Marine Coastal Ecosystems Biodiversity and Services in a Changing World

MaCoBioS

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Table of contents

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List of Abbreviations

ARPA	Agenzia Regionale per la Protezione Ambientale (in Italy)
BES	Bonaire, St. Eustatius and Saba
CARICOM	Caribbean Community
CBD	Convention on Biological Diversity
CEP	Caribbean Environment Programme of the United Nations Environment Programme
Cefas	Centre for Environment, Fisheries and Aquaculture Science (in the UK)
CERMES	Centre for Resource Management and Environmental Studies (in Barbados)
CCCCC	Caribbean Community Climate Change Centre
CDEMA	Caribbean Disaster Emergency Management Agency
CGEDD	Conseil Général de l'Environnement et du Développement Durable (in France)
CMCC	Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici (in Italy)
CNTE	Conseil National de la Transition Ecologique (in France)
COP	Conference of Parties
CSIC	Consejo Superior de Investigaciones Cientificas (in Spain)
CZMU	Coastal Zone Management Unit (in Barbados)
DEFRA	Department for Environment, Food & Rural Affairs (in the UK)
EU	European Union
IFREMER	Institut Français de Recherche pour l'Exploitation de la Mer (in France)
IMELS	Italian Ministry for the Environment Land and Sea
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
ISPRA	Istituto Superiore per la Protezione e la Ricerca Ambientale (in Italy)
IUCN	International Union for Conservation of Nature
JNCC	Joint Nature Conservation Committee (in the UK)
MENB	Ministry of Environment and National Beautification (in Barbados)
MISEN	Mission inter-service de l'Eau et de la Nature (in Martinique)
MITECO	Ministerio para la Transición Ecológica y el Reto Demográfico (in Spain)
MMABE	Ministry of Maritime Affairs and Blue Economy (in Barbados)
MMO	Marine Management Organisation (in the UK)
MPAs	Marine Protected Areas
NAF(s)	National Adaptation Framework(s)
NAP(s)	National Adaptation Plan(s)
NAS	National Adaptation Strategy
NBSs	Nature-Based Solutions
NBSAPs	National Biodiversity Strategies and Action Plans
NGO(s)	Non-Governmental Organisation(s)
OECD	Organisation for Economic Co-operation and Development
PDP	Physical Development Plan
PNACC	Plan National d'Adaptation au Changement Climatique (in France) and Plan Nacional de Adaptación al Cambio Climático (in Spain)
UK	United Kingdom
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UWI	University of the West Indies
WP	Work Package
WWF	World Wide Fund for Nature

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1. Introduction

Marine and coastal ecosystems provide a wide array of ecosystem services, including key services for climate change adaptation and mitigation such as coastal protection, carbon sequestration, flood control, etc. However, marine and coastal ecosystems are threatened globally by increased environmental pressures related to climate change or more direct human impacts. The degradation of these habitats alters their provision of ecosystem services with negative consequences for human well-being.

Current policy debates at the European Union (EU) and global levels emphasise the need to better link biodiversity policies and climate change (EC, 2020). In this context, Nature-Based Solutions (NBSs) have been recognised for their potential to contribute to both biodiversity conservation and climate change mitigation and adaptation (EC, 2020).

The aim of MaCoBioS is to ensure integrated management and conservation strategies for European marine and coastal ecosystems to face climate change, highlighting the potential of NBSs as long-term and cost-effective mitigation and adaptation measures.

To achieve that goal, the project will develop evidence-based guidelines on how to make NBSs effective for policy-makers and other decision-making stakeholders. This is the main objective of Work Package (WP) 4.

The acceptance and adoption of marine and coastal ecosystems policy measures greatly depends on the engagement of stakeholders throughout the policy development process, which allows due consideration of stakeholders' practices, expectations, and interests (Katsanevakis et al., 2011; Pomeroy & Douvere, 2008). Therefore, MaCoBioS wants to involve policy-makers and other stakeholders from different levels into the conception, development and implementation of mitigation and adaptation measures based on the project's results.

To that end, Task 4.1 was designed to identify potential stakeholders at country, regional and international levels to be engaged in the project (through subsequent Task 4.2), and to provide a general overview of the current policy framework related to biodiversity and climate change adaptation internationally and in each of the ecoregions and countries MaCoBioS works within.

The two policy areas are not only connected with each other but intertwine with many other domains of public action. For instance, the current COVID-19 pandemic has shown how the loss of biodiversity due to the destruction of ecosystems by humans contributes to the outbreak of infectious diseases that threaten public health. Furthermore, climate change is cross-cutting; in particular, climate change adaptation needs to be mainstreamed and integrated into sectoral policies such as water management and civil protection.

This report focuses on the interaction between (marine) biodiversity and climate change. It provides an overview of the major state and non-state actors involved in these two policy areas in order to frame those policy communities. The report also identifies the latest international and national policy developments for biodiversity and climate change, and analyses to what extent national policies in the case study locations investigated in MaCoBioS have incorporated NBSs or related concepts such as ecosystem services.

In those cases where NBSs have not been integrated into the national legal and policy frameworks, opportunities for policy change in the direction of the uptake of this concept may open during the revision process of current laws and strategies that countries have planned or conduct on a regular basis.

MaCoBioS studies different marine and coastal ecosystems in three ecoregions with different climates (tropical, temperate and oceanic/cold) and undergoing different effects of climate

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change. These ecoregions are Northern Europe, the North-western Mediterranean and the Lesser Antilles in the Caribbean. In each ecoregion three case studies were selected: a) Ireland, Norway and the United Kingdom (Northern Europe); b) France, Italy and Spain (North-western Mediterranean); and c) Barbados, Bonaire and Martinique (Lesser Antilles) (Fig. 1).

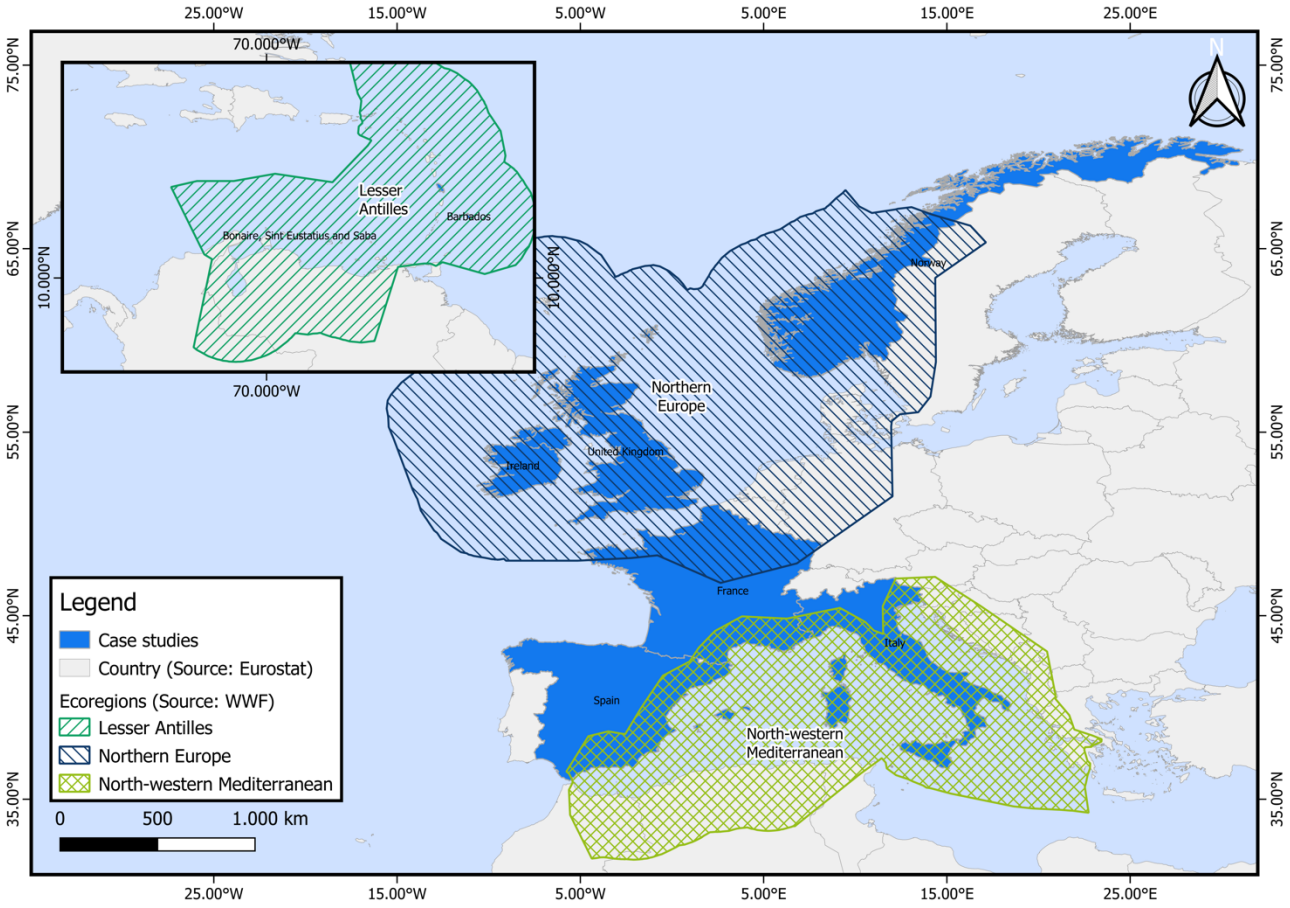

Figure 1. *Ecoregions and case studies focused on by MaCoBioS (sources: Eurostat, 2020; WWF, 2007).*

1.1 Concepts

To help explain the rationale behind the identification of potential stakeholders and the selection of legal and policy documents analysed in the scope of this report, it is first important to clarify the concepts of "Nature-Based Solutions" and "stakeholders".

Nature-Based Solutions

Nature-Based Solutions are defined by the International Union for Conservation of Nature (IUCN) as "actions to protect, sustainably manage and restore natural or modified ecosystems, which address societal challenges (e.g., climate change, food and water security or natural disasters) effectively and adaptively, while simultaneously providing human well-being and biodiversity benefits" (Cohen-Shacham et al., 2016, p.2).

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The concept is relatively recent but is increasingly being developed and applied by the IUCN and other organisations. For its part, the European Commission defines NBSs as "solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience" (EC, 2020 p. 3).

While the concept of NBSs may be relatively new within a policy context, it is clearly derived from more established practices such as forest landscape restoration, integrated water resource management and ecosystem-based adaptation (IUCN, 2020). The wide variety of NBSs approaches found today are generally grouped into three main types: i) making better use of existing natural or protected ecosystems; ii) developing sustainable management protocols for managed or restored ecosystems; iii) creating new ecosystems (Cohen-Shacham et al., 2016).

Some authors argue that the concept's introduction was designed to promote the role of nature in providing solutions to climate change mitigation and adaptation challenges (Nesshöver et al., 2017). IUCN emphasizes that NBSs need to be designed as a response to a societal challenge(s) which, in addition to climate change mitigation and adaptation, may also include disaster risk reduction, economic and social development, human health, food security, water security, and environmental degradation and biodiversity loss (IUCN, 2020).

For its part, the European Commission stresses that NBSs must benefit biodiversity and support the delivery of ecosystem services (EC, 2020).

For the design and implementation of context-specific NBSs stakeholders should be involved through active, inclusive and transparent participation (IUCN, 2020).

Stakeholders

Felipe-Lucia et al. (2015, p. 4) define a stakeholder as "any group, organization or individual having a stake, interest, or who can affect a biological or physical resource, ecosystem service, institution or social system, or someone who is or may be affected by a public policy".

OpenNESS Project (FP7) [1] adopted the definition of Hein et al. (2006, p. 213) with a 'stakeholder' being "[a]ny group or individual who can affect or is affected by the ecosystem's services", distinguishing four main groups: a) stakeholders who directly benefit (beneficiaries); b) stakeholders who are negatively affected (burden); c) stakeholders who directly impact ecosystems and their services (e.g., landowner, resource manager); and d) stakeholders who indirectly influence ecosystems and their services (e.g., decision-makers, civil society organisations) (Hauck et al., 2016).

MaCoBioS focuses on improving our understanding of how to manage and conserve marine and coastal ecosystems and the services they provide under climate change. In this context, stakeholders may be those who:

- Have a direct role in the management of marine and coastal ecosystems (e.g., protected area managers, governmental agencies with jurisdiction over the coastal zone/coastal waters);
- Can influence (directly or indirectly) the management of marine and coastal ecosystems through policies, legislation, funding, research, environmental education, etc. (e.g., policy-makers, universities, non-governmental organisations - NGOs);

[1] http://www.openness-project.eu/

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- Make use of marine and coastal ecosystems (e.g., fishermen, divers, etc.);
- Benefit (directly and/or indirectly) from services provided by marine and coastal ecosystems (e.g., coastal communities benefiting from coastal protection).

These include stakeholders acting at different geographical scales, from the local to the national, regional and international levels.

1.2 Methods

Identification of potential stakeholders

In this report we focused on the identification of international, regional and national stakeholders that may affect decision-making and management/regulation of the uptake and implementation of NBSs and provide the institutional setting for future use of NBSs.

Nevertheless, being aware of the importance of local stakeholders for the successful implementation of NBSs and the value of bottom-up experiences to inform policy design, WP4 aims to add this level of analysis as soon as all study sites and NBSs to be studied are clearly established for every case studies.

Potential stakeholders were initially identified by MaCoBioS project partners directly linked with each case study, based on their knowledge and previous experience. These preliminary data were then completed with desk research (searching official websites and documents, newspapers, blogs, etc.) to gather a comprehensive list of stakeholders with competences and/or interest in biodiversity conservation, marine/coastal issues and/or climate change. Next, the stakeholders identified were classified according to one of the following categories:

- National policy-makers and governmental departments;
- National regulatory bodies and implementing agencies;
- Subnational public agencies (regulatory, implementing, etc.);
- Regional, municipalities and other local authorities;
- Advisory and consultative bodies;
- Scientific research institutes;
- Civil society organisations and NGOs;
- Industrial/commercial organisations, sectoral and professional associations;
- Media (national and local);
- Other organisations (e.g., museums, consultancies).

The resulting database was later validated by a country expert to avoid selection bias or errors. Nonetheless, we expect these lists to evolve over time as the analysis continues and other stakeholders may be identified as relevant through interviews, expert opinion, etc.

The information used in this report, in particular entities' designations and competences, was updated in April 2021.

Overview of the policy context

During the initial phase of this Task, we collected a high number of documents for each case study based on desk research and inputs from the scholars and experts involved in MaCoBioS.

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After listing the main national legislation and strategic documents, we refined our selection and analyses to focus in more detail on the most important documents falling into two policy areas: biodiversity conservation and climate change. This choice was motivated by the crucial interrelation between these two strands of environmental policies as it is stressed by the European Commission that:

> We cannot address biodiversity loss without tackling climate change, but it is equally impossible to tackle climate change without addressing biodiversity loss. Protecting and restoring ecosystems can help us reduce the extent of climate change and cope with its impact.
>
> (European Commission[2])

Despite the relevance of this interrelation, these two policy areas and the respective communities have not yet developed strong interactions[3]. For each one of these two policy areas, we selected the most recent legal documents and national strategies for each of the cases studied in our project. For biodiversity policy, the Convention on Biological Diversity (CBD) calls for its Contracting Parties to adopt a National Biodiversity Strategy. The country profiles developed by the Secretariat of the CBD[4] were a useful basis to collect background information on biodiversity conservation in the countries of our study. The site also works as a repository of the most recent National Biodiversity Strategies and Action Plans (NBSAPs). For climate change we have investigated adaptation strategies rather than climate mitigation; unlike climate change mitigation, adaptation has only recently received political attention. The European Climate Adaptation Platform (Climate-ADAPT) proved a useful tool for collecting data on national policy frameworks for climate change[5].

Table 1 lists the documents selected for each case study. In the selected documents, we searched for the presence of the concept of NBSs by searching for related words ("nature", "nature-based"; "solution", "measure", "option", "action"; "green/blue infrastructure", "green", "blue", "structure"; "ecosystem services", "ecosystem-based", "ecosystem-based initiatives", "ecosystem-based adaptation", "ecosystem-based mitigation", "ecosystem-based management") in English and their translation into other languages (Dutch, French, Italian and Spanish). For the Norwegian case, we relied on an informal English translation as explained in the case study section. Once the keywords were identified, we read the related paragraph (see

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[2] Internet source:

https://ec.europa.eu/environment/nature/climatechange/index_en.htm#:~:text=In%20a%20nutshell,and%20cope%20with%20its%20impact (last access: 01.02.2021).

[3] This point was stressed in a webinar arranged by Euractiv on 10th November 2020 on "The 2030 Climate Target Plan: What will it take to reach the target?". Participants to the seminar also pointed out that the climate change mitigation discourse is captured almost entirely by the energy and transport sector without much consideration for the role played by biodiversity. The recording of the event is available at https://www.youtube.com/watch?v=-5Evcq8M2hY (last access: 15.04.2021).

[4] Source: https://www.cbd.int/nbsap/

[5] Climate-ADAPT is a partnership between the European Commission and the European Environment Agency (EEA). The Platform is maintained by the EEA with the support of the European Topic Centre on Climate Change Impacts, Vulnerability and Adaptation (ETC/CCA). Source: https://climate-adapt.eea.europa.eu/#t-countries

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Bowen 2009 for further information about these different steps in document analysis). This analysis was initially conducted by one investigator and then later checked and validated by a second investigator to avoid misunderstandings and reinforce our conclusions.

We acknowledge that focusing on words in isolation from their textual context can be reductive and disregard nuanced meanings. However, content analysis can be used in research once a clear research question is formulated. At this stage of the project, we have selected the most relevant documents (i.e. the content) that we can better analyse once the other MaCoBioS Work Packages specify questions.

