

MAPPING OCEAN GOVERNANCE AND REGULATION

Working paper for consultation for
UN Global Compact Action Platform for Sustainable Ocean Business

ACKNOWLEDGEMENTS

Date of issue 24 September 2018
Authors Bente Pretlove (DNV GL)
Robert Blasiak (Stockholm Resilience Centre)

Special thanks for valuable discussions and contributions to this report to:

Sturla Henriksen (UNGC), Erik Giercksky (UNGC), Natacha Blisson (Equinor), Viggo Bondi (Norwegian Shipowners Association), Sigrid Brynestad (GIEK), Kjetil Eivindstad (Gard), Matilda Petersson (SRC), Jessica Spijkers (SRC), Jean-Baptiste Jouffray (SRC), Kjersti Aalbu (DNV GL), Lars Almklov (DNV GL), Asun St. Clair (DNV GL), Ole Andreas Flagstad (DNV GL), Erik Andreas Hektor (DNV GL), Henrik Helgesen (DNV GL) and Bjørn Kj. Haugland (DNV GL).

And to the many experts that have provided comments to early versions of this report:

Alf Håkon Hoel (UiT), Anne Husebekk (UiT), Sissel Rogne (Havforskningsinstituttet), Ingrid Schjøberg (NTNU) and Asgeir Sørensen (NTNU).

This report has been prepared for general guidance and is not representing any official positions or views by the companies or organisations that are members of the UN Global Compact Action Platform for Sustainable Ocean Business.

UN GLOBAL COMPACT ACTION PLATFORM FOR SUSTAINABLE OCEAN BUSINESS

The UN Global Compact is the world's largest corporate sustainability initiative with stakeholders from more than 170 countries. Its aim is to encourage businesses worldwide to adopt sustainable and socially responsible policies, and to report on their implementation.

The UN Global Compact Action Platform for Sustainable Ocean Business will take a comprehensive view at the role of the ocean in achieving the 17 SDGs. The aim is to explore attractive and viable solutions and best practices for sustainable use and management of the ocean.

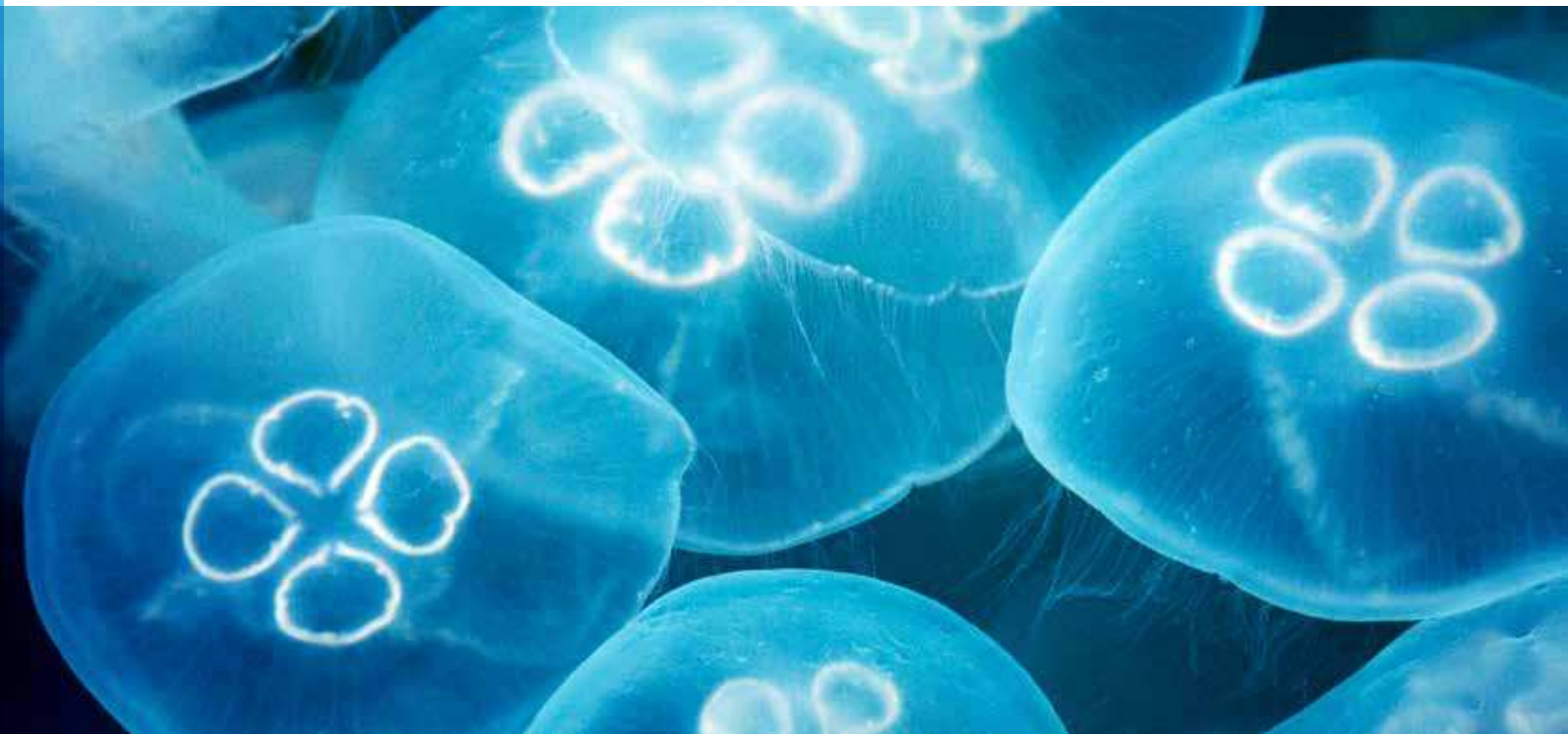
By bringing together the leading industries in shipping, aquaculture, fisheries, energy production, with key equity funds, banks and insurance companies, the Platform has a cross industry, cross UN and cross SDGs approach.

The Action Platform is designed to drive decision making processes and catalyze partnerships to advance shared ocean priorities across all 17 Global Goals - leading up to the 2020 UN Ocean Conference - with a specific aim to scale-up the commitments and performance of companies on this critical agenda.

