular socio-economic and environmental data that can be used to inform, assess and adjust RISC-proof blue economy policy when needed.	
How?	Assessment question	Are data and information on the blue economy collected, analysed and shared in a sufficiently granular and timely way to inform, assess and adjust a RISC-proof blue economy policy?
	Level 1	The local or regional government does not collect or have access to sufficiently granular and timely socio-economic and environmental data to inform blue economy policy and it does not share information on the blue economy publicly.
	Level 2	The local or regional government has an understanding of the impacts of the blue economy (e.g. in terms of GDP, jobs and greenhouse gas emissions) thanks to the analysis of broader socio-economic and environmental indicators at functional the national and subnational levels, but it does not have dedicated blue economy indicators. The government has mapped existing indicators and datasets across private, public and civil society sources and identified new indicators to be collected.
	Level 3	The local or regional government has carried out a socio-economic and environmental assessment on the impact of the blue economy (e.g. in terms of GDP, jobs and greenhouse gas emissions) at the subnational level and is defining a framework for the systematic collection and dissemination of data to inform, assess and adjust blue economy policy.
	Level 4	The local or regional government has a dedicated data and information system for blue economy policy that is sufficiently granular and timely to effectively inform, assess and adjust blue economy policy.
	Examples of suggested actions	Map existing indicators and data sources (including private, public and civil society ones) and identify gaps, as in many cases, data are available but fragmented across different sources, and collect new indicators where needed.
		Build trust and encourage data sharing from third parties that might be reluctant by defining guidelines and regulatory frameworks to ensure data privacy and security.
		Ensure that timely and regularly updated data and information on the blue economy is publicly available, preferably on a single platform.
		Ensure that data and information effectively feed into policy making, including periodically reviewing data collection, using and sharing methods to identify overlaps and synergies and track unnecessary data overload.
		Engage in local knowledge-sharing and bottom-up learning, including indigenous knowledge, to feed into blue economy policy and acknowledge local specificities, contexts and heritage.

Policy coherence

Ensure effective co-ordination across water and marine ecosystems

What and why?	Governments should foster effective co-ordination across government departments and agencies in charge of oceans and freshwater to ensure a RISC-proof blue economy from source to sea.	
	Assessment	To what extent do local or regional government departments or agencies responsible for freshwater policy

How?	question	and ocean policy co-ordinate to ensure a RISC-proof blue economy?
	Level 1	The local or regional government has specific departments or agencies responsible for freshwater policy and ocean policy but they do not co-ordinate with one another.
	Level 2	The local or regional government has specific departments or agencies responsible for freshwater policy and ocean policy that co-ordinate on an ad hoc basis.
	Level 3	The local or regional government has specific departments or agencies responsible for freshwater policy and ocean policy that co-ordinate on a regular basis.
	Level 4	The local or regional government has either brought together ocean and freshwater departments or agencies under a single roof or it has specific departments or agencies responsible for ocean and freshwater that co-ordinate regularly and effectively.
	Examples of suggested actions	Create ad hoc co-ordination bodies, such as committees, commissions, agencies or working groups.
		Organise ad hoc co-ordination meetings when needed.
		Draw up cross-sectoral plans with jointly designed and implemented measures benefitting both entities.
		Share data, knowledge and best practices to enhance understanding of the interconnectedness between freshwater and marine ecosystems and support evidence-based decision making.