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Table 1. *Overview of the documents selected.*

	Biodiversity conservation	***Climate change adaptation***
Northern region		
Ireland	• Wildlife Act (1976; consolidated version of 2020) • Third National Biodiversity Plan (2017)	• Climate Action and Low Carbon Development Act (2015) • First National Adaptation Framework (NAF) (2018)
Norway	• Nature Diversity Act (Act of 19 June 2009 No.100 Relating to the Management of Biological, Geological and Landscape Diversity) • Norway's national biodiversity action plan (2015)	• Climate Change Act (2017) • White Paper on Climate Change Adaptation (2013)
United Kingdom (England)	• Countryside and Rights of Way Act (2000) • UK Post-2010 Biodiversity Framework (2012)	• Climate Change Act (2008) • Second National Adaptation Programme (2018)
Mediterranean region		
France	• *Loi n°2016-1087 pour la reconquête de la biodiversité, de la nature et des paysages* (21016) • *Stratégie nationale pour la biodiversité (SNB) 2011-2020* (2011)	• *Loi n°2019-1147 relative à l'énergie et au climat* (2019) • National Climate Change Adaptation Strategy (2006)
Italy	• *Legge 1° dicembre 2015, n. 194 per la tutela e la valorizzazione della biodiversità di interesse agricolo e alimentare* (2015) • *Strategia nazionale per la biodiversità* (2011-2020)	• A national law has not been adopted • National Adaptation Strategy to Climate Change (2015)
Spain	• Law 42/2007 on Natural Heritage and Biodiversity (2007) • Strategic Plan on Natural Heritage and Biodiversity (2011)	• *Ley 7/2021 de cambio climático y transición energética (2021)* • *Plan Nacional de Adaptación al Cambio Climático 2021-2030* (2020)

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	Biodiversity conservation	*Climate change adaptation*
Caribbean region		
Bonaire	• Nature Conservation Framework Act BES (2019) • Nature and environment policy plan 2020-2030 (2020)	• Climate Act (2019) [for the whole Netherlands] • National Climate Adaptation Strategy (2016) [for the whole Netherlands]
Barbados	• Planning and Development Bill 2019 (pending approval) • Coastal Zone Management Act • Fisheries Act • Physical Development Plan • Integrated Coastal Zone Management Policy Framework (drafted • Second National Biodiversity Strategy and Action Plan (2021) • Second National Biodiversity Strategy and Action Plan (2021)	• A national law has not been adopted • Physical Development Plan • Integrated Coastal Zone Management Policy Framework (drafted)
Martinique	• *Loi n°2016-1087 pour la reconquête de la biodiversité, de la nature et des paysages* (2016) [France] • *Stratégie nationale pour la biodiversité (SNB) 2011-2020* (2011) [France]	• *Loi n°2019-1147 relative à l'énergie et au climat* (2019) [France] • National Climate Change Adaptation Strategy (2006) [France]

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2. The international and regional level

2.1 Environmental governance: major stakeholders

Most environmental problems, including biodiversity conservation and climate change, require transnational and global coordination. International and regional organisations (both intergovernmental and non-governmental) create platforms for cooperation and contestation, shaping debates and advocating policy solutions (Kaiser & Meyer, 2016).

International level

In the framework of the United Nations (UN) system, the Environment Programme (UNEP) is key in terms of environmental action, assisting countries in implementing environmentally sound policies, providing guidelines and funding. It covers issues such as climate change, ecosystems, and biodiversity, and the connection between both has been highlighted in recent years.

The Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (UNESCO) is responsible for supporting global ocean science and services thus playing an important role in raising awareness regarding threats to marine and coastal ecosystems.

The Intergovernmental Panel on Climate Change (IPCC) is the UN body for assessing the science related to climate change. Its reports are a key input into the international negotiations to tackle climate change.

The Organisation for Economic Co-operation and Development (OECD) is a forum and knowledge hub for data and analysis, exchange of experiences, best-practice sharing, and advice on public policies that also covers issues related to biodiversity, climate change and the ocean.

The Global Environmental Facility provides grants for projects addressing biodiversity and climate change (among other environmental problems) and serves as a financial mechanism for international conventions related to these issues.

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) is an independent body that aggregates 137 member States and assesses the state of biodiversity and of ecosystem services, in response to requests from decision-makers.

At the international level, NBSs have been brought to attention particularly by the International Union for Conservation of Nature, which recently published the Global Standard on Nature-Based Solutions, aiming to provide a robust framework for designing and verifying NBSs (IUCN, 2020).

The potential of NBSs to address global challenges is the focus of the Nature-Based Solutions Initiative, an international network of natural and social scientists that provides advice to governments, NGOs and the UN.

Several international NGOs work to raise awareness about the need to protect biodiversity and to address climate change effects. A few examples are the World Wide Fund for Nature (WWF), Fauna & Flora International and Conservation International. In addition to awareness and outreach, many international NGOs also develop research and conservation projects. Some are more focused on oceans (e.g., Oceana, Sea Shepherd) or address specific marine and coastal ecosystems (e.g., Global Coral Reef Alliance, International Coral Reef Initiative, Reef Check

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and Wetlands International). A more detailed list of potential stakeholders identified for the international level can be found in Annex I, Table A.

European level

The European Commission is the executive branch of the European Union and has different thematic departments. Directorate-General for the Environment is responsible for EU policy on the environment (including biodiversity), Directorate-General for Maritime Affairs and Fisheries for EU policy on maritime issues and Directorate-General for Climate Action coordinates EU efforts to fight climate change.

These issues are frequently addressed in a cross-cutting way through research projects funded by the EU, and the Directorate-General for Research and Innovation has been putting some effort into the analysis and synthesis of projects in the area of NBSs (EC, 2020).

The Joint Research Centre is the Commission's science and knowledge service and provides a compilation of databases and modelling tools in different science areas, including environment and climate change. The European Environment Agency is another provider of environment-related data.

Concerning the protection of marine and coastal biodiversity in the Mediterranean Sea, the Regional Activity Centre for Specially Protected Areas, established under the Barcelona Convention, provides assistance to Mediterranean countries in regard to developing and promoting Specially Protected Areas. Furthermore, MedPAN, the Network of managers of marine protected areas (MPAs) in the Mediterranean, provides a platform for exchanges between its members and for capacity building to effectively manage their MPAs. Finally, in terms of the sustainable use of living marine resources, the General Fisheries Commission of the Mediterranean is an important actor.

In terms of awareness and outreach, Surfrider Foundation Europe and WWF Mediterranean are some examples of the international NGOs contributing to that task, with WWF Mediterranean also involved in several conservation projects.

A more detailed list of potential stakeholders identified for the European level can be found in Annex I, Table B.

Caribbean level

There are numerous different intergovernmental organizations addressing sustainability, environmental problems and climate change in the Caribbean region. The Alliance of Small Island States is a coalition of 44 small island and low-lying coastal developing states (including Barbados) which focuses on climate change, sustainable development and ocean conservation. The Association of Caribbean States has among its areas of concern the preservation and conservation of the Caribbean Sea and disaster risk reduction. The Caribbean Community (CARICOM), which comprises the Anglophone Caribbean plus Suriname and Haiti, recognises the importance of biodiversity protection and climate change adaptation at the highest levels, publishing a report on the 'State of Biodiversity in the Caribbean Community,' developing a five-year CARICOM Biodiversity Strategy for the implementation of the Biodiversity Cluster of Multilateral Environmental Agreements (MEAs). CARICOM also established in 2002 the Caribbean Community Climate Change Centre (CCCCC) to coordinates the Caribbean region's response to climate change and provide climate change-

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related policy advice and guidelines to the Member States. Biodiversity and ecosystems management, climate and disaster resilience and ocean governance are also part of the Organisation of Eastern Caribbean States (OECS) focus areas, a sub-regional grouping within CARICOM.

Climate change and disaster management are major concerns for the region containing the most Small Island Developing States (SIDS) in the world. A few entities provide data and guidance in this area, such as the Caribbean Regional Climate Centre, the CCCCC (above), and the Caribbean Disaster Emergency Management Agency (CDEMA). The Caribbean Development Bank supports capacity building and projects that aim to mitigate the impact of climate change and protect the environment. The CCCCC, CDEMA, and CDB are all institutions of CARICOM.

The University of the West Indies (UWI), also an institution of CARICOM, with campuses in Barbados, Jamaica, Trinidad and Tobago, concerns itself with the general sustainable development and climate resilience of the region through the research, education and policy advice activities of various Departments and institutes. For example, the Centre for Resource Management and Environmental Studies (CERMES) at the Cave Hill Campus "*responds to the concerns of member countries regarding incorporation of environmental issues into sustainable development by creating a multidisciplinary programme*."

UN Environment has a Caribbean Environment Programme (UNEP-CEP) in recognition of the importance and value of the Wider Caribbean Region's fragile and vulnerable coastal and marine ecosystems. The legal framework for the CEP is provided by the Cartagena Convention, which is the first and only regionally binding treaty of its kind, promoting the protection and development of the marine environment of the Region.

The protection of the Caribbean environment is also the aim of Environmental Protection in the Caribbean (EPIC), a non-profit organisation that has research, restoration, and education projects with some focus on wetlands. The Caribbean Natural Resources Institute is a non-profit technical institute with experience in research, policy influence and capacity building for participatory natural resource governance in the Caribbean.

The Caribbean Regional Fisheries Mechanism (CRFM) promotes and facilitates the responsible utilization of the region's fisheries and other aquatic resources. The Caribbean Network of Fisherfolk Organizations is a network of small-scale fisherfolk and their organisations, operating in the Caribbean Community. One of their objectives is to promote an ecosystem approach to fisheries and build resilience and adaptive capacity of fishers and fishing communities to deal with climate change.

A more detailed list of potential stakeholders identified for the Caribbean level can be found in Annex I, Table C.

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2.2 The international policy context for biodiversity and climate change

Numerous international policies at both global and EU level relate, directly or indirectly, to biodiversity protection (EC 2017; Maes et al. 2018; Rouillard et al. 2016; Soler Luque & Kostecka 2018).

The construction of a system of international governance for biodiversity started gradually in the early 20th century (Arjjumend et al. 2016). However, major advancements in this process occurred in the 1970s (Wilkinson et al. 2013). The UN Conference on the Human Environment of 1972 – also known as the Stockholm Summit (from the city where it took place) – is considered as the real beginning of the international environmental law movement (Arjjumend et al. 2016). In the half-century that has passed since the Stockholm Summit, a complex array of international biodiversity agreements has been developed.

In 1992, the United Nations Conference on Environment and Development (or the Rio Earth Summit) led to the adoption of important binding and non-binding documents. Three binding conventions were adopted: Convention on Biological Diversity (CBD), United Nations Framework Convention on Climate Change (UNFCCC) and United Nations Convention to Combat Desertification. Due to the thematic scope of our study (on biodiversity and climate change), only the first two documents are considered relevant.

Biodiversity conservation

The CBD was adopted in 1992 and came into force in 1993 (UN 1992). It represents the main global instrument and most comprehensive international agreement for biodiversity conservation (Arjjumend et al. 2016; Benzaken & Renard 2011). Indeed, it is the first global agreement on all aspects of biodiversity: genetic resources, species and ecosystems. The CBD has three objectives: 'the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources' (CBD, art. 1).

The work related to the CBD and its implementation is led by the Conference of Parties (COP) (CBD, art. 23). Its Secretariat operates under UNEP. The CBD has several protocols such as the Cartagena Protocol and Nagoya Protocol (for details, see Arjjumend et al. 2016). Under article 26, each state that is part of the CBD regularly reports to the COP about their implementation of the provisions of this Convention and their effectiveness in meeting its objective. Both the European Union (EU) and its Member States are Parties to the Convention.

The 2010 targets set by the CBD to preserve biodiversity were missed. As a response, in 2010, the COP of the CBD adopted a 10-year Strategic Plan to combat biodiversity loss in the world (CBD 2010). The Plan contained 20 new targets – i.e. the Aichi Biodiversity Targets – aimed at achieving this overall objective (IUCN 2018). Both the CBD and the Aichi Biodiversity Targets give relevance to the National Biodiversity Strategies and Action Plans (NBSAPs) as the primary instruments (and a legal commitment of the Parties) for the implementation of international obligations related to biodiversity linking national action to global goals (Hagerman & Pelai 2016; IUCN 2018). For this reason, we consider it important to trace the presence of NBSs (and related concepts) in these documents as well as in national primary laws for biodiversity conservation.

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Biodiversity conservation in the European Union

A complex array of directives, policies, communications and programmes have addressed the threats to the natural environment of the EU (EC 2020a). Rouillard et al. (2016) define the EU environmental policy as extensive, complex and fragmented. Table 2 provides a comprehensive, though not exhaustive, overview.

Table 2. *Overview of the most relevant EU documents for the protection of the environment.*

Directives and Regulations
– Birds Directive – Directive on Environmental Quality Standards – Floods Directive – Habitat Directive – Invasive Alien Species Regulation Marine Strategy Framework Directive – Marine Spatial Planning Directive – Water Framework Directive
Policies, programmes and action plans
– Action Plan for Nature, People and the Economy – Common Fisheries Policy – Integrated Maritime Policy – Seventh Environment Action Programme – Water Security and Drought Policy
Strategies and other documents
– Biodiversity Strategy – Bioeconomy Strategy – Blue Growth Strategy – Green Infrastructure Strategy – Ocean Governance Communication – Strategy on Adaptation to Climate Change – 2030 Climate and Energy Framework

Source: Adaptation from Ferraro and Failler (2021)

A crucial EU-wide strategic document is the EU Biodiversity Strategy adopted and regularly updated by the EU since 1998 as a Contracting Party to the CBD. The EU Biodiversity Strategy to 2020 (EC 2011) was adopted in 2011 to comply with the new Aichi targets. Some progress has been observed but more efforts are still needed (Rouillard et al. 2016) as clearly identified by the newly adopted EU Biodiversity Strategy for 2030 (EC 2020b).

The EU environmental legislation is built on three major pillars that consist of the following directives: the Birds Directive and Habitats Directive, also known together as the "Nature Directives"; the Water Framework Directive and the Marine Strategy Framework Directive (Maes et al. 2018). They constitute the "four main environmental directives" of the EU; the accomplishment of the objectives of the EU Biodiversity Strategy strongly relies on the success of these four Directives (Rouillard et al. 2016). In particular, the Nature Directives constitute the legislative cornerstone of European biodiversity protection and establish an extensive network of nature protection areas called the Natura 2000 network (EC 2020a). The Marine Strategy Framework Directive is the first EU legislative instrument related to the protection of marine biodiversity across Europe (EASAC & JRC 2016).

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Despite these efforts, the EU Directives have not been able to effectively address the loss of biodiversity (Rouillard et al. 2016). According to the European Environment Agency (EEA 2015), EU countries are still far from achieving many policy objectives for healthy ecosystems although EU environmental policy has delivered some improvements. The same applies to global conventions: biodiversity loss continues unhalted worldwide (Vaughn 2010).

Climate change

International efforts to address climate change as a global challenge started with the UN Conference on Environment and Development (Rio, 1992). On that occasion, the UN Framework Convention on Climate Change (UNFCCC) was adopted; it entered into force in 1994. Several protocols on climate change followed (e.g., Kyoto Protocol). Negotiations on climate change have continued since then and have culminated in the Paris Agreement adopted in 2015 to enhance the implementation of the UNFCCC (see article 2 of the Paris Agreement). Regular reporting on progress towards the objectives of the Paris Agreement is required under article 13. The Conference of the Parties to the UNFCCC will first assess the national implementation of mitigation and adaptation measures in 2023 under the Paris Agreement (Art. 14).

The Paris Agreement sets clear goals, i.e. holding the rise in the global average temperature to less than 2°C above pre-industrial levels – while pursuing efforts to limit it to 1.5°C – and to decrease emissions to net-zero to achieve this goal. In this context national governments are requested to submit Nationally Determined Contributions every 5 years. The Paris Agreement has committed its Parties to keep global warming below 2°C. Although climate mitigation is pivotal for the achievement of this objective, countries' adaptation to climate change has become a necessity. The Paris Agreement has, thus, also included a Global Goal on Adaptation that 'aims to enhance adaptive capacity, strengthen resilience and reduce vulnerability to climate change' (EEA 2020: 7).

Climate change adaptation in the European Union

In 2013, the EU adopted an adaptation strategy (EEA 2020). A new and more ambitious EU strategy on adaptation to climate change was adopted in 2021 in the framework of the European Green Deal (EC 2019a; 2019b). This new adaptation strategy defines how the EU can adapt to the impacts of climate change and become climate resilient by 2050. The Strategy is based on four objectives, i.e. to make adaptation smarter (objective 1), swifter (objective 2) and more systemic (objectives 3), and to step up international action (objective 4)[6].

Furthermore, from March 2021, Member States will report about national adaptation actions every two years as part of the Regulation on the Governance of the Energy Union and Climate Action (EU 2018). All governments should acknowledge climate adaptation as a national priority and develop adaptation policies to reduce the negative impact of climate change.

Unlike climate change mitigation, adaptation has only recently received political attention. However, all Member States have adopted an adaptation policy. Most Member States have also adopted a National Adaptation Strategy (NAS) and revised it, and some of them have issued one or several National Adaptation Plan(s) (NAPs). Although national differences exist with

[6] Source: https://ec.europa.eu/clima/policies/adaptation/what_en (last access: 20.05.2021).

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regard to what constitutes a NAS and a NAP, the first document generally presents a long-term vision of the country's measures to deal with the impact of climate change while NAPs tend to specify how the NAS will be implemented with a shorter time frame (EEA 2020).

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Part A – The Northern European region

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3. Ireland

3.1 Environmental governance: major stakeholders in Ireland

A total of 38 potential stakeholders were identified, with a predominance of 'national regulatory bodies and implementing agencies' and 'civil society organisations and NGOs' (Fig. 2). The full list of potential stakeholders, categorised and with their main areas of interest and/or activity detailed, can be found in Annex I, Table D.

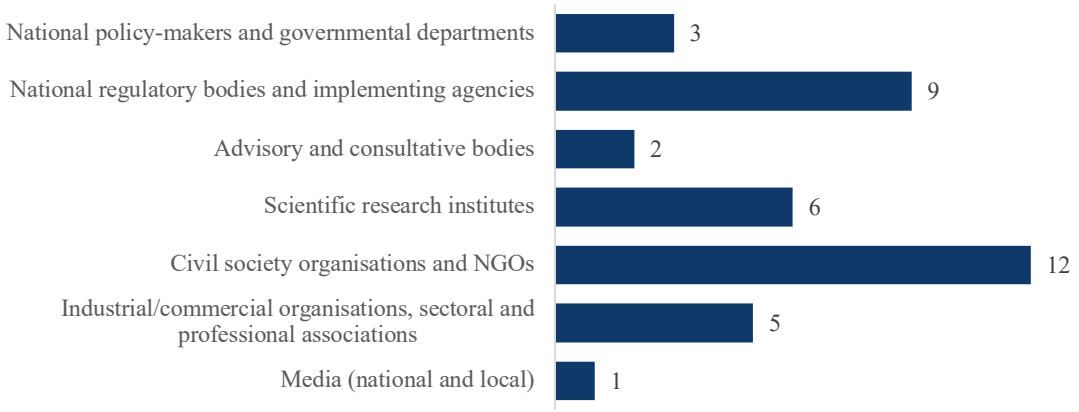

Figure 2. *Number of stakeholders per category for the Irish case study.*

State actors at national and subnational levels

Three different government departments cover the main environmental policies: the Department of Housing, Local Government and Heritage (*An Roinn Tithíochta, Rialtais Áitúil agus Oidhreachta*), the Department of the Environment, Climate and Communications (*An Roinn Comhshaoil, Aeráide agus Cumarsáide*) and the Department of Agriculture, Food and the Marine (*An Roinn Talmhaí-ochta, Bia agus Mara*).

The National Parks and Wildlife Service (*An tSeirbhís Páirceanna Náisiúnta agus Fiadhúlra*), responsible for securing ecosystems' conservation, namely through the designation and management of protected areas, is under the Department of Housing, Local Government and Heritage. The Environmental Protection Agency (*Ghníomhaireacht um Chaomhnú Comhshaoil*) is tasked with environmental protection and policing and plays a key role in preparing Ireland's greenhouse gas inventories and projections as well as implementing the EU Emissions Trading Scheme.