<https://www.unglobalcompact.org/take-action/action-platforms/ocean>



**Sustainable
Ocean Business**
Action Platform



CONTENT



- Foreword..... 4
- Executive summary 6
- Introduction..... 9
- International ocean governance..... 11
- Governance of some key ocean-based industries..... 15
 - Shipping..... 16
 - Offshore Oil and Gas 19
 - Offshore renewable energy 21
 - Marine aquaculture 24
 - Marine fisheries..... 26
 - Seabed mining..... 28
- Emerging governance issues and regulatory developments 31
- Cross-cutting challenges for the ocean 36
 - Climate change..... 36
 - Conserving biodiversity in areas beyond national jurisdiction (BBNJ)..... 37
 - Ocean plastics pollution 37
- Conclusions: The role of the private sector and the UNGC Action platform 40



FOREWORD

The Ocean covers two thirds of the surface of the Earth and represents more than 90 per cent of livable space on our Planet. It represents one of humankind's most important global commons, crucial for the wellbeing and prosperity of current and future generations.

The system for Ocean governance is extensive and complex. Coastal states are vested with jurisdiction within the areas defined as the Exclusive Economic Zones, generally extending to 200 nm outside of their coastline. In the Areas Beyond National Jurisdictions, generally known as the High Seas, the Ocean is subject to weaker governance and poorer management. In these areas, there are, by definition, no sole nation state responsible for managing these areas. Also, and more importantly, there are no sole international body vested with a strong mandate and effective means to ensure a holistic, sustainable approach to managing the High Seas.

The global regulations of the High Seas have developed over time to become an extensive framework of rules based on economic, social, environmental and industrial considerations. The UN Convention on the Law of the Sea sets out the legal framework within which all activities



*Sturla Henriksen
Special Advisor, Ocean
UN Global Compact*



in the ocean and seas must be carried out. It is of strategic importance as it serves as the basis for national, regional and global action and cooperation in the marine sector. Other instruments are sector-specific with detailed technical specifications. Some are intentional or target-based, others are mandatory and prescriptive.

The development, implementation and enforcement of the High Seas' regulations are embedded in a wide range of different bodies at global, regional and national levels. In the UN alone, there are more than twenty different bodies vested with some kind of normative and regulatory competence related to the High Seas. Even the largest of these, like FAO, IMO, UNEP, ISA and UNESCO/IOC, are each mandated to cover only parts of the comprehensive, holistic approach required to ensure a sustainable management of the ocean, its resources and economic potential. UN-Ocean is an inter-agency mechanism that seeks to enhance the coordination, coherence and effectiveness of these bodies. Implementation and enforcement of the regulations are generally left to the national states in their capacities as coastal states, port states, flag states or signatories to the conventions. Lack of consistent implementation and uniform enforcement of rules are posing key challenges for the effectiveness of international ocean regulations.

The UN Global Compact's Action Platform for Sustainable Ocean Business brings together a cross-section of leading actors of global business, research and government institutions to address how the ocean industries can actively underpin and advance the full

range of the UN's 17 Sustainable Development Goals. An important part of the work will be to identify areas and topics for further consideration or action by governments or the United Nations, with the objective to enhance further global and local ocean governance.

This report endeavours to form a basis and a point of departure for these discussions, providing an overview mapping of the current status of regulations and systems governing the Ocean. Given the complexity of the topic, this has, in itself, proven to be an ambitious - and important - effort. An overview of this kind is a precondition for identifying areas or topics for improvements; be they lack of adequate regulations in certain areas, inconsistencies between or within current regulations, lack of consistent implementation and uniform enforcement of rules, or whether there are areas where regulations are hampering or lagging technological, operational or commercial developments promoting a sustainable management of the ocean resources.

It goes without saying that this effort is by nature a "work in progress", as such a document has to be updated regularly and frequently as new regulations are adopted, ratified and implemented. In this respect, it is both significant and encouraging that by the time of the release of this report, the global community will gather under the auspices of the United Nations to negotiate a new treaty on marine biodiversity of areas beyond national jurisdiction.

EXECUTIVE SUMMARY

The well-being of humanity is inextricably linked to the health of ocean ecosystems and the stability of the ocean's biogeochemical processes. Although the ocean already sustains a range of industries, its potential as a dynamo for sustainable development has led it to be dubbed the new economic frontier. This report introduces a mapping exercise that demonstrates how uneven the governance landscape is across the industries that populate this frontier. Six industries are considered: international shipping, offshore oil and gas, offshore renewable energy, marine aquaculture, marine fisheries and seabed mining. While some, such as maritime shipping, have well-established and extensive governance structures encompassing a wide breadth of public and private sector actors, others like the seabed mining industry are still in a state of emergence. Crucially, all ocean-based industries are having an impact on the health of ocean ecosystems. In addition, many of the challenges the ocean faces, including climate change, ocean plastics, and biodiversity loss, transcend the capacity of a single industry or a single state to address. Concerted action is needed to ensure coherent action across thematic areas and towards addressing cross-cutting ocean challenges. Due regard must also be taken to linkages between land, water, coastal and marine systems. Finally, effective implementation and enforcement of the rules and arrangements that have been agreed upon must continue to be prioritised.

Ocean-based industries are well-positioned to act in line with the principles of the UN Global Compact, to promote sustainable and socially responsible operations. In some cases, the governance and implementation gaps highlighted in this report are already being mitigated through voluntary private sector initiatives that often go beyond the threshold of compliance to promote new norms of best practice. The diversity of experience across the industries represented in the Platform for Sustainable Ocean

Business provides an opportunity for learning and sharing of best practice, while the scale of the cross-cutting challenges facing the ocean underscores the need for cross-sectoral cooperation. Collectively, the ocean-based industries are of relevance to all of the Sustainable Development Goals, and most specifically to achieving the suite of targets under Goal #14 on Life Below Water.



Crucially, all ocean-based industries are having an impact on the health of ocean ecosystems. In addition, many of the challenges the ocean faces, including climate change, ocean plastics, and biodiversity loss, transcend the capacity of a single industry or a single state to address.