Nurture a systems approach to blue economy policy

What and why?	Governments should nurture a systems approach to RISC-proof blue economy policy to overcome fragmentation, manage trade-offs between sectors and align blue economy policy objectives with economic and environmental ones.	
How?	Assessment question	Is blue economy policy linked to and coherent with other sectoral policies (e.g. climate mitigation, adaptation, economic development, etc.) in terms of strategies, plans and programmes developed by the local or regional government?
	Level 1	The local or regional government is defining or has defined a formal or informal vision for the blue economy but it is not connected with other relevant policy sectors and related strategies or programmes and objectives.
	Level 2	The local or regional government has defined a formal or informal vision for the blue economy but it is poorly connected with other relevant policy sectors and related strategies or programmes and objectives.
	Level 3	The local or regional government's long-term vision for blue economy policy establishes clear links with other relevant sectoral policies but it does not always align with the objectives of related strategies or programmes.
	Level 4	The local or regional government's long-term vision for blue economy policy is coherent with several other relevant sectoral policies and aligned with corresponding objectives, strategies and programmes.
	Examples of suggested actions	Leverage systems approaches to policy making for the blue economy.
		Meaningfully engage with public, private and non-profit blue economy players from all sectors by mapping actors with a stake in the blue economy, defining the expected use of stakeholder inputs and adapting the type and level of stakeholder engagement to needs, paying particular attention to involving under-represented groups (e.g. low-income or informal workers, women, youth, etc.) and mitigating risks of consultation capture from over-represented or overly vocal categories.
		Consider defining a formal long-term vision for the blue economy in co-ordination with relevant departments and stakeholders involved in the design and implementation.
		Identify, assess and address barriers to policy coherence using monitoring, reporting and reviews as well as cross-departmental co-ordination mechanisms.

Promote a "city-basin" approach to water resources management

What and why?	Governments should promote a "city-basin" approach to water resources management to enhance water security (i.e. maintain acceptable levels of the risks of too much, too little, too polluted water and disruption to freshwater systems) from source to sea, to the benefit of the RISC-proof blue economy.	
How?	Assessment question	To what extent does the local or regional government take part in water resources management at the basin scale, through a "city-basin" or "region-basin" approach with its local basin organisation, to foster a RISC-proof blue economy?
	Level 1	The local or regional government does not have a local basin organisation or does not interact with its local basin organisation.
	Level 2	The local or regional government interacts with its local basin organisation on an ad hoc basis, with a view to managing water resources sustainably. It does not yet consider the implications for the blue economy.

	Level 3	The local or regional government plays an active role in water resources management by interacting regularly with its local basin organisation. It considers the impacts of the blue economy on the basin system (including the coast) and the impacts of water security in the basin on the local blue economy.
	Level 4	The local or regional government and the basin organisation have a strong relationship that plays a crucial role in achieving a RISC-proof blue economy and sustainable water resources management. The government implements measures to address the impacts of water security in the basin on the local blue economy. It takes part in a range of activities with the basin organisation, including decision making, stakeholder engagement, data collection and funding.
	Examples of suggested actions	Take part in the governance structure of the basin organisation, from simply taking part in meetings to sitting in and/or advising executive committees, voting or making decisions.
		Take part in water resources management planning activities with the basin organisation, including consultations and other forms of engagement for designing, implementing and monitoring basin management plans.
		Exchange data and information relative to water security in the basin (e.g. monitoring indicators for bathing water quality).
		Jointly fund upstream or downstream projects (e.g. support farmers in reducing pesticide use and support local communities protecting headwaters) to improve water security in the basin, city and/or region.

Policy implementation

Set sound economic incentives and financing frameworks

What and why?	Governments should set sound economic incentives and financing frameworks to catalyse financial resources for the RISC-proof blue economy, allocate them efficiently and "tip the playing field" in favour of more sustainable blue economy sectors or practices and more resilient freshwater, coastal and marine ecosystems.	
How?	Assessment question	Does the local or regional government mobilise and allocate financial resources for the RISC-proof blue economy efficiently and effectively through economic incentives and financing frameworks?
	Level 1	The local or regional government does not have a framework for prioritising and allocating financial resources for the blue economy. It does not leverage economic tools to foster a RISC-proof blue economy, and counter-productive instruments (e.g. fossil fuel subsidies or subsidies harmful to biodiversity) can be in place.
	Level 2	The local or regional government has an understanding of the economic and financial instruments that foster a RISC-proof blue economy and makes some use of them.
	Level 3	The local or regional government is planning to define a financing framework for the RISC-proof blue economy and already leverages a range of economic instruments and tools to mobilise and allocate financial resources efficiently.
	Level 4	The local or regional government has a clear financing framework, including sound economic incentives, in place for the RISC-proof blue economy, allowing the efficient and effective prioritisation and allocation of financial resources for the blue economy.
	Examples of suggested actions	Implement economic tools that foster sustainable blue economy sectors and resilient blue ecosystems while raising revenues, such as taxes applying the polluter-pays principle, charges, fees and payments for ecosystem services.
		Clarify existing financing opportunities at the national (e.g. subsidies, grant funding, loans, loan guarantees, tax credits, green and blue bonds, etc.) and international (e.g. international loans and grant funding) levels by liaising with the national government.
		Channel funding and financing to public entities, businesses and civil society related to the blue economy through grants, subsidies, loans, loan guarantees and waivers on local taxes.
		Support sustainable blue economy start-ups and small and medium-sized enterprises (SMEs) by launching customers, facilitating access to public and private funds (e.g. through awareness raising, training and having a single window for such information), implementing green public procurement and making public tenders more accessible to start-ups and SMEs (e.g. by dividing tenders into smaller lots or explicitly prioritising SMEs).
		Allocate funds efficiently by clearly defining financing priorities or a financing strategy for the blue economy and removing counter-productive, environmentally harmful subsidies (e.g. fossil fuel subsidies, subsidies harmful to biodiversity, etc.).

