
ONE OCEAN
FOUNDATION
OCEAN DISCLOSURE
INITIATIVE
SDA Bocconi
SCHOOL OF MANAGEMENT
SUSTAINABILITY LAB
McKinsey
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CSIC
Consejo Superior de Investigaciones Científicas

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FOREWORD

The ocean ecosystem is an extraordinary source of life, food, energy and wellbeing for humans; it is crucial as it enables many vital and economic activities, providing an extraordinary array of natural assets and environmental services.

It covers about 71% of the Earth's surface and it contains approximately 97% of the available water. The ocean generates about 50% of the oxygen we breathe, more than three times the amount produced by the Amazon rainforest. Over 40% of the world's population (approximately 3 billion people) depends on its biodiversity and the services offered by marine and coastal ecosystems.

The underwater world is still mostly unknown and unexplored and, considering that we only know about 19% of the ocean floor, there are still many resources to be discovered. Luckily, the general public's curiosity about the ocean has grown in recent years, and with it, the awareness that this "blue world" is essential to our well-being.

The continued deterioration of marine environments and coastal ecosystems caused by human activity generates significant consequences for our future generations. Our social and economic systems have to adapt to this new situation urgently. As we have experienced in the past year, the pandemic has taught us that in a global emergency situation we must be able to act with fast and efficient solutions for there is no more time left.

We know of the importance of networking to achieve important results and One Ocean Foundation, since its birth in 2018, has focused on involving the social community, institutions and also the business world to accelerate a change that is now mandatory.

As of today, many companies measure their sustainability commitment and performances at a general level, but there is a lack of transparency and information focused on the impact on the ocean. Over the last 3 years, One Ocean Foundation has been focusing on building further knowledge on the relationships between business and ocean sustainability, providing innovative solutions and tools for companies and policy makers.

With this document we want to go further, presenting with a scrupulous scientific approach, what will be an extraordinarily concrete evaluation and measurement tool at the service of businesses, investors and policymakers to direct energies and resources in favor of our beloved ocean and consequently to ourselves.

Paul Rose

EXECUTIVE SUMMARY

The 2021 edition of the multi-year project “Business for Ocean Sustainability” advances the One Ocean Foundation goal of building knowledge on the relationship between business and the ocean. The objective of this report is to introduce the steps taken to develop the Ocean Disclosure Initiative (ODI), a science-based framework and methodology aimed at supporting businesses from all industries in taking action on ocean-related issues. Through a system of standard guidelines and metrics (KPIs), the ODI will support companies in becoming aware of their pressures on marine ecosystem, assessing the related risks, and disclosing key information and strategic responses. Moreover, it will facilitate the relationship between business and finance, helping to direct investment towards firms with strategies aimed at preventing and/or mitigating their pressures on marine ecosystems.

Preserving the ocean is paramount, as it provides fundamental resources and ecosystem services that enable many activities that are vital to human well-being. Despite its relevance, in recent decades the degradation of marine and coastal ecosystems has quickly accelerated. The urgent need for significant changes to reduce the pressure on the ocean is confirmed by the rising number of international initiatives aimed at increasing awareness on the interaction between ocean health and human activities, in order to promote responses from private and public players (e.g. the UN Decade for Ocean Science for Sustainable Development and the Ocean Health Index).

Given that the ocean consists of multiple ecosystems linked to other complex socio-ecological systems, its conservation requires a standardized set of metrics and indicators that addresses several relevant factors (such as biodiversity, contaminants, acidification and the ocean’s capacity to store carbon) and that guides companies in the disclosure of ocean-related business activities.

There is currently, however, a lack of initiatives and tools specifically designed to intercept business pressures on the marine and coastal ecosystem. At the same time, although some indirect pressures on the ocean are covered, these initiatives and tools are not explicitly linked to marine conservation (e.g. GHG emissions or plastics). Moreover, none of these tools offer a full set of specific metrics and KPIs to all industries to assess their direct and indirect ocean-related pressures.

The ODI aims to fill this gap by promoting a comprehensive approach that acknowledges all sectors’ direct and indirect pressures and the multiple spatial and temporal scales affecting marine and coastal ecosystems. Drawing from previous experience, our methodology is ocean-focused - addressing the most significant pressures exerted by each industry on marine ecosystems, science-based, consistent with a sustainability risk management approach, multi-stakeholder and aligned with existing initiatives.

The ODI encourages companies to evaluate their performance with respect to 3 *ocean domains and* 5 fundamental *managerial dimensions*. The former represent the marine ecosystem components whose conservation and good status is paramount for a functional and resilient ocean (i.e. marine biodiversity and biological integrity, marine water quality, sea-floor integrity). The latter cover companies' options to address ocean-related issues (i.e. business activity, governance and policies, assessment and risk analysis, role and measurement of ocean impact and managerial action). The ODI integrates a value chain approach with industry material topics to provide each company with a tool tailored to its needs. In fact, our framework combines a general structure common to every industry with additional data and information that address sector-specific topics. The methodology is being designed to use primary and secondary sources of information and to combine them in a final assessment evaluation and scoring system.

The development process of the ODI has been created to integrate scientific knowledge with the business and financial perspective, in order to engage the final users (i.e. firms and the financial community) from the very beginning. The engagement of companies and financial institutions will ensure the development of a business-oriented, impactful and sector-specific framework. At the same time, an ongoing review process with the contribution of our partners will guarantee a comprehensive and robust methodology.

With the Ocean Disclosure Initiative companies, the scientific and financial communities, and civil society can rely on a common language to address and mitigate the most relevant direct and indirect pressures that humanity exerts on the ocean.

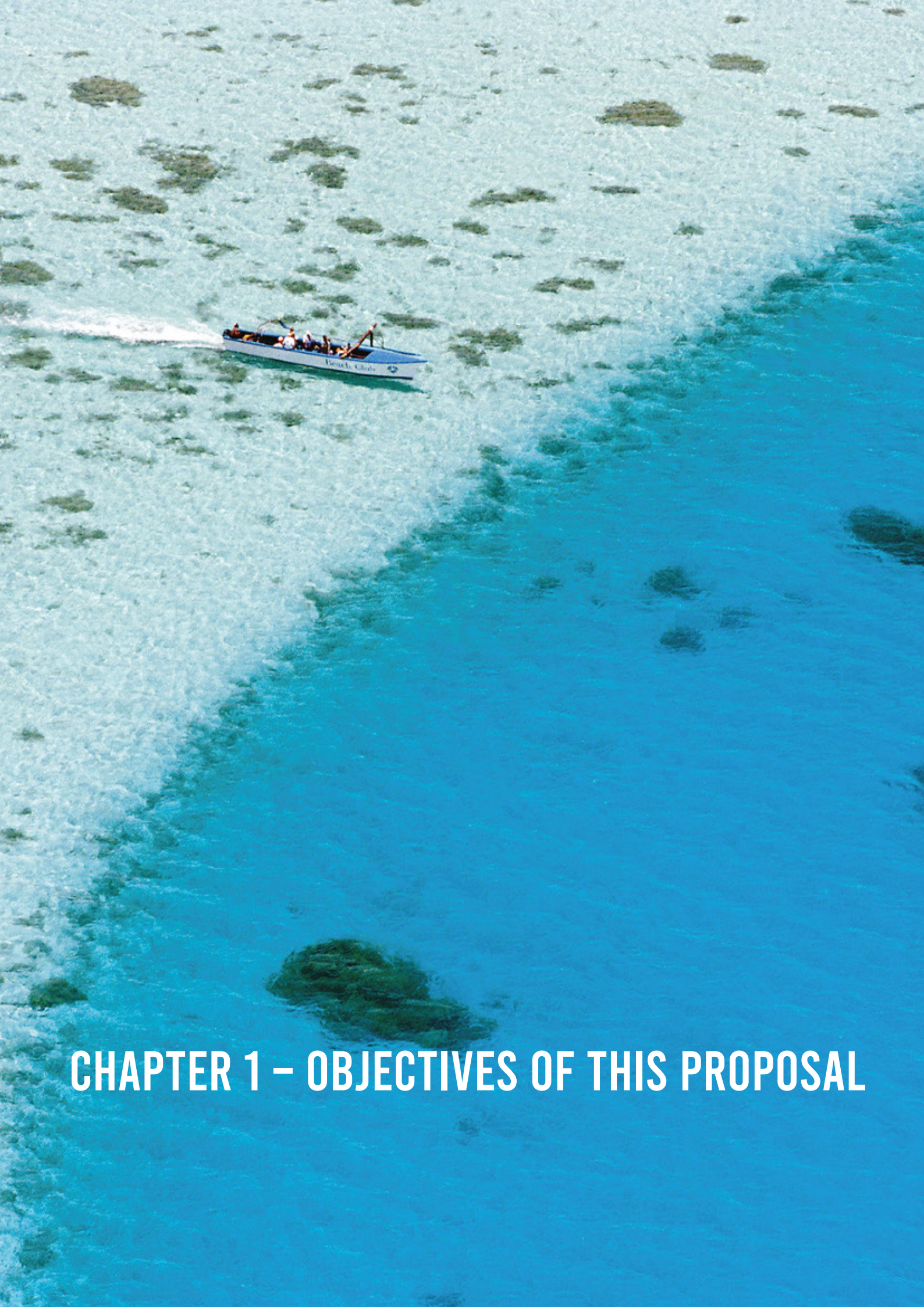
Our journey towards the creation of the Ocean Disclosure Initiative has begun.

Our next steps include:

- **Testing, pilot projects, review and release of the methodology:** the preliminary testing of the methodology will involve a selected number of companies, and will include the support of financial partners.

- **Release of the first ocean-based assessment for companies:** based on the methodology we have developed, the data and information will provide the grounds for the development of the first ocean-based assessment document.

- **Development of specific industry protocols:** although sector-specific material issues have already been analyzed for a selection of industries, a further follow-up will include the development of industry-specific disclosure protocols, in order to provide additional support to interested companies and refine the assessment process



CHAPTER 1 – OBJECTIVES OF THIS PROPOSAL

This fundamental framework proposal is part of the multi-year project “Business for Ocean Sustainability” promoted by the One Ocean Foundation (OOF), in collaboration with SDA Bocconi School of Management Sustainability Lab, McKinsey & Company and CSIC (Consejo Superior de Investigaciones Científicas) and aimed at building knowledge about the relationship between businesses and the ocean.

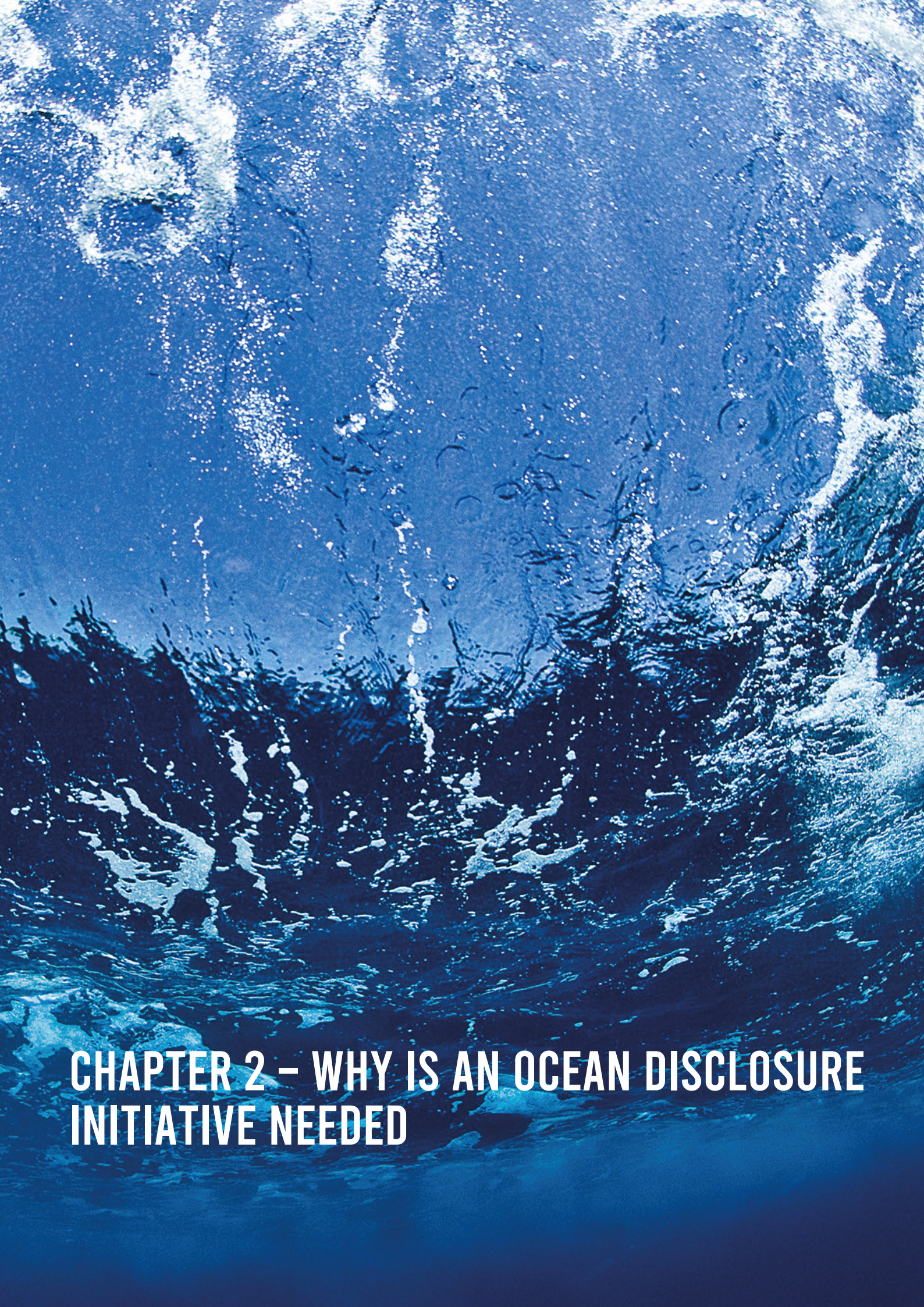
The project started in 2019 with the goal of investigating the role of companies in addressing ocean challenges, focusing on the pressures on marine ecosystems, the business community’s level of awareness, its activation for ocean preservation and the main (technological and organizational) responses implemented.. As a result, three main reports have been published and presented at international conferences and events, including the World Ocean Day event organized by the United Nations on June 8, 2020.