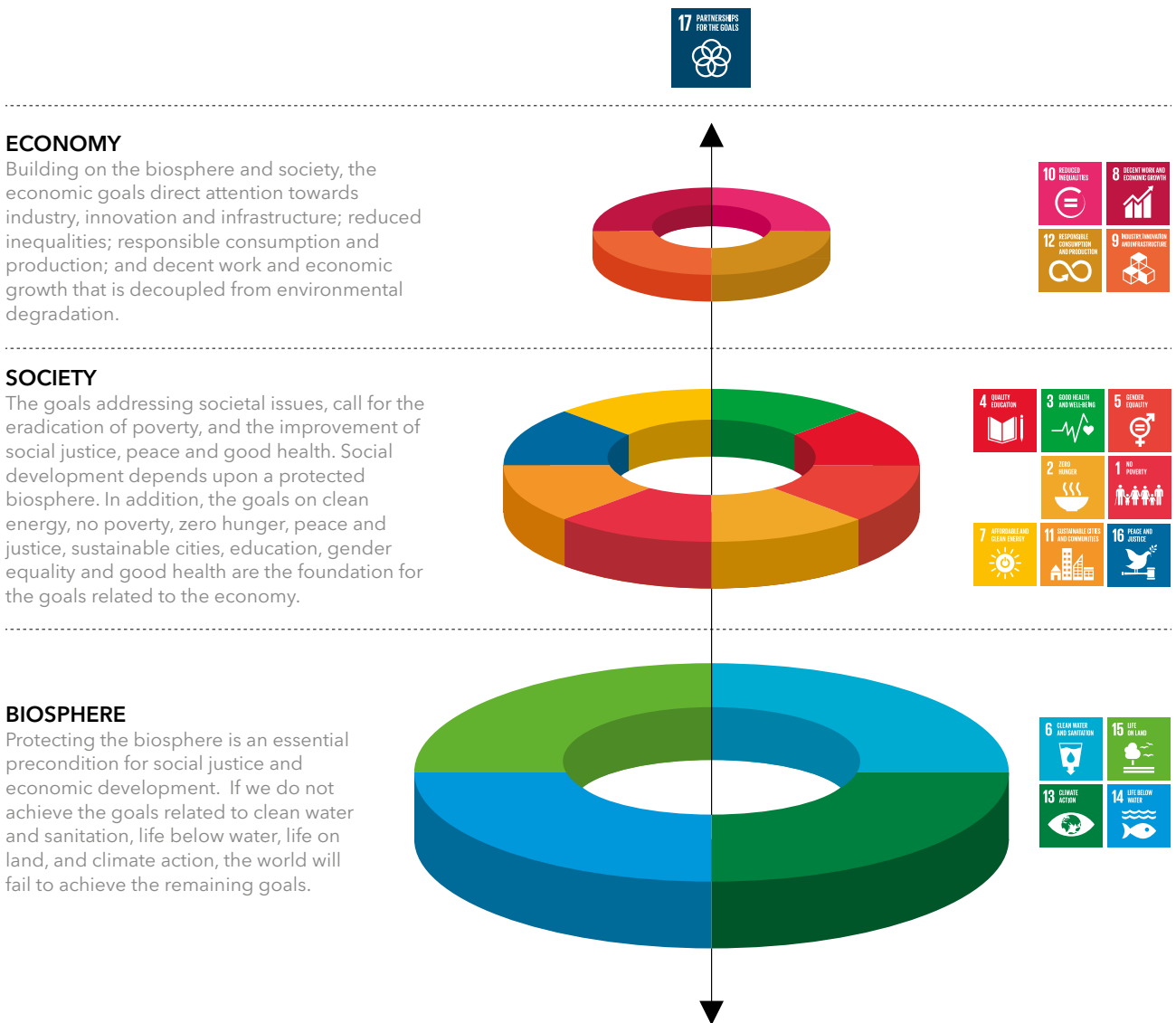


Figure 1: The interconnected nature of the SDGs (Credit: Adopted from Azote Images for Stockholm Resilience Centre)

INTRODUCTION

The ocean covers more than 70% of Earth's surface and contains about 97% of its water (NOAA, 2018). However, more than 95% of the depths of the water column and the seabed remain largely unexplored.

The ocean is referred to as the new economic frontier (OECD, 2016), with a capacity for significant economic growth in both traditional and emerging ocean-based industries and fostering human wellbeing through its vital contributions to food security, regulating the climate and providing natural resources and renewable energy.

Managing the opportunities related to the ocean, however, must be balanced with due regard to threats to the ocean environment such as over-exploitation, pollution, biodiversity loss and climate change. Sustainable management of the ocean requires international cooperation that spans the public and private sector, and is complemented by effective governance structures that are inclusive of different ocean stakeholders, precautionary in terms of the ocean environment, and anticipatory of the growing and emerging economic activities of ocean-based industries.

Global ocean governance rests on the foundation of the United Nations Convention on the Law of the Sea, the framework within which a mosaic of different legal and non-legal institutions rests. It includes international and national governance, in which governments and various public bodies are the primary actors. But it also encompasses private governance initiatives led by companies and other non-state actors such as environmental organisations. Private governance mechanisms, including standards, best practices and certification schemes, complement public governance.

This report aims to provide a brief overview of rules, institutions, processes, agreements, arrangements and activities carried out to manage the use of the ocean. Underpinned by the Law of the Sea, it focuses on the governance of six ocean-based industries: international

shipping, offshore oil and gas, offshore renewable energy, marine aquaculture, marine fisheries and seabed mining. For each of the industries, a few examples of private sector driven initiatives focusing on the sustainable management of the oceans are provided. These bring together private sector actors committed to common targets, standards, best practices and operating principles, often going beyond compliance, and illustrate how ocean-based industries are working across several sustainability areas.

However, there are a number of governance issues related to the effectiveness of current regimes and the need to address the increasing pressures on the ocean. These are exemplified through sector-specific lenses on effective implementation and enforcement of conventions, the need for collaboration between different organisations and greater consistency across different jurisdictions. Finally, this report focuses on governance issues related to three of the most prominent cross-cutting challenges to the ocean: climate change, biodiversity loss and ocean plastics.

Sustainable management of the ocean and value creation linked to it will be vital for the world's ability to realize the totality of the Sustainable Development Goals (SDGs) by 2030. The goal specifically addressing the ocean, SDG 14, stresses the urgent need to "conserve and sustainably use the ocean, seas and marine resources for sustainable development". However, as illustrated by the interconnected nature of the SDGs (Figure 1), other goals such as taking urgent action to combat climate change and its impacts (SDG 13) and ensuring sustainable consumption and production patterns (SDG12) are essential for the achievement of SDG 14.



INTERNATIONAL OCEAN GOVERNANCE

At the heart of international ocean governance is the United Nations Convention on the Law of the Sea (UNCLOS), adopted in 1982 . The convention, which entered into force in 1994 and is ratified by 168 states to date, is the legal framework for all activities in the ocean and seas.

UNCLOS codifies the rights and obligations of states and provides the foundation for international collaboration on conservation and sustainable use of the ocean and marine resources. It comprises 320 articles and nine annexes, governing all aspects of ocean space, such as delimitation, environmental control, marine scientific research, economic and commercial activities, transfer of technology and the settlement of disputes relating to ocean matters.

In addition to the main convention, there are two important implementing agreements; the 1995 United Nations Fish Stocks Agreement and the 1994 Agreement relating to the implementation of Part XI of UNCLOS (deep seabed mining provisions).

KEY PROVISIONS OF UNCLOS

Maritime zones

UNCLOS delimits different maritime zones (see Figure 2). Coastal states exercise sovereignty over their territorial sea. Coastal states also have sovereign rights in their exclusive economic zone (EEZ) with respect to natural resources and certain economic activities, and exercise jurisdiction over marine science research and environmental protection. In addition, coastal states have sovereign rights over the continental shelf (the national area of the seabed) for exploration and exploitation of resources, including in areas where the continental shelf extends beyond the EEZ.