Leverage regulatory frameworks and command-and-control tools

What and why?	Governments should leverage regulatory frameworks and command-and-control tools to balance RISC-proof blue economy activity with environmental and social protection.	
How?	Assessment question	Does the local or regional leverage regulatory tools (e.g. licenses, permits, standards, restrictions, bans, etc.) to balance blue economy activity with environmental protection?
	Level 1	The local or regional government makes very little or no use of regulatory tools to balance blue economy sector activity with environmental protection.
	Level 2	The local or regional government uses regulatory tools on an ad hoc basis to manage trade-offs between blue economy activity and environmental protection but in practice they are not always implemented.
	Level 3	The local or regional government leverages regulatory tools to manage blue economy sector activity while limiting adverse environmental impacts. Regulations are followed and regulatory tools are generally implemented in practice.
	Level 4	The local or regional government has a comprehensive set of regulatory tools in place that allow it to manage trade-offs between blue economy sectors and environmental protection and are systematically enforced.
	Examples of suggested actions	Review regulations that affect the blue economy at the subnational level, identifying gaps and overlaps.
		Leverage all regulatory tools and incentives available within the jurisdiction, such as licenses, authorisations, permits and permit trading schemes, restrictions, extended producer responsibility, environmental impact assessments and offsetting requirements.
		Ensure adequate enforcement and compliance through inspections and non-compliance penalties to give regulatory tools full force.

Build an "ecosystem" of blue economy players

What and why?	Governments should strive to build effective ecosystems of blue economy players, including businesses, research and knowledge institutions, universities, public entities and civil society, to drive sustainable growth and a just transition within the RISC-proof blue economy.	
How?	Assessment question	Does the local or regional government foster innovation networks that gather different players (e.g. public research institutes, large businesses, SMEs, universities and other public agencies) to work together on innovations fostering a RISC-proof blue economy?
	Level 1	The local or regional government does not facilitate connections between different blue economy players across different sectors and institutional settings. It has not carried out a mapping of blue economy stakeholders in the city or region.
	Level 2	The local or regional government facilitates connections between blue economy players on an ad hoc basis and has an understanding of the blue economy "ecosystem" of actors in the city or region. It often facilitates connections on a sectoral basis.
	Level 3	The local or regional government facilitates connections between blue economy players through informal mechanisms such as meetings or the sharing of contact details.
	Level 4	The local or regional government has a formal innovation network in place that favours the systematic connection of blue economy players between themselves. The innovation network is in line with the government's RISC-proof blue economy policy objectives.
	Examples of suggested actions	Create innovation networks that combine a diversity of blue economy players (e.g. public research institutes, large businesses, SMEs, universities and other public agencies) into flexibly organised networks working on various scientific and technological innovations across different blue economy sectors.
		Mainstream the blue economy in existing entrepreneurship and employment programmes.
		Ensure that local education and training programmes related to the blue economy match the needs of the blue economy.
		Raise public awareness of the blue economy to enhance ocean literacy, especially among youth, through targeted communications, such as awareness-raising campaigns, events, employment fora and activities in schools.