Climate change action is covered by the Department of Housing, Local Government and Heritage (planning dimension) and by the Department of the Environment, Climate and Communications (energy supply and use efficiency). Flood risk management is addressed by the Office of Public Works (*Oifg na nOibreacha Poiblí*), a government office that delivers public services for flood protection, managing government properties and heritage services.

As for the marine environment, while marine planning is a task of the Department of Housing, Local Government and Heritage, fishing and aquaculture policies are under the Department of Agriculture, Food and the Marine. The Marine Institute (*Foras na Mara*) is a state agency responsible for marine research, technology development and innovation. The Agriculture and Food Development Authority (*tÚdarás Forbartha Talmhaíochta agus Bia*) provides integrated

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research, advisory and training services with some focus on climate change. Specific technical expertise, funding and training related to the seafood industry is delivered by Ireland´s Seafood Development Agency (*Bord Iascaigh Mhara*).

Administrative coordination and advisory bodies

The Climate Change Advisory Council (*Chomhairle Chomhairleach um Athrú Aeráide*) is an independent advisory body tasked with informing and shaping Ireland's response to climate change. Specific issues related to water management and monitoring are addressed by the Water Advisory Body (*Comhlacht Comhairleach Uisce*).

Science advice and data provision

The collection, collation, management, analysis and dissemination of data on Ireland's biological diversity is centralized by the National Biodiversity Data Centre. The Geological Survey Ireland also has extensive marine datasets.

Universities play an important role in data provision, namely the National University of Ireland, Galway (*OÉ Gaillimh*) and the University College Cork (*Coláiste na hOllscoile Corcaigh*). In addition, the Irish Climate Analysis and Research UnitS (ICARUS) at Maynooth University is a national leader in the area of climate change providing integrated climate system research, solutions, data and advice to the scientific community and policy-makers. In the biodiversity field, the Trinity Centre for Biodiversity Research at Trinity College Dublin provides a broad base of expertise. Other relevant research institutes of note include Science Foundation Ireland funded MaREI (Energy, Climate & Marine Research) and Terrain-AI (Decision Support Platform for Carbon Management).

Societal actors and public participation

Several NGOs work independently and/or in networks (e.g., Irish Environmental Network, Sustainable Water Network) to raise public awareness on environmental problems such as climate change and biodiversity decline. For example, Coastwatch Ireland is particularly focused on the protection and sustainable use of coastal resources and collects data on the state of Ireland's coast through citizen science work.

Raising awareness on environmental issues is also the aim of Green News, which tries put to environmental news front and centre, including climate change and wildlife conservation.

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3.2 Policy context for biodiversity and climate change in Ireland

Biodiversity conservation

A key legislation for biodiversity and nature conservation in Ireland is the Wildlife Act issued in 1976 and last amended in 2018[7]. The Act of 1976 and its amendments[8] do not explicitly refer to NBSs or ecosystem services (Table 3) but these Acts designate the majority of the conservation sites in Ireland (e.g., Natural Heritage Areas, Nature Reserves and Refuges for Fauna) excluding the European Natura 2000 sites[9].

Ireland has adopted three National Biodiversity Plans. The most recent national strategy for biodiversity was issued in 2017 and covers the period until 2021. The document commits the country to seven strategic objectives: mainstream biodiversity into decision-making across all sectors; strengthen the knowledge base for conservation, management, and sustainable use of biodiversity; increase awareness and appreciation of biodiversity and ecosystem services; conserve and restore biodiversity and ecosystem services in the wider countryside; conserve and restore biodiversity and ecosystem services in the marine environment; expand and improve management of protected areas and species; and strengthen international governance for biodiversity and ecosystem services. The document also refers to NBSs and green/blue infrastructures.

Climate change adaptation

Climate policy in Ireland is based on the Climate Action and Low Carbon Development Act (the Climate Act) adopted in 2015. The document does not explicitly refer to NBSs or ecosystem services but defines green-house gas sinks as 'an ecosystem or a mechanism (whether natural or manmade), or part thereof, that contributes to, or assists in, the removal of one or more of such gases from the earth's atmosphere'.

The Government is committed to adopt national mitigation plans and National Adaptation Frameworks (NAFs)[10]. Ireland adopted its first NAF in 2018. However, a non-statutory National Climate Change Adaptation Framework had been in place since 2012. The current NAF constitutes the National Adaptation Strategy for Ireland. It ensures that climate adaptation is mainstreamed into all local, regional and national policy-making; it also supports local and regional adaptation action and the development of local adaptation strategies. Indeed, the NAF identifies the important role of local authorities in climate change adaptation: under the NAF, local authorities are required to develop local adaptation strategies[1].

The NAF does not propose adaptation measures: detailed adaptation measures will be developed at the national level per policy areas (agriculture, forestry, biodiversity, transport, etc.) and by local governments. Some sectors (e.g., agriculture and transport) had already

[7] Source: https://www.npws.ie/legislation (last update: 16.03.2021).

[8] In addition, the European Communities (Birds and Natural Habitats) Regulations 2011 (amended in 2013 and 2015) are also hugely important as the Wildlife Act and its amendments fully transpose the Birds and Habitats Directives into Irish legislation.

[9] Source: https://www.cbd.int/countries/profile/?country=ie#measures (last access: 16.03.2021).

[10] Source: https://climate-adapt.eea.europa.eu/countries-regions/countries/ireland (last access: 04.11.2020).

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developed non-statutory plans under the earlier 2012 National Climate Change Adaptation Framework; these plans will be revised in line with the requirements of the NAF and the Climate Act.

The NAF refers to concepts such as ecosystem services and green infrastructures. The document will be reviewed every 5 years; the current NAF will be revised and updated by 2023.

Table 3. *Key documents for biodiversity and climate change in Ireland.*

	Biodiversity conservation	**Climate change adaptation**
National law	Wildlife Act (1976; consolidated version of 2020) - no mention of NBSs, ecosystem services and related term - reference to nature reserves	Climate Action and Low Carbon Development Act (2015) [being amended in 2020]: - NBSs although not mentioned explicitly - a single ecosystem service presented as an example
National strategy	Third National Biodiversity Plan 2017-2021 (2017) - NBSs - blue/green infrastructures - ecosystem services	First National Adaptation Framework (NAF) (2018) [being revised in 2023]: - ecosystem services - green infrastructures (or solutions, measures and options) - NBSs (although not explicitly mentioned)

The document mentions NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document does not explicitly mention NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document has not been issued

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4. Norway

4.1 Environmental governance: major stakeholders in Norway

A total of 27 potential stakeholders were identified at the national level, with a particular emphasis on 'scientific research institutes' (Fig. 3). The full list of potential stakeholders, categorised and with their main areas of interest and/or activity detailed, can be found in Annex I, Table E.

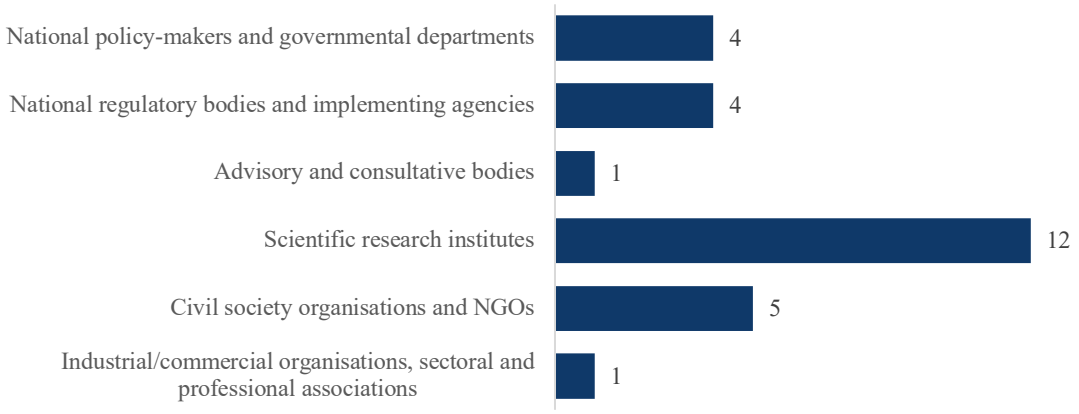

Figure 3. *Number of stakeholders per category for the Norwegian case study.*

State actors at national and subnational levels

Environmental policies are carried out by the Ministry of Climate and Environment (*Klima- og miljødepartementet*), which includes the Department for Marine Management and Pollution, the Department for Climate Change and the Department for Nature Management. The implementation of environmental policies, regulation, monitoring and control, is the responsibility of the Norwegian Environment Agency (*Miløjdirektoratet*).

Coastal management, the marine environment and port and sea transport policies are the responsibility of the Ministry of Transport (*Samferdselsdepartementet*). Under this Ministry, the Norwegian Coastal Administration (*Kystverket*) is the national agency for coastal management, maritime safety and preparedness against acute pollution.

Policies related to maritime industry, fisheries and aquaculture fall under the remit of the Ministry of Trade, Industry and Fisheries (*Nærings- og fiskeridepartementet*) and the regulation, supervision and quality control of such activities are performed by the Directorate of Fisheries (*Fiskeridirektoratet*). The Norwegian Maritime Authority (*Sjøfartsdirektoratet*) is also important for the control of maritime activities.

Administrative coordination and advisory bodies

The Norwegian Centre for Climate Services (*Norsk Klimaservicesenter*) provides the scientific basis for decision-making regarding climate change adaptation in Norway. It collects and prepares climate and hydrological data and collaborates with the Norwegian Coastal Administration on questions related to sea-level rise along the Norwegian coast.

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Science advice and data provision

The Norwegian Biodiversity Information Centre (*Kunnskapsbank for naturmangfold*) provides society with up-to-date accessible information about Norwegian species and biotopes.

The Institute of Marine Research (*Havforskningsinstitutet*) serves in an advisory capacity to the Ministry of Trade, Industry and Fisheries and performs key tasks in the investigation and monitoring of fish stocks and marine mammals, the marine and coastal environment and activities related to aquaculture and sea ranching.

In addition, several research centres and universities provide important data related to climate change (e.g., Bjerknes Centre for Climate Research, The Norwegian Research Centre, The Arctic University of Norway, the Norwegian Institute for Water Research), marine and coastal issues (e.g., Norwegian University of Science and Technology, University of Agder, Nord University) and biodiversity (e.g., the Norwegian Institute for Nature Research).

Societal actors and public participation

The Norwegian Society for the Conservation of Nature/Friends of the Earth Norway (*Norges Naturvernforbund*) is one of the oldest environmental protection organisations addressing conservation and climate change. The Norwegian Biodiversity Network works to halt the loss of biodiversity by proposing political solutions and disseminating knowledge about ecological contexts. There are some national branches of international NGOs (e.g., WWF and Greenpeace) working on awareness-raising and conducting public campaigns for environmental protection in Norway.

4.2 Policy context for biodiversity and climate change in Norway

Biodiversity conservation

In line with the Convention on Biological Diversity, Norway adopted the Nature Diversity Act in 2009[11] (Table 4). The Act protects biological diversity and ecological processes through conservation and sustainable use (Norwegian Ministry of Climate and Environment 2014). The Act aims to conserve biodiversity by limiting the impact of human and economic activities on biodiversity, including within Norwegian territorial waters. It also commits all ministries to the achievement of national biodiversity targets. However, despite its reference to nature reserves, marine protected areas and national parks, the document does not explicitly contain the concepts of NBSs or ecosystem services.

The first Biodiversity Action Plan was adopted by Norway in 2001. The document has played a crucial role for the development of Norway's environmental policy since it laid the foundation for new national biodiversity legislation. The Plan also launched the consideration of ecosystem services in the country. A new national biodiversity strategy was adopted in 2015

[11] In addition, harvesting and other utilisation of wild marine resources are regulated by the Marine Resources Act (source https://www.fiskeridir.no/English/Fisheries/Regulations/The-marine-resources-act). The document does include considerations on NBSs or ecosystem services but it deals only with marine protected areas and fishing restrictions to manage fishery resources.

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by the Ministry of the Environment[12]. The new documents clearly refer to ecosystem services and – without using the term of NBSs – several related nature-based instruments such as nature reserves, national parks and green infrastructures (nature areas, green corridors, recreation areas and parks, green spaces).

Climate change adaptation

The White Paper on Climate Change Adaptation adopted in 2013 outlined for the first time national guidance for adaptation in Norway. The document constitutes the Norwegian national strategy for climate change adaptation. The Norwegian Environment Agency supports the Ministry of Climate and Environment in the area of climate change adaptation as the coordinating agency. As such, the agency also follows the implementation of the White Paper on Climate Change Adaptation.

Following the issuing of this strategy, Norway reviewed its legislation, and several changes will be debated in the coming years. In June 2017, the Norwegian Parliament adopted a Climate Change Act; it calls for annual reporting on adaptation measures against climate change.[13]

While the national strategic document includes the concepts of NBSs, ecosystem services and related ones, the national act does not mention any of them.

Table 4. *Key documents for biodiversity and climate change in Norway.*

	Biodiversity conservation	**Climate change adaptation**
National law	Nature Diversity Act (2009): - no mention of NBSs but reference to nature reserves, national parks	Climate Change Act (2017) - no mention of NBSs, ecosystem services and related terms *[However, we could only work on an unofficial English translation of the Norwegian text]*
National strategy	National biodiversity action plan (2015): - ecosystem services - reference to nature reserves and national parks - reference to green infrastructures (nature areas, green corridors, recreation areas and parks, green spaces)	White Paper on Climate Change Adaptation (2013) - ecosystem services - green structures (and green roofs/walls) - ecosystem-based management - NBSs (although not mentioned explicitly)

The document mentions NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document does not explicitly mention NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document has not been issued

[12] Source: https://www.cbd.int/countries/profile/?country=no#facts (last access: 17.03.2021).

[13] Source: https://climate-adapt.eea.europa.eu/countries-regions/countries/norway (last access: 09.11.2020).

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5. United Kingdom

The United Kingdom (UK) is composed of four countries: England, Scotland, Wales and Northern Ireland. While international commitments are made as a single nation, the process of devolution in the UK means that responsibility for the environment and climate change is transferred to the devolved administrations who govern each individual country. There are therefore differences between the four countries in the policy landscape and different stakeholders operate. Given this complexity, and the focus of MaCoBioS's UK study sites being in southern England, this section focuses on identifying the major national and subnational stakeholders and providing an overview of biodiversity and climate change-related policy within England.

5.1 Environmental governance: major stakeholders in the United Kingdom

A total of 27 potential stakeholders were identified at the national and subnational levels, with a particular focus on 'civil society organisations and NGOs' (Fig. 4). The full list of potential stakeholders, categorised and with their main areas of interest and/or activity detailed, can be found in Annex I, Table F.

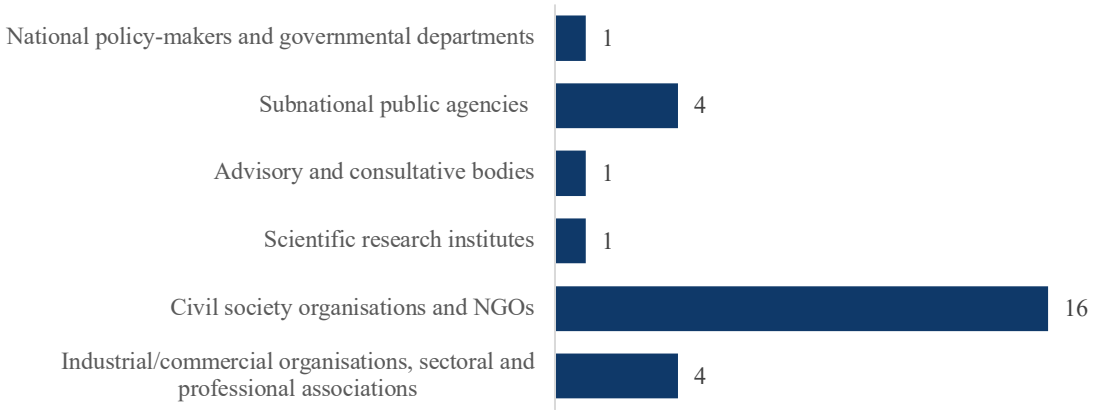

Figure 4. *Number of stakeholders per category for the UK (England) case study.*

State actors at national and subnational levels

The Department for Environment, Food and Rural Affairs (DEFRA) is responsible for biodiversity and nature conservation policy and strategy at the UK level for reserved matters and England for devolved matters. There are three non-departmental public bodies sponsored by DEFRA, focused on the English territory, that might be relevant for MaCoBioS: the Environment Agency, Natural England and the Marine Management Organisation (MMO). The Environment Agency is responsible for environmental regulation and monitoring of waste management, nature conservation, flood defence, water management and freshwater and migratory fisheries (out to 6 nautical miles). Natural England designates and manages nature conservation sites and promotes outdoor activities. Its role in the marine environment is primarily advisory, including the provision of statutory advice on a range of issues including Marine Protected Areas and sustainable use of the sea. The MMO supports marine protection by regulating activities, and is responsible for managing, supporting and enforcing fisheries.

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The management of inshore (out to 6nm) sea fisheries resources is coordinated between MMO and Inshore Fisheries & Conservation Authorities.

Administrative coordination and advisory bodies

The Joint Nature Conservation Committee (JNCC), also a non-departmental public body sponsored by DEFRA, is the statutory adviser to the government and devolved administrations on the UK and international nature conservation, providing scientific advice on biodiversity and nature conservation and taking a coordination role across devolved nations.

Science advice and data provision

The Centre for Environment, Fisheries and Aquaculture Science (Cefas) is an Executive Agency of DEFRA focused on marine and freshwater science. It provides data and advice to the Government and overseas partners. Cefas research covers several areas, namely marine monitoring, marine biodiversity, ecosystem understanding, ocean and coastal processes, climate change and sustainable fisheries.

Societal actors and public participation

There are several charities working to raise awareness and educate on environmental problems. Some are particularly focused on marine and coastal environments, such as the Marine Conservation Society, Blue Marine Foundation, Marine Biological Association, Wildfowl and Wetlands Trust and the Surfers Against Sewage.

The National Trust is the UK's largest coastal landowner and about 80% of their coastal areas are next to or overlap with MPAs. It is developing coastal adaptation strategies and is interested in changing coastlines as a result of climate change (increased storms).

5.2 Policy context for biodiversity and climate change in the United Kingdom

This section provides an overview of the most important legal and strategic documents that shape the UK's policy on biodiversity and climate change (Table 5), focused on UK-wide documents or documents that apply to England where our study sites are located.

Biodiversity conservation

Most UK environmental laws and regulations were designed to rule specific aspects within the environmental policy domain. For a long time, the 1949 National Parks and Access to the Countryside Act and the 1981 Wildlife and Countryside Act (amended in 1991) were the principal legal instruments for the protection of nature (OECD 2002). The 2000 Countryside and Rights of Way Act is the newest environmental act (OECD 2002; personal communication with experts). However, this Act only relates to England and Wales with limited application

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for Scotland and does not apply to Northern Ireland[14]. There is no presence of NBSs or related terms in this document.