Our research has highlighted that, although disclosure frameworks on ESG issues are becoming more established, companies committed to ocean sustainability have limited opportunities to report their strategies and achievements against ocean-specific targets and KPIs and they can only assess and report their progresses on the basis of self-defined criteria. This is mainly due to a lack of reporting frameworks focused on ocean-related issues.

We think it is time to close this gap by connecting business and science, finance, civil society and governments, and facilitating the dialogue on ocean sustainability between all parties.

The objective of this document is to introduce the preliminary research steps carried out to develop the **Ocean Disclosure Initiative**, a science-based framework aimed at increasing awareness of business pressures on marine and coastal ecosystems, gathering data to facilitate the assessment and disclosure of key performance indicators related to the ocean. The final goal of our project is the development of a disclosure tool aimed at helping companies along their sustainability path and providing stakeholders with additional insights in order to evaluate the ocean-related sustainability profile of companies and the associated risks.

1 The first report, “Business for Ocean Sustainability - Focus on the Mediterranean Sea”, was published in 2019, followed in 2020 by a second edition entitled “Business for Ocean Sustainability - A Global Perspective” which broadened the scope of the analysis worldwide. A sector-specific report, “Business for Ocean Sustainability – The Fashion Industry”, dedicated to the fashion industry was released in 2021



CHAPTER 2 – WHY IS AN OCEAN DISCLOSURE INITIATIVE NEEDED

2.1 The ocean facilitates many vital activities and provides fundamental natural assets and ecosystem services. However, the ocean is increasingly endangered by direct and indirect human pressures

Preserving the ocean is paramount, as it provides fundamental resources and ecosystem services that enable many activities that are vital for human well-being

The Earth could have been called Planet Ocean. In fact, the ocean is our planet's largest life support system. About 70% of the planet's surface is covered by water, and 97% of this water is found in the ocean. In addition, ocean currents govern the world's weather and its dependent biomes.

Over 3 billion people (40% of the world's population) depend on the biodiversity and services offered by marine and coastal ecosystems. The ocean supports unique habitats and contains somewhere between 500,000 and 10 million marine species, most of which are still unknown[2]. Services provided by the ocean include food and fresh water supply, renewable energy, benefits for health and well-being, cultural value, tourism, trade, and transport, making a major contribution to our economic and social development.

At the same time, ocean economy, which encompasses economic activities related to the ocean, seas and coasts (e.g. coastal tourism, commercial fishing, aquaculture, shipbuilding and repair, offshore oil and gas, port activities, maritime transport, and exploitation of renewable energy), employs 168 million people and accounts for estimated annual revenues of $5.2 trillion. In terms of gross value added (GVA) the ocean economy generates $2.6 trillion (3.3% of the global gross domestic product), making it the seventh largest economy in the world[3]. Preserving the health of marine and coastal ecosystems is paramount due to the many irreplaceable benefits provided by the ocean and seas. A sustainable ocean economy (the Blue Economy) will emerge when economic activity is in balance with the long-term capacity of ocean ecosystems to support this activity and remain resilient and healthy.

Despite its relevance, in recent decades the degradation of marine and coastal ecosystems has quickly accelerated

For centuries, a planetary equilibrium in the ocean's overturning circulation (the flow of warm, salty water in upper layers of the ocean, and the opposite flow of cold water in lower layers) created stable conditions for the atmosphere and made life possible below water – and on land. Today, that equilibrium has been disrupted: the growing emission of greenhouse gases, primarily due to human activities, has interfered with the energy balance, heating the ocean and altering their ability to absorb these gases.

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2 UN (2017), The Ocean Conference available at: https://sustainabledevelopment.un.org/content/documents/-Ocean_Factsheet_Biodiversity.pdf
3 OOF (2020) Business for Ocean Sustainability - A Global Perspective

In turn, this upended equilibrium has modified the overturning circulation, altering the transport of nutrients with a consequent loss of life. It has also increased the ocean's acidification to a degree that can potentially collapse rich ecosystems and entire habitats.

Although the ocean seem an infinite resource, the reality is profoundly different. Growing scientific evidence shows that the health of the ocean is at great risk and that marine ecosystems are already subject to extreme stress from pollution and overexploitation. The demand for ocean resources is expected to continue growing, further increasing expectations for ocean as drivers of human development and a source of food, materials, and space. Reversing the ocean's further degradation and preserving their health is paramount due to the many irreplaceable benefits that they provide. As a result, there is an ongoing battle for their conservation and sustainable use.

Scientific evidence reports that the ocean has absorbed more than 90% of the excess heat in the climate system, constantly warming from 1970 onward. Since 1993 the rate of warming has more than doubled, while marine heatwaves have very likely doubled in frequency since 1982 and occur with increased intensity. Moreover, with the absorption of higher quantities of atmospheric anthropogenic CO_2, the ocean and the seas have undergone a process of increasing acidification. Based on multiple lines of evidence, ocean acidification[4] and ocean deoxygenation will continue to increase in the 21st century, at rates dependent on future emissions[5]. The World Meteorological Organization's (WMO) Statement on the State of the Global Climate in 2019 confirms exceptionally high ocean and land temperatures in recent years, and a record rise in sea level, with a warming trend expected to continue[6].

Overfishing is widely acknowledged as the greatest single threat to biodiversity and marine wildlife and habitats. The Food and Agriculture Organization (FAO) reports that more than 60% of the world's fish stocks are now fully fished, overfished or depleted. Among the 16 major statistical areas[7], the Mediterranean and the Black Sea have the highest percentage (62%) of unsustainable fishing stocks, followed by the Southeast Pacific (61%) and Southwest Atlantic (59%)[8].

However, one third of fish caught around the world never reaches the final consumer as it is thrown away during the processing phase or rots before it can be eaten[9].

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4 IPCC (2019), IPCC Special Report on the Ocean and Cryosphere in a Changing Climate [H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegría, M. Nicolai, A. Okem, J. Petzold, B. Rama, N.M. Weyer (eds.)]

5 IPCC (2021), Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J. B. R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press

6 WMO (2020), WMO Statement on the State of the Global Climate in 2019

7 For statistical purposes, 27 major fishing areas have been internationally established These comprise 8 major inland fishing areas covering the inland waters of the continents, and 19 major marine fishing areas covering the waters of the Atlantic, Indian, Pacific and Southern Oceans with their adjacent seas http://www.fao.org/cwp-on-fishery-statistics/handbook/general-concepts/fishing-areas-for-statistical-purposes/en/

8 FAO (2018), The State of World Fisheries and Aquaculture 2018 - Meeting the sustainable development goals. Rome

9 FAO (2020), The State of World Fisheries and Aquaculture 2020

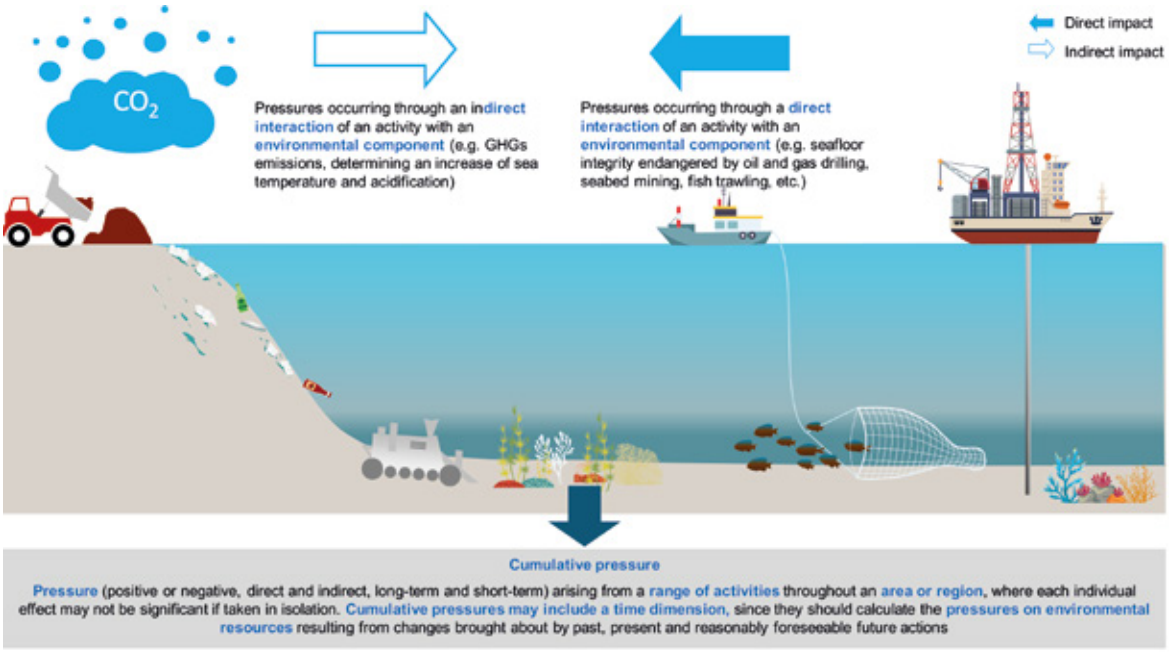
Growth in population and in economic activities will drive additional and accelerating pressures on the marine and coastal environment. Negative consequences not only impact habitats and biodiversity, but also industries based on ecosystem services (e.g. fisheries, agriculture, tourism). The consequences are expected to affect coastal or ocean related activities, but also inland sectors such as agriculture and infrastructure, and services such as energy, transportation, and utilities.

Direct and indirect pressures from production and consumption activities have significant consequences on the ocean

Direct pressures on marine and coastal ecosystems occur through direct interaction with environmental components: sea-floor integrity, for example, is endangered by oil and gas drilling, trawler fishing, and grounding and anchoring, while contaminants in seawater and seafood enter the marine ecosystem in the form of hydrocarbons leaks, biocides and anti-fouling, coagulants, or anti-foaming agents directly discharged or spilled into the sea. In contrast, indirect pressures can be observed through indirect interaction with an environmental component: pollution and contaminants, including heavy metals, plastics and microplastics, indirectly reach the sea through land-based sources of discharge such as wastewater, dumping grounds, fluvial run-offs, or atmospheric deposition.

These pressures can be observed at different spatial scales: at the micro (i.e. with a local area of impact, such as a site, a bay, a gulf), meso (i.e. a regional area, such as a region or a basin) or macro level (i.e. the entire ocean). In addition, direct and indirect pressures include cumulative effects, since the pressures on environmental resources may result from changes determined by past, present and future actions, as well as from their interactions.

FIGURE 1 – DIRECT AND INDIRECT PRESSURES



Source: Authors' elaboration

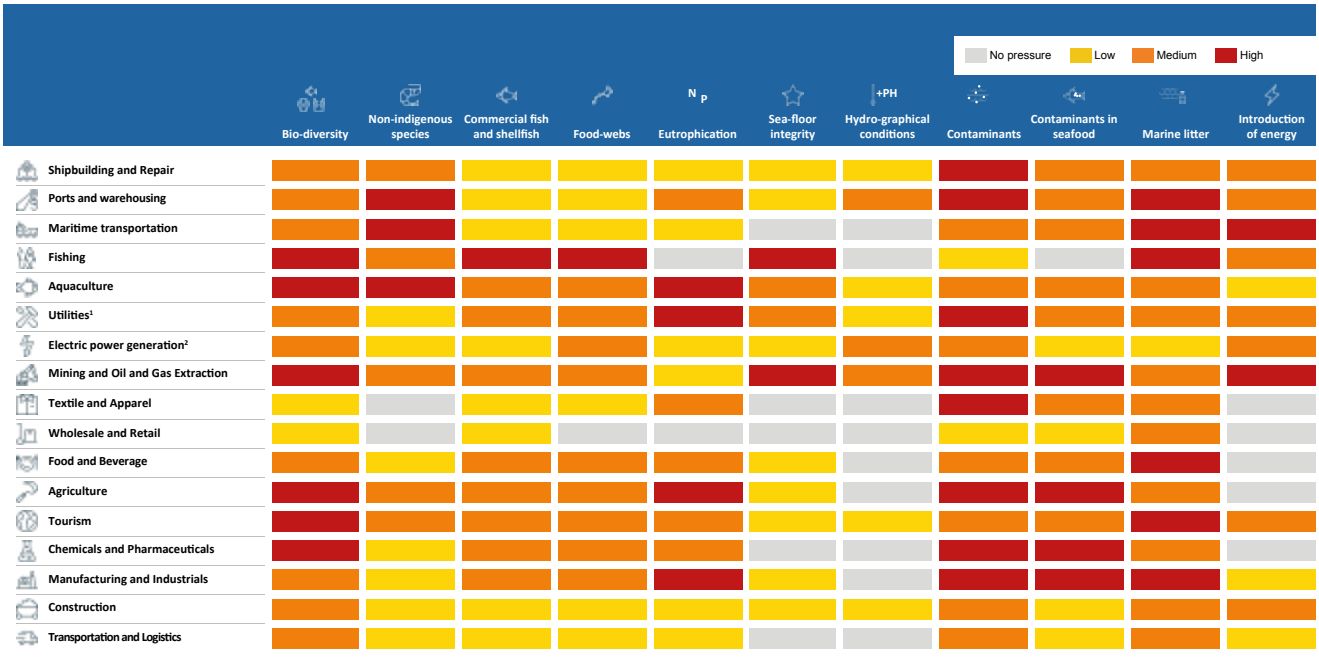
All industries, directly or indirectly interacting with the ocean, potentially exert a pressure on marine and coastal ecosystems

The report "Business for Ocean Sustainability - A Global Perspective", based on a scientific review conducted with the support of an international panel of 56 scholars and experts from multiple scientific disciplines, underlined that all industries, whether directly or indirectly interacting with the ocean, potentially exert a pressure on the Good Environmental Status descriptors (GES), which the European Commission identified to describe "the environmental status of marine waters where these provide ecologically diverse and dynamic ocean and seas which are clean, healthy and productive"[10] (Fig. 2).