Part 3. "Whole of water" checklist for the blue economy

The blue economy, which is based in and depends on healthy coastal, marine and freshwater environments, is strongly dependent on good "whole of water" management, an approach that links freshwater and ocean systems with the surrounding human settlements and their accompanying activities and structures. As a result, blue economy activities and infrastructure are particularly vulnerable to water-related shocks and stresses, the cascading effects of which are magnified by climate change. At the same time, blue economy sectors can deteriorate freshwater and seawater quality and disrupt blue ecosystems and the services they provide, thus weakening overall water security.

The "whole of water" checklist (Table 4.3) aims to guide governments in considering both the impacts of water-related risks on the blue economy and the impacts of the blue economy on freshwater, coastal and marine ecosystems. By focusing on water-related impacts of the blue economy, the checklist leverages 15 years of OECD work on water governance as part of the OECD Water Governance Programme.

As a complement to Parts 1 and 2, the checklist proposes a list of ten actions that governments and stakeholders can consider to build a resilient, inclusive, sustainable and circular blue economy strategy that fosters water security. It can be used as part of the design phase of a blue economy strategy or policy to brainstorm or engage in dialogue and co-ordinate with blue economy stakeholders (e.g. businesses, universities, river basin organisations, local communities, etc).

Table 4.3. The "whole of water" checklist

1.	Conduct a vulnerability or risk assessment to determine geographical hotspots for water-related risks, shocks and stresses, the vulnerability of infrastructure related to the blue economy (e.g. ports, water supply and sanitation systems, transport networks, etc.) and the vulnerability of blue economy sectors (e.g. fisheries, tourism) to water-related risks of too much, too little and too polluted water.
2.	Identify the main forms of blue ecosystem degradation due to blue economy sectors (e.g. unsustainable fishing practices, untreated sewage and/or wastewater from all sectors, single-use plastics from tourism and shipping, unsustainably designed water-based energy infrastructure, etc.), including potential implications for local communities, especially vulnerable groups.
3.	Assess the freshwater abstraction and consumption levels of blue economy sectors and their impact on freshwater availability, including potential implications for local communities, especially vulnerable groups (e.g. women, youth, the elderly, migrant or informal workers, Indigenous peoples, ethnic minorities, etc.).
4.	Ensure coherence between land use plans, basin management plans, coastal zone management plans and marine spatial plans to enhance resilience to water-related risks.
5.	Consider measures to minimise the adverse impacts of water-related shocks and stresses on the blue economy, such as short-term contingency measures to ensure critical infrastructure and services (e.g. ports) in case of shocks (e.g. floods), offsetting mechanisms (e.g. payments for ecosystem services) to improve marine and freshwater quality and ecosystem services (e.g. community-led blue carbon projects) and the management of the entire urban water cycle.
6.	Consider measures to limit the negative impacts of blue economy sectors on blue ecosystems (e.g. plastic pollution, untreated wastewater discharge, illegal fishing, overtourism and excessive coastal development) with instruments such as single-use plastic bans on beaches, fish catch quotas, restrictions on fishing gear and practices, design standards and licensing rules for energy infrastructure, urban planning rules that limit the impacts of waterside development on blue ecosystems, a city tax on tourism, mandating the tertiary treatment of wastewater from tourist accommodation, etc.
7.	Consider different water demand management tools, a demand management strategy and a communication strategy to reach all blue economy sectors in the event of a drought.
8.	Facilitate the use of nature-based solutions to protect blue ecosystems and enhance resilience to water risks, including by updating land use planning frameworks and rules (e.g. to reduce permeable surfaces, increase setbacks and improve drainage systems), enhancing government capacity (e.g. to facilitate the uptake of nature-based solutions in procurement) and leveraging adequate funding and financing tools.
9.	Ensure that bulky waste from blue economy sectors (e.g. from coastal and waterside development, shipbuilding, and waterborne vessels in general) is recovered, recycled and adequately treated to avoid environmental leakage, including into blue ecosystems.
10.	Consider measures to transform by-waste from blue economy sectors (e.g. by-waste from seafood processing, sludge from sewage and wastewater treatment) into resources for other economic activities to avoid environmental leakage, including into blue ecosystems.