Rights of passage and navigation

Foreign ships have the right of passage in the territorial sea of a coastal state, and all states have the freedom of navigation in the EEZ and on the high seas.

Peace and security of ocean and seas

The convention provides a framework for the regulation of all activities related to the uses of the ocean and seas, and sets out the rights and duties of coastal and flag states regarding criminal jurisdiction.

Conservation and management of marine living resources

Coastal states have a responsibility for ensuring the sustainability of living marine resources within the EEZ. On the high seas, states have a duty to collaborate with other states on the conservation and management of marine living resources.

Protection and preservation of the marine environment

All states are required to protect and preserve the marine environment, and are required to take measures to prevent, reduce and control pollution of the ocean.

Marine scientific research

States are required to promote and facilitate marine scientific research, including through collaboration.

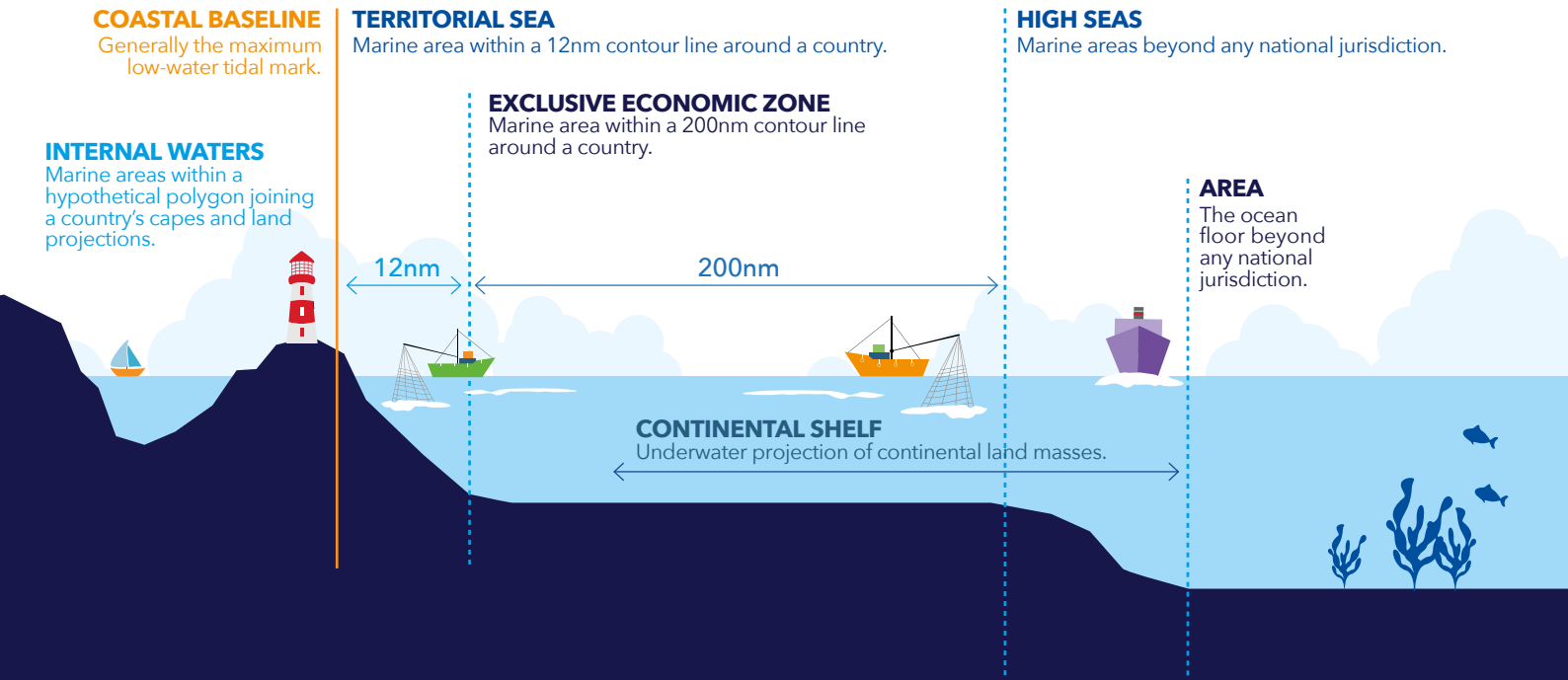


Figure 2: Maritime zones (European Commission, 2015)

Dispute settlement procedures

States are required to settle disputes concerning the application of the Convention by peaceful means. Disputes can be submitted to the International Tribunal for the Law of the Sea established under the Convention, to the International Court of Justice, or to arbitration.

Three institutional bodies are established under the convention: the Tribunal for the Law of the Sea, the International Seabed Authority (ISA) and the Commission for the outer Limits of the Continental Shelf (CLCS). A number of other institutions at the international and regional level supports UNCLOS by regulating specific activities at sea (Figure 3), for example:

- The International Maritime Organization (IMO) for international shipping
- The UN Food and Agriculture Organization (FAO) and regional fisheries management organisations (RFMOs) for living marine resources.

- United Nations Environment Programme (UNEP), regional sea conventions (RSCs) and multilateral environmental agreements (MEAs) for conservation and sustainable use of the marine environment
- The Intergovernmental Oceanographic Commission (IOC) of UNESCO for marine scientific research
- The International Whaling Commission (IWC).

The United Nations General Assembly (UNGA) oversees the implementation of the Convention and its associated agreements. An ocean and law of the sea resolution is negotiated every year addressing the full range of issues pertaining to the implementation of the Convention, constituting the global coordination of ocean issues. A similar resolution addressing fisheries issues is also negotiated every year.