We acknowledge that ocean sustainability will occur when both terrestrial and marine-based activities operate in balance with the long-term capacity of their ecosystems to support them while remaining resilient and healthy.

The direct pressures exerted on marine ecosystems by ocean or coastal based industries (e.g. fisheries, maritime transportation, ports and warehousing) have long been recognized. However, indirect pressures from other sectors (e.g. chemicals, agriculture, energy, fashion) are also paramount and require adequate business responses. Several studies suggest that the pressures exerted by land-based activities greatly exceed those of ocean industries.

FIGURE 2 – REVIEW OF NEGATIVE DIRECT AND INDIRECT PRESSURES OF VARIOUS SECTORS



1. Includes energy transmission and distribution, water, sewage and waste management
2. Includes electric power generation from renewables and from fossil fuels

Experts scientific review, total no. = 56

Source: OOF (2020) Business for Ocean Sustainability - A Global Perspective

10 Article 3, European Union's Marine Strategy Framework Directive

Overall, as confirmed the IPCC[11], **acidification** is one of the most serious issues threatening the health of the ocean. The reduction in the pH of the ocean over an extended period of time is caused primarily by uptake of carbon dioxide from the atmosphere, closely linked to climate change, the release of contaminants into the environment that eventually reach the sea, the eutrophication of marine ecosystems, and the loss of biodiversity.

The scientific review confirmed the most significant pressures for ocean health (biodiversity and clean waters) as being those related to:

- **Effects on marine biodiversity**, including the depletion of fish stocks and the alteration of food webs (e.g. over-exploitation of marine resources, introduction of non-indigenous species), which is also co-determined by a number of different causes, such as the introduction of contaminants and pollution into the marine environment, the modification of the hydrographical conditions of waters (e.g. rising sea temperatures, acidification, and decrease in oxygen), eutrophication or the alteration of seafloor integrity

- **The introduction of contaminants in marine ecosystems**, including their presence in seafood, either through direct interaction with the marine environment, or indirectly through wastewater, discharge points and dumping grounds, or atmospheric deposition. Water releases are mostly related to the fertilizer industry, metal industry, wastewater treatment plants, energy and chemical sectors

- **The pollution of the ocean and marine environments through the discharge of litter and other human-created waste**, such as plastic, glass, paper, metal, cloth, rubber, fishing-related items, wood, smoking-related items, sanitary waste, and other unidentified items. Plastic is also the main component of floating and seafloor marine litter, while recent studies focusing on marine pollutants at the size of microplastics or nanoplastics[12], reveal that the main types found are hard plastics, fibers, and nylon[13], deriving, to a large extent, from various land-based industrial and consumption sources. As extensively reported by several different studies, 80% of plastic pollution is estimated to be of land-based origin, due to mismanaged processes, such as littering or dumping in unregulated landfills[14]

The negative consequences of ocean degradation not only impact marine habitats and biodiversity, but also those industries that are based on its ecosystem services (e.g. fisheries, tourism), whether they operate in direct contact with the ocean or inland.

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11 IPCC (2019), IPCC Special Report on the Ocean and Cryosphere in a Changing Climate [H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegría, M. Nicolai, A. Okem, J. Petzold, B. Rama, N.M. Weyer (eds.)]

12 Primary microplastics, produced originally at microscopic size, or secondary microplastics, fragments from originally larger plastic items

13 UNEP/MAP (2018), 2017 Mediterranean Quality Status Report https://www.medqsr.org/sites/default/files/inline-files/2017MedQSR_Online_0.pdf

14 Ocean Conservancy & McKinsey Center for Business and Environment (2015), Stemming the Tide: Land-Based Strategies for a Plastic-Free Ocean

Nonetheless, our research showed that among the 17 Sustainable Development Goals (SDGs) adopted by the United Nations in the 2030 Agenda for Sustainable Development, the SDG 14 Life Below Water is one of the least prioritized, meaning that companies' attention to ocean protection and preservation is still very limited[15].

These findings confirm that significant changes are needed to reduce the pressure on marine ecosystems

In December 2017, the United Nations proclaimed the UN Decade of Ocean Science for Sustainable Development (2021-2030)[16], with the aim of providing a common framework to raise awareness on the many issues the ocean faces and to support countries' actions to sustainably manage them. The Decade provides the opportunity to strengthen international cooperation and to develop scientific research, innovative technologies and tools aimed at protecting and sustainably using the ocean. Similarly, in 2012 Conservation International issued the Ocean Health Index, a scientific framework intended to measure the health status of the marine ecosystem and support decisions with regard to its conservation.

The table below briefly summarizes some of the frameworks aimed at raising awareness on the key dimensions of ocean health and on their interaction with human activities, in order to promote responses from private and public players (Tab. 1).

TABLE 1 – SELECTION OF INITIATIVES AND FRAMEWORKS AIMED AT SUPPORTING OCEAN HEALTH PRESERVATION

	RELEASED BY	YEAR	OBJECTIVE
Nature-Positive Global Goal for Nature	Natural Capital Coalition	2021	The aim of the Natural Capital Coalition initiative is the establishment of a succinct Nature-Positive Global Goal for Nature that addresses various dimensions of biodiversity. The goal would have three measurable temporal objectives: Zero Net Loss of Nature from 2020, Net Positive by 2030, and Full Recovery by 2050.
UN Decade of Ocean Science for Sustainable Development	United Nations	2017	The UN Decade of Ocean Science for Sustainable Development has been established to reverse the cycle of decline in ocean health and create improved conditions for the sustainable development of the ocean, seas and coasts.
2030 Agenda for Sustainable Development	United Nations	2015	The 2030 Agenda for Sustainable Development provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDG_s), which are an urgent call for action by all countries - developed and developing - in a global partnership. SDG14 – Life below water focuses on the conservation and sustainable use of the oceans, seas and marine resources
Ocean Health Index (OHI)	Conservation International	2012	The Ocean Health Index is an assessment tool that scientifically measures key elements from all dimensions of the ocean's health — biological, physical, economic and social — to guide decision makers toward the sustainable use of the ocean
EU Marine Strategy Framework Directive	European Commission	2010	The main goal of the Marine Directive is to achieve Good Environmental Status (GES) of EU marine waters. GES means that the different uses made of the marine resources are conducted at a sustainable level, ensuring their continuity for future generations

15 OOF (2020) Business for Ocean Sustainability - A Global Perspective
16 United Nations (2017), UN Decade of Ocean Science for Sustainable Development, the science we need for the ocean we want

The ocean consists of multiple ecosystems linked to other complex socio-ecological systems across different spatial and temporal scales. The conservation of ocean health requires multiple goals and indicators, such as those for biodiversity, contaminants, acidification, or the ocean's capacity to store carbon

Our extensive literature review and our interactions with experts and scientists have shown that with regard to the ocean, all frameworks identify a set of key indicators as measures of ocean health and as guidance for ocean conservation. This is different from the climate case, where the concentration of carbon dioxide in the atmosphere is the fundamental control variable for avoiding major risks and uncertainties connected to sharp temperature changes and extreme climate variations. This is essentially due to the fact that the ocean is a complex set of ecosystems, linked to other complex socio-ecological systems across different spatial and temporal scales. For example, the EU Marine Strategy Framework Directive introduced 11 specific Good Environmental Status descriptors to identify the ways in which the different uses of marine resources are conducted at a sustainable level, ensuring their continuity for future generations. SDG 14 Life Below Water identifies 10 specific targets, ranging from the reduction of marine pollution to the protection and restoration of ecosystems, and from the reduction of acidification to sustainable fishing. The Ocean Health Index establishes reference points for achieving 10 widely accepted socio-ecological goals, such as food provision, carbon storage, clean waters, and biodiversity.

2.2 There is a lack of initiatives and tools specifically designed to provide guidance on the disclosure of ocean-related business activities

Despite the growing relevance of ocean-related issues and the importance of preserving marine and coastal ecosystems, there is a lack of frameworks, standards, and ratings focused on ocean sustainability. This means that currently there are no tools specifically designed to provide comprehensive support in guiding the assessment and disclosure of business pressures on marine ecosystems and the actions to mitigate these pressures. This is confirmed by the fact that the companies most committed to ocean issues voluntarily set their own ocean-specific targets and indicators against which to report.

In order to explore this gap, our work started from a review of the most recognized tools and initiatives that companies can adopt to track and disclose their sustainability performance, or that third parties can apply to assess and evaluate firms' behavior on ESG topics. Our analysis aimed to investigate if and how these tools/initiatives include business pressures and risks related to the ocean among their evaluation criteria.

The review covers 20 initiatives, which were examined to outline their mission and main characteristics, such as the topics assessed, the entities analyzed, the target audience, and the governance structure (i.e. public, industry-led or multi-stakeholder).

The review comprises the recent UNEP FI guide on financing a sustainable ocean recovery[17], the EU ESG Taxonomy (i.e. the EU-led technical screening criteria to assess environmentally sustainable activities), in addition to disclosure/reporting frameworks, disclosure/reporting standards[18], ESG ratings[19] as well as government (e.g. High Level Panel for a Sustainable Ocean Economy) or industry-led initiatives (e.g. Sustainable Shipping Initiative).

The initiatives were created starting from the 1990s and are public, multi-stakeholder, or industry-led programs, mainly focused on analyzing businesses.

TABLE 2 – LIST OF TOOLS AND INITIATIVES REVIEWED AND ANALYSIS OF THEIR MAIN CHARACTERISTICS

	YEAR	ASSESSMENT TOPICS	ENTITIES UNDER ANALYSIS	TARGET AUDIENCE	GOVERNANCE STRUCTURE	TYPE
UNEP FI Turning the Tide: How to finance a sustainable ocean recovery	2021	Social and environmental challenges for blue economy	Businesses	Investors	Multi-stakeholder	Guidance document
EU ESG Taxonomy	2020	Environmentally sustainable activities	Businesses	Investors	Public	ESG Taxonomy
World Economic Forum (WEF) Stakeholder Capitalism Metrics	2020	ESG information	Businesses	Businesses	Multi-stakeholder	Disclosure framework
SDG Action Manager	2020	Sustainable Development Goals	Businesses	All stakeholders	Multi-stakeholder	Self assessment tool
High Level Panel for a Sustainable Ocean Economy	2018	Ocean wealth, health, equity, knowledge, finance	Businesses, governments	Businesses, governments, stakeholders	Public	Policy agenda
Natural Capital Protocol	2016	Impact drivers and/or dependencies on natural capital	Businesses	Businesses	Multi-stakeholder	Decision-making framework-agenda
Task Force on Climate-related Financial Disclosures (TCFD) Recommendations	2015	Financially material information on climate-related risks and opportunities	Businesses	Investors	Industry-led	Disclosure framework
Sustainability Accounting Standards Board (SASB) Standards	2011	Financially material ESG information	Businesses	Investors	Multi-stakeholder	Disclosure standard
Aquaculture Stewardship Council (ASC) standards	2010	Environmentally and Socially Sustainable fishing practices	Businesses	All stakeholders, mainly retailers and customers	Multi-stakeholder	Certification and labelling standards

17 United Nations Environment Programme Finance Initiative (2021), Turning the Tide: How to finance a sustainable ocean recovery—A practical guide for financial institutions. Geneva

18 In this document, "framework" is used to indicate principles-based guidance on how to prepare and structure information for reporting and what topics need to be addressed. "Standard", instead, refers to a set of specific and detailed requirements, metrics and indicators about what should be reported for each topic

19 By "ESG ratings" this document refers to assessments of organizations' sustainability performance based on a common scale that judges how they perform against a set methodology and assessment criteria