In compliance with the CBD, the UK issued its national strategy for biodiversity in 1997 and revised it in 2007 and 2012. The text of 2012 covers the period 2011-2020 and responds to two main drivers: the Aichi Biodiversity Targets adopted in 2010 and the EU Biodiversity Strategy adopted in 2011 (DEFRA 2009). The document clearly acknowledges the services coming from nature (JNCC and DEFRA 2012).

In the UK, biodiversity policy is a devolved matter[15]: each of the four UK countries aims at complying with the CBD targets – and EU targets, before BREXIT (NRP 2015). Therefore, the work planned under the UK Biodiversity Strategy is implemented by the four countries assisted by DEFRA and the JNCC in their coordination capacities for the entire UK (JNCC and DEFRA 2012). The UK Biodiversity Framework aims at coordinating and complementing the efforts of the four countries to achieve the Aichi Biodiversity Targets. Although biodiversity and the natural environment are devolved, the UK government responds to international obligations. Moreover, some activities benefit from action at UK level above its four countries (JNCC and DEFRA 2012). Regular reporting to the CBD is also coordinated at the UK level (NRP 2015).

Climate change adaptation

The UK Government has responsibility for overseeing the meeting of international obligations, such as the Paris Agreement. However, climate adaptation policy in the UK is a devolved matter. DEFRA acts on behalf of the UK as the coordinating agency amongst the four countries to facilitate consistent and complementary action.

The Climate Change Act was adopted by England, Wales and Northern Ireland in 2008[16] and is the key instrument for setting out climate change mitigation and adaptation actions in the UK. It gave statutory force to domestic carbon reduction targets and established an independent body, the Committee on Climate Change, to provide independent advice on carbon reduction budgets and climate risk for the UK. The Climate Change Act 2008 requires the publication of a climate change risk assessment every five years to provide the evidence base for national adaptation programmes and, subsequently, a National Adaptation Programme to address the most urgent risks identified. The first UK-wide climate change risk assessment was published in 2012, followed by the second in 2017.

[14] Scotland has its own Nature Conservation (Scotland) Act of 2004. In Northern Ireland, the main legislation is the Wildlife (Northern Ireland) Order 1985 (as amended), the Nature Conservation and Amenity Lands (Northern Ireland) Order 1995, The Environment (Northern Ireland) Order 2002, the Wildlife and Natural Environment Act (Northern Ireland) 2011.

[15] The sub-national governments of each of the four UK countries have adopted their own biodiversity strategy at country-level (JNCC and DEFRA 2012): England in 2011 (DEFRA 2011), Northern Ireland in 2015 (DOENI 2015), Wales in 2015 (NRP 2015); Scotland reviewed in 2013 the document already adopted in 2004 (Scottish Government 2013).

[16] Scotland passed its own Climate Change (Scotland) Act 2009 and has since amended this through the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019.

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The most recent National Adaptation Programme covering England and UK-wide reserved matters was published in 2018 for the period 2018-2023 (EC 2018)[17].

Table 5. *Key documents for biodiversity and climate change in England and the United Kingdom.*

	Biodiversity conservation	**Climate change adaptation**
National law	Countryside and Rights of Way Act (2000) - no mention of NBSs, ecosystem services and related terms	Climate Change Act (2008): - no mention of NBSs, ecosystem services and related terms
National strategy	UK Post-2010 Biodiversity Framework (2012) - ecosystem services - green infrastructures	Second National Adaptation Programme (2018): - green infrastructures (e.g., forestry and urban spatial planning) - natural capital and ecosystem services - NBSs (although not explicitly mentioned)

The document mentions NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document does not explicitly mention NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document has not been issued

[17] Wales published its climate change adaptation plan for 2020-2025 in 2019. Northern Ireland's Climate Change Adaptation Programme 2019-2024 was published in 2019. Wales has also mandated action to build resilience to climate change impacts through the Wellbeing of Future Generations (Wales) Act 2015 and the Environment (Wales) Act 2016, as well as setting emission reduction targets. The Scottish Climate Change Adaptation Programme 2019-2024 was launched in 2019. Source: https://climate-adapt.eea.europa.eu/countries-regions/countries/united-kingdom (last access: 26.10.2020).

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Part B – The North-western Mediterranean region

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6. France

6.1 Environmental governance: major stakeholders in France

A total of 53 potential stakeholders were identified at the national and subnational levels, with an emphasis on 'scientific research institutes' and 'civil society organisations and NGOs' (Fig. 5). Other organisations include aquarium and museums that can play a role in raising public awareness about the importance of marine and coastal ecosystems and their services. The full list of potential stakeholders, categorised and with their main areas of interest and/or activity detailed, can be found in Annex I, Table G.

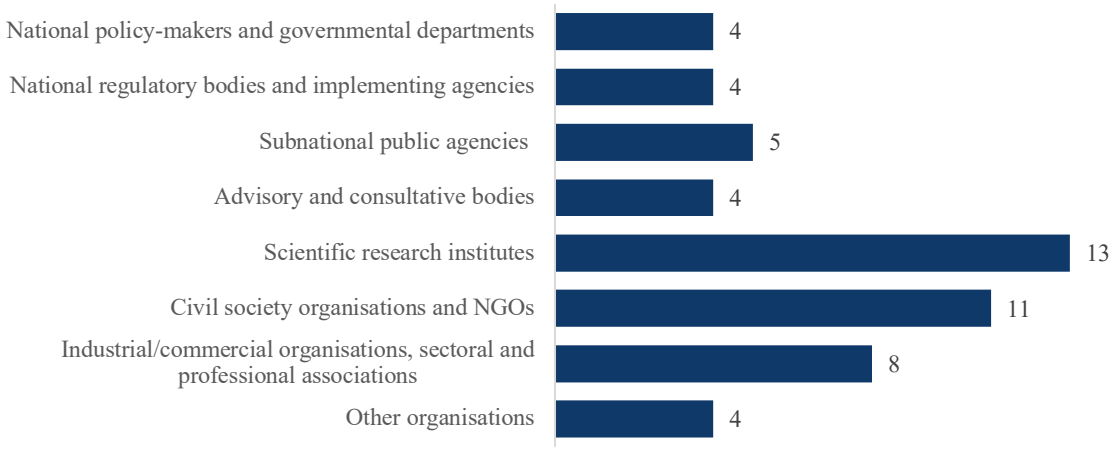

Figure 5. *Number of stakeholders per category for the French case study.*

State actors at national and subnational levels

Policy development in the fields of sustainable development, environment, nature protection and climate is the responsibility of the Ministry of Ecological Transition (*Ministère de la Transition Écologique*). The most relevant implementing agencies under this Ministry are the Agency for Ecological Transition (*Agence de la Transition Écologique*), with a relevant role in the funding of research and innovation, namely in the climate field, and the French Office for Biodiversity (*Office Française pour la Biodiversité*), responsible for the management (and co-management) of protected areas (including marine) and the enforcement of biodiversity regulations. Nevertheless, it is important to highlight the importance of local policy-makers and other local stakeholders in the management of many (marine) protected areas.

The management and preservation of water resources and aquatic environments is carried out by the Water agencies (*Agences de l'Eau*).

The Ministry of the Sea (*Ministère de la Mer*) is focused on sea-related policies (e.g., the national strategy for the sea and the coast), and the General Inspectorate of Maritime Affairs (*Inspection Générale des Affaires Maritimes*) carries out the necessary inspection. The Ministry also has decentralised services responsible for implementing maritime policies in each basin, the Interregional Directorates of the Sea (*Directions Interrégionales de la Mer*).

The Coastal Conservatory (*Conservatoire du Littoral*) has a special role in the protection of the coast through the acquisition and restoration of threatened coastal areas.

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Administrative coordination and advisory bodies

The coordination of the Government's maritime policy is ensured by the General Secretariat of the Sea (*Secrétariat Général de la Mer*), placed directly under the Prime Minister's authority. In addition, the Interministerial Committee for the Sea (*Comité Interministériel de la Mer*) gathers all the ministries dealing with maritime issues under the chairman of the Prime Minister.

Two main advisory bodies were identified for the environmental field: the National Council for Environmental Transition (*Conseil National de la Transition Ecologique* - CNTE*)*) and the General Council for the Environment and Sustainable Development (*Conseil Général de l'Environnement et du Développement Durable* - CGEDD). CNTE is consulted on draft laws concerning, mainly, the environment or energy and on national strategies relating to sustainable development and biodiversity. CGEDD is responsible for advising the Government in the fields of the environment, the sea and climate change (among others). In addition, the National Council for the Sea and Coast (*Conseil National de la Mer et des Littoraux*) must be consulted on decrees relating to the management of the public maritime domain.

Science advice and data provision

The French Research Institute for the Exploitation of the Sea (*Institut Français de Recherche pour l'Exploitation de la Mer* - IFREMER) is a public institute that conducts research to support the deployment of maritime policies. Most of the universities identified have research units dedicated to marine/coastal environments (biology, ecology, oceanography, etc.) that can provide relevant data. The main marine stations and laboratories in France are organized in a network *(Réseau des Stations et Observatoires Marins)* which benefits from public financial support (namely from IFREMER).

Societal actors and public participation

Some international NGOs have French branches (e.g., Sea Shepherd, IUCN, WWF) that actively promote knowledge dissemination and public awareness of marine and coastal problems. *Just 2.0ºC* and *Fondation Tara Nova* address particularly the question of climate change and climate risks through research and education. There are other relevant initiates gathering scientists around marine issues and climate change, such as *GIS Posidonie* and the Ocean & Climate Platform.

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6.2 Policy context for biodiversity and climate change in France

Biodiversity conservation

The French legal framework for environment and biodiversity was left untouched for three decades since the late 1970s until recent reforms (OECD 2016a).

France ratified the CBD in 1994 (MEDDTL 2011). In compliance with the CBD, the country adopted its first National Biodiversity Strategy (*Stratégie nationale de la biodiversité*) in 2004. The adoption of the Aichi Targets in 2010 and the following EU Biodiversity Strategy (also issued in 2010) provided strong impetus for a new National Biodiversity Strategy that France adopted for the period 2011-2020 (MEDDTL 2011) (Table 6). This second National Biodiversity Strategy confirms the country's commitment to the conservation of biodiversity on both mainland France and in its overseas territories (MEDDTL 2011). The text of the Strategy acknowledges the relevance of ecosystem services and (implicitly) NBSs mainly as green infrastructures.

The Strategy – that does not set precise figures and deadlines for its targets – was developed with the engagement of a broad range of stakeholders: national government and agencies, regional authorities, business sectors, NGOs, research community (MEDDTL 2011). However, the involvement of local governments and the general public still needs to be strengthened (OECD 2016b).

In recent years, France conducted a parliamentary debate on the need for a new law on biodiversity (OECD 2016a). The development of a new legislative act marks the very first reform to the national legal framework in this policy area since 1976 (OECD 2016b). The new law was adopted in 2016 (*Loi n°2016-1087 pour la reconquête de la biodiversité, de la nature et des paysages*). The law explicitly acknowledges the importance of ecosystem services and seems to refer (though implicitly) to NBSs (as green spaces, natural reserves and natural parks) (OECD 2016b).

Climate change adaptation

The most important national document for climate change in France is the *Loi n°2019-1147 relative à l'énergie et au climat*. However, the text does not mention NBSs, ecosystem services or related terms. A new law on climate change and adaptation to its effects has been presented but not adopted yet at the time of writing, i.e. *Projet de loi n° 3875 portant lutte contre le dérèglement climatique et renforcement de la résilience face à ses effets*.

The Ministry competent for the Environment (currently the Ministry for the Ecological Transition) initiated a national adaptation process in the late 1990s to limit the impacts of climate change. France has, thus, elaborated a National Climate Change Adaptation Strategy. The Strategy was the product of a wide consultation process with numerous economic sectors and was issued in 2006. The text of the Strategy mentions ecosystem services and green infrastructures but does not refer explicitly to the concept of NBSs.

In 2011, France adopted its National Adaptation Plan for the period 2011-2015 (*Plan National d'Adaptation au Changement Climatique* – PNACC); this document was also developed in close collaboration with stakeholders. It was then followed by a second plan in 2018 (NAP-2). In the wake of COP21, France started to update the country's adaptation policy in compliance

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with the Paris Agreement. NAP-2 covers both mainland France and its overseas territories for the period 2018-2022. The NAPs are built to be revised every five years[18].

Table 6. *Key documents for biodiversity and climate change in France.*

	Biodiversity conservation	**Climate change adaptation**
National law	*Loi n°2016-1087 pour la reconquête de la biodiversité, de la nature et des paysages* (2016) - NBSs (although not explicitly mentioned: e.g., green spaces, natural reserves and natural parcs) - ecosystem services - green/blue infrastructures	*Loi n°2019-1147 relative à l'énergie et au climat* (2019) - no mention of NBSs, ecosystem services and related terms
National strategy	*Stratégie nationale pour la biodiversité (SNB) 2011-2020* (2011) - ecosystem services - green infrastructures - NBSs (although not explicitly mentioned)	National Climate Change Adaptation Strategy (2006) - ecosystem services

The document mentions NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document does not explicitly mention NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document has not been issued

[18] Source: https://climate-adapt.eea.europa.eu/countries-regions/countries/france (last access: 23.11.2020).

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7. Italy

7.1 Environmental governance: major stakeholders in Italy

A total of 23 potential stakeholders were identified from different categories (Fig. 6). The full list of potential stakeholders, categorised and with their main areas of interest and/or activity detailed, can be found in Annex I, Table H. 'Other organisations' include *Fondazione Ecosistemi*, a foundation involved in several activities to promote sustainable development, including capacity building and training.

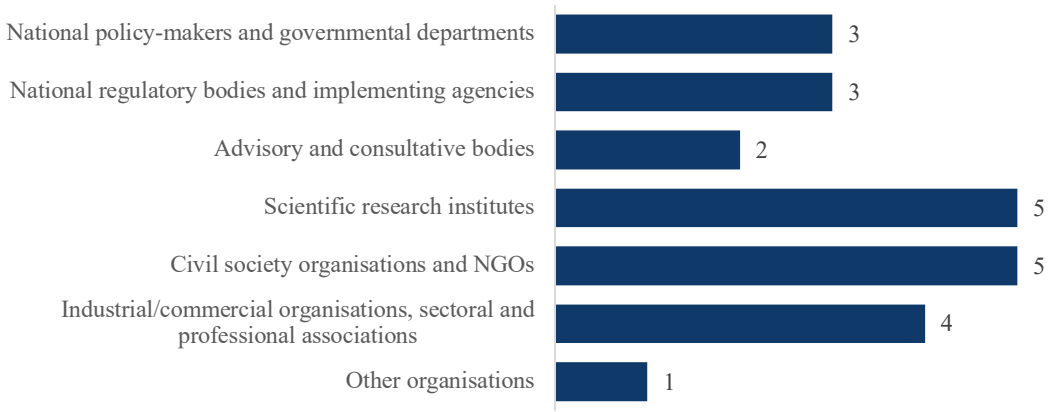

Figure 6. *Number of stakeholders per category for the Italian case study.*

State actors at national and subnational levels

The Ministry of Ecological Transition (*Ministero della Transizione Ecologica*) is responsible for policy formulation related to environmental issues (water, air, energy, nature and territory). It includes (among others) a Directorate-General dedicated to climate, energy and air and another to the sea and coast. For example, the creation of MPAs is driven by this Ministry, in agreement with the regional authority in charge (and their management can be handed over to municipalities, research institutes or environmental associations).

Policy regarding fisheries and aquaculture is under the Ministry of Agricultural, Food and Forestry Policies (*Ministero delle politiche agricole alimentari e forestali*), and issues related to navigation, safety and maritime transport are the responsibility of the Ministry of Infrastructure and Sustainable Mobility (*Ministero delle infrastrutture e della mobilità sostenibili*).

The National Institute for Environmental Protection and Research (*Istituto Superiore per la Protezione e la Ricerca Ambientale* - ISPRA) is the main public agency responsible for the environment, carrying out research and monitoring, protection activities (including environmental impact assessment) and management of environmental emergencies. Biodiversity, climate change, and the sea are among its action areas. It should be highlighted that some activities concerning environmental protection are delegated to the Regional Environmental Protection Agencies (ARPA) under the currently shared competences between the State and the Regions. The role of ARPA is (among others) the protection and safeguard of the marine and coastal environment.

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The protection of the marine environment is also a competence of the Italian Coast Guard (*Guardia Costiera*) through the control of maritime activities and ports. In addition, the Carabinieri Command for Environmental Protection (*Comando Carabinieri per la Tutela Ambientale*) controls (terrestrial) activities that can cause environmental degradation (such as pollution).

Administrative coordination and advisory bodies

The National Commission on Sustainable Development (*Commissione Nazionale per lo Sviluppo Sostenibile*), established under the Presidency of the Council of Ministers, supports the achievement of the Agenda 2030 objectives. The Commission plays a coordinating role in the update of the national strategy for sustainable development and the design of actions and policies supporting its implementation. The Natural Capital Committee (*Comitato per il Capitale Naturale*), chaired by the Ministry of Ecological Transition, is a national advisory body that delivers an annual report on the state of the Italian natural capital and elaborates tools and models to assess the policies' impacts on natural capital and to highlight the key role of natural capital on the national socio-economic system.

Science advice and data provision

The main Italian scientific research institutes dedicated to the marine environment are the National Centre on Marine Science (*Istituto di Scienze Marine*) and the National Institute of Oceanography and Experimental Geophysics (*Istituto Nazionale di Oceanografia e di Geofisica Sperimentale*). Their research covers multiple aspects, among others: i) the evolution of oceans, ii) the biogeochemical and physical processes of oceans, iii) the evaluation of habitat and ecology of deep-sea environments, iv) the interactions between natural and anthropogenic factors economically and socially affecting marine coastal ecosystems.

Research on fisheries and aquaculture is the focus of the Institute for Economic Research in Fishery and Acquaculture (*Istituto di Ricerche Economiche per la Pesca e l'Acquacoltura*) and UNIMAR. They are committed to promote economic research in fishing activities and supporting the management and coordination of fishery and aquaculture.

A further research centre is the Euro-Mediterranean Center on Climate Change Foundation (*Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici* - CMCC), devoting its research efforts to the analysis and modelling of the climate system and its interactions with society, with the main purpose of fostering sustainable growth, protecting the environment and developing adaptation and mitigation strategies. Specific CMCC divisions are dedicated to developing models and risk-based approaches for interdisciplinary research on coastal areas, open ocean, and marine ecosystems.