The UNGA also carries out annual reviews and publishes comprehensive reports on ocean affairs and developments relating to the law of the sea. It has also established processes and working groups on specific

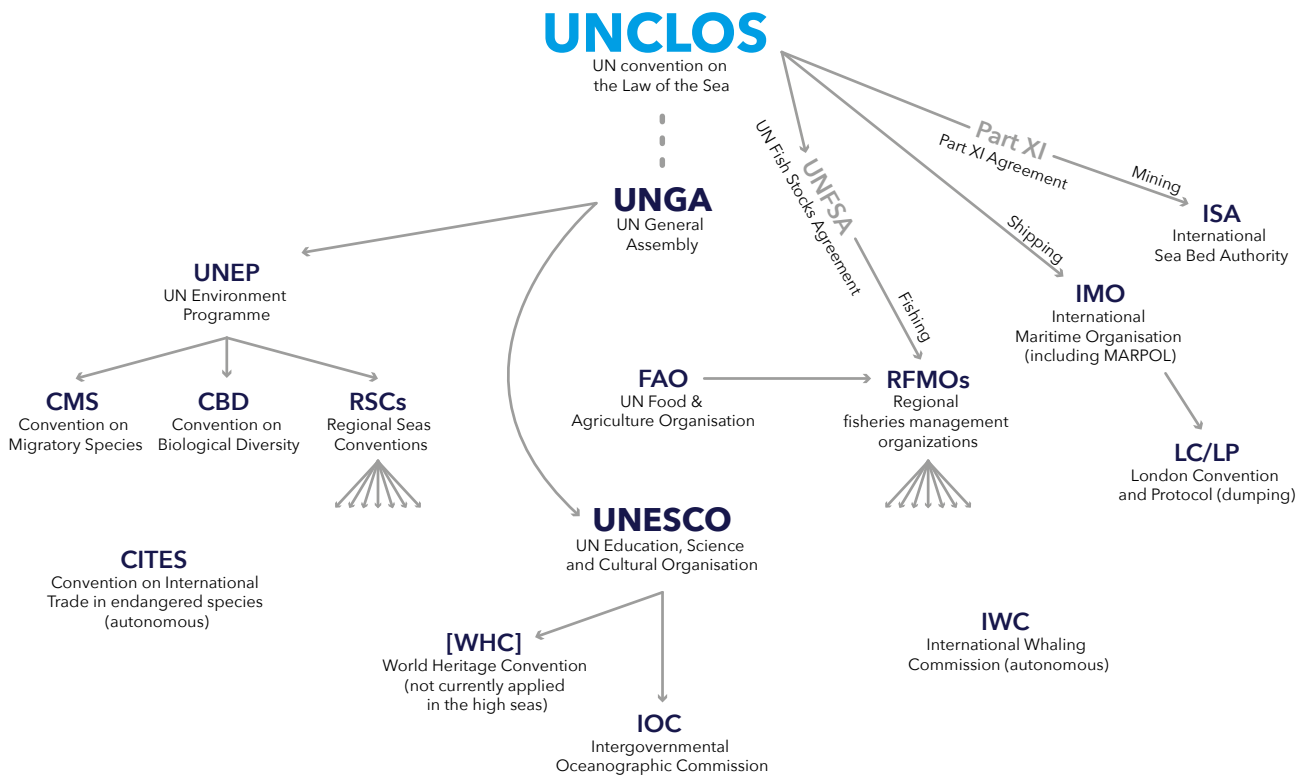


Figure 3: Institutions and frameworks that supports UNCLOS (Ardron & et al., 2015).

themes such as “Marine biological diversity beyond areas of national jurisdiction”, a regular process to assess the state of the global marine environment producing a World Ocean Assessment (the next due in 2020), informal consultations on oceans and the law of the sea, and the implementation of the SDGs.

To further enhance coordination across all the UN system organizations with activities related to ocean and coastal areas and the International Seabed Authority, an inter-agency mechanism called “UN-Oceans” was established in 2003. UN-Oceans has met on an annual basis since 2005.



An ocean and law of the sea resolution is negotiated every year addressing the full range of issues pertaining to the implementation of the Convention, constituting the global coordination of ocean issues. A similar resolution addressing fisheries issues is also negotiated every year.

ROLE OF FINANCE

Financial institutions are the other major player, alongside governments and business, in developing sustainable business models for SDGs, including financing for ocean related transactions. For example, the UN Environment Finance Initiative is a partnership between UN Environment and the global financial sector with a mission to promote sustainable finance. More than 200 financial institutions, including banks, insurers, and investors, work with UN Environment to understand today's environmental, social and governance challenges, why they matter to finance, and how to actively participate in addressing them.

Financial institutions have, in general, increased environmental and social awareness and due diligence related to their transactions. For example, over 90 banks are members of the Equator Principles; a risk management framework, adopted by financial institutions, for determining, assessing and managing environmental and social risk in projects. The World Bank and Export Credit Agencies in OECD countries evaluate projects based on IFC performance standards for social and environmental impact. There is an increasing pressure on financial institutions not only to "do no harm" but to create positive, impact based financial flows. Major banks are, through actions such as the Responsible Ship Recycling Standards Initiative, requiring that the entire lifecycle of assets be considered before financing is given.

GOVERNANCE OF SOME KEY OCEAN- BASED INDUSTRIES

Ocean-based industries include traditional maritime industries such as shipping, fisheries, aquaculture, offshore oil and gas as well as emerging industries such as offshore wind and seabed mining.

This chapter provides a high-level overview, of how six key industries are regulated: international shipping, offshore oil and gas, offshore renewable energy, marine aquaculture, marine fisheries and seabed mining. These industries are at different levels of maturity in relation to ocean governance and operate within different maritime zones. While there is considerable variance across ocean-based industries and their corresponding value chains, all depend on the ocean, and all are having an impact on it.

In addition, the chapter provides a few examples of private sector related sustainability initiatives. These focus on convening the private sector around common targets, standards, best practices and operating principles, often going beyond compliance, and illustrate how ocean-based industries are working across several sustainability areas. Sustainable management of the ocean and value creation linked to the sea will play a vital role for the world's ability to realize the totality of the Sustainable Development Goals (SDGs) by 2030. Hence, the chapter also highlights current efforts in mapping the contribution of the industries toward the SDGs.



Sustainable management of the ocean and value creation linked to the sea will play a vital role for the world's ability to realize the totality of the Sustainable Development Goals (SDGs) by 2030.



SHIPPING

International shipping is a mobile economic activity where the vessels move across the high seas and multiple exclusive economic zones.

It is a mature industry with well-established international governance institutions. How these public and private governance regimes are interlinked to UNCLOS and to each other is shown in Figure 4.

Within the legal framework set by UNCLOS, the International Maritime Organization (IMO) develops conventions containing detailed requirements that enter into force after they have been ratified by a required number of states. The conventions are then implemented into the national law of the ratifying/acceding parties, and establish a global minimum standard for the shipping industry. The International Labour Organization (ILO) develops frameworks for national legislation, and what parties shall regulate to comply with the conventions.