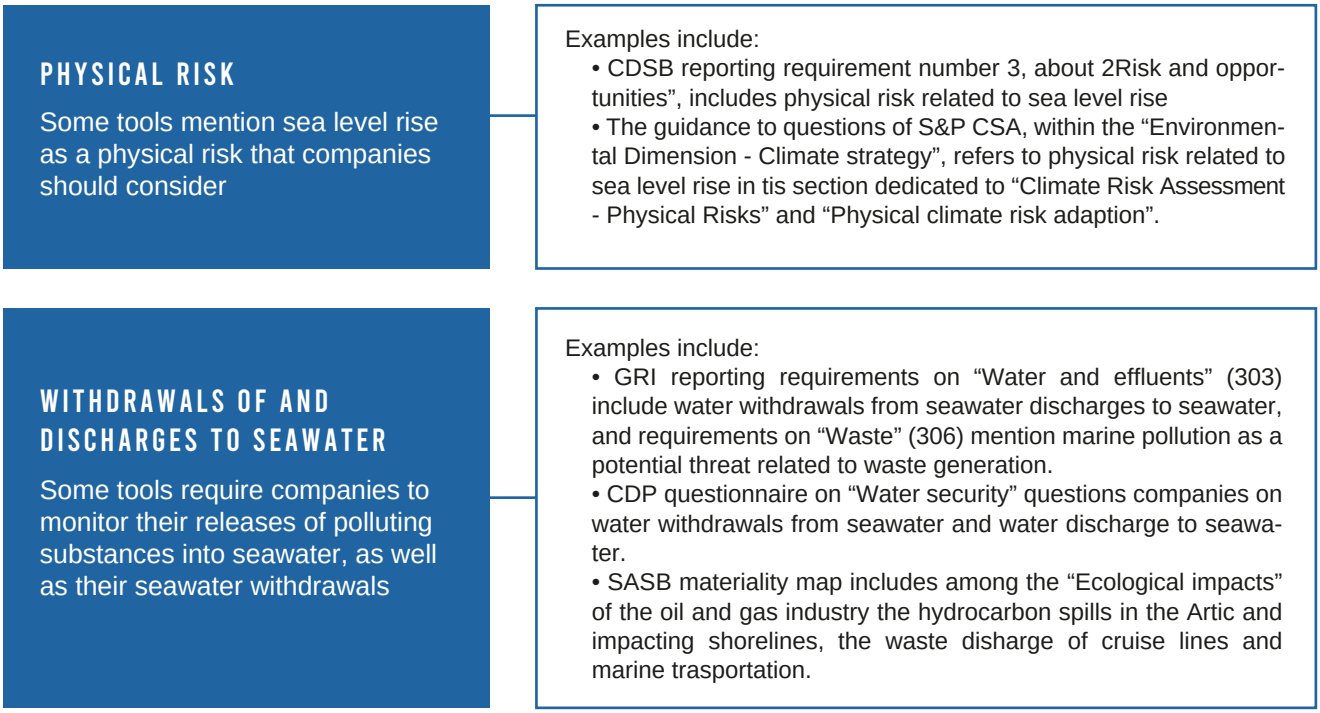
	YEAR	ASSESSMENT TOPICS	ENTITIES UNDER ANALYSIS	TARGET AUDIENCE	GOVERNANCE STRUCTURE	TYPE
Sustainable Shipping Initiative	2010	Oceans, communities, people, transparency, finance, energy	Businesses	Businesses, Investors	Industry-led	Roadmap
International Integrated Reporting Council (IIRC) Framework	2009	Integrated reporting (resources and relationships used and affected by an organization)	Businesses	Investors	Multi-stakeholder	Disclosure framework
Planetary Boundaries Framework	2009	Human activities pressure on Earth stabilizing processes	Businesses, governments	Science community, businesses, governments	Multi-stakeholder	Scientific framework
Climate Disclosure Standards Board (CDSB) Framework	2007	Financially material information on business' use of and effects on natural capital	Businesses	Investors	Multi-stakeholder	Disclosure framework
CDP (formerly Carbon Disclosure Project)	2002	Environmental information, risks and opportunities related to climate change, deforestation, water security	Businesses, cities, states and regions	Investors, customers and cities	Multi-stakeholder	Disclosure standard
Global Reporting Initiative (GRI) Standards	1997	Economic and ESG information	Businesses	All stakeholders	Multi-stakeholder	Disclosure standard
Marine Stewardship Council (MSC) standards	1997	Environmentally Sustainable fishing practices	Businesses	All stakeholders, mainly retailers and customers	Multi-stakeholder	Certification and labelling standards
S&P Global Corporate Sustainability Assessment (CSA)	1999	Financially-material economic, environmental and social information	Businesses	Investors	Industry-led	ESG Rating
Sustainalytics ESG Risk Rating	> 25 years	Financially material ESG-related risks	Businesses	Investors	Industry-led	ESG Rating
Refinitiv ESG Rating	n.a.	ESG performance	Businesses	Investors	Industry-led	ESG Rating
MSCI ESG Rating	n.a.	Resilience to financially material ESG risks and opportunities	Businesses	Investors	Industry-led	ESG Rating

The main findings reveal that:

- **Existing tools and initiatives mainly have investors as the target audience** and focus on material issues (i.e. sustainability issues, such as climate change, potentially affecting firms' financial results), although all the stakeholders concerned can benefit from such tools and all the initiatives aim at fostering companies' capability to take responsibility for their pressures on the natural environment

• **Despite its paramount relevance, the ocean is only marginally mentioned by the initiatives analyzed,** which generally make explicit reference to the ocean only in relation to physical risks to which companies are exposed (i.e. sea level rise) or in relation to withdrawals of, and discharges to, seawater. Only a few more ocean-related metrics[20] are considered in relation to the industries that operate in direct contact with marine ecosystems (e.g. ballast water treatment and shipping routes in marine protected areas) (Fig. 3)

FIGURE 3 – EXAMPLES OF EXISTING TOOLS THAT MENTION OCEAN-RELATED ISSUES



Source: authors' elaboration on publicly available information

• **Several indirect pressures on marine ecosystems are covered, but they are not explicitly linked to ocean preservation.** This is the case, for example, of carbon dioxide emissions, which are also responsible for marine acidification, or the generation of waste and the release of contaminants which can eventually reach and affect marine ecosystems (Fig. 4). In particular, CO_2 emissions either Scope 1, 2 or 3[21] , are not generally linked to marine ecosystem conservation, due to the still relatively limited knowledge of basic ocean carbon chemistry and of the consequences of carbon dioxide uptake by aquatic ecosystems. Higher concentrations of CO_2 in the ocean drive higher concentrations of carbonic acid, associated with the reduction of calcium carbonate, a constituent of the skeletons or shells of a variety of marine organisms, whose alteration affects global marine biodiversity and food webs.

20 By "metrics", this document refers to quantitative and/or qualitative measures intended to assess performance on a specific topic

21 The Greenhouse Gas (GHG) Protocol, a widely-used international accounting tool, categorizes greenhouse gas emissions into three groups or 'Scopes'. Scope 1 emissions are those that are directly generated by the company, Scope 2 emissions are indirect emissions from the generation of purchased energy and Scope 3 emissions are all the other indirect emissions that occur in the value chain of the reporting company, including both upstream and downstream emissions.

FIGURE 4 – EXAMPLES OF SECTIONS OF EXISTING TOOLS DEDICATED TO AIR EMISSIONS WITH NO REFERENCES TO HOW THEY AFFECT MARINE ECOSYSTEMS.

AIR EMISSIONS

which contribute to ocean acidification are generally not linked to marine acosystems preservation

Examples include:
- GRI reporting requirements on £Emissions" (305)
- CDP questionnaire on Climate Change
- SASB metrics on GHGs emission
- The Capitals Coalition Proticil impact drivers "GHG emissions" and "Non-GHG air pollutants"

Source: authors' elaboration on publicly available information

Anthropogenic CO_2 emissions are the main driver of ocean acidification

The latest IPCC report released in August 2021[22] confirms that ocean acidification is one of the most visible effects of climate change, and that it is certain that ocean pH has declined globally over the last 40 years in all ocean basins and that the main driver is the uptake of anthropogenic CO_2.

The atmospheric concentration of CO_2 has increased to unprecedented levels, with a 40% increase since pre-industrial times, primarily due to fossil fuel emissions and secondarily from net emissions from land-use change. The ocean has absorbed about 30% of the anthropogenic carbon dioxide, causing ocean acidification due to its conversion into carbonic acid in seawater. There is also a high degree of certainty that ocean acidification and associated reductions in the saturation of calcium carbonate, a constituent of skeletons or shells of a variety of marine organisms, is expected to increase in the 21st century in all emissions scenarios.

These data are consistent with previous IPCC AR5 assessments[23]. Since then, observations and simulations of multidecadal trends in surface and deep ocean carbon chemistry have become increasingly robust. The evidence on ocean pH decline was further strengthened in IPCC SROCC[24] with a high level of certainty that the ocean will continue to acidify in response to ongoing carbon uptake.

22 IPCC (2021), Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J. B. R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press

23 IPCC (2014), Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.

24 IPCC, 2019: IPCC Special Report on the Ocean and Cryosphere in a Changing Climate [H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegría, M. Nicolai, A. Okem, J. Petzold, B. Rama, N.M. Weyer (eds.)]. In press.

• **A few recently developed tools explicitly mention the use of marine resources** as one of the drivers that companies should assess as they monitor their pressures and dependencies on natural capital (i.e. the Natural Capital Protocol) or provide guidance to self-assess progress towards the 17 Sustainable Development Goals, including Goal 14: Life Below Water (i.e. the SDG Action Manager launched by the UN Global Compact). The Natural Capital Protocol,[25] in particular, explores four stages broken down into nine steps which contain issues to be considered when integrating the value of natural capital into business processes. Some examples of change in natural capital with regard to specific drivers of impact related to the ocean are provided, such as the hectares of mangrove ecosystem cleared (which can have consequences on fish stocks and ecosystem services, for example protection from storm surges), or the tons of Atlantic cod caught (which can affect the resilience of the cod population, and thus the dependency of the very same cod fishing industry on the availability of fish stocks). On the other hand, the SDG Action Manager offers a framework to self-assess the progress of organizations throughout the UN 2030 Agenda. With regard to ocean-related issues, for example, it provides guidance on how to self-assess the initiatives taken to address the targets set by SDG 14 Life Below Water. In any case, none of these tools offer a full set of specific metrics and KPIs to assess firms' direct and indirect ocean-related pressures.

• **Finally, there are some specific initiatives focused on ocean economy sectors** such as maritime transport (e.g. the Sustainable Shipping Initiative), or promoted by governments (e.g. the High Level Panel for a Sustainable Ocean Economy) or by multi-stakeholder groups (e.g. UNEP FI Turning the Tide: How to finance a sustainable ocean recovery). The common denominator of these initiatives is the attention to the sustainability of ocean economy sectors, and as such they propose roadmaps, political agendas or investment criteria to guide companies, governments, investors and stakeholders towards greater attention to ocean issues in order to develop a blue economy.

Examples of sustainable initiatives in ocean economy sectors

The increasing awareness that companies need to manage the ocean well, use its resources sustainably and reduce their environmental pressures has led to the development of several initiatives including some specifically focused on ocean economy sectors.

25 Natural Capital Coalition (2016), Natural Capital Protocol www.naturalcapitalcoalition.org/protocol

To lead a sustainable ocean recovery, *the UN Environment Programme Finance Initiative (UNEP FI)* has released practical guidance to support banks, insurers and investors in financing the transition towards a Blue economy. The guide, entitled "Turning the Tide: How to finance a sustainable ocean recovery", explores five key ocean sectors (i.e. seafood, shipping, ports, coastal and marine tourism and marine renewable energy) and outlines how financial institutions can avoid and mitigate environmental and social impacts when providing capital to companies or projects within the ocean economy.[26]

Moreover, there are also several ocean sector-specific initiatives. As regards maritime transport, in 2010 the Forum for the Future, in collaboration with WWF and industry leaders, founded the Sustainable Shipping Initiative (SSI), a multi-stakeholder initiative that aims to create a sustainable shipping industry addressing the sector's environmental, social and economic impacts. In the Vision for 2040 document, SSI members set out several goals for the shipping industry such as the use of a different mix of energy sources to reduce greenhouse gas intensity, the guarantee of safe, healthy and protected work environments, and the development of financial solutions that reward sustainable performance in the sector.[27]

With respect to the fishing sector, the Marine Stewardship Council (MSC), an international non-profit organization, aims to protect ocean and safeguard seafood supplies through a specific ecolabel and fishery certification program. The MSC recognizes and rewards sustainable fishing practices, influences consumer choices and promotes the transition to a sustainable seafood market28. Likewise, the Aquaculture Stewardship Council (ASC) has established specific protocols and labels for farmed seafood with the aim of ensuring sustainable aquaculture. ASC, which is an independent non-profit organization, cooperates with scientists, NGOs, producers, processors, retailers, companies and consumers to promote the environmental and social sustainability of the aquaculture industry.[29]

2.3 Greater business awareness and activation[30] can be boosted through a new and dedicated initiative aimed at promoting disclosure in all sectors, not only the ocean economy industries, with regard to the pressures on marine ecosystems and the related prevention and/or mitigation activities

In a similar way to the initiatives developed to tackle climate change, new instruments designed to support the understanding of business pressures on the ocean and prevention and/or mitigation initiatives at corporate level would meet companies' growing needs for disclosure, as well as the requests coming from stakeholders such as investors, consumers, and NGOs.

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26 United Nations Environment Programme Finance Initiative (2021), Turning the Tide: How to finance a sustainable ocean recovery—A practical guide for financial institutions. Geneva
27 Sustainable Shipping Initiative (2011), Vision for 2040
28 Marine Stewardship Council (MSC), www.msc.org/uk/about-the-msc/what-is-the-msc
29 Aquaculture Stewardship Council (ASC). www.asc-aqua.org/what-we-do/
30 In our previous reports, we defined companies' awareness as the match between firms' acknowledgement of their direct and indirect pressures on the marine ecosystems with the opinion of ocean experts; while we defined companies' activation as the deployment of prevention, mitigation and remediation activities.

Additionally, a process of standardization of metrics aimed at measuring and assessing business pressures and responses relating to the ocean would be useful to support companies in addressing their most relevant direct and indirect impacts.