Societal actors and public participation

Different actors are active in the Italian context for fostering environmental conservation in an equal and sustainable way, as well as for creating a network between science and civil society. International organisations include WWF and IUCN, which have national branches in Italy and work in biodiversity conservation and outreach activities. Moreover, at the national scale, *MareVivo* is an NGO devoted to the protection of the sea and its resources, acting through environmental education and advocacy. Their activities focus on multiple aspects, especially

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biodiversity conservation, sustainable development, pollution, and climate change. *Legambiente* and ANTA (*Associazione Nazionale per la Tutela dell'Ambiente*) are other examples of non-profit organisations involved in conservation projects and environmental education. *Legambiente* is a crucial actor in the national context, playing an active role in engaging young generations in their activities while addressing informative and educational campaigns on the environmental status and developing scientific reports and assessments on the environmental status of natural ecosystems.

7.2 Policy context for biodiversity and climate change in Italy

Biodiversity conservation

In 2015, Italy adopted a law for the protection and valorisation of biodiversity[19] (Table 7). The law focuses on biodiversity as relevant in the agri-food sector. The text does not include any consideration of ecosystem services and/or NBSs.

Italy's National Biodiversity Strategy was adopted in 2010. The National Biodiversity Strategy is structured around three key issues: biodiversity and ecosystem services; biodiversity and climate change; biodiversity and economic policies. The document clearly mentions ecosystem services; it also contains clear references to green infrastructures, but it never mentions the term 'nature-based solutions' although the concept seems to be present (e.g., as green areas and ecological corridors). The governance of the Strategy relies on three main structures: the National Biodiversity Committee, composed of representatives of all ministries and regions; the National Biodiversity Observatory, composed of technical and scientific experts; and a Consultation Table held with all stakeholders. The implementation of the Strategy is in line with EU policies dealing with biodiversity and with the EU Biodiversity Strategy. The National Biodiversity Strategy has been implemented from 2011 to 2020, with a report issued every two years about the progress made towards the achievement of strategic objectives[20].

Climate change adaptation

According to the European path in adaptation strategy, in 2015, the Ministry for the Environment Land and Sea (IMELS; now Ministry of Ecological Transition - Ministero della Transizione Ecologica, see Section 7.1 for more details) adopted the Italian National Adaptation Strategy to Climate Change (NAS). The NAS is a tool for encouraging adaptation actions in planning activities at national, regional and local levels. The document includes references to green infrastructures (e.g., green roofs and urban green) and the concept of ecosystem services. Although not explicitly mentioned, NBSs seem to be envisaged by the Strategy as a part of the multi-sectorial actions addressed by the strategy to face future climate-related impacts. The areas for actions in the NAS (e.g., water resources, marine environments, inland and transitional waters, coastal zones, hydrogeological instability, sea fishing, aquaculture, tourism, energy, etc.) were selected according to a sectorial approach, based on socio-economic relevance and vulnerability to the impacts of climate change.

[19] *Legge 1° dicembre 2015, n. 194 per la tutela e la valorizzazione della biodiversità di interesse agricolo e alimentare.*

[20] Source: https://www.cbd.int/countries/profile/?country=it (last access: 18.01.2021).

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After the "State-Regions Unified Conference" approval on 30th October 2014, the NAS was finally adopted in June 2015 by a Directorial Decree of the Climate and Energy General Directorate, establishing specific objectives to be reached by 31st December 2016. The Directorate-General for Climate and Energy of IMELS is currently working to implement the NAS through the Italian National Adaptation Plan for Climate Change (NAP), developed with the support of the Euro-Mediterranean Centre on Climate Change. The NAP was drafted in December 2016. During 2017 and the first half of 2018, the IMELS carried out a check on the draft NAP by a consultative process involving national, regional and local authorities, universities, research centres and other stakeholders. The approval of the NAP is occurring through an Agreement with the State-Regions Conference. The NAP will provide institutional guidance to national and local authorities for the elaboration of regional strategies or plans and for integration of climate change adaptation within spatial and sectoral planning [21].

The country does not have a legal act on climate change.

Table 7. *Key documents for biodiversity and climate change in Italy.*

	Biodiversity conservation	**Climate change adaptation**
National law	*Legge 1° dicembre 2015, n. 194 per la tutela e la valorizzazione della biodiversità di interesse agricolo e alimentare* (2015)	*Missing*
National strategy	*Strategia nazionale per la biodiversità 2011-2020* (2010) - ecosystem services - green infrastructures - NBSs (although not explicitly mentioned)	National Adaptation Strategy to Climate Change (2015) - green infrastructures, measures and actions (green roofs and "urban green") - NBSs (although not mentioned explicitly) - ecosystem services

The document mentions NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document does not explicitly mention NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document has not been issued

[21] Source: https://climate-adapt.eea.europa.eu/countries-regions/countries/italy (last access: 11.11.2020).

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8. Spain

8.1 Environmental governance: major stakeholders in Spain

A total of 30 stakeholders were identified as potentially relevant for the Spanish case study (Fig. 7). The full list of potential stakeholders, categorised and with their main areas of interest and/or activity detailed, can be found in Annex I, Table I. The Spanish Federation of Municipalities and Provinces (*Federación Española de Municipios y Provincias*) is included here ('regional, municipalities and other local authorities') since it is a joint initiative to promote the common interests of local authorities and comprises the Network of Spanish Cities for Climate.

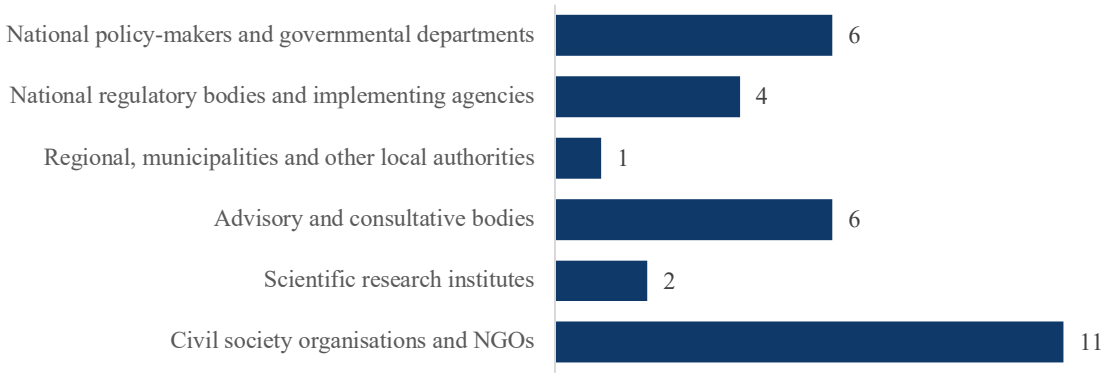

Figure 7. *Number of stakeholders per category for the Spanish case study.*

State actors at national and subnational levels

The Ministry for the Ecological Transition and the Demographic Challenge (*Ministerio para la Transición Ecológica y el Reto Demográfico* - MITECO) is responsible for the policy formulation in the fields of climate change, protection of biodiversity, natural heritage and the sea (among others). It is also responsible for the direct management of the maritime-terrestrial public domain. Fisheries related policies are under the Ministry of Agriculture, Fisheries and Food (*Ministerio de Agricultura, Pesca y Alimentacion*).

The Biodiversity Foundation (*Fundación Biodiversidad*) is part of MITECO and is responsible for implementing conservation projects and managing national and European funds for conservation. Marine and coastal biodiversity and climate change are among its action areas.

The Service for Nature Protection - Civil Guard (*Servicio de Protección de la Naturaleza - Guardia Civil*) ensures the compliance with relevant regulations (nature conservation, fishing, hunting, etc.).

It should be emphasised that in Spain, many implementation and surveillance issues ultimately depend on the Autonomous Communities, particularly regarding the implementation of Environmental and Fisheries legislations. For example, in the case of compliance with fishing/hunting regulations, the Rural Agents (sub-national body) have the jurisdiction in

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Catalonia. Also, several Marine Protected Area schemes are partly or totally managed by the Department of Environment of the Autonomous Communities[22].

Administrative coordination and advisory bodies

To guarantee the administrative coordination in issues related to climate change and energy there is an Inter-ministerial Commission on Climate Change and Energy Transition (*Comisión Interministerial para el Cambio Climático y la Transición Energética*). A similar structure exists for implementing marine strategies and marine spatial planning, the Inter-ministerial Commission on Marine Strategies (*Comisión Interministerial de Estrategias Marinas*).

The coordination and collaboration between the State General Administration and the Autonomous Communities in environmental matters are discussed by the Sectoral Conference on the Environment (*Conferencia Sectorial de Medio Ambiente*) and there is also a Climate Change Policy Coordination Commission (*Comisión de Coordinación de Políticas de Cambio Climático*).

There are different thematic advisory and consultative bodies: the Environment Advisory Council (*Consejo Asesor de Medio Ambiente*), the National Climate Council (*Consejo Nacional del Clima*) and the National Water Council (*Consejo Nacional del Agua*). The State Comission for Natural Heritage and Biodiversity (*Comisión estatal para el patrimonio natural y la biodiversidad*) is a consultative body that also ensures cooperation between the State General Administration and the Autonomous Communities.

Science advice and data provision

The Spanish Institute of Oceanography (*Instituto Español de Oceanografía*) is a public body dedicated to marine science and research. It depends on the Ministry of Science and Innovation and is the research and advisory body for the Government's fisheries policy. The Spanish National Research Council (*Consejo Superior de Investigaciones Cientificas* - CSIC) includes several institutes carrying out research on marine science, including the Institute of Marine Science. CSIC is a State Agency that also depends on the Ministry of Science and Innovation.

At the sub-national level, universities play an important role in data provision (e.g., University of Barcelona).

Societal actors and public participation

The State Council for natural heritage and biodiversity (*Consejo estatal para el patrimonio natural y la biodiversidad*) is a body of public participation in the field of conservation and is consulted by the Government on nature conservation issues.

Several international NGOs have national branches in Spain (Friends of the Earth, WWF, Greenpeace) and there are also some national non-profit organisations addressing climate

[22] For example, Cap de Creus Natural Park is managed by the Catalan Autonomous Government, and the coastal sections of the Marine reserve in the East of Mallorca ("Reserva Marina de Llevant") are managed by the Balearic Islands Autonomous Government. Both areas are included in the Spanish case study of MaCoBioS.

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change in their initiatives, for example Ecopreneurs for the Climate, Eco-Union and *Ecologistas en Acción*.

8.2 Policy context for biodiversity and climate change in Spain

This section provides an overview of the most important legal and strategic documents that shape Spain's policy in the specific field of biodiversity and climate change in the broader context of environmental policy.

Biodiversity conservation

For a long time, Spain did not have a consolidated national environmental law, but several legislative texts supported by multiple strategies and programmes. Considerations on biodiversity have been included in many laws adopted since the early 2000s under several topics (e.g., coastal management, land use, rural development and infrastructure projects linked to the energy and transport sector) (OECD 2015a). Under the CBD's legal obligations[23], Spain adopted its first national strategy for biodiversity in 1998 (*Estrategia Española para la Conservación y el Uso Sostenible de la Diversidad Biológica*). The Strategy called for a new law that was enacted in 2007.

Law 42/2007 on Natural Heritage and Biodiversity constitutes the core legal document for the conservation, restoration and enhancement of biodiversity in Spain. The new law incorporated Spain's commitments to several international agreements, including the CBD, and transposed the Habitats Directive of the EU. It consolidated several previous national biodiversity laws and established the Strategic Plan on Natural Heritage and Biodiversity (*Plan Estratégico del Patrimonio Natural y la Biodiversidad*) as pivotal for Spain's strategic planning in the domain of nature conservation (OECD 2015a, 2015b; Real Decreto 1274/2011). The Strategic Plan supports the implementation of Law 42/2007, in line with the EU Biodiversity Strategy 2020, and works as the national strategy for biodiversity requested by the CBD (OECD 2015b). Spain's current Strategic Plan was issued in 2011 for the period 2011-2017. Although Law 42/2007 foresees that the Strategic Plan will be revised every six years, the last valid version remains the one adopted in 2011.

Both Law 42/2007 and the Strategic Plan recognise the importance of ecosystem services and stress the need to integrate them into public decisions. The documents also seem to refer to NBSs although the term is not explicitly mentioned; the texts refer to "green infrastructures" (Table 8).

Climate change adaptation

Spain has just adopted (in May 2021) its first national law about climate change, i.e. *Ley 7/2021 de cambio climático y transición energética*. The new law mentions the relevance of biodiversity, ecosystem services and nature-based solutions in the adaptation to climate change.

Spain adopted its National Climate Change Adaptation Plan (*Plan Nacional de Adaptación al Cambio Climático* - PNACC) in 2006. This document has been the major reference for the

[23] Spain ratified the CBD in 1993.

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development of adaptation policies in Spain. In 2020, Spain adopted a new National Adaptation Strategy for the period 2021-2030. The PNACC constitutes the major national framework coordinating the national response to climate change. It integrates climate change adaptation into rural planning instruments and biodiversity management.

The Strategic Plan on Natural Heritage and Biodiversity of 2011 (see section above on biodiversity conservation) integrated the aims of the previous PNACC (issued in 2006) to achieve synergies between the two plans.

The PNACC adopted in 2020 includes concepts such as NBSs, green and blue infrastructures, and ecosystem services.

The Ministry for the Ecological Transition – more precisely the Climate Change Office within this Ministry – coordinates the implementation of the PNACC. In addition, most Spanish Autonomous Communities have developed regional adaptation plans (or strategies) in the framework of their own climate change programmes (OECD 2015a)[24].

Table 8. *Key documents for biodiversity and climate change in Spain.*

	Biodiversity conservation	**Climate change adaptation**
National law	Law 42/2007 on Natural Heritage and Biodiversity (2007) - green infrastructures - ecosystem services - NBSs (although not explicitly mentioned)	*Ley 7/2021 de cambio climático y transición energética (2021)* - NBSs ecosystem services
National strategy	Strategic Plan on Natural Heritage and Biodiversity (2011) - NBSs (although not explicitly mentioned) - ecosystem services	*Plan Nacional de Adaptación al Cambio Climático 2021-2030* (2020) - NBSs - green/blue infrastructures - ecosystem services

The document mentions NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document does not explicitly mention NBSs, ecosystem service or related concepts (e.g., green/blue infrastructures)

The document has not been issued

[24] Internet source: https://climate-adapt.eea.europa.eu/countries-regions/countries/spain (last access: 02.12.2020).

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Part C – The Lesser Antilles region

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9. Barbados

9.1 Environmental governance: major stakeholders in Barbados

For the case of Barbados, we identified 22 potential stakeholders at the national level (Fig. 8). The detailed list, with designations and main areas of interest and/or activity, can be found in Annex I, Table J.

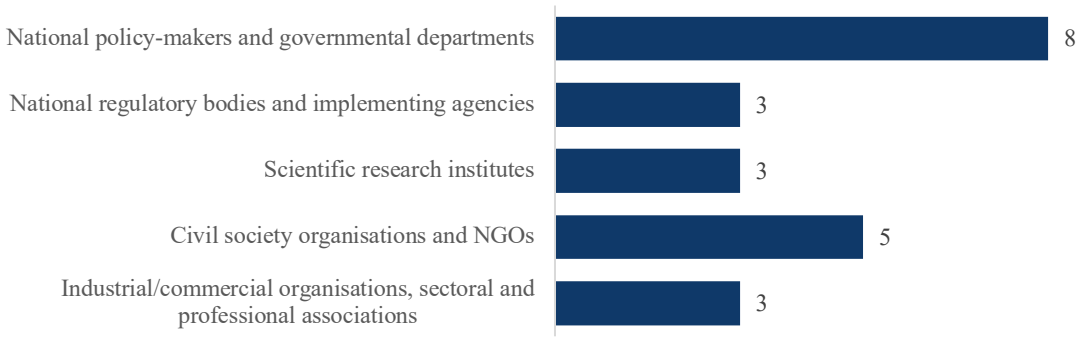

Figure 8. *Number of stakeholders per category for the Barbados case study.*

State actors at national and subnational levels

Environmental conservation and climate change have been widely mainstreamed in different national policies and legislation with multiple agencies involved in different areas of environmental governance. The Ministry of Environment and National Beautification (MENB) is the key actor in the environmental protection and management in Barbados. It is responsible for policy development regarding climate change and sea-level rise, natural disasters, biodiversity conservation and management and pollution. Within the MENB, there are two agencies of note with responsibilities that relate to biodiversity and climate change. The Environmental Protection Department (EPD) is responsible for the control of pollution, including pollution of the marine environment (marine or land-based source). The National Conservation (NCC) is a statutory body with responsibility for the conservation of the natural beauty and other national assets, as well as the maintenance and development of public parks, public gardens and beaches of Barbados.

The Town & Country Development Planning Office, within the Prime Minister's Office, plays a critical role in environmental protection by regulating land use and physical development.

Maritime issues and activities are covered by the relatively new Ministry of Maritime Affairs and Blue Economy (MMABE) and the Ministry of Tourism & International Transport. The MMABE includes the Coastal Zone Management Unit (CZMU), which was formerly a part of the Ministry responsible for Environment. The CZMU is responsible for monitoring coastal resources (ecosystems, beaches, structures), beach erosion and accretion monitoring and control, regulation of marine research, coastal conservation project design and management, and advising on applications for physical development permission (see below). The Fisheries Division is also under the MMABE and oversees sustainable fisheries management as well as the protection of marine life, including coral reefs.

Agencies in other Ministries also play important roles. The Barbados Coast Guard (BCG) is responsible for enforcing several laws, including (but not limited to) those relating to fisheries,

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territorial waters and economic zones, and safety at sea. The Department of Emergency Management is responsible for developing, promote and maintain a comprehensive National Disaster Management Programme.

Administrative coordination and advisory bodies

The Roofs to Reefs Programme (R2RP) is being established as the coordinating framework for planning and investment in the sustainable development of Barbados. The programme name is derived from a spin on the 'ridge to reef' concept, and it is conceptualised as a framework for sustainable development and climate resilience across sectors, and across the island, starting with the home – thus, from 'Roofs to Reefs.'

Climate change matters are addressed collaboratively across relevant Ministries. The primary actors are the Ministry with responsibility for Environment, currently the MENB, along with the Sustainable Development Unit in the Economic Affairs and Investment Division. The MENB is the designated focal point for the UNFCCC, while the Ministry of Finance, Economic Affairs and Investment (MFEAI) is the National Designated Authority (NDA) to the Green Climate Fund (GCF). Other Ministries or agencies with specific sectoral mandates may also have a dedicated climate change section or focal point and/or climate change related programming.

The MENB chairs a multisectoral Working Group on Biodiversity, which oversees the implementation of the obligations of the CBD. Representatives from the CZMU and the Fisheries Division and marine experts from the University of the West Indies (UWI) serve on this Working Group alongside others from Government and the private sector with expertise in terrestrial biodiversity.

There is a Cabinet level inter-agency committee that addresses all water-related matters and an associated technical sub-committee. Matters addressed include wetland areas and the Graeme Hall Swamp (RAMSAR site) in particular.

Science advice and data provision

Institutions in Barbados carrying out research and data collection related to biodiversity, climate change, and adjacent topics include various Departments of the UWI Cave Hill Campus, particularly the Centre for Resource Management and Environmental Studies (CERMES), as well as the Bellairs Research Institute of McGill University.