References

OECD (2020), *The Circular Economy in Cities and Regions: Synthesis Report*, OECD Urban Studies, OECD Publishing, Paris, https://doi.org/10.1787/10ac6ae4-en. [2]

OECD (2018), *Implementing the OECD Principles on Water Governance: Indicator Framework and Evolving Practices*, OECD Studies on Water, OECD Publishing, Paris, https://doi.org/10.1787/9789264292659-en. [1]

Annex A. List of respondents to the OECD Global Survey on Localising the Blue Economy

Country	Name of the city/basin/region	Principal respondent	Scale
Belgium	Antwerp	Marijke De Roeck, Communication and Participation Manager, Urban Development, City of Antwerp	City
Brazil	Pelotas	Gilmar Tadeu Bazanella, Municipal Secretary, Secretariat of Development, Tourism and Innovation, Pelotas City Council	City
	Piracicaba-Capivari-Jundiaí Basin	Sergio Razera, CEO, Piracicaba-Capivari-Jundiaí Basin Committee	Basin
	Rio Grande	Werner Hartmann Spotorno, Assistant Secretary, Municipal Secretariat for the Environment, City of Rio Grande	City
	Rio Grande do Sul	Giovani Trindade, Port Planning Coordinator, Ports RS	Region
	Rio Pardo Basin	Valéria Borges Vaz, President, Rio Pardo Basin Committee	Basin
	São José do Norte	Fabiany Zogbi Roig, Mayor, City of São José do Norte	City
	Salvador	Franklin Gomes, Economic Development Director, Salvador City Hall	City
Cambodia	Tonle Sap	Puy Lim, Vice-President, Tonle Sap Lake Authority	Basin
Canada	Nova Scotia	Greg Landry, Senior Strategic Policy Advisor, Office of Priorities and Planning, Government of Nova Scotia	Region
Comoros	Moroni	Fouad Issoufa Ali, Head of Environment, Climatology and Oceanography, National Agency for Civil Aviation and Meteorology, Comoros	SIDS
Chile	La Araucanía	Marjorie Schwartz, Assessor, Environmental Assessment Service, Regional Government of La Araucanía	Region
	Los Lagos	Patricio Vallespín López, Regional Governor of Los Lagos	Region
	Quillota	Francisco Marchant, Manager, Local Economic Development Unit, Municipality of Quillota	City
China (People's Republic of)	Haihe	Jie Kang, Deputy Division Chief, Haihe River Water Conservancy Commission	Basin
Colombia	Barranquilla	Diana Mantilla Parra, Secretary of Planning, Mayor's Office, City of Barranquilla	City
	Nuquí	Jhordyn Mosquera Nique, Secretary for Planning and Infrastructure, Mayor's Office, Municipality of Nuquí	City
	Puerto Escondido	Gabriel Antonio Vega Franco, Support for the Secretariat of Planning and Public Works, Municipality of Puerto Escondido	City
	Sitionuevo	Eva Luna Cañas, Head of Office, Secretariat for Sustainable Economic Development, Municipality of Sitionuevo	City
	Tumaco	Zulma Bibiana Rojas Prieto, Advisor for Special Projects, Municipality of Tumaco	City
Congo	Congo-Ubangi-Sangha	Georges Gulemvuga, Director, Water Resources, International Commission of the Congo-Ubangi-Sangha Basin	Basin
Côte d'Ivoire	Assinie-Mafia	Hippolyte Ebagnitchie, Mayor, Municipality of Assinie-Mafia	City
Croatia	Dubrovnik	Marko Miljanic, Senior Advisor for Strategic Planning, Administrative Department for European Funds, Regional and International Co-operation, City of Dubrovnik	City
Estonia	Saaremaa	Jaanika Tiitson, Development Advisor, Municipality of Saaremaa	Region
Finland	Lappeenranta	Ilkka Rasanen, Environmental Director, City of Lappeenranta	City
	North Karelia	Jukka Nykänen, Environment Specialist, Regional Council of North Karelia	Region