To tackle ocean-related issues, it is of primary importance for firms, as well as for their stakeholders, and in particular investors, to be able to rely on a common tool to inform their decisions, with the aim of:

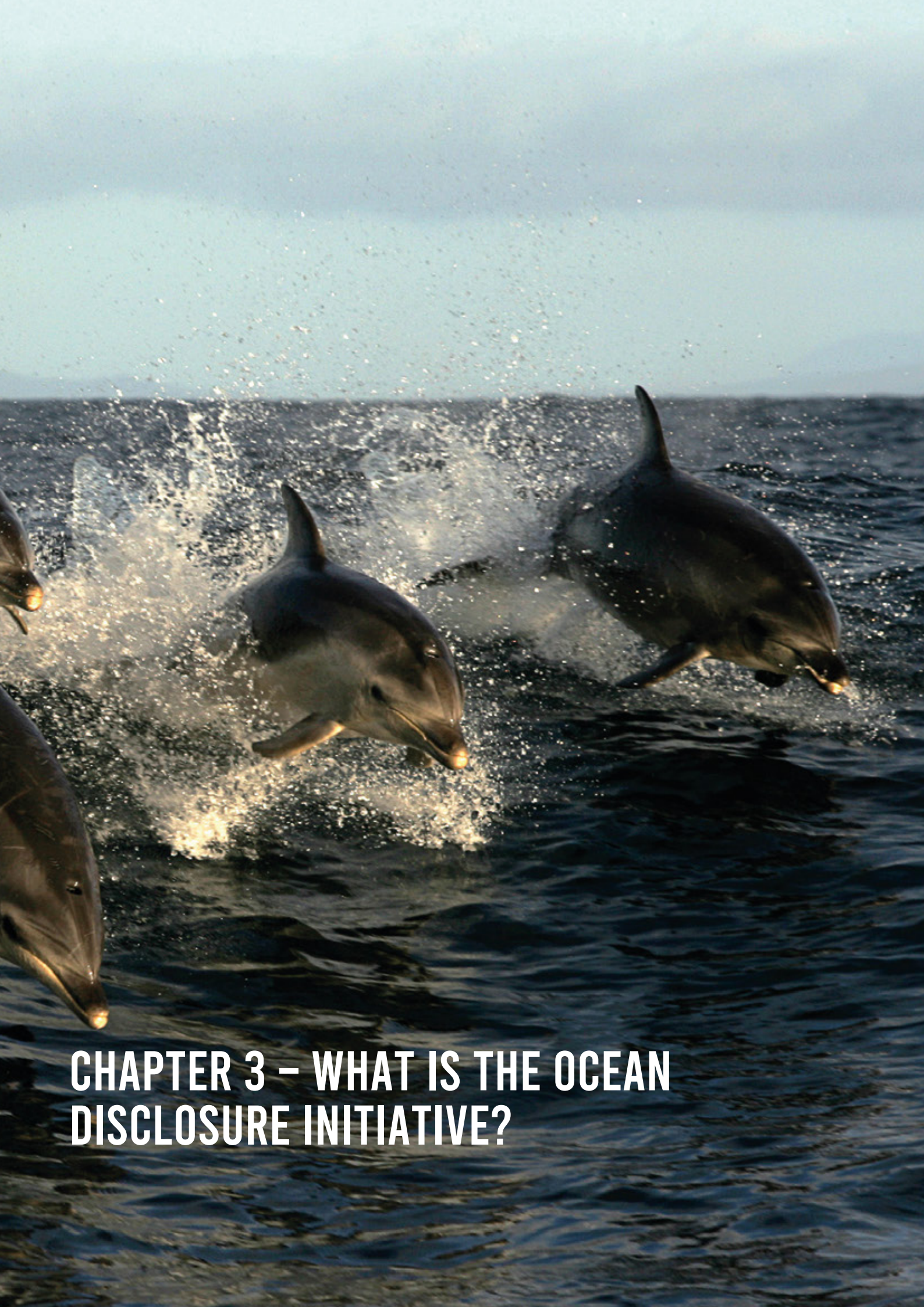
- **Creating awareness among companies** belonging to different industries, not only ocean economy sectors, on the direct and indirect pressures of their operations on marine ecosystems

- **Enabling disclosure** on ocean-related issues

- **Fostering strategic responses** in terms of prevention and/or mitigation actions

- **Supporting the understanding of business risks** related to ocean pressures and the crisis in marine ecosystems

- **Helping to direct investments** towards companies with strategies aimed at preventing and/or mitigating their pressures on the marine ecosystems.



CHAPTER 3 – WHAT IS THE OCEAN DISCLOSURE INITIATIVE?

3.1 The Ocean Disclosure Initiative has the objective of being a science-based framework and methodology aimed at supporting businesses from all industries in taking action on ocean-related issues, promoting prevention and/or mitigation responses and favoring disclosure and reporting

We are committed to developing the Ocean Disclosure Initiative to address direct and indirect pressures on marine ecosystems from different business sectors. In order to raise awareness and promote activation on ocean sustainability, a new initiative dedicated to standardizing a set of indicators and disclosing corporate information about ocean sustainability is needed.

Drawing from previous experience, our proposal is framed around the following pillars:

- **Ocean-focused**, to fill the gap in terms of availability of guidance, standardized metrics and indicators related to the disclosure of pressures on marine ecosystems, as well as on the actions to mitigate such pressures

- **Material**, as it is intended to focus on the most significant direct and/or indirect pressures exerted by each business, taking in account industry's specificities

- **Science-based**, to promote the collection and disclosure of data and information, based on the acknowledgment of social-ecological system functioning and on the availability of robust and reliable scientific evidence related to the possibility of improving the environmental status of ocean ecosystems

- **Comprehensive**, in the sense that it must consider not only the direct pressures on marine ecosystems, but also the indirect ones, most of which are land-based, while acknowledging the complexity of the ocean system

- **Consistent with a sustainability risk management approach** already embraced by leading finance institutions within the general ESG perspective, to highlight both risks and benefits related to sound ocean sustainability

- **Multi-stakeholder and open to contributions from the first adopters** - i.e. the business community, as well as of the main stakeholder groups, e.g., the financial community, academia and research, governments, NGOs, civil society, industrial and consumers' associations

- **Aligned with existing initiatives**, as the main objective would not be the development of an additional and competing standard or framework, but to complete the missing elements relating to ocean conservation

The collection of ocean-based business data and information will help to identify and select ocean leaders; those virtuous companies that have taken steps in managing and disclosing their practices on marine sustainability.

3.2 To develop this framework and methodology an ecosystem approach, that acknowledges multiple spatial and temporal scales, is needed to assess pressures - both direct and indirect - on marine and coastal ecosystems

When dealing with the need to analyze and assess the health of ecosystems it is generally not possible to use a single indicator, because their functioning depends on the interaction of multiple linked processes. For example, the Planetary Boundaries framework introduced multiple environmental thresholds for our Earth system's resilience and stability. Based on our understanding of the functioning of our planet, we know that exceeding these thresholds might lead to catastrophic consequences due to the risk of triggering non-linear, abrupt environmental change within regional-scale to global-scale systems.

With regard to the sustainability of the ocean, the frameworks we have analyzed (e.g. the EU Marine Strategy Framework Directive, SDG 14 Life Below Water, Ocean Health Index) identify a set of key indicators (e.g. biodiversity preservation, reduction of marine pollution, acidification and eutrophication, carbon storage, preservation of clean waters, etc.) and not a single synthetic descriptor. This is essentially due to the fact that the ocean consists of a complex set of ecosystems and multiple processes, linked to other complex socio-ecological systems, such as climate, across different spatial and temporal scales.

Developing this methodology, therefore, requires a specific approach that acknowledges these specific features for a number of reasons:

- **An ecosystem approach is needed.** Compared to the climate system, for which over the years it has been possible to define a limited number of fundamental change metrics, represented by the concentration of carbon dioxide in the atmosphere and the carbon budget capable of maintaining climate warming within 1.5 - 2.0 degrees Celsius above pre-industrial levels, the health of marine and coastal ecosystems requires more descriptors capable of capturing the complexity of ecosystem dynamics and interactions. Moreover, **a spatially explicit approach is also needed**. In a further fundamental difference with respect to the definition of metrics capable of combating climate change, which have a global scale, a methodology aimed at considering the most relevant pressures on marine ecosystems requires consideration of the spatial scale, in the sense that such pressures can have a local, basin, regional or global scale

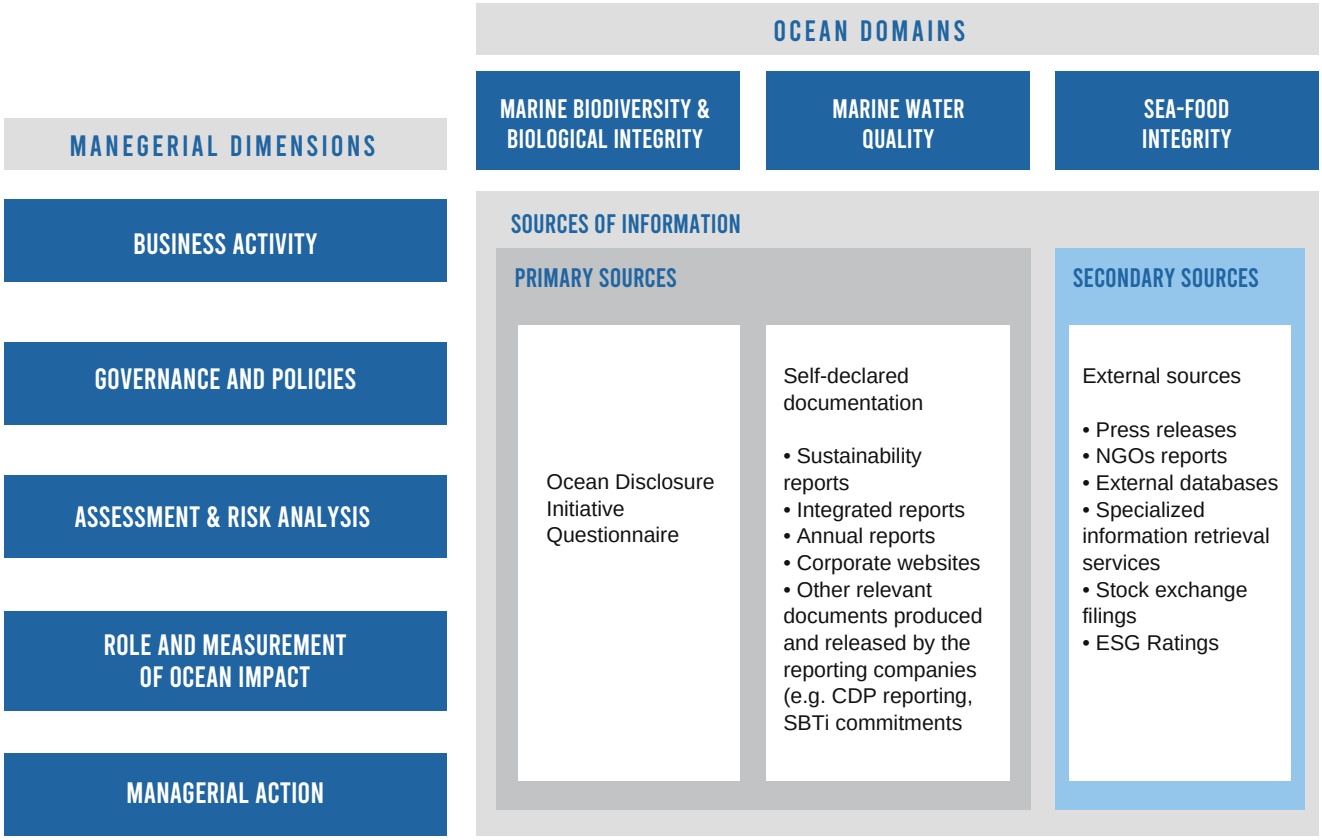
- **Comprehensive approach:** as already highlighted, since the pressures exerted by human activities on marine ecosystems can be both direct and indirect, the proposed framework and methodology must be able to capture these interactions, exerted by both the ocean economy sectors and land-based activities

3.3 The Ocean Disclosure Initiative proposed methodology addresses 3 main ocean domains and 5 fundamental managerial dimensions

Over the past years, our research on ocean sustainability has combined scientific analysis relating to the direct and indirect pressures of the various economic sectors, analyzed thanks to the involvement of scientists and experts from a broad range of ocean-related ecologic disciplines, with the managerial dimension inherent to the technological and organizational initiatives that can lead to better conservation of ocean and marine ecosystems.

In consideration of this work, our methodological proposal is based on a framework that considers **3 main ocean domains and 5 fundamental managerial dimensions** (Fig. 5). These components will be combined to create a matrix that assesses each managerial dimension across all the marine environment domains, allowing companies to explore potential areas for improvement in detail. The assessment will build both on primary and secondary sources of information.