Societal actors and public participation

The Future Centre Trust, Barbados Environmental Conservation Trust, Barbados Marine Trust and Barbados National Trust work to preserve and protect Barbados' natural heritage, including marine biodiversity. With a broader perspective, the Caribbean Youth Environment Network – Barbados Chapter provides education opportunities with a focus on the environment and sustainable development.

Barbados's National Union of Fisherfolk organization is a national level body that comprise local fisherfolk groups as well as individual fishers and work to strengthen the capacity of its members. Regarding tourism, while created with a broader perspective, the Barbados Hotel

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and Tourism Association aims to facilitate sustainable growth and development of the local tourism sector.

9.2 Policy context for biodiversity and climate change in Barbados

Barbados addresses environmental management, biodiversity protection and climate change concerns through a set of inter-connected legislative and policy instruments, along with associated national strategies and plans. Selecting a single piece of legislation would for review would not be a realistic or fair representation of the policy framework in Barbados. In general, legislation, especially older legislation, is unlikely to explicitly mention nature-based solutions and similar terminologies that are relatively new. These are more likely to be mentioned and mainstreamed in national strategies, policies, and plans, which in many cases are directly referenced by legislation.

Biodiversity conservation

Barbados does not have a single comprehensive legislative document for environmental management[25]. Biodiversity is managed as part of broader land use management and coastal zone management. The preservation of the natural environment and natural heritage systems is integrated into several broader pieces of legislation, in particular the laws governing physical development control and coastal zone management. The Fisheries Act (1992) and regulations (1998), currently being updated, protect certain marine species (all turtles, all marine mammals, all corals). Although it does not specifically mention biodiversity, the Marine Pollution Control Act (Cap 392) plays an important role in the regulation of pollution. In addition, there are also some significant pieces of legislation focused on specific biodiversity issues, some very old, that were put in place to mitigate the negative impacts of colonial settlement and land-use practices, including the Tree Preservation Act (Cap 397), the Cultivation of Trees Act (Cap 390), Wild Birds Protection Act (Cap 398).

Biodiversity conservation is guided by various national policy documents, particularly the Physical Development Plan (PDP)[26], which is a broad policy document and spatial plan grounded in sustainable development that integrates a number of sectoral policies, including the Integrated Coastal Zone Management Plan, the Integrated Gully Ecosystem Management Plan (IGEMP, and the Groundwater Protection Policy. Sustainable Development, environmental management, and addressing climate change impacts are central and fundamental objectives of the PDP. It includes a specific strategic policy on the protection of natural heritage systems as a core asset. A recently developed Stormwater Management Plan, also integrated into the PDP and prepared as part of a climate change adaptation programme, incorporates recommendations for stormwater best management practices and low impact development, the definitions of which at least overlap with nature-based solutions.

Barbados has been a party of the CBD since 1994. In compliance with this ratification, in 2002 the Government of Barbados issued its first National Biodiversity Strategy and Action Plan. The document was followed by a second NBSAP that was adopted in 2021 in the wake of the

[25] Source: https://www.cbd.int/countries/profile/?country=bb#measures (last access: 11.05.2021).
[26] The Physical Development Plan establishes policies and management strategies to conserve and enhance the system of parks and open spaces identified in the island, which are anchored by the National Park (guided by the National Park Plan).

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Aichi Biodiversity Targets. The new Strategy covers the period from 2020 to 2035. The document refers to ecosystem services – but not to NBSs[27] – and stressed the value of biodiversity, marine and terrestrial ecosystems together with their services for the country's economic, social, and cultural wellbeing. The Strategy refers to the management of protected areas and emphasises the importance of connecting terrestrial, inland, coastal, and marine areas within the national park system. It also prioritises the protection of coral reefs and other coastal ecosystems. Barbados has also ratified the Specially Protected Areas and Wildlife (SPAW) protocol of the Cartagena Convention, which works in support of other global environmental conventions, agreements and commitments including CBD and CITES.

Climate change adaptation

Barbados ratified the Paris Agreement in 2016. The Barbados National Climate Change Policy (2012) establishes a process for adaptation to climate change through the design of appropriate mechanisms and commits the country to reduce greenhouse gases emissions by moving towards renewable energy[28]. Major national policies, plans and programmes such as the Physical Development Plan, Integrated Coastal Zone Management Plan, and the Roofs to Reefs Programme integrate climate change adaptation as a core consideration. The PDP lists addressing the critical impacts of climate change as one of its core objectives, and the issue is comprehensively mainstreamed throughout the document. The recently prepared draft update to the Integrated Coastal Zone Management Policy Framework for 2020-2030 explicitly refers to ecosystem-based management and ecosystem-based adaptation. In addition, NBSs are proposed as pivotal for future coastal infrastructures and risk reduction measures in future disaster risk management and climate change adaptation plans.

In line with the UNFCCC, the Government of Barbados issued its National Determined Contributions in 2005 and a Second National Communication in 2018. While terms such as NBSs and ecosystem services are not explicitly mentioned, the Second National Communication highlights adaptation as a national priority through projects to restore coastal habitats and improve coastal infrastructure. Barbados is in the process of preparing its Second Nationally Determined Contributions, and it is expected that it will incorporate ecosystems-based adaptation and similar concepts and types of interventions.

In addition to the legislation and policies/plans outlined above, there are some significant plans and programmes in development and/or early stages that represent opportunities or entry points for further integration and mainstreaming of nature-based solutions in the policy and legal framework. Based on advice from the MaCoBioS Case Study counterpart institution, which is familiar with these initiatives, incorporation of the concept of NBSs and/or similar concepts is already underway. These include:

- The Roofs to Reefs Programme (described earlier)
- The ongoing development of a Strategy and Roadmap for Blue Economy in Barbados
- The ongoing preparation of Barbados Second Nationally Determined Contributions

[27] While the terms green/blue infrastructures are not mentioned, the document mentions an ecosystem-based pilot project, implemented as part of the Barbados Coastal Risk Assessment and Management Programme, which involved the implementation of a non-engineering solution (reef-generation) to shoreline erosion.

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- The ongoing (early stages) development of a Marine Spatial Plan for Barbados

Table 9. *Key documents for biodiversity and climate change in Barbados.*

	Biodiversity conservation	**Climate change adaptation**
National law	Planning and Development Bill 2019 (pending approval) Coastal Zone Management Act Fisheries Act - ecosystem services - ecosystem-based management	A national law has not been adopted
National strategy	Physical Development Plan Integrated Coastal Zone Management Policy Framework (drafted Second National Biodiversity Strategy and Action Plan (2021) - ecosystem services	Physical Development Plan; Integrated Coastal Zone Management Policy Framework (drafted) - NBSs - ecosystem-based management and ecosystem-based adaptation

The document mentions NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document does not explicitly mention NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document has not been issued

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10. Bonaire

10.1 Environmental governance: major stakeholders in Bonaire

Bonaire is a special municipality within the country of the Netherlands. As such, this section includes stakeholders both from the Netherlands and specifically linked to the territory of Bonaire, in total 21 potential stakeholders (Fig. 9). The full list of potential stakeholders, categorised and with main areas of interest and/or activity detailed, can be found in Annex I, Table K.

Figure 9. *Number of stakeholders per category for the Bonaire case study (NL refers to stakeholders from the Netherlands, BO refers to stakeholders linked to Bonaire).*

State actors at national and subnational levels

In the structure of the Dutch Government, the policy and regulation related to nature and biodiversity are under the Ministry of Agriculture, Nature and Food Quality (*Ministerie van Landbouw, Natuur en Voedselkwaliteit*). This Ministry also covers the fishing sector. The Dutch maritime strategy and policy is one of the tasks of the Ministry of Infrastructure and Water Management (*Ministerie van Infrastructuur en Waterstaat*) and the climate policy is the responsibility of the Ministry of Economic Affairs and Climate Policy (*Ministerie van Economische Zaken en Klimaat*).

Still at the national level, the Netherlands Environmental Assessment Agency (*Planbureau voor de Leefomgeving*) is an autonomous research institute, part of the Dutch Government, that provides outlook studies, analyses and evaluations to support decision-making in the fields of the environment, natural and spatial planning.

The implementation of services, projects and laws from Dutch ministries in the Caribbean Netherlands (Bonaire, St. Eustatius and Saba) is supported by the National office of the Caribbean Netherlands (*Rijksdienst Caribisch Nederland*). The Caribbean Coast Guard (*Kustwacht Caribisch Gebied*) ensures the enforcement of maritime law and control on illegal activities in these territories (including the exclusive economic zones).

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Administrative coordination and advisory bodies

The Social and Economic Council of the Netherlands (*Sociaal-Economische Raad*) advises the Dutch Government and Parliament on social and economic policy.

Regional, municipalities and other local authorities

Bonaire Public Body (*Openbaar Lichaam Bonnaire*) is similar to a municipality in the Netherlands and, as such, is part of the Association of Netherlands Municipalities (*Vereniging van Nederlandse Gemeenten*).

The Kralendijk Port Authority is involved in the planning of new developments in coastal waters (such as harbours and piers).

Science advice and data provision

The main data providers related to the marine environment are the Royal Netherlands Institute for Sea Research (*Koninklijk Nederlands Instituut voor Onderzoek der Zee* - NIOZ), which includes a Caribbean Centre of Expertise on St. Eustatius, and Wageningen University and Research.

Societal actors and public participation

Bonaire National Parks Foundation (*Stichting Nationale Parken Bonaire*) was commissioned by the island government to manage the two protected areas of Bonaire (Bonaire National Marine Park and Washington Slagbaai National Park). Protected Area management organisations in the Dutch Caribbean are supported by the Dutch Caribbean Nature Alliance. Sea Turtle Conservation Bonaire, Echo Foundation and Reef Renewal Bonaire are NGOs involved in conservation projects, with the last one particularly involved in coral reef restoration.

10.2 Policy context for biodiversity and climate change in Bonaire

Aruba, Curaçao, St. Maarten, Bonaire, Saba and St. Eustatius are all part, together with the country of the Netherlands, of the Kingdom of the Netherlands. The Kingdom of the Netherlands is a sovereign state made up of four countries. The Netherlands is one country. Aruba, Curaçao and St. Maarten constitute the other three remaining constituent countries; these become independent in 2010 (personal communication with an expert on the area). These three independent countries can, thus, sign international treaties in full autonomy from the country of the Netherlands. Bonaire, St. Eustatius and Saba (indicated together as BES) are instead part of the country of the Netherlands with the status of special municipalities. These three islands are known as the Caribbean Netherlands (MEA 2013). The Caribbean Netherlands have a wide range of autonomy in the implementation of national laws and strategies. EU law does not apply to Bonaire, St. Eustatius and Saba (personal communication with an expert on the area).

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Bonaire, as part of the Caribbean Netherlands, largely has its own laws and regulations, i.e. the BES-laws (Slijkerman & van der Geest 2019).

Biodiversity conservation

The key legal document for biodiversity conservation in the Netherlands is the Nature Conservation Act (*Wet natuurbescherming*) that took effect in 2017 (see Table 10). The Act protects natural areas, wild animals and plants in the Netherlands. The Nature Conservation Act replaced three other laws: the Nature Conservancy Act, the Flora and Fauna Act, and the Forestry Act. The Act calls for the development of Environmental Visions – at national, provincial and local levels – that will include climate adaptation[29]. A first part of a national environmental vision (*Nationale Omgevingsvisie*) was already published in 2017[22]. The Netherlands will adopt a new Environment Act in 2021 that will substitute the current Nature Conservation Act.

The Caribbean Netherlands – including Bonaire (see above) –adopted the Nature Conservation Framework Act BES (*Wet grondslagen natuurbeheer en bescherming BES*) in 2019 (Slijkerman & van der Geest 2019). The document neglects NBSs, ecosystem services or any related concept (e.g., green/blue infrastructures). The Caribbean Netherlands issued the "Nature and environment policy plan 2020-2030" that works as a national strategy for the three islands in compliance with the CBD. It is a legally binding document referring to concepts like NBSs and ecosystem services. Yet, the implementation of thess strategic documents relies heavily on the efforts of each special municipality through individual implementation plans (ANF et al. 2020). Implementation efforts have been quite disappointing (personal communication with an expert on the area). It is clear from this policy plan that competencies in environmental matters are distributed across several ministries; this jeopardises a common, coordinated, and united response (personal communication with an expert on the area).

Climate change adaptation

In the area of climate policy, the Climate Act adopted in 2019 represents the most important legal text for the Netherlands. In addition, climate change adaptation in the Netherlands is ruled by two key documents: the National Climate Adaptation Strategy and the Delta Programme[30].

The National Climate Adaptation Strategy represents the overarching national strategy for all possible climate change impacts and the related adaptation measures. The first National Climate Adaptation Strategy (NAS) was adopted in 2007. The second NAS was adopted in 2016; the document refers to ecosystem services and nature-based infrastructures. For the issuing of this document, authorities from provinces and municipalities, knowledge institutes, private companies and societal organisations were consulted. In 2018, the country adopted the Implementation Programme 2018-2019 of the NAS. The Implementation Programme states that an evaluation of the NAS (2016) will be conducted in 2019[4]. The National Climate

[29] https://www.government.nl/topics/nature-and-biodiversity/legislation-protecting-nature-in-the-netherlands (last access: 04.05.2021).

[30] Source: https://climate-adapt.eea.europa.eu/countries-regions/countries/netherlands (last access: 16.11.2020).

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Adaptation Strategy refers to the Caribbean Netherlands; a climate plan for the islands of Bonaire, Sint Eustatius and Saba has been foreseen but it has not yet been issued (personal communication with an expert on the area). We can read in the National Climate Adaptation Strategy (MIE 2016):

> 'Climate-related issues in the Caribbean Netherlands are significantly different to those in Europe and demand a separate plan. During the first half of 2017, the Ministry of Infrastructure and the Environment will hold talks with the 'special municipalities' of Bonaire, Sint Eustatius and Saba, and will offer assistance in producing a climate adaptation strategy. Should they so wish, the autonomous islands of Aruba, Curaçao and Sint Maarten can avail themselves of the same opportunity, subject to the approval of the Interparliamentary Council of the Kingdom.'

The Delta Programme is a programme that addresses specific possible impacts of climate change to the Netherlands: sea-level rise, intense rainfall, droughts and heat. A new version of the Delta Programme is issued every year. The Delta Programme builds on a legal document, i.e. the Delta Act on flood safety and freshwater supply (or Delta Act). The Delta Act entered into force in 2012[22].

IMPORTANT NOTE. Acts such as Nature Conservation Act (2017) and the new Environment Act (entering into force in 2021) as well as the National Climate Adaptation Strategy in 2016 are not legally binding for Bonaire but are relevant for their goals since Bonaire (as well as the other two special municipalities of the Caribbean Netherlands) does not have its own Climate Act or Adaptation Strategy (personal communication with an expert on the area).

Table 10. *Key documents for biodiversity and climate change in Bonaire.*

	Biodiversity conservation	**Climate change adaptation**
National law	Nature Conservation Framework Act BES (2019)	Climate Act 2019 [the Netherlands]
National strategy	Nature and Environment Policy Plan Caribbean Netherlands 2020 -2030 (2020) - ecosystem services - NBSs (e.g., for coastal protection)	National Climate Adaptation Strategy (2016) [the Netherlands] - NBSs although not mentioned explicitly as such (e.g., green zones in urban areas, nature areas and corridors) - natural infrastructures (e.g., water and ecological corridors) - ecosystem services

The document mentions NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document does not explicitly mention NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document has not been issued

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11. Martinique

11.1 Environmental governance: major stakeholders in Martinique

Martinique is an Overseas Region and overseas department of the French Republic. Information on potential stakeholders at the national level for France can be found in section 6. This section is focused on potential stakeholders specifically linked to the territory of Martinique, and a total of 29 potential stakeholders were identified (Fig. 10). The full list of potential stakeholders, categorised and with their main areas of interest and/or activity detailed, can be found in Annex I, Table L.

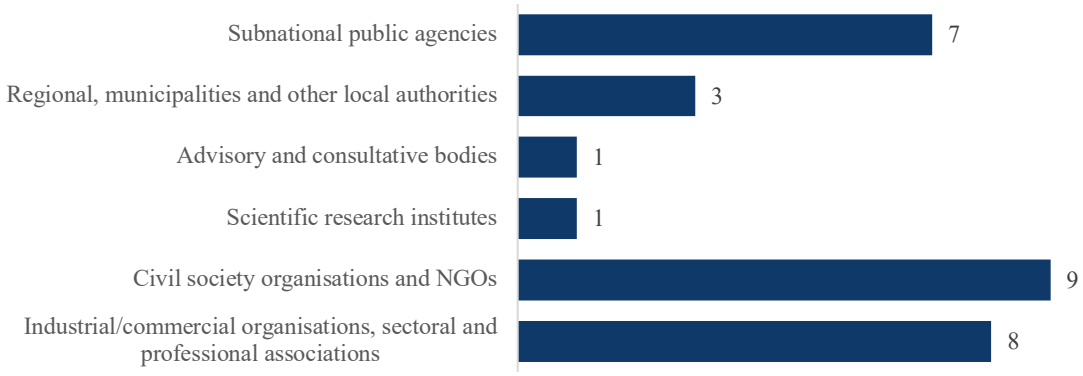

Figure 10. *Number of stakeholders per category for the Martinique case study.*

State actors at national and subnational level

In Martinique, the implementation of national environmental policies is ensured by the Directorate for the environment, planning and housing of Martinique (*Direction de l'Environnement, de l'Aménagement et du Logement de la Martinique*), while the implementation of sea-related policies is the responsibility of the Sea Directorate of Martinique *(Direction de la Mer de la Martinique*), both of which are decentralised services of the National Government.

Martinique Water Office (*Office de l'Eau Martinique*) is responsible for improving knowledge, facilitating and financing actions regarding the management of water and aquatic environments. They work closely with the Forests National Office - Territorial Department of Martinique (*Office National des Forêts - Direction territoriale de Martinique*) in issues connected to, for example, mangrove protection.

Directorate of Food, Agriculture and Forestry (*Direction de l'Alimentation, de l'Agriculture et de la Forêt*) is responsible for forest policy in Martinique.

Administrative coordination and advisory bodies

The Inter-service Mission for Water and Nature *(Mission inter-service de l'Eau et de la Nature* - MISEN*)* is responsible to ensure the implementation of policies related to water and aquatic environments in the department (action plan, planning, coordination, evaluation, communication). MISEN is composed by several entities, including the Water Office, the Directorate for the environment, planning and housing and the Sea Directorate (among others).

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Regional, municipalities and other local authorities

The Territorial Collective of Martinique (*Collectivé Territoriale de Martinique*) exercises all the rights and obligations initially attributed to the Department and the Region, namely in terms of regional cooperation, economic development, and territorial management.

The Martinique Marine Natural Park (*Parc Naturel Marin de Martinique*) and the Martinique Regional Natural Park (*Parc Naturel Régional de la Martinique*) both have a management body/board which includes local actors.

Science advice and data provision

The Martinican Biodiversity Observatory (*Observatoire Martiniquais de la Biodiversité*) is linked with the Martinique Regional Natural Park and brings together knowledge about biodiversity in Martinique.