Examples of the IMO and ILO conventions include:

- **Safety of Life at Sea (SOLAS)** - The most important of all international treaties concerning the safety of merchant ships.
- **Standards of Training, Certification and Watchkeeping (STCW)** - Requirements on training, certification and watchkeeping for seafarers on an international level
- **Ballast Water Management Convention (BWMC)** - Convention for the Control and Management of Ships' Ballast Water and Sediments
- **International Maritime Solid Bulk Cargoes (IMSBC) code** - Facilitates safe stowage and shipment of solid bulk cargoes.
- **Maritime Labour Convention (MLC)** - International agreement which sets out seafarers' rights to decent conditions of work
- **Prevention of Pollution from Ships (MARPOL)** - Covering prevention of pollution of the marine environment by ships from operational or accidental causes
- **Civil Liability Convention (CLC/FUND)** - Regulates the liability, compulsory insurance requirements and a principle for cost sharing between the ship owner and the cargo owner for oil pollution damage.
- **BUNKER** - Defines the liability and ensures that persons who suffer damage caused by oil spills when carried as fuel in ships' bunkers are compensated.
- **Transport of hazardous and noxious substances (HNS)** - Liability and compensation regime for damage caused by transportation of hazardous and noxious substances other than oil.
- **Nairobi Convention on the removal of wrecks** - Provides the legal basis for states to remove, or have removed, shipwrecks that may have the potential to affect adversely the safety of lives, goods

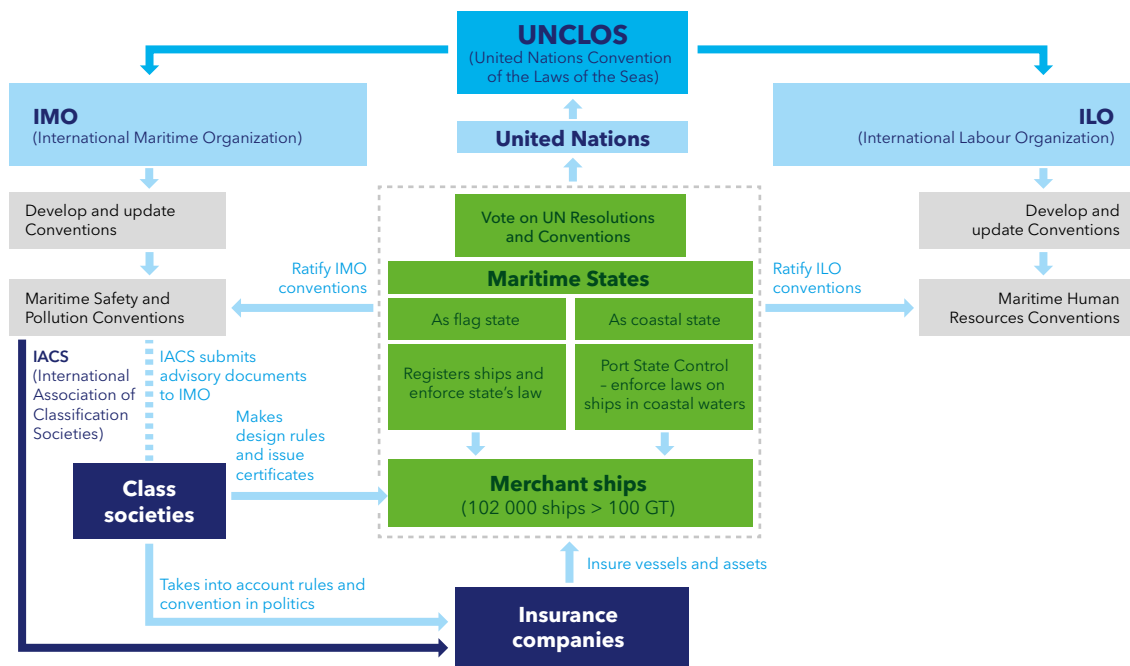


Figure 4: Overview of maritime international, regional and private sector governance.

and property at sea, as well as the marine environment.

- **Regulations for Preventing Collisions at Sea (COLREGS)** - Navigation rules for ships and other vessels at sea to prevent collisions
- **Hong Kong Convention (HKC)** - Ensuring that ship recycling does not pose any human health and safety or environmental risk

IMO and ILO do not enforce any regulations. This is the obligation of the flag state for ships flying its flag, while port states exercise port state control based on domestic law. Flag and port states are free to introduce additional domestic regulations. Examples from the EU are Directive (EU) 2016/802 (known as the 'Sulphur Directive'), EU Ship Recycling Regulation (EU SRR) or EU MRV for greenhouse gas monitoring.

In addition to multilateral and national regimes, the shipping industry is heavily regulated through private governance mechanisms. Within the convention framework set by IMO and the regulations set by the flag states, classification societies play a key role as private governance actors. Classification societies, such as American Bureau of Shipping (ABS), Bureau Veritas, DNV GL or Lloyd's Register develop and maintain technical rules and standards for ships. These societies work together through the International Association of Classification Societies (IACS). IACS works with all

sectors of the industry and maritime regulators to ensure that the legislative framework is underpinned and enhanced by classification rules that allow for its practical implementation

The traditional Protection & Indemnity insurers (P&I clubs) underpin the enforcement and implementation of the IMO conventions and the safety rules and regulations of the flag state and class societies. The P&I clubs are owned and controlled by the ship owners who have entered vessels there. Around 90 per cent of the world's ocean going tonnage is covered by 13 P&I clubs that are organized in the International Group of P&I clubs. They share claims and make collective purchase of market reinsurance. The right to be indemnified under a standard P&I policy in an International Group club is conditional upon compliance with flag state and classification requirements. Non-compliance with the MARPOL and SOLAS requirements in respect of the ship involved in a casualty may deprive the assured owner the right of recovery. Compensation regimes such as CLC/FUND, BUNKER and Nairobi Convention are also mainly financed by P&I clubs.