FIGURE 5 – OCEAN DISCLOSURE INITIATIVE PROPOSED METHODOLOGY



Ocean domains

The identified ocean domains, derived from the GES descriptors introduced by the EU Marine Strategy Framework Directive, represent the main components of healthy marine ecosystems, whose preservation and good status is paramount for a fully functional ocean:

- **Marine biological integrity and diversity** includes the preservation of biological diversity, protection from adverse alterations due to the introduction of non-indigenous species, the conservation of healthy populations of commercial fish and shellfish, and the preservation of food webs to ensure long-term abundance and reproduction of aquatic life

- **Multi-stakeholder and open to the contribution of the first adopters** comprises the prevention of the release of litter or contaminants suitable to directly or indirectly enter marine ecosystems, thus leading to absorption by seafood or eutrophication of marine waters. It also includes the prevention of the permanent alteration of hydrographical conditions (e.g. temperature, salinity, acidity), and the introduction of energy (including underwater noise) that does not adversely affect the ecosystem

- **Sea-floor integrity** considers the physical, chemical and biological characteristics of the sea bottom as a fundamental habitat for marine wildlife. While negatively affected by pressures exerted on marine water quality, it is also threatened by human activities which directly damage it, such as trawling, dredging, mining or the construction of artificial infrastructures

TABLE 3 – OCEAN DOMAINS AND GES DESCRIPTORS

OCEAN DOMAINS	GES DESCRIPTORS
MARINE BIOLOGICAL INTEGRITY AND DIVERSITY	BIODIVERSITY
	NON-INDIGENOUS SPECIES
	COMMERCIAL FISH AND SHELLFISH
	FOOD-WEBS
MARINE WATER QUALITY	EUTROPHICATION
	HYDROGRAPHICAL CONDITIONS
	CONTAMINANTS
	CONTAMINANTS IN SEAFOOD
	MARINE LITTER
	ENERGY INCL. UNDERWATER NOISE
SEA-FOOD INTEGRITY	SEA-FLOOR INTEGRITY

Managerial dimensions

The managerial dimensions are intended to provide companies with the opportunity to disclose their level of awareness related to the direct and indirect pressures exerted on marine ecosystems, and the initiatives implemented to prevent and/or mitigate such pressures:

- **Business activity** includes information related to the main activities of the reporting companies, their locations and range of operations, boundaries and exclusions, as well as the reporting period
- **Governance and policies** considers if and how companies integrate ocean-related issues in their policies, and if the board oversees such policies, analyzing how firms' commitment translates into formal governance structures and/or initiatives
- **Assessment & risk analysis** investigates whether firms carry out systematic analysis of the direct and indirect pressures they exert on the marine environment, of their dependence on ocean and marine resources, and of the risks to which they are exposed in relation to the most significant ocean-related issues
- **Role and measurement of ocean impact** examines whether the respondent companies have integrated marine and coastal ecosystem preservation in their long-term strategy, or have made an explicit commitment to the UN 2030 Agenda SDG 14 Life Below Water with the adoption of specific ocean-related targets and KPIs
- **Managerial action** focuses on the activities put in place by respondent companies to address pressures on marine ecosystems. It includes prevention, mitigation and remediation initiatives, ocean-related partnerships, R&D investments and certifications, initiatives directed toward suppliers along the supply chain (not only first tier suppliers), as well as engagement and education activities aimed at business partners and clients

FIGURE 6 – MANAGERIAL DIMENSIONS AND RELATED ASPECTS

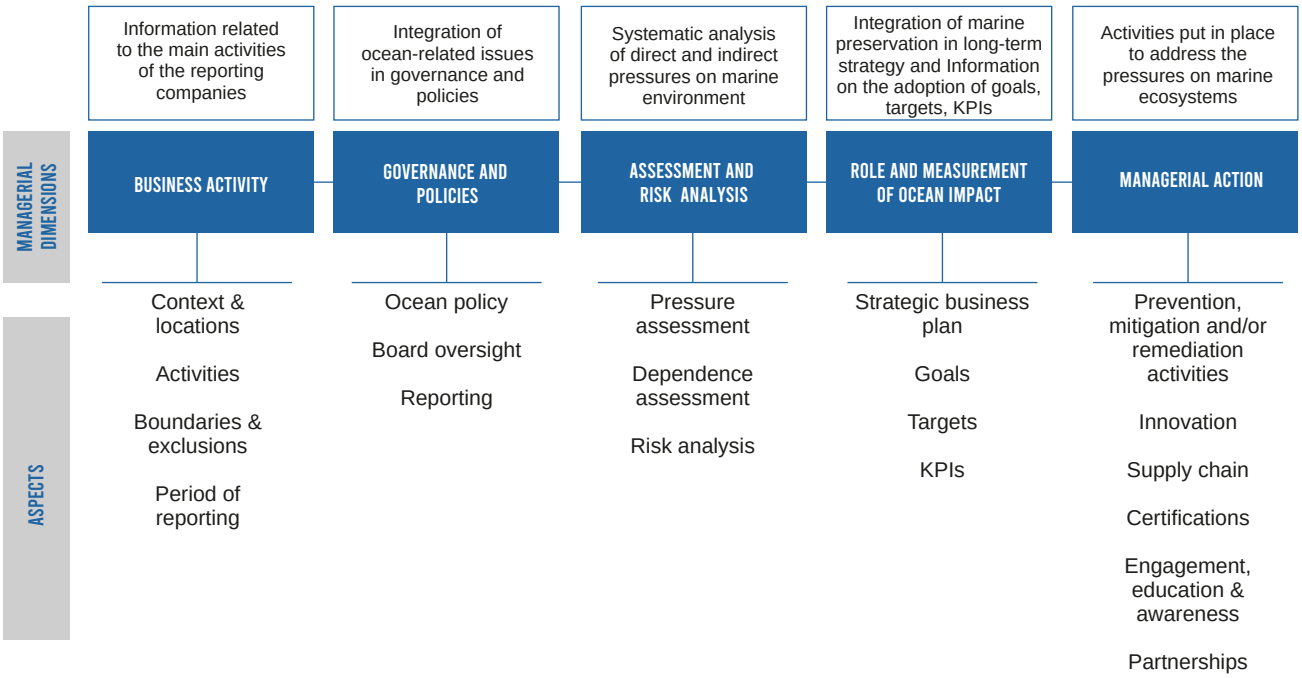


TABLE 4 – MANAGERIAL DIMENSIONS, RELATED ASPECTS, AND EXAMPLES OF INFORMATION TO BE DISCLOSED

MANAGERIAL DIMENSIONS	ASPECTS	EXAMPLES OF INFORMATION TO BE DISCLOSED
Business activity	Context & locations	General description of the organization, the countries and the location(s) for which data are provided
	Activities	Description of the organization's products or services and of the use of materials with a high likelihood of entering marine environments after disposal or during use (e.g., microplastic beads, single use plastics, polyester fabric, etc.). Description of whether the organization's operations are carbon intensive with a high amount of CO_2 emissions
	Boundaries & exclusions	Description of what activities of the organization are excluded from reporting, and why
	Period of reporting	Description of the period of reporting
Governance and policies	Ocean policy	Description of whether the organization has adopted a formal ocean policy, and what issues are covered (e.g. direct and indirect pressures, commitment to align with public policy initiatives, such as the SDG 14 Life below water, etc.)
	Board oversight	Description of whether the organization has a board level oversight for ocean-related issues
	Report	Description of whether the organization has already started reporting on direct and/or direct ocean-related pressures
Assessment & risk analysis	Pressure assessment	Description of whether the organization carries out an environmental assessment that considers the direct and/or indirect pressures on marine biological integrity & diversity, marine water quality or sea-floor integrity
	Dependence assessment	Description of whether the organization carries out an analysis of its dependence from ocean and marine resources
	Risk analysis	Description of whether the organization assesses the risks to which it is exposed in relation to ocean-related issues
Role and measurement of ocean impact	Strategic plan	Description of whether ocean-related issues are integrated into any aspects of the organization's long-term strategic plan
	Goals	Description of the commitment (if any) to adopt SDG 14 Life below water of the UN Agenda 2030 for sustainable development
	Targets	Description of ocean-related targets adopted (If any), to prevent and/or mitigate the pressures on marine biological integrity & diversity, marine water quality, or sea-floor integrity
	KPIs	Description of ocean-related KPIs (if any) adopted to prevent and/or mitigate the pressures on marine biological integrity & diversity, marine water quality, or sea-floor integrity
Managerial action	Prevention, mitigation and/or remediation activities	Description of the prevention, mitigation and/or remediation activities carried out by the organization to tackle its direct and/or indirect pressures on marine biological integrity & diversity, marine water quality or sea-floor integrity
	Innovation	Description of R&D or innovation (including organizational) to develop solutions to prevent or mitigate the direct and/or indirect pressures on marine biological integrity & diversity, marine water quality, or sea-floor integrity
	Supply chain	Description of the criteria (if any) adopted to select suppliers committed to reduce their direct and/or indirect pressures on marine biological integrity & diversity, marine water quality, or sea-floor integrity
	Certifications	Description of certification(s) (if any) related to the management of the direct and/or indirect pressures of activities on marine biological integrity & diversity, marine water quality, or sea-floor integrity
	Engagement, education & awareness	Description of engagement initiatives (if any) to raise awareness and activation regarding ocean and marine preservation
	Partnerships	Description of partnership/initiative aimed at preventing, mitigating and/or restoring organization's direct and/or indirect pressures on marine biological integrity & diversity, marine water quality, or sea-floor integrity

Sources of information

The proposed methodology combines primary and secondary sources of information, allowing companies to report their commitment and initiatives covering the identified ocean domains:

- **Primary sources** consist of a questionnaire addressed directly to firms, integrated with information gathered through the review of self-declared documentation (e.g. sustainability reports, integrated reports, annual reports, corporate websites, other documents produced and released by the reporting companies, such as for example CDP reporting, SBTi commitments, etc.)

- **Secondary sources** of information will be activated to retrieve data and insights related to actual or potential controversies involving the reporting companies. These sources include press releases, NGO reports, external databases, specialized information retrieval services, ESG Ratings, etc.

The methodology is being designed to take advantage of each source of information and to combine them in a final assessment evaluation and scoring system.

3.4 The Ocean Disclosure Initiative integrates the value chain approach with industry specific material topics to provide each company with a tool tailored to its needs

Since 2019, our work has been aimed at raising awareness on the direct and indirect pressures that both ocean economy sectors and land-based activities exert on the ocean. While every industry needs to become aware of its link with the ocean, in general each sector should also explore the specific pressures derived from its activities. Since most companies are not fully aware of their interaction with marine and coastal ecosystems, the Ocean Disclosure Initiative aims to provide guidance on disclosing more commonly acknowledged and less evident pressures.

To be as comprehensive as possible, our framework and methodology build on a structure common to every industry, while additional data and information address sector-specific topics that are material to different sectors.

As a starting point for the identification of sector-specific issues, we carried out an in-depth analysis of three high-pressure industries, namely **fishing and aquaculture, agriculture and fashion**.

Agriculture, fishing and aquaculture in 2019 accounted for 3.5% of the global GDP, up to 24% in low income-states,[31] and employed about 27% of the world population, ranging from 3% in high-income countries to 60% in low-income economies.[32] The fashion industry is one of the world's biggest manufacturing industries, generating more than USD 2.5 trillion in global annual revenues,[33] and employing more than 300 million people along its value chain.

As the global demand for agriculture, fishing and aquaculture and fashion products increases, environmental pressures on land and ocean resources also rise. Despite this, 14% of the world's food is still lost post-harvest[34] and 35% of all materials in the supply chain still end up as waste before a garment or product reaches the consumer.[35]

These sectors' environmental pressures have far-reaching consequences for marine ecosystems. Although caused by different sector-specific sources, these industries share three common drivers of pressure:

- **GHG emissions**: CO_2 warming potentially affects water temperature as the ocean absorbs excess heat from the atmosphere. This exerts a negative pressure on marine species and ecosystems as rising water temperature leads to deoxygenation, which results in a high level of mortality for marine species, loss of breeding grounds and mass migration.[36] This is coupled with the uptake of carbon dioxide responsible for progressive ocean acidification, with detrimental pressure on marine species and food webs[37] [38]

- **Contaminants**: although it could seem that contaminants can get diluted in the vastness of the ocean, continued exposure of marine water to such components affects marine organisms and biological processes.[39] Contaminants negatively affect water's physical and chemical parameters, potentially determining water toxicity. For example, chemicals can lead to an increase in nutrients, the main cause of eutrophication. This phenomenon implies the proliferation of aquatic plants and micro-organisms that consume oxygen at the expense of other marine species, affecting biodiversity and fisheries[40] [41]

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31 The World Bank, Agriculture, forestry, and fishing, value added (% of GDP) https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS
32 The World Bank, Employment in agriculture (% of total employment) (modeled ILO estimate) https://data.worldbank.org/indicator/SL.AGR.EMPL.ZS
33 McKinsey & Company, BOF (2020), The State of Fashion 2020 Coronavirus Update
34 FAO (2019), The State of Food and Agriculture 2019 http://www.fao.org/3/ca6030en/ca6030en.pdf
35 Global Fashion Agenda, Boston Consulting Group, and Sustainable Apparel Coalition (2017), Pulse Report
36 IUCN, Ocean warming https://www.iucn.org/resources/issues-briefs/ocean-warming
37 IUCN, Ocean acidification https://www.iucn.org/resources/issues-briefs/ocean-acidification
38 NOAA, Ocean acidification https://www.noaa.gov/education/resource-collections/ocean-coasts/ocean-acidificationsources/environmental-implications-of-excess-fertilizer-and-manure-on-water-quality
39 European Commission, Our Oceans, Seas and Coasts https://ec.europa.eu/environment/marine/good-environmental-status/descriptor-8/index_en.htm
40 North Dakota State University (2017), Environmental Implications of Excess Fertilizer and Manure on Water Quality https://www.ag.ndsu.edu/publications/environment-natural-resources/environmental-implications-of-excess-fertilizer-and-manure-on-water-quality
41 FAO (2017), Water pollution from agriculture: a global review http://www.fao.org/3/i7754e/i7754e.pdf

• **Waste:** marine litter can travel throughout waterways to the ocean, where it can be found floating on the surface, suspended in the water column or on the sea bottom.[42] Waste affects marine physical habitats and threatens aquatic wildlife in several ways: it transports chemical pollutants and harms the health of marine species, which can become entangled in or ingest plastic debris[43]

In the following sections, these dynamics and other industry-specific sources of pressure on marine and coastal ecosystems are explored in further detail.