The Geological and Mining Research Office of the National Geological Service (*Bureau de Recherche Géologique et Minière - Service Géologique National*) conducts research on geology and has knowledge of the subsurface, groundwater management, risks and spatial planning and mineral resources.

Université des Antilles has sustainable development and biodiversity as one of its main research domains.

Societal actors and public participation

Different associations focus on nature conservation and environmental protection such as: Association for the Protection and Defence of the Islets of Martinique (*Association pour la Protection et la Défense des Ilets de la Martinique*), Association for nature and environmental protection (*Association pour la Protection De la Nature et de l'Environnement*), OCEANvironnement, Society for the Study of Protection and Management of Nature in Martinique (*Association Société Étude Protection et Aménagement de la Nature à la Martinique)* and Association for the Safeguarding of Martinican heritage (*Association Pour la Sauvegarde du Patrimoine Martiniquais*).

11.2 Policy context for biodiversity and climate change in Martinique

Martinique is a French department (Law n° 1946-45) under the legal regime of "legislative assimilation" (article 73 of the Constitution); it implies that the law and regulations in mainland France are automatically applicable in Martinique with some possible adaptations (Table 11).

Biodiversity conservation

The new law on biodiversity adopted by France in 2016 (*Loi n°2016-1087 pour la reconquête de la biodiversité, de la nature et des paysages*) also constitutes the main legislative document for Martinique. The law explicitly acknowledges the importance of ecosystem services and

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seems to refer (though implicitly) to NBSs (as green spaces, natural reserves and natural parks) (OECD 2016b).

France ratified the CBD in 1994. In compliance with the CBD, the country adopted two National Biodiversity Strategies. The second National Biodiversity Strategy (issued in 2011) confirms the country's commitment to the conservation of biodiversity on both mainland France and in its overseas territories (MEDDTL 2011). The text of the Strategy acknowledges the relevance of ecosystem services and (implicitly) NBSs mainly as green infrastructures. In addition to this national strategic document, Martinique can adopt its own regional strategy. Efforts in this direction have been made since 2012[31]; yet the region has not adopted any document[32].

With the purpose of halting biodiversity loss, France's outermost regions have developed regional development schemes knows as *Schémas d'Aménagement Régional*. These documents define orientations in terms of the sustainable development of the territory in combination with the protection of the environment. Since 2010, the Grenelle Law II has given the *Schémas d'Aménagement Régional* the same importance of the *Schéma Régional de Cohérence Ecologique.* To this end, the former integrates a chapter about green and blue infrastructures.

Climate change adaptation

The most important national document for Climate Change in France is the *Loi n°2019-1147 relative à l'énergie et au climat*. The text does not mention NBSs, ecosystem services or related terms.

In 2011, France adopted its National Adaptation Plan for the period 2011-2015 (*Plan National d'Adaptation au Changement Climatique*, followed by a second plan in 2018 (NAP-2). In the wake of COP21, France started to update the country's adaptation policy in compliance with the Paris Agreement. NAP-2 covers both mainland France and its overseas territories for the period 2018-2022[33].

In addition to these national legislative and strategic documents, France adopted an action plan for the protection of coral reefs in French overseas territories (*Le plan d'action pour la protection des récifs coralliens des outre-mer français)* in 2019. The plan is based on three national strategies, i.e. for the sea and the coastline *(Stratégie nationale pour la mer)*, protected areas *(Stratégie nationale pour les aires protégées 2020-2030)* and adaptation to climate change (*Plan National d'Adaptation au Changement Climatique*). In 2021, the country issued the *Document Stratégique de Bassin Maritime des Antilles* to coordinate all sectoral policies related to the sea and coast. The document focus on blue economy activities, marine environment protection, disaster risk reduction, cooperation, and research and innovation.

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[31] Source: http://www.martinique.developpement-durable.gouv.fr/la-strategie-regionale-pour-la-biodiversite-srb-et-a665.html (last access: 12.05.2021).

[32] The *Département* of Martinique issued a "Local strategy for biodiversity" *(Stratégies Locales pour la Biodiversité)* in 2005. This technical document aims to inform on local biodiversity issues, strengthen the coordination and reinforce the efficiency of actions.

[33] Source: https://climate-adapt.eea.europa.eu/countries-regions/countries/france (last access: 23.11.2020).

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Table 11. *Key documents for biodiversity and climate change in Martinique.*

	Biodiversity conservation	**Climate change adaptation**
National law	*Loi n°2016-1087 pour la reconquête de la biodiversité, de la nature et des paysages* (2016) [France] - NBSs (although not explicitly mentioned: e.g., green spaces, natural reserves and natural parcs) - ecosystem services	*Loi n°2019-1147 relative à l'énergie et au climat* (2019) [France] - no mention of NBSs, ecosystem services and related terms
National strategy	*Stratégie nationale pour la biodiversité (SNB) 2011-2020* (2011) [France] - ecosystem services - green infrastructures - NBSs (although not explicitly mentioned)	National Climate Change Adaptation Strategy (2006) [France] - ecosystem services

The document mentions NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document does not explicitly mention NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document has not been issued

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12. Conclusions

A multitude of potential stakeholders was identified at the international, regional and national levels. The resulting lists (see Annex I) were not intended to be exhaustive but rather a starting point for stakeholders' engagement actions in the scope of the project (to be coordinated through Task 4.2).

At this stage we focused mostly on stakeholders that may influence (directly or indirectly) the management of marine and coastal ecosystems through policies, legislation, funding, research, environmental education, etc., and therefore, those who can uptake the results and guidelines from MaCoBioS. As the project deepens the study of its case studies, different groups of stakeholders might be identified at the local level, including those who make use of specific marine and coastal ecosystems and benefit from the ecosystem services provided. The successful implementation of different NBSs will most likely require the involvement of specific sets of stakeholders.

In the scope of this report, we highlighted some of the major stakeholders with competencies and/or interest in biodiversity conservation, marine/coastal issues and/or climate change in each case study. We did not aim to perform a comparative analysis between case studies, but it is clear that there is a diversity of settings and the integration between biodiversity conservation and climate change in national institutional frameworks differs. In some cases, both areas are incorporated in the same Ministry (although, most likely in separate directorates or departments), while in others climate change is more linked with other policy areas such as economy and industry.

Similarly, our sections on the policy frameworks governing biodiversity and climate change (adaptation) in the different countries called for a selection of few key policy documents for each case study among the many national laws, regulations, strategies, programmes, plans that govern environmental matters. Table 12 summarises all the national documents selected; colours were assigned to each document analysed in the previous sections according to the following categories:

The document mentions NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document does not explicitly mention NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document has not been issued

This allows some general conclusion to be drawn about the current legal and policy frameworks present in the three ecoregions. First, national strategies are in line with new scientific and conceptual developments such as the approach based on NBSs and more extensively ecosystem services. Second, most national laws are clearly missing the uptake of these new concepts and approaches to biodiversity conservation and climate change adaptation. This delay could be due to the more complex process of revision of national legal frameworks compared to policy strategies. Third, national legislations for the conservation of biodiversity seem to be more open to the application of concepts like NBSs and ecosystem services compared to national laws addressing climate change. Fourth, some countries are still lacking climate change legislation (see Italy) or have just adopted their very first law in this policy area (see Spain).

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Table 12. *Summary table on the policy frameworks.*

	National law for biodiversity conservation	National Strategy for biodiversity conservation	National law for climate change adaptation	National strategy for climate change adaptation
IE	Wildlife Act (1976; consolidated version of 2020)	Third National Biodiversity Plan (2017)	Climate Action and Low Carbon Development Act (2015)	First National Adaptation Framework (NAF) (2018)
NO	Nature Diversity Act (Act of 19 June 2009 No.100 Relating to the Management of Biological, Geological and Landscape Diversity)	Norway's national biodiversity action plan (2015)	Climate Change Act (2017)	White Paper on Climate Change Adaptation (2013)
UK	Countryside and Rights of Way Act (2000)	UK Post-2010 Biodiversity Framework (2012)	Climate Change Act (2008)	Second National Adaptation Programme (2018)
FR	*Loi n°2016-1087 pour la reconquête de la biodiversité, de la nature et des paysages* (2016)	*Stratégie nationale pour la biodiversité (SNB) 2011-2020* (2011)	*Loi n°2019-1147 relative à l'énergie et au climat* (2019)	National Climate Change Adaptation Strategy (2006)
IT	*Legge 1° dicembre 2015, n. 194 per la tutela e la valorizzazione della biodiversità di interesse agricolo e alimentare* (2015)	*Strategia nazionale per la biodiversità* (2011-2020)	A national law has not been adopted	National Adaptation Strategy to Climate Change (2015)
ES	Law 42/2007 on Natural Heritage and Biodiversity (2007)	Strategic Plan on Natural Heritage and Biodiversity (2011)	*Ley 7/2021 de cambio climático y transición energética (2021)*	*Plan Nacional de Adaptación al Cambio Climático 2021-2030* (2020)
BB	Planning and Development Bill 2019 (pending approval) Coastal Zone Management Act Fisheries Act	Physical Development Plan Integrated Coastal Zone Management Policy Framework (drafted) Second National Biodiversity Strategy and Action Plan (2021)	A national law has not been adopted	Physical Development Plan; Integrated Coastal Zone Management Policy Framework (drafted)
BO	Nature Conservation Framework Act BES (2019)	Nature and Environment Policy Plan Caribbean Netherlands 2020 -2030 (2020)	Climate Act 2019 [the Netherlands]	National Climate Adaptation Strategy (2016) [the Netherlands]
MA	*Loi n°2016-1087 pour la reconquête de la biodiversité, de la nature et des paysages* (2016) [France]	*Stratégie nationale pour la biodiversité (SNB) 2011-2020* (2011) [France]	*Loi n°2019-1147 relative à l'énergie et au climat* (2019) [France]	National Climate Change Adaptation Strategy (2006) [France]

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The document mentions NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document does not explicitly mention NBSs, ecosystem services or related concepts (e.g., green/blue infrastructures)

The document has not been issued

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Annex I. Lists of stakeholders

Table A. *List of potential stakeholders identified at the international global level with main focus of interests and/or activities indicated categorised by biodiversity conservation, sea/coast issues and/or activities and climate change. Note this is a qualitative assessment based on expert knowledge and that given the interrelatedness of biodiversity and climate change these interests often overlap to some degree.*

	Bio diversity	Sea/ Coast	Climate Change
Intergovernmental organisations			
Organisation for Economic Co-operation and Development	X	X	X
United Nations Environment Programme	X	X	X
Intergovernmental Oceanographic Commission of UNESCO	X	X	X
Intergovernmental Panel on Climate Change			X
The International Council for the Exploration of the Sea	X	X	
Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services	X	X	X
Global Environmental Facility	X	X	X
International non-governmental organisations			
International Union for Conservation of Nature	X	X	X
World Wide Fund for Nature	X	X	X
Fauna & Flora International	X	X	
Conservation International	X	X	X
Nature Conservancy	X	X	X
Friends of the Earth International	X	X	X
Greenpeace International	X	X	X
Oceana		X	
Ocean Conservancy	X	X	X
Sea Shepherd	X	X	X
Waitt Foundation	X	X	X
Global Coral Reef Alliance	X	X	X
International Coral Reef Initiative	X	X	X
Reef Check	X	X	X
Wetlands International	X	X	X
Other organisations			
Nature-Based Solutions Initiative	X	X	X
World Resources Institute		X	X
SeaLegacy		X	

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Table B. *List of potential stakeholders identified at the European level with main focus of interests and/or activities indicated categorised by biodiversity conservation, sea/coast issues and/or activities and climate change. Note this is a qualitative assessment based on expert knowledge and that given the interrelatedness of biodiversity and climate change these interests often overlap to some degree.*

	Bio diversity	Sea/ Coast	Climate Change
EU institutions and other intergovernmental organisations			
Directorate-General for the Environment	X	X	X
Directorate-General for Maritime Affairs and Fisheries		X	
Directorate-General for Climate Action			X
Joint Research Centre	X	X	X
European Environment Agency	X	X	X
General Fisheries Commission of the Mediterranean		X	
Regional Activity Centre for Specially Protected Areas	X	X	X
Ocean Thematic Centre		X	X
International non-governmental organisations			
Surfrider Foundation Europe	X	X	X
WWF Mediterranean	X	X	X
Other organisations			
Covenant of Mayors for Climate and Energy			X
Association of the Overseas Countries and Territories of the European Union	X	X	X
MedPAN - Network of managers of MPAs in the Mediterranean	X	X	X
Seas at risk	X	X	X
Wildsea Europe		X	

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Table C. *List of potential stakeholders identified at the Caribbean level with main focus of interests and/or activities indicated categorised by biodiversity conservation, sea/coast issues and/or activities and climate change. Note this is a qualitative assessment based on expert knowledge and that given the interrelatedness of biodiversity and climate change these interests often overlap to some degree.*

	Bio diversity	Sea/ Coast	Climate Change
Intergovernmental organisations			
Alliance of Small Island States	X	X	X
Association of Caribbean States	X	X	X
Organisation of Eastern Caribbean States	X	X	X
The Caribbean Disaster and Emergency Management Agency			X
World Health Organization Caribbean Regional Climate Centre			X
Caribbean Community Climate Change Centre			X
Caribbean Regional Fisheries Mechanism		X	
UNEP Caribbean Environment Programme	X	X	X
International non-governmental organisations			
Environmental Protection in the Caribbean	X	X	X
Other organisations			
Caribbean Development Bank	X	X	X
Caribbean Natural Resources Institute	X	X	X
Caribbean Network of Fisherfolk Organizations		X	

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Table D. *List of potential stakeholders identified for Ireland with main focus of interests and/or activities indicated categorised by biodiversity conservation, sea/coast issues and/or activities and climate change. Note this is a qualitative assessment based on expert knowledge and that given the interrelatedness of biodiversity and climate change these interests often overlap to some degree.*

	Bio diversity	Sea/ Coast	Climate Change
National policy-makers and governmental departments			
An Roinn Tithíochta, Rialtais Áitúil agus Oidhreachta (Department of Housing, Local Government and Heritage)	X	X	X
An Roinn Comhshaoil, Aeráide agus Cumarsáide (Department of the Environment, Climate and Communications)	X		X
An Roinn Talmhaíochta, Bia agus Mara (Department of Agriculture, Food and the Marine)		X	
Advisory and consultative bodies			
Comhlacht Comhairleach Uisce (Water Advisory Body)		X	
Chomhairle Chomhairleach um Athrú Aeráide (Climate Change Advisory Council)			X
National regulatory bodies and implementing agencies			
Ionad Náisiúnta le Sonraí Bithéagsúlachta (National Biodiversity Data Centre)	X		X
An tSeirbhís Páirceanna Náisiúnta agus Fiadhúlra (National Parks and Wildlife Service)	X	X	X
Suirbhéireacht Gheolaíochta Éireann (Geological Survey Ireland)	X	X	
Oifg na nOibreacha Poiblí (Office of Public Works)		X	
Ghníomhaireacht um Chaomhnú Comhshaoil (Environmental Protection Agency)	X	X	X
Bord Iascaigh Mhara (Ireland´s Seafood Development Agency)		X	
Ghníomhaireacht Bainistíochta Rialtais Áitiúil (Local Government Management Agency)			X
tÚdarás Forbartha Talmhaíochta agus Bia (Agriculture and Food Development Authority)		X	X
Foras na Mara (Marine Institute)	X	X	X
Scientific research institutes			
Tá Ollscoil na hÉireann, Gaillimh (National University of Ireland, Galway)	X	X	X
Coláiste na hOllscoile Corcaigh (University College Cork)	X	X	X
t-Ionad Náisiúnta Anailíse 's Taighde na h-Aeráide (The Irish Climate Analysis and Research UnitS/University Maynooth)			X
Trinity Centre for Biodiversity Research/Trinity College Dublin	X		
SFI Centre MaREI		X	X
SFI SP Terrain-AI			X
Civil society organisations and NGOs			
Irish Environmental Network	X	X	X
Sustainable Water Network	X	X	X
An Taisce (The National Trust for Ireland)	X	X	X
BirdWatch Ireland	X	X	X

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	Bio diversity	Sea/ Coast	Climate Change
Coastwatch Ireland	X	X	X
Friends of the Irish Environment	X	X	X
Friends of the Earth Ireland	X	X	X
Civil society organisations and NGOs (cont.)			
Eco-UNESCO	X	X	X
Irish Whale and Dolphin Group	X	X	X
Irish Wildlife Trust	X	X	X
Green Foundation Ireland	X	X	X
Global Action Plan Ireland	X	X	X
Industrial/commercial organisations, sectoral and professional associations			
Irish Underwater Council		X	
SubandCast Ltd		X	
Irish Seaweed Consultancy Ltd		X	
Wild Irish Seaweed Ltd		X	
Connemara Organic Seaweed Company Ltd		X	
Media (national and local)			
The Green News	X	X	X

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Table E. *List of potential stakeholders identified for Norway with main focus of interests and/or activities indicated categorised by biodiversity conservation, sea/coast issues and/or activities and climate change. Note this is a qualitative assessment based on expert knowledge and that given the interrelatedness of biodiversity and climate change these interests often overlap to some degree.*

	Bio diversity	Sea/ Coast	Climate Change
National policy-makers and governmental departments			
Klima- og miljødepartementet (Ministry of Climate and Environment)	X		X
Nærings- og fiskeridepartementet (Ministry of Trade, Industry and Fisheries)		X	
Samferdselsdepartementet (Ministry of Transport)		X	
Fiskeridirektoratet (Directorate of Fisheries)		X	
Advisory and consultative bodies			
Norsk Klimaservicesenter (Norwegian Centre for Climate Services)		X	X
National regulatory bodies and implementing agencies			
Miløjdirektoratet (Norwegian Environment Agency)	X	X	
Kystverket (The Norwegian Coastal Administration)		X	
Sjøfartsdirektoratet (Nowergian Maritime Authority)		X	
Kunnskapsbank for naturmangfold (Norwegian Biodiversity Information Centre)	X		
Scientific research institutes			
Havforskningsinstitutet (Institute of Marine Research)	X	X	
Nord University	X	X	
Norsk institutt for vannforskning (Norwegian Institute for Water Research)		X	X
Norges teknisk-naturvitenskapelige universitet (Norwegian University of Science and Technology)	X	X	X
Norges arktiske universitet (The Arctic University of Norway)	X	X	X
University of Agder		X	
University of Bergen		X	
University of Oslo			
Bjerknes Centre for Climate Research			X
The Norwegian Research Centre	X	X	X
Norwegian Institute for Nature Research	X	X	
Norske Havforskeres Forening (Norwegian Association of Marine Scientists)	X	X	
Civil society organisations and NGOs			
The Norwegian Biodiversity Network	X		
Norges Jeger- og Fiskerforbund (Norwegian Association of Hunters and Anglers)	X	X	
Norges Naturvernforbund (Norwegian Society for the Conservation of Nature/ Friends of the Earth Norway)	X	X	X
WWF Norway	X	X	X