Figure 5: Examples of industry initiatives for shipping

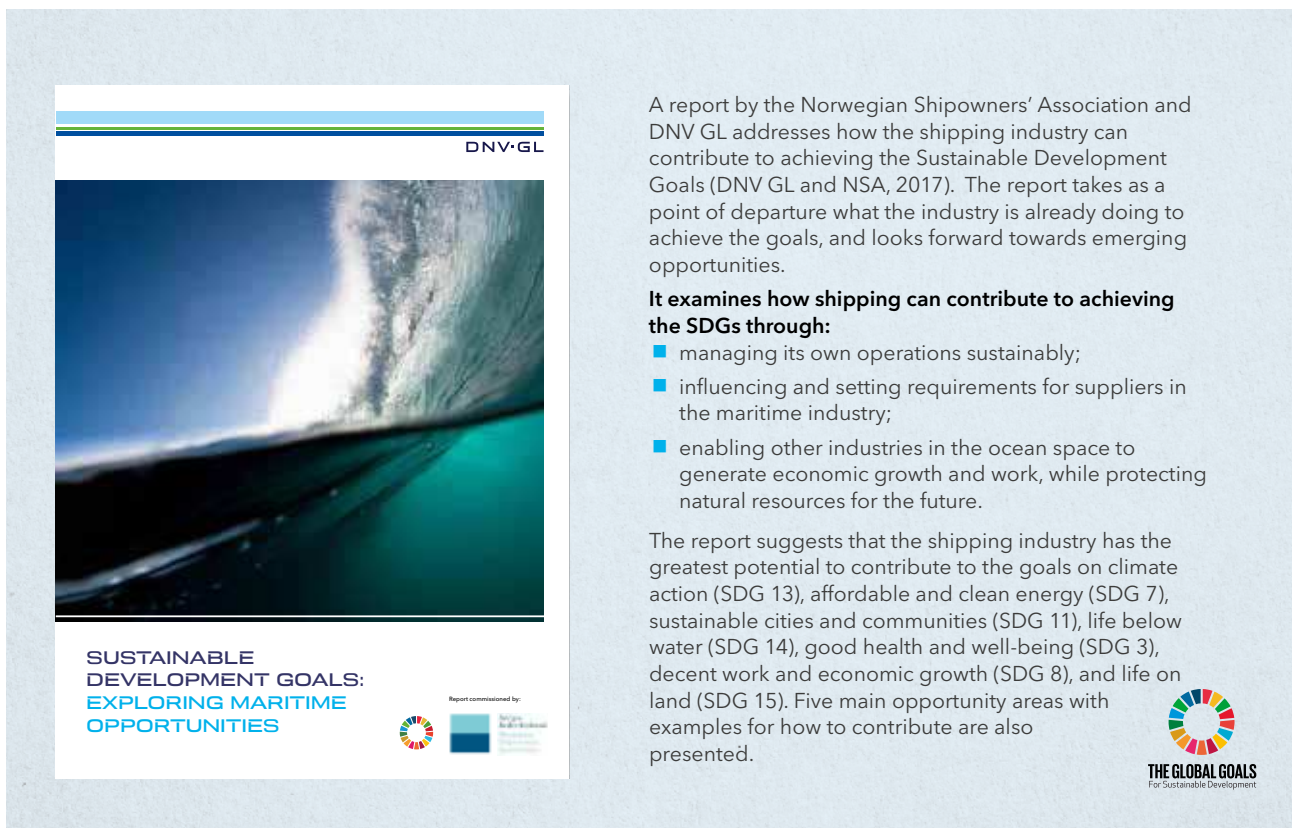


Figure 6: Industry contribution towards the SDGs



OFFSHORE OIL AND GAS

Offshore oil and gas refers to the exploration, development and production of crude oil or natural gas from below the seabed.

These fixed/stationary activities take place on the continental shelf of coastal states, where, under UNCLOS, states enjoy sovereign rights over resources and their domestic legislation regulates activities. If the oil and gas exploration and production at some point in the future should move into the Area, the deep seabed beyond the outer limits of the continental shelf of coastal states, the activities would be regulated by the International Seabed Authority.

Since states have sovereign rights over the natural resources on their continental shelf, the states have exclusive jurisdiction. Given that most regulatory regimes function in a context of social, political and economic frameworks that vary considerably across regions, governance requirements for oil and gas industries also vary significantly. The physical operating environments are also very different between regions.

Therefore, when looking for example at how the industry and regulatory safety regimes may evolve in the future, it is important to understand the context and history of the segment in each region, the drivers behind current and future developments, and the governmental and industry roles within the framework of each regime. Efforts are being made to share experiences and practices. The International Regulators' Forum (IRF) which is a group of 10 countries' regulators of health and safety in the offshore upstream oil and gas industry, exists to drive forward improvements in health and safety in the sector through

collaboration on joint programmes and information sharing.

In many states, several different bodies are involved in the governance of offshore oil and gas. This creates some complexity. For example in the US, the offshore oil and gas production operations in the Gulf of Mexico are regulated by a number of federal agencies, including the United States Coast Guard, the Bureau of Safety and Environmental Enforcement and the Bureau of Ocean Energy Management. The Environmental Protection Agency does not have a direct role in the regulation of oil and gas extraction, but has regulatory authority over the release, or threatened release, of hazardous and toxic substances.

To bridge the multitude of governing bodies, Norway has introduced integrated management plans. These were first introduced by the government in 2001/2002 and the purpose of the management plans is to provide a framework for value creation through the sustainable use of natural resources and ecosystem services in the sea areas and at the same time maintain the structure, functioning, productivity and diversity of the ecosystems (Norwegian Ministry of Climate and Environment, 2015). The management plans clarify the overall framework and encourage closer coordination and clear priorities for management of Norway's sea areas. Integrated management plans have been drawn up for all Norwegian sea areas.

Private sector governance has an important role in driving sustainability through global activities, and to converting rules and regulations into practice and sharing best practices across regions.


Companies, industry organisations and national/international standardisation bodies work to document and share best practices that support the lifecycle value chain, from investment decision making through to ensuring consistent products, processes and performance for components and equipment



Given that most regulatory regimes function in a context of social, political and economic frameworks that vary considerably across regions, governance requirements for oil and gas industries also vary significantly. The physical operating environments are also very different between regions.

IPIECA

IPIECA: a not for profit association that provides a forum for encouraging continuous improvement in industry performance. IPIECA is the only global association involving both the upstream and downstream oil and gas industry and is the industry's principal channel of communication with the United Nations.



The International Association of Oil & Gas Producers (IOGP): works to create alignment and facilitate continuous Health, Safety and Environment (HSE) improvements across oil and gas exploration and production, and undertakes special projects on critical issues affecting the industry. IOGP works with relevant national and international industry associations to advocate industry views to international regulators, legislative bodies and other relevant stakeholders.

Figure 7: Examples of industry initiatives for offshore oil and gas

In 2017, IPIECA partnered with the United Nations Development Programme (UNDP) and the International Finance Corporation (IFC) to develop a shared understanding of the implications of the SDGs for the oil and gas industry and how the industry can most effectively contribute (IPIECA, UNDP & IFC, 2017). Their joint report (Mapping the oil and gas industry to the Sustainable Development Goals: An Atlas) outlines the typical roles and responsibilities of key stakeholders in enhancing the industry's contribution to sustainable development. It presents examples of good practice in the industry, alongside existing knowledge and resources on sustainable development that could help the industry make useful contributions to the SDGs.






Figure 8: Industry contribution towards the SDGs



OFFSHORE RENEWABLE ENERGY

Offshore renewable energy (ORE) refers to wave, tidal and offshore wind energy generation. These activities currently take place on stationary installations in the EEZs of coastal states. New technologies are opening up the potential to produce ORE through other processes, including by salinity gradients and thermal gradients, but these have not yet been commercially deployed on a large scale.

Public and private actors play an important role in shaping the governance of ORE. A governance triangle illustrating the multiple actors involved in different forms of ORE governance in EU states is presented in an article by Guerra (2018) and shown in Figure 9. In this study, the institutions are classified according to the type of actors involved: intergovernmental bodies, business firms, civil society organisations (CSOs), and various combinations of public and private stakeholders.