Country	Name of the city/basin/region	Principal respondent	Scale
France	Dunkerque	Jean-François Vereecke, Deputy General Director, Urban Planning and Development Agency of the Flanders-Dunkerque Region	City
	Guadeloupe	Nicolas Diaz, Head of the Blue Strategy and Maritime Activities Department, Regional Council of Guadeloupe	Region
	Le Port	Aude Quidbeuf Cousin, Deputy Director, General Planning and Local Development, Municipality of Le Port, Reunion Island	Region
	Marseille	Bertrand Righo, Project Manager, City-Port Relation, Sea-based Economy and Sustainable Tourism, Economic Projects Department, City of Marseille	City
	Nouvelle-Aquitaine	Laura Chiron, Policy Officer, Atlantic Maritime Co-operation, Region of Nouvelle-Aquitaine	Region
	Seine-Normandie	Christophe Poupard, Director of Knowledge and Planning, Seine-Normandie Water Agency	Basin
	Sète	Jean-Guy Majourel, Vice-President, Inter-municipal government of Sète (*Sète agglopôle méditerranée*)	City
Ghana	Cape Coast Metropolitan District	Richmond Yeboah, Deputy Director, Cape Coast Metropolitan Assembly	City
	Korle Klottey Municipal District	Emmanuel Baisie, Municipal Coordinating Director, Korle Klottey Municipal Assembly	City
Indonesia	Tanjungpinang	Heni Ari Putranti, Head of Infrastructure and Spatial Planning, Planning and Development Board, Tanjungpinang City Government	City
Japan	Kumamoto	Hirano Takahiro, Section Chief, Water Conservation Division, Kumamoto City Council	City
Kenya	Kilifi	Zeina Mohammed, Director, Environment Department, City Government of Kilifi	City
	Kisii	Edwin Muga, County Director of Fisheries, Agriculture, Livestock, and Cooperative Development, County Government of Kisii	Region
	Marsabit	Omar Aga, Director of Fisheries, County Government of Marsabit	Region
	Narok	Vincent Kinyua, Director of Fisheries, County Government of Narok	Region
	Samburu	Simon Rapunye Lepakiyo, Director of Fisheries, County Government of Samburu	Region
Lao People's Democratic Republic	Mekong River Basin	Ly Thim, Chief River Basin Planner, Mekong River Commission Secretariat	Basin
Malaysia	Melaka City	Zuhaila Ahmad Zubel, Director of Town Planning, Melaka Historic City Council	City
Mauritania	Nouakchott	Saleck Moulaye Ahmed Cherif, Director of Studies, Projects and Co-operation, Region of Nouakchott	Region
Mauritius	Port Louis	Jogeeswar Seewoobaduth, Director of the Environment Department, Ministry of the Environment, Solid Waste Management and Climate Change, Mauritius	SIDS
Morocco	Rabat	Mustapha Benbouya, Environmental Officer, City of Rabat	City
	Souss-Massa	Abdelhamid Aslikh, Secretary-General, Souss-Massa Basin Agency	Basin
Netherlands	Rotterdam	Thuy Do, Senior Advisor, Water, Soil and Climate, City of Rotterdam	City
	The Hague	Martijn van Weert, Policy Officer, Economic Development, Urban Development Department (DSO), Municipality of The Hague	City
Nigeria	Cross River State	Sonigitu Asibong Ekpe, Director, Environmental Multilateral Support and Co-operation, Ministry of Environment, Cross River State	Region
Panama	Panama City	Jannia Samuels, Deputy Director, Resilience, City of Panama	City
Philippines	Calabarzon	William Esguerra, Ecosystems Management Specialist, Department of Environment and Natural Resources, Regional Office of Calabarzon	Region
	Guimaras	Leonard Pasiderio, Provincial Environment and Natural Resources Officer (ENR) Guimaras ENR Office, Provincial Government of Guimaras	Region
	Ivisan	Lorna Bernales, Municipal Planning and Development Coordinator, Local Government Unit of Ivisan	City
	Laguna de Bay	Marilyn Apacionado, Community Development Officer, Laguna Lake Development Authority	Basin
	Sebaste	Leonaris Dionela, Local Planning Officer, Municipal Hall of Sebaste, Antique	City
Portugal	Faro	Joao Correia Vargues, Division of Economic Development, Studies and	City