TABLE 5 – EXAMPLES OF SECTOR SPECIFIC DRIVERS OF PRESSURE ON THE OCEAN

SECTOR	EXAMPLES OF SECTOR SPECIFIC DRIVERS OF PRESSURE ON THE OCEAN
Fishing and aquaculture	• GHG emissions from energy consumption, fuel and raw material use, packaging and other supply components as well as distribution and logistics • Fishing techniques (e.g. trawl fishing) and feeding techniques (e.g. supplemental feed suitable to contribute to overfishing of some species, such as forage fish) • Specific categories of waste (e.g. fishing gears, bio-waste due to bycatch or on-board fish processing discarded in the sea) and contaminants (e.g. injection of nutrients, pesticides, drugs, hormones in marine environment) • Farmed fish escape (e.g. alien species)
Agriculture	• GHG emissions from land clearance (e.g. rangeland, bushes and forest burned in favor of agriculture), livestock breeding (e.g. emissions of methane), nitrous oxide released by fertilizers and manure, ammonia generated by manure and urine • Use of agrochemicals (e.g. fertilizers and pesticides) and veterinary medicines • Organic matter (e.g. manure, crops residuals or soil sediments) can reach water resources with negative consequences for marine ecosystems • Soil erosion contributing to water contamination by agrochemicals and manure, as eroded soil transport attached nutrients and accumulate as sediments into water resources
Fashion	• Energy consumption and GHG emissions due to long and energy intensive supply chain and manufacturing process • Extreme water usage from the production of raw materials (e.g. cultivation of crops, cotton), and their manufacturing (e.g. weaving, dyeing, washing, finishing) • Chemicals for the production of raw materials (e.g. cotton), and in the manufacturing process (e.g. solvents, dyes) • Waste and pollution, including fibers, plastics and microplastics

A. Fishing and aquaculture industries

The rise of demand and consumption of fish has increased the pressures exerted by the fishing and aquaculture industries[44] on marine ecosystems. Overfishing has traditionally been seen as the major environmental pressure from fisheries, but other practices also negatively affect the ocean. Incidental catch of non-target species, physical damage to habitats caused by destructive fishing activities and construction of aquaculture installations may also have significant impacts on aquatic stocks and ecosystems.[45] Moreover, the fishing and aquaculture sectors can also alter habitats physically (e.g. by adding aquaculture installations and cages), mechanically (e.g. through the use of trawling), or chemically (e.g. through the introduction of nutrients, pesticides, drugs and hormones).

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42 EPA, Impacts of Mismanaged Trash https://www.epa.gov/trash-free-waters/impacts-mismanaged-trash
43 United Nations (2016), New UN report finds marine debris harming more than 800 species, costing countries millions https://news.un.org/en/story/2016/12/547032-new-un-report-finds-marine-debris-harming-more-800-species-costing-countries
44 Fishing is the catching of existing populations of fish and other aquatic animals while aquaculture is the intentional cultivation and subsequent harvesting of both freshwater and marine aquatic plants and animals. In some cases, they can be considered as a unique sector even if they exert quite different environmental pressures
45 OECD (2008), OECD Environmental Outlook to 2030

There are several key material topics for the fishing and aquaculture industries that identify the main sources of environmental pressures on the ocean.

The common material topic for both industries is GHG emissions. Sources of GHG emissions for these sectors are closely related to energy consumption, fuel and raw material use, packaging and other supply chain components as well as to distribution and logistics management. Technological innovations (e.g. energy reduction in fishing practices and aquaculture production and more efficient post-harvest and distribution systems) could improve the sectors' sustainability, contributing to the decrease of their carbon footprint.

With regard to the fishing sector, besides GHG emissions, our analysis has identified the following material topics:

- **Fishing techniques:** the fishing techniques adopted can contribute to several ocean-related issues. This is the case of overfishing that is strictly dependent on unsustainable catches and unregulated and illegal fishing methods in economic exclusive zones and the high seas. Overfishing transforms the marine ecosystem by catching fish and reducing their abundance faster than stocks can replenish.[46] Another consequence strictly related to the type of fishing technique is the phenomenon of bycatch. Many fishing activities are not selective enough to remove only the desired target species from the ocean and this leads to accidentally catching other species, part of which have little or no use and are discarded along with the offal from fish processing at sea.[47] Animals that are discarded often die and cannot reproduce, impacting marine ecosystems. Bycatch can slow the rebuilding of overfished stocks, and put protected species such as whales and sea turtles at further risk

- **Waste:** sources of waste in fishing operations mainly include bycatch discards, processing waste when catch is processed aboard, plastic waste due to abandoned, lost and discarded fishing gear and other waste from vessel operations.[48] In terms of bio-waste, the magnitude of annual discards in global marine capture fisheries was estimated to be 9.1 million tons, which represent 10.8% of the annual average catch of 2010-2014.[49] The ghost fishing gear phenomenon refers to any gear that is abandoned, lost or discarded in the ocean. These nets account for 46% to 70% of surface floating macro-plastics in the ocean by weight. Ghost gear has severe consequences: it represents a potent threat to marine life, a serious problem for the health of our ocean and fishermens' safety, a significant source of marine plastics and microplastics, and the direct cause of a substantial decline in fish stock levels globally.[50]

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46 WWF, Overfishing https://www.worldwildlife.org/threats/overfishing
47 FAO, Fisheries impact on the ecosystem http://www.fao.org/3/y4773e/y4773e05.htm
48 Boopendranath M.R. (2012), Waste Minimisation in Fishing Operations, Fishery Technology 49: 109-119
49 FAO (2019), A third assessment of global marine fisheries discards, Technical Paper n. 633
50 Global Ghost Gear Initiative

Like the fishing sector, **the aquaculture industry also has characteristic material topics:**

- **Contaminants and waste:** commercial shellfish and fish farming may significantly increase the amount of nutrients entering a system through the deposition of feces, fish food, live shellfish, and shells from a farm, contributing to marine eutrophication. Various data report that from the total nitrogen supplemented to cultivated organisms, only 20% to 50% is retained as biomass by the farmed organisms, while the rest is incorporated into the water column or sediment, causing diverse impacts such as phytoplankton blooms and death of benthic organisms[51]

- **Feeding techniques:** supplemental feed is considered one of the main sources of contamination from aquaculture. The most obvious ecological pressure results from the use of wild fish in feeds, mainly for the farming of carnivorous species. Fed aquaculture still relies on large amounts of wild-caught fish, particularly forage fish such as anchovies and sardines, turned into fishmeal and fish oil. However forage fish play an important role in marine ecosystems by feeding on plankton and transferring energy from the bottom of the food chain to seabirds, marine mammals and larger fish[52]

- **Prevention of farmed fish escape**: when aquaculture farms are connected to natural water bodies, some of the stock can escape. In some cases, escapees impact wild populations by competing with them for food, habitat and spawning partners (especially in the case of alien species). If escapees breed with their wild counterparts, the genetic makeup of their offspring may be less adapted to the ecological niche and less likely to survive. Another detrimental effect of escapes is the transmission of pathogens from farm to wild. Farmed fish have a greater tendency to develop diseases that can affect wild stock and push them to extinction[53]

B. Agriculture industry

The agriculture sector plays a major role in current social and environmental challenges and represents an opportunity to build a sustainable future. Indeed, innovating current agricultural practices underpins more or less explicitly most of the UN 2030 Agenda: from the eradication of poverty and hunger, to the achievement of good health and education for all, from community resilience to the responsible management of natural resources and climate change challenges[54].

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51 Martinez-Porchas M., Martinez-Cordova L.R. (2012), World Aquaculture: Environmental Impacts and Troubleshooting Alternatives, The Scientific World Journal
52 World Ocean Initiative (2020), Fish feed of the future
53 Atalah J., Sanchez-Jerez P. (2020), Global assessment of ecological risks associated with farmed fish escapes, Global Ecology and Conservation, Volume 21
54 FAO, Transforming the world through food and agriculture http://www.fao.org/3/ca5299en/ca5299en.pdf

As the industry faces rising demand, production increases have been mainly achieved through agricultural land expansion and production intensification.[55] This has inevitably come with environmental drawbacks, several of which also have ocean-related relevance.

Agriculture core activities contribute to global GHG emissions and to the introduction of contaminants and waste in water bodies through industry-specific practices:

- **GHG emissions:** particulate matter and GHG emissions deriving from land clearance (rangeland, bushes and forest are burned in favor of agriculture) and the burning of fallow fields, to promote growth or to dispose of crop residuals. At the same time, livestock breeding contributes to the emission of methane, which has 20 times the warming potential of carbon dioxide, while nitrous oxide is released by fertilizers and manure, and ammonia is generated from manure and urine. WWF recognizes agriculture as the main single cause of deforestation (or forest degradation)[56] and the World Economic Forum has estimated that it accounts for about 25% of the GHG emissions present in the atmosphere.[57]

- **Contaminants:** from 1960 to 2010, worldwide use of mineral fertilizers to supplement natural nutrient sources increased ten times[58] and, from 2010 to 2021, it has risen by a further 23%.[59] Production intensification requires an increasing employment of agrochemicals (e.g. fertilizers and pesticides), salts and veterinary medicines, whose overuse can cause contamination of waterways through runoffs, eventually resulting in marine environment pollution. For example, farming-related nitrate, if not managed properly, can reach water bodies through leaching and runoffs or accumulation of sediment, contributing to the introduction of nutrients into water bodies, and consequently to water eutrophication. According to the FAO, it is the most common chemical found in groundwater.[60] In the last 20 years, veterinary medicines (e.g. antibiotics, vaccines, growth promoters, hormones) have become a source of concern as they can travel from farms to water ecosystems[61]

- **Organic matter:** organic matter such as manure, crop residuals or soil sediment can reach water resources with negative consequences for marine ecosystems. Although manure contribution to fertilizers has declined globally, in some developing countries it remains the main nutrient input[62], with possible runoffs to water basins.

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55 FAO, Agriculture and the environment: changing pressures, solutions and trade-offs http://www.fao.org/3/y4252e/y4252e12.pdf
56 WWF, Forest conversion https://wwf.panda.org/discover/our_focus/forests_practice/deforestation_causes2/forest_conversion/
57 World Economic Forum (2021), Net Zero Challenge. The Supply Chain Opportunity. Insight Report http://www3.weforum.org/docs/WEF_Net_Zero_Challenge_The_Supply_Chain_Opportunity_2021.pdf
58 FAO (2018), More people, more food, worse water? A global review of water pollution from agriculture http://www.fao.org/3/ca0146en/CA0146EN.pdf
59 FAO (2019), World fertilizer trends and outlook to 2022 http://www.fao.org/3/ca6746en/ca6746en.pdf; FAO (2016), World fertilizer trends and outlook to 2019 http://www.fao.org/3/i5627e/i5627e.pdf
60 FAO (2018), "More people, more food, worse water? A global review of water pollution from agriculture". Available at: http://www.fao.org/3/ca0146en/CA0146EN.pdf
61 Ibidem
62 Ibidem

Accidental introduction of manure into water bodies can also occur through manure mismanagement, for example in proximity to wells. As it reaches waterways, manure can cause eutrophication, water toxicity due to ammonia releases or can introduce pathogenic organisms into water bodies.[63] At the same time, other organic matter like soil, crops and manure sediment contribute to water turbidity, altering ocean hydrographical conditions

- **Soil erosion** plays a significant role in exacerbating agriculture's pressure on the ocean. Each year 24 billion tons of fertile soil are lost due to erosion[64] and, although agriculture is negatively affected by this phenomenon itself, unsustainable land use and management are among its main causes.[65] Soil erosion contributes to water contamination by agrochemicals and manure, as eroded soil particles transport attached nutrients and accumulate as sediment in water resources[66]

C. Fashion industry

Besides its relevance in the global economy, the fashion industry plays a fundamental role in social and cultural life. From the environmental point of view, the industry presents several issues, which have still not been fully explored. According to several studies, fashion is considered one of the most polluting industries in the world.[67]

As highlighted in the report "Business for Ocean Sustainability – The Fashion Industry", this sector g**enerates major pressures on the natural environment and ecosystems:**[68]

- **Energy and GHG emissions:** it is estimated that due to its long supply chains and energy intensive production, the fashion industry represents from 4% to 10% of the global carbon emissions in the atmosphere, outweighing the carbon footprint of international flights and maritime shipping, or about the same total quantity of greenhouse gas emitted per year by the economies of Germany, France and the United Kingdom combined [69] [70]

- **Extreme water usage:** the production of raw materials, starting with the cultivation of crops, and their manufacturing into end products through the various phases of weaving, dyeing, washing, and finishing, requires enormous quantities of water, often in countries characterized by chronic water scarcity, thereby overexploiting freshwater resources.

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63 North Dakota State University (2017), Environmental Implications of Excess Fertilizer and Manure on Water Quality https://www.ag.ndsu.edu/publications/environment-natural-resources/environmental-implications-of-excess-fertilizer-and-manure-on-water-quality
64 FAO, "Desertification and land degradation". Available at: http://www.fao.org/in-action/action-against-desertification/overview/desertification-and-land-degradation/en/
65 Eurostat, "Agri-environmental indicator - soil erosion". Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Agri-environmental_indicator_-_soil_erosion
66 Ibidem
67 According to the United Nations and the Ellen MacArthur Foundation it is the second most polluting industry after the oil industry
68 OOF (2020), "Business for Ocean Sustainability – The Fashion Industry"
69 McKinsey (2020), The State of Fashion 2020 Report
70 Ellen MacArthur Foundation (2017), A new textiles economy: Redesigning fashion's future

A single pair of jeans requires from 3,800[71] to 7,500[72] liters of water for their production, while 2,700 liters are needed to produce one T-shirt[73]

• **Chemicals:** it is reported that the fashion industry is one of the largest consumers of chemicals, and that the production of 1 kg of fabric requires similar quantities of chemicals. The production of raw materials, the spinning and weaving of fabrics, as well as the washing and dyeing processes, all require enormous quantities of chemicals, including from 10% to 20% of the world's pesticide use for the cultivation of raw materials such as cotton. Out of the 1,900 chemicals used in the production of clothing, the European Union classifies 165 as dangerous to the health of the environment.[74] Solvents and dyes used in the washing process and in manufacture are responsible for about 20% to 25% of industrial water pollution. Additional environmental footprint is also created by consumer use, due to the water, energy and chemicals used in washing, tumble drying and ironing

• **Waste and pollution, including microplastics:** according the Ellen MacArthur Foundation, the global fashion industry produces about 53 million tons of fibers every year. More than 70% of clothing ends up in landfill or incinerated, while less than 1% is collected for reuse or recycling to produce new clothes.[75] This is also due to the lack of fully viable recycling technologies to effectively and economically separate blended fibers, or separate fibers from chemicals, including colorants, used in the production process in the first place. Every year, more than 500 million tons of microfibers, which includes microplastics, are released into the environment, the equivalent of 50 billion plastic bottles[76]