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	Bio diversity	Sea/ Coast	Climate Change
Greenpeace Norway	X	X	X
Industrial/commercial organisations, sectoral and professional associations			
Norges Foskarlag (Norwegian Fishermen's Association)		X	

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Table F. *List of potential stakeholders identified for UK (England) with main focus of interests and/or activities indicated categorised by biodiversity conservation, sea/coast issues and/or activities and climate change. Note this is a qualitative assessment based on expert knowledge and that given the interrelatedness of biodiversity and climate change these interests often overlap to some degree.*

	Bio diversity	Sea/ Coast	Climate Change
National policy-makers and governmental departments			
Department for Environment, Food and Rural Affairs	X	X	X
Advisory and consultative bodies			
Joint Nature Conservation Committee	X	X	X
Subnational public agencies			
Environment Agency	X	X	X
Natural England	X	X	X
Marine Management Organisation	X	X	
Inshore Fisheries & Conservation Authorities	X	X	
Scientific research institutes			
Centre for Environment, Fisheries and Aquaculture Science	X	X	X
Civil society organisations and NGOs			
Marine Conservation Society	X	X	X
National Trust	X	X	X
Royal Society for the Protection of Birds	X	X	X
Blue Marine Foundation	X	X	X
WWF – UK	X	X	X
Wildfowl and Wetlands Trust	X	X	X
Greenpeace Environmental Trust	X	X	X
Surfers Against Sewage	X	X	X
Zoological Society of London	X	X	X
New Economics Foundation	X	X	X
Marine Biological Association	X	X	X
British Ecological Society	X	X	X
The Royal Society	X	X	X
Ocean Conservation Trust	X	X	X
The Wildlife Trusts	X	X	X
The Nature Conservancy UK Limited	X	X	X
Industrial/commercial organisations, sectoral and professional associations			
British Sub-Aqua Club		X	
Angling Trust		X	
National Federation of Fishermen's Organisation		X	
Royal Yachting Association		X	

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Table G. *List of potential stakeholders identified for France with main focus of interests and/or activities indicated categorised by biodiversity conservation, sea/coast issues and/or activities and climate change. Note this is a qualitative assessment based on expert knowledge and that given the interrelatedness of biodiversity and climate change these interests often overlap to some degree.*

	Bio diversity	Sea/ Coast	Climate Change
National policy-makers and governmental departments			
Ministère de la Transition Écologique (Ministry of Ecological Transition)	X	X	X
Ministère de la Mer (Ministry of the Sea)		X	
Secrétariat général de la mer (General Secretariat of the Sea)		X	
Comité interministériel de la mer (Interministerial Committee for the Sea)		X	
Advisory and consultative bodies			
Conseil National de la Transition Ecologique (National Council for Environmental Transition)	X	X	X
Conseil général de l'Environnement et du développement durable (General Council for the Environment and Sustainable Development)	X	X	X
Conseil national de la mer et des littoraux (National Council for the Sea and Coast)		X	
Conseil National de la Chasse et de la Faune Sauvage (National Council for Hunting and Wildlife)	X		
National regulatory bodies and implementing agencies			
Inspection générale des affaires maritimes (General inspectorate of maritime affairs)		X	
Agence de la transition écologique (Agency for ecological transition)			X
Office Française pour la Biodiversité (French Office for Biodiversity)	X	X	
Conservatoire du littoral (Coastal Conservatory)	X	X	
Subnational public agencies			
Préfecture Maritime (Maritime Prefecture)		X	
Directions interrégionales de la mer (Interregional directorates of the sea)		X	
Directions régionales de l'environnement, de l'aménagement et du logement (Regional directorates for the environment, planning and housing)	X		
Directions départementales des territoires (et de la mer) (Departmental directorates of territories (and of the sea))	X	X	
Agences de l'Eau (Water Agencies)	X	X	
Scientific research institutes			
Observatoire Océanologique de Banyuls sur mer (Oceanological observatory of Banyuls sur mer)	X	X	X
Observatoire Océanologique de Villefranche sur Mer (Oceanological observatory of Villefranche sur mer)	X	X	X
Réseau des Stations et Observatoires Marins (Network of Marine Stations and Observatories)	X	X	X
Università di Corsica Pasquale Paoli (University of Corsica)	X	X	X

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	Bio diversity	Sea/ Coast	Climate Change
Aix Marseille Université (University of Marseille)	X	X	X
Scientific research institutes (cont.)			
Université de Montpellier (University of Montpellier)	X	X	X
Université Côte d'Azur (University of Nice)	X	X	X
Université de Toulon (University of Toulon)	X	X	X
Institut Méditerranéen de Biodiversité et d'Ecologie marine et continentale (Mediterranean Institute of Biodiversity and Ecology, Marine and Continental)	X		X
Institut français de recherche pour l'exploitation de la mer (French research institute for the exploitation of the sea)		X	X
Institute de recherche pour le développement (Research institute for development)		X	X
Institut de recherche CHORUS (CHORUS Research Institute)	X	X	X
Institut du Développement Durable et des Relations Internationales (Institute of sustainable development and international relations)	X	X	X
Civil society organisations and NGOs			
Groupement d'intérêt scientifique Posidonie (Group of Scientific Interest)	X		
Groupe d'étude du mérou (Grouper Study Group)	X		
Réseau des tortues marines de Méditerranée française (French Mediterranean Sea Turtle Network)	X		
Sea Shepherd - France	X	X	
WWF - France	X	X	X
UICN Comité Français			
Juste 2.0°C			X
The SeaCleaners		X	
Fondation Tara Nova		X	X
Bloom	X		
Ocean & Climate Platform	X	X	X
Industrial/commercial organisations, sectoral and professional associations			
Fédération Française d'études et de Sports Sous-Marins (French Federation of Underwater Studies and Sports)		X	
Association pour la Pêche et les Activités Maritimes (Association for Fishing and Maritime Activities)		X	
Andromède océanologie	X	X	
CREOCEAN		X	
ECOCEAN	X	X	
Seaboost	X	X	
Semantic TS		X	
SPYGen	X		
Other organisations			
Biodiversarium (at Banyuls sur mer)	X	X	

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	Bio diversity	Sea/ Coast	Climate Change
Planet ocean (Montpellier)	X	X	
Institut Océanographique Paul Ricard (ile des Embiez) (Paul Ricard Oceanographic Institute)	X	X	X
Musée Océanographique de Monaco (Oceanographic Museum of Monaco)	X	X	

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Table H. *List of potential stakeholders identified for Italy with main focus of interests and/or activities indicated categorised by biodiversity conservation, sea/coast issues and/or activities and climate change. Note this is a qualitative assessment based on expert knowledge and that given the interrelatedness of biodiversity and climate change these interests often overlap to some degree.*

	Bio diversity	Sea/ Coast	Climate Change
National policy-makers and governmental departments			
Ministero della Transizione Ecologica (Ministry of Ecological Transition)	X	X	X
Ministero delle politiche agricole alimentari e forestali (Ministry of Agricultural, Food and Forestry Policies)		X	
Ministero delle infrastrutture e della mobilità sostenibili (Ministry of Infrastructure and Sustainable Mobility)		X	
Advisory and consultative bodies			
Commissione Nazionale per lo Sviluppo Sostenibile (National Commission on Sustainable Development)	X	X	X
Comitato per il Capitale Naturale (Natural Capital Committee)	X	X	X
National regulatory bodies and implementing agencies			
Istituto Superiore per la Protezione e la Ricerca Ambientale (National Institute for Environmental Protection and Research)	X	X	X
Guardia Costiera (Italian Coast Guard)		X	
Comando Carabinieri per la Tutela Ambientale (Carabinieri Command for Environmental Protection)		X	
Scientific research institutes			
Istituto di Scienze Marine (National centre on marine science)	X	X	X
Istituto di Ricerche Economiche per la Pesca e l'Acquacoltura (Institute for Economic Research in Fishery and Aquaculture)		X	
UNIMAR		X	
Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (National Institute of Oceanography and Experimental Geophysics)	X	X	X
Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici (Euro-Mediterranean Center on Climate Change Foundation)	X	X	X
Civil society organisations and NGOs			
WWF - Italy	X	X	X
IUCN Comitato Italiano	X	X	X
MareVivo	X	X	X
Legambiente	X	X	X
Associazione Nazionale per la Tutela dell'Ambiente (National Association for the Protection of the Environment)	X		
Industrial/commercial organisations, sectoral and professional associations			
Federazione Nazionale delle Imprese di Pesca (National Federation of Fishing Enterprises)		X	
Associazione Generale Cooperative Italiane - Dipartimento Pesca (General Association of Italian Cooperatives - Fishing Department)	X	X	
Federazione Nazionale Cooperative della Pesca (National Federation of Fisheries Cooperatives)		X	
Legacoop agroalimentare - Dipartimento pesca (Legacoop - Fisheries department)		X	

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	Bio diversity	Sea/ Coast	Climate Change
Other organisations			
Fondazione Ecosistemi *(Ecosystem foundation)*	X	X	X

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Table I. *List of potential stakeholders identified for Spain with main focus of interests and/or activities indicated categorised by biodiversity conservation, sea/coast issues and/or activities and climate change. Note this is a qualitative assessment based on expert knowledge and that given the interrelatedness of biodiversity and climate change these interests often overlap to some degree.*

	Bio diversity	Sea/ Coast	Climate Change
National policy-makers and governmental departments			
Ministerio de Agricultura, Pesca y Alimentacion (Ministry of Agriculture, Fisheries and Food)		X	
Ministerio para la Transición Ecológica y el Reto Demográfico (Ministry for the Ecological Transition and the Demographic Challenge)	X	X	X
Conferencia Sectorial de Medio Ambiente (Sectoral Conference on the Environment)	X	X	X
Comisión Interministerial para el Cambio Climático y la Transición Energética (Inter-ministerial Commission on Climate Change and Energy Transition)			X
Comisión Interministerial de Estrategias Marinas (Inter-ministerial Commission on Marine Strategies)	X	X	
Comisión de Coordinación de Políticas de Cambio Climático (Climate Change Policy Coordination Commission)			X
Advisory and consultative bodies			
Consejo Nacional del Clima (National Climate Council)			X
Consejo Nacional del Agua (National Water Council)		X	
Consejo estatal para el patrimonio natural y la biodiversidad (State Council for natural heritage and biodiversity)	X		
Comisión estatal para el patrimonio natural y la biodiversidad (State Comission for natural heritage and biodiversity)	X		
Consejo Asesor de Medio Ambiente (Environment Advisory Council)	X	X	X
Consejo de Desarrollo Sostenible (Sustainable Development Council)	X	X	X
National regulatory bodies and implementing agencies			
Servicio de Protección de la Naturaleza - Guardia Civil (Service for Nature Protection - Civil Guard)	X	X	
Red de Autoridades Ambientales (Environmental Authorities Network)		X	
Red de Inspección Ambiental (Environmental Inspection Network)		X	
Fundación Biodiversidad (Biodiversity Foundation)	X	X	X
Scientific research institutes			
Instituto Español de Oceanografia (Spanish Institute of Oceanography)	X	X	
Consejo Superior de Investigaciones Cientificas (Spanish National Research Council)	X	X	X
Civil society organisations and NGOs			
Fundación Global Nature	X	X	X
Amigos de la Tierra España (Friends of the Earth Spain)	X	X	X
UICN Comité Español	X	X	X
WWF España	X	X	X

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	Bio diversity	Sea/ Coast	Climate Change
Greenpeace España	X	X	X
Fundacion CRAM	X	X	X
Ecologistas en Acción	X	X	X
Civil society organisations and NGOs (cont.)			
Sociedad Española de Ornitología (Spanish Society of Ornithology)	X		
Ecopreneurs for the Climate			X
Eco-union	X	X	X
Asociación Española de Educación Ambiental (Spanish Association of Environmental Education)	X	X	X
Regional, municipalities and other local authorities			
Federación Española de Municipios y Provincias (Spanish Federation of Municipalities and Provinces)		X	X

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Table J. *List of potential stakeholders identified for Barbados with main focus of interests and/or activities indicated categorised by biodiversity conservation, sea/coast issues and/or activities and climate change. Note this is a qualitative assessment based on expert knowledge and that given the interrelatedness of biodiversity and climate change these interests often overlap to some degree.*

	Bio diversity	Sea/ Coast	Climate Change
National policy-makers and governmental departments			
Ministry of Maritime Affairs and Blue Economy		X	
Coastal Zone Management Unit		X	
Fisheries Division, Ministry of Agriculture and Food Security		X	
Ministry of Environment and National Beautification	X		X
Sustainable Development Unit and Roofs to Reefs Programme, Ministry of Economic Affairs	X	X	X
Ministry of Tourism & International Transport		X	
Town & Country Development Planning Office	X	X	X
Department of Emergency Management		X	X
National Climate Change Committee			X
Natural Heritage Division	X		
National regulatory bodies and implementing agencies			
Environmental Protection Department	X	X	X
National Conservation Commission	X	X	
Barbados Water Authority		X	
Barbados Coast Guard		X	
Barbados Port Inc		X	
Scientific research institutes			
Bellairs Research Institute	X	X	X
Centre for Resource Management and Environmental Studies, the University of the West Indies	X	X	X
The University of the West Indies	X	X	X
Civil society organisations and NGOs			
Future Centre Trust	X	X	X
Barbados Environmental Conservation Trust	X	X	X
Barbados Marine Trust	X	X	X
Barbados National Trust	X	X	X
Caribbean Youth Environment Network – Barbados Chapter	X	X	X
Industrial/commercial organisations, sectoral and professional associations			
Barbados Hotel and Tourism Association		X	X
Barbados National Union of Fisherfolk Organisation		X	X
Insurance Corporation of Barbados Ltd			X

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Table K. *List of potential stakeholders identified for Bonaire with main focus of interests and/or activities indicated categorised by biodiversity conservation, sea/coast issues and/or activities and climate change. Note this is a qualitative assessment based on expert knowledge and that given the interrelatedness of biodiversity and climate change these interests often overlap to some degree.*

	Bio diversity	Sea/ Coast	Climate Change
National policy-makers and governmental departments			
Ministerie van Landbouw, Natuur en Voedselkwaliteit (NL) (Ministry of Agriculture, Nature and Food Quality)	X	X	X
Ministerie van Economische Zaken en Klimaat (NL) (Ministry of Economic Affairs and Climate Policy)			X
Ministerie van Infrastructuur en Waterstaat (NL) (Ministry of Infrastructure and Water Management)		X	
Advisory and consultative bodies			
Sociaal-Economische Raad (NL) (Social and Economic Council of the Netherlands)		X	X
National regulatory bodies and implementing agencies			
Planbureau voor de Leefomgeving (NL) (Netherlands Environmental Assessment Agency)	X	X	X
Rijksdienst Caribisch Nederland (National office of the Caribbean Netherlands)	X	X	X
Kustwacht Caribisch Gebied (Caribbean coast guard)		X	
Regional, municipalities and other local authorities			
Vereniging van Nederlandse Gemeenten (NL) (Association of Netherlands Municipalities)		X	X
Openbaar Lichaam Bonnaire (Bonaire Public Body)	X		
Kralendijk Port Authority		X	
Scientific research institutes			
Koninklijk Nederlands Instituut voor Onderzoek der Zee (NL) (Royal Netherlands Institute for Sea Research)	X	X	X
Wageningen University and Research (NL)	X	X	X
Civil society organisations and NGOs			
WWF – the Netherlands (NL)	X	X	X
Stichting Nationale Parken Bonaire (NL) (Bonaire National Parks Foundation)	X	X	X
Dutch Caribbean Nature Alliance	X	X	X
Reef Renewal Bonaire	X	X	X
Sea Turtle Conservation Bonaire	X	X	X
Echo Foundation	X		X
Industrial/commercial organisations, sectoral and professional associations			
Dive Friends Bonaire		X	
Tourism corporation Bonaire		X	
Piskabon		X	

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Table L. *List of potential stakeholders identified for Martinique with main focus of interests and/or activities indicated categorised by biodiversity conservation, sea/coast issues and/or activities and climate change. Note this is a qualitative assessment based on expert knowledge and that given the interrelatedness of biodiversity and climate change these interests often overlap to some degree.*

	Bio diversity	Sea/ Coast	Climate Change
Advisory and consultative bodies			
Observatoire Martiniquais de la Biodiversité (Martinican Biodiversity Observatory)	X		
Subnational public agencies			
Direction de la Mer de la Martinique (Sea Directorate of Martinique)	X	X	
Direction de l'Environnement, de l'Aménagement et du Logement de la Martinique (Directorate for the environment, planning and housing of Martinique)	X	X	X
Direction de l'Alimentation, de l'Agriculture et de la Forêt de la Martinique (Directorate of Food, Agriculture and Forestry of Martinique)	X	X	X
Bureau de Recherche Géologique et Minière - service géologique national (Geological and Mining Research Office - national geological service)		X	
Office de l'Eau Martinique (Martinique Water Office)		X	
Office National des Forêts - Direction territoriale de Martinique (Forests National Office - Territorial Department of Martinique)	X	X	
Mission inter-service de l'Eau et de la Nature (Inter-service Mission for Water and Nature)	X	X	
Regional, municipalities and other local authorities			
Collectivé Territoriale de Martinique (Territorial Collectivity)	X	X	X
Parc Naturel Marin de Martinique (Martinique Marine Natural Park)	X	X	
Parc Naturel Régional de la Martinique (Martinique Regional Natural Park)	X	X	
Scientific research institutes			
Université des Antilles	X	X	X
Civil society organisations and NGOs			
Carbet des Sciences		X	
Le Carouge	X		
OCEANvironnement	X	X	
Association Société Étude Protection et Aménagement de la Nature à la Martinique (Society for the Study of Protection and Management of Nature in Martinique)	X	X	X
Association Pour la Sauvegarde du Patrimoine Martiniquais (Association for the Safeguarding of Martinican heritage)	X	X	X
Fédération Départementale des Associations agréées pour la pêche et la protection des milieux aquatiques (Departmental Federation of Associations for fishing and the protection of aquatic environments)		X	
Association ECOLOGIE URBAINE (Urban Ecology Association)		X	
Association pour la Protection et la Défense des Ilets de la Martinique (Association for the Protection and Defense of the Islands of Martinique)	X	X	

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	Bio diversity	Sea/ Coast	Climate Change
Association pour la Protection De la Nature et de l'Environnement (Association for nature and environmental protection)	X	X	X
Industrial/commercial organisations, sectoral and professional associations			
Association pour le Développement de la Production Aquacole Martiniquaise (Association for the Development of Martinican Aquaculture Production)		X	
Chambre d'Agriculture de la Martinique (Martinique Chamber of Agriculture)		X	
Comité Régional des Pêches Maritimes et Elevages Marins de Martinique (Regional Committee of Maritime Fisheries and Marine Breeding of Martinique)		X	
Coopérative des Aquaculteurs de Martinique (Martinique Aquaculturists Cooperative)		X	
CAREX		X	
ImpactMer	X	X	X
Nova Blue Environment	X	X	X
Antilles Sub Diamond Rock		X	

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