Country	Name of the city/basin/region	Principal respondent	Scale
		Community Finance, Municipality of Faro	
	Lisbon	Ana Sofia Aníbal, Director, Department of Innovation and Strategic Sectors, City of Lisbon	City
	Matosinhos	Susana Sousa Gonçalves, Head of Department, Civil Protection, Matosinhos City Council	City
	Porto	Ruben Fernandes, Executive Director, Water and Energy of Porto	City
Senegal	Dakar	Abdou Birahim Diop, Director of Urban Development, City of Dakar	City
	Pikine	Ndiaga Fall, Coordinator, Programme of the Covenant of Mayors on Climate and Energy in Sub-Saharan Africa, City of Pikine	City
Seychelles	Victoria	Elna Etienne, Principal Information and Communication Officer, Department of Blue Economy, Seychelles	SIDS
Slovenia	Soča Valley	Miro Kristan, Head of Department, Environment and Spatial Planning, Soča Valley Development Centre	Basin
South Africa	Cape Town	Gareth Morgan, Executive Director, Future Planning and Resilience, City of Cape Town	City
	eThekwini	Nomalanga Sokhela, Programme Manager, Economic Development Unit, eThekwini Municipality	City
Spain	Barcelona	Anna Majo Crespo, Director, Entrepreneurial Innovation Projects, Barcelona Activa	City
	Canary Islands	Ramón Aymerich de Vega, Coordinator, Canary Islands Blue Economy Strategy, Vice-Ministry of Economy and Internationalisation, Regional Government of the Canary Islands	Region
	Gijón	Luis Díaz Gutierrez, Managing Director, Gijón City Council	City
	Júcar Basin	Maria Inmaculada, Head of Human Resources and Services Area, Hydrographic Confederation of Júcar	Basin
	San Sebastián (Donostia)	Judith Moreno Zumalde, Senior Technician, Management Assistance, Strategy Office, San Sebastián City Council Asier Goya Urigain, Environmental Planning and Climate Change Technician, Department of Health and Environment, San Sebastián City Council	City
	Tagus Basin	Mercedes Echegaray Giménez, Head of Public Participation, Hydrographic Confederation of Tagus	Basin
	Vigo	Carlos Botana Lagarón, Head of the Sustainability Department, Port of Vigo	City
Switzerland	Geneva	Gilles Mulhauser, Director-General, Cantonal Water Office, Geneva	City
United States	Los Angeles	Aaron Gross, Chief Resilience Officer, City of Los Angeles	City
	New Orleans	Zach Monroe, External Affairs Manager, Office of Resilience and Sustainability, City of New Orleans	City
	Philadelphia	Abby Sullivan, Interim Chief Resilience Officer, Philadelphia Office of Sustainability	City
	Sausalito	Janelle Kellman, Mayor, City of Sausalito	City
	Seattle	Ashima Sukhdev, Climate Mitigation and Circular Economy Policy Advisor, Seattle Public Utilities, City of Seattle	City
Uruguay	Montevideo	Andrea De Nigris, Chief Resilience Officer, Planning Department, City of Montevideo	City

Note: The names of survey respondents, their respective titles and organisations were correct at the time of collecting the survey responses and may have changed since then.

OECD Urban Studies

The Blue Economy in Cities and Regions

A TERRITORIAL APPROACH

The blue economy is a major driver of urban and regional development, creating millions of local jobs in water-dependent sectors such as fisheries, tourism, and shipping. However, it can also contribute to carbon emissions and ecosystem degradation, while its reliance on freshwater, coastal and marine ecosystems exposes it to the impacts of climate change. As the places where the blue economy takes place, creates value and provides jobs, cities and regions play a key role in unlocking the potential of a resilient blue economy that preserves the ecosystems that sustain it. Building on a global survey of 80+ cities, regions and basins, this report highlights the costs and benefits of the blue economy at subnational level, shedding light on the link between the blue economy and water security. This analysis provides an overview of the multi-level governance of the blue economy and related gaps. It calls on cities and regions to develop resilient, inclusive, sustainable and circular (RISC-proof) blue economies by establishing the right governance conditions related to policy making, policy coherence and policy implementation. The report concludes with a RISC Assessment Framework that offers a self-evaluation tool for subnational governments.

PRINT ISBN 978-92-64-60115-4
PDF ISBN 978-92-64-81852-1