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71 The World Bank (2019), How Much Do Our Wardrobes Cost to the Environment? https://www.worldbank.org/en/news/feature/2019/09/23/costo-moda-medio-ambiente
72 United Nations (2019), UN launches drive to highlight environmental cost of staying fashionable https://news.un.org/en/story/2019/03/1035161
73 McKinsey (2020), Biodiversity: The next frontier in sustainable fashion https://www.mckinsey.com/industries/retail/our-insights/biodiversity-the-next-frontier-in-sustainable-fashion
74 uropean Parliamentary Research Service (2019), Environmental impact of the textile and clothing industry https://www.europarl.europa.eu/RegData/etudes/BRIE/2019/633143/EPRS_BRI(2019)633143_EN.pdf
75 Ellen MacArthur Foundation (2017), A new textiles economy: Redesigning fashion's future https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report_Updated_1-12-17.pdf
76 Ellen MacArthur Foundation (2017), A new textiles economy: Redesigning fashion's future

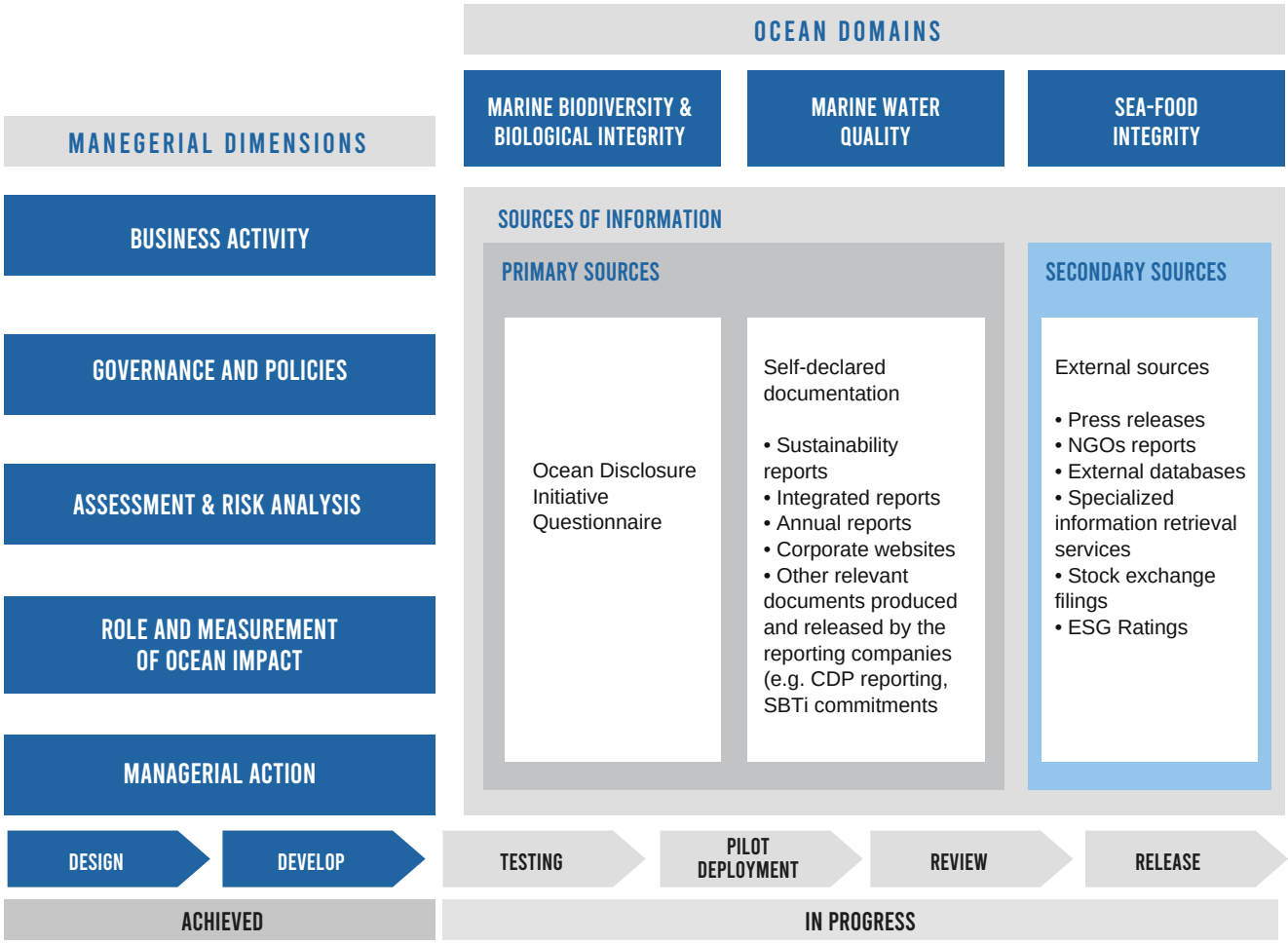
CHAPTER 4 – HOW WE ARE DEVELOPING THE OCEAN DISCLOSURE INITIATIVE AND WHAT'S NEXT

4.1 Scientific research is at the core of the Ocean Disclosure Initiative development process

The Ocean Disclosure Initiative is based on the evidence gathered in the process of developing the Business for Ocean Sustainability body of research. In particular, the scientific analysis of industries' direct and indirect pressures on marine and coastal ecosystems, and the results regarding companies' awareness and activation lie at the very foundation of our methodology. In addition to having designed the general framework, which will be further developed and tested through the involvement of interested stakeholders and partners, we have started to dive deeper into the most significant material issues for a selected number of sectors, such as fishing and aquaculture, agriculture, and fashion. The Ocean Disclosure Initiative is being developed with the support of sustainability and industry experts as well as of the business and financial community. The questionnaire, the self-declared documentation and the external sources of data and information are in the process of being tested through pilot projects, and will be further reviewed before the official release of the framework (Fig. 7).

The entire process is designed to integrate scientific knowledge with the business and financial perspective, in order to engage the Ocean Disclosure Initiative's final users from the very beginning, i.e. companies and the financial community.

FIGURE 7 – OCEAN DISCLOSURE INITIATIVE DEVELOPMENT PROCESS



The different stages draw on a thorough review of academic and practitioners' literature, and of existing disclosure and assessment frameworks and standards. At the same time, engagement of the business and financial community takes place through interviews. Furthermore, the sector-specific focus is implemented thanks to a continuous dialogue with firms to guarantee a practice-oriented approach. To create a comprehensive and robust methodology, the Ocean Disclosure Initiative will go through an ongoing review process with the contribution of our partners.

Our journey towards the creation of the Ocean Disclosure Initiative has begun. The credibility of the ODI's theoretical basis is built on scientific knowledge. At the same time, the engagement of companies and financial institutions will ensure the development of a business-oriented, impactful and sector-specific framework.

Our next steps include:

- **Testing, pilot projects, review, and release of the methodology**: the preliminary testing of the methodology will involve a selected number of companies, and will include the support of financial partners. This will be followed by the pilot deployment of a data-gathering digital platform aimed at enlarging the initial sample of companies involved. The final version of the methodology will be officially released only after a thorough review of the data collected

- **Release of the first ocean-based assessment of companies**: based on the methodology we have developed, the data and information gathered will provide the grounds for the development of the first ocean-based assessment document. This will be in the form of a scoring or ranking of the companies participating in the initiative, highlighting the best in class and providing insights on how to improve ocean-related practices

- **Development of specific industry protocols**: although sector specific material issues have already been analyzed for a selection of industries, a further follow-up will include the development of industry-specific disclosure protocols, in order to provide additional support to interested companies and refine the assessment process

4.2. How can you contribute to the Ocean Disclosure Initiative?

The process of testing, deployment, review and release of the framework will involve different categories of stakeholders, including companies, the financial community, scientists, researchers and research centers, and NGOs.

Each of these groups can contribute to the Ocean Disclosure Initiative, for example:

- **Companies**: by participating in the testing and pilot deployment phases, companies can help to check and refine the methodology, while acquiring valuable knowledge for improving their sustainability profile with regard to ocean issues

- **Financial community**: by joining the initiative, the financial community can contribute its knowledge of ESG-related issues, at the same time acquiring additional competencies for the development of new sustainable products and services

- **Scientists, researchers and research centers**: the involvement of scholars, scientists, researchers and experts in subjects related to the health of the ocean and marine and coastal ecosystems is essential for a continuous improvement of the methodology, including from the perspective of the assessment of the reporting companies

- **NGOs**: the involvement of NGOs, among the most active entities in relation to ocean protection, can bring further elements of knowledge, while at the same time expanding the ability to collect and scrutinize relevant information regarding business pressures on marine and coastal ecosystems

The challenge of ocean sustainability has just begun. It is complex and intertwined with the other great challenges of our century: climate change, biodiversity loss, as well as poverty, hunger, equality and health.

We can learn a lot from the climate crisis that started almost 30 years ago (the UNFCCC was established in 1992, the Kyoto Protocol dates back to 1997), both in terms of failures and successes. We must focus more on the centrality of business, as business has the knowledge, the competencies and the financial resources.

Companies must acknowledge their interdependence with socio-ecological systems: resilient marine and costal ecosystems are as necessary to business as they are to humans and other species. Sustainable solutions come from the development of clean technologies, innovative products and services, and new and sustainable business models. Companies must engage in dialogue and cooperate with NGOs, governments and agencies to develop innovative solutions and gain legitimacy, contributing positively to society and the environment, instead of minimizing the negative impacts. In addition the world of finance, which today displays greater maturity and attention to ESG issues, and which is becoming an agent of change, must be fully involved in contributing to the transformations we need.

Finally, we must build a bridge between ocean sciences and business, creating a common language, because companies must be supported and guided in addressing and mitigating their most relevant direct and indirect pressures on the ocean.

With the **Ocean Disclosure Initiative**, our ambition is to facilitate the path towards the creation of an open multi-stakeholder framework, favoring dialogue between the parties, and connecting business and finance, science, civil society, and governments.

The ocean provides irreplaceable benefits and a major contribution to our social well-being and economic prosperity. The challenges are many and complex, as illustrated throughout the report, but our hope is that ocean sustainability can be mainstreamed and concretely pursued with the immediate and effective mobilization of the numerous interested parties.

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GLOSSARY

Acidification – Reduction in the pH (i.e. increase in acidity) of ocean waters over an extended period of time, caused primarily by the uptake of carbon dioxide (CO_2) from the atmosphere

Blue bond – Financial instrument aimed at financing specifically ocean-friendly projects

Blue economy – A sustainable ocean economy (the Blue economy) that emerges when economic activity is in balance with the long-term capacity of ocean ecosystems to support this activity and remain resilient and healthy

Contaminant – Substances (i.e. chemical elements and compounds) or groups of substances that are toxic, persistent and liable to bio-accumulate and other substances or groups of substances which give rise to an equivalent level of concern

Ecosystem services – The Millennium Ecosystem Assessment defined ecosystem services as "the benefits people obtain from ecosystems. These include provisioning services such as food, water, timber, and fiber; regulating and supporting services that affect climate, floods, disease, wastes, and water quality but also soil formation, photosynthesis, and nutrient cycling and; cultural services that provide recreational, aesthetic, and spiritual benefits". Recently, IPBES builds on the ecosystem service concept to come up with the new term nature's contributions to people

Eutrophication – The process by which a body of water becomes enriched in dissolved nutrients (such as phosphates) that stimulate the growth of aquatic plant life usually resulting in the depletion of dissolved oxygen

Food web – A system of interlocking and interdependent food chains

GDP – Gross Domestic Product. Total value of goods produced and services provided in a country during one year

GVA – Gross Value Added. The difference between total industry GVA and total GDP is taxes less subsidies on products, which varies across countries. This adjustment is made at the aggregate (total economy) level because, while time series of taxes less subsidies on products may be available by product, they are not generally available by industry

Greenhouse Gas (GHG) – Gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the Earth's surface, the atmosphere itself, and by clouds. This property causes the greenhouse effect. Primary greenhouse gases in the Earth's atmosphere are water vapor (H_2O), carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), ozone (O_3)

Hydrographical conditions – The physical parameters of seawater, such as temperature, salinity, depth, currents, waves, turbulence, turbidity

NGO – Non-governmental organization

Non-indigenous species – Species introduced outside their natural past or present range, which may survive and subsequently reproduce, threatening the biodiversity of an ecosystem

Overfishing – The uncontrolled catch of fish in a water course or sea area, destined to irreparably compromise its reproductive capacity

Pressure – Any action that makes a change to the state of the natural environment whether adverse or beneficial, wholly or partially resulting from the activity of an organization, or the utilization of products or services

Traditional ocean economy – Economic sectors whose activities take place in marine and/or coastal environments

ABOUT
ONE OCEAN FOUNDATION

This research is an initiative of the One Ocean Foundation, as part of its commitment to the diffusion of ocean literacy.
The mission of the foundation is to accelerate solutions to ocean issues by inspiring international leaders, institutions, companies and people; promoting a sustainable blue economy and enhancing ocean knowledge through ocean literacy.
Thanks to a privileged network of contacts (companies, institutions, entrepreneurs, sportsmen, yacht clubs, influencers, etc.) the One Ocean Foundation intends to develop a leading platform, bringing together and strengthening the voices speaking out on behalf of the ocean around the world.
The distinctive feature of the One Ocean Foundation is its scientific scope and, at the same time, its strong educational drive, in order to increase awareness and establish constructive relationships between all stakeholders engaged in marine preservation at different levels.
Thanks to its partners, the One Ocean Foundation is engaged in numerous projects related to its mission of environmental protection, in particular: blue economy, environmental projects and communication/educational activities, especially for younger generations.

One Ocean Foundation's projects are supported by its partners:

Find out more at www.1ocean.org/

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