Most of the institutional complexity lies in Zone 1, which represents the public sector. More than half of the institutions of ORE governance are state-led (56.4%) or involve state collaboration (72.7%) (Guerra, 2018). However, non-state actors play a significant part in ORE governance and should not be overlooked. Although important institutions such as the International Renewable Energy Agency (IRENA) and the International Energy Agency (IEA) are state-led, key organisations operating for these types of renewable energy are led by the private sector, for example, WindEurope and Ocean Energy Europe (OEE).

States lead by creating binding regulation applicable to ORE, while the private tier provides guidelines, standards and certification schemes for renewable energy. It is also noteworthy that financing is mainly provided by state-led institutions or collaborative, hybrid initiatives where states are present. Non-governmental organisations and social movements also have stakes in energy governance, because it impacts values they promote, such as socio-economic development, social justice, and ecological sustainability.

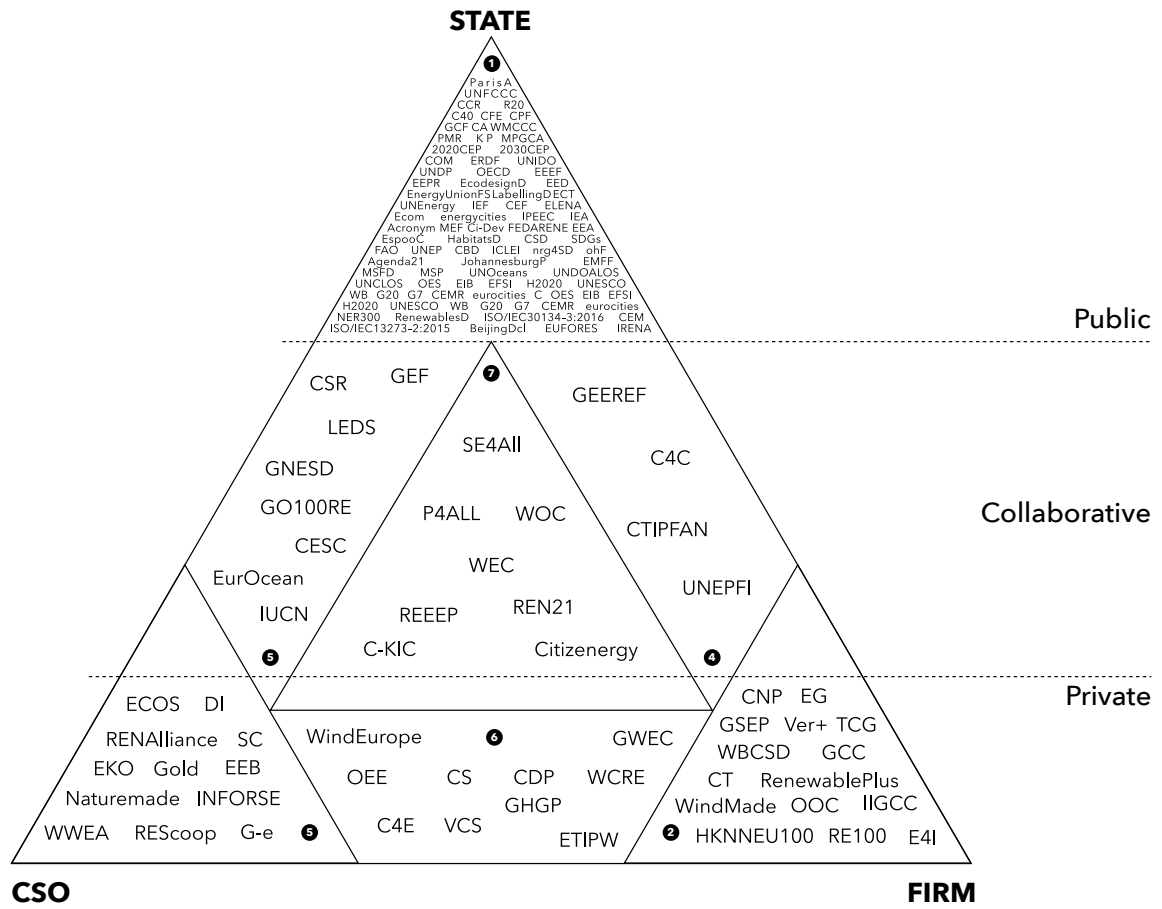


Figure 9: Governance triangle for offshore renewable energy in EU states comprising international and transnational institutions (Guerra, 2018) . Public = State (Zone 1); Private = Firm (Zone 2), CSO (Zone 3) or Firm/CSO (Zone 6); Collaborative = State/Firm (Zone 4), State/CSO (Zone 5) or State/Firm/CSO (Zone 7).





Wind[•] EUROPE

WindEurope: promotes wind power in Europe and worldwide and coordinates international policy, communications, research and analysis. The organisation has over 450 members, active in over 40 countries. Members include wind turbine manufacturers, component suppliers, research institutes, national wind and renewables associations, developers, contractors, electricity providers, finance and insurance companies, and consultants.



Ocean Energy Europe: is the largest network of ocean energy professionals in the world, representing over 120 organisations, including Europe's leading utilities, industrialists and research institutes. The organisation promotes the development of ocean energy, improved access to funding, and enhanced business opportunities for its members. They engage with the European Institutions (Commission, Parliament, Council, EIB, etc), and national ministries on policy issues affecting the sector.

Figure 10: Examples of industry initiatives for offshore renewable energy



The Sustainable Development Solutions Network (SDSN) has partnered with the Columbia Center on Sustainable Investment, the Business and Human Rights Resource Centre, and Equitable Origin to create a shared understanding of how the renewable energy sector can most effectively contribute to the SDGs (UNSDSN, 2018).

The product of this collaboration will be a mapping document for the industry that traces the many points of intersection between renewable energy and the SDGs, including ways in which the renewable sector can contribute toward the realization of the SDGs, the risks renewable energy operations can pose for sustainable development and the realization of human rights, and the implications of the SDGs for the industry's future operations. A draft of the report will be available in September 2018.



Figure 11: Industry contribution towards the SDGs



MARINE AQUACULTURE

Since the 1960s, rates of fish consumption have been increasing twice as rapidly as population growth, yet catch volumes from marine fisheries have remained stagnant at around 80 million tons since the 1980s (FAO 2018). Only 7% of fish stocks are currently classified as under-fished, and global capture fisheries are not expected to grow in the near future due to the need to rebuild depleted stocks to biologically sustainable levels (OECD, 2016).

Global aquaculture production has expanded significantly in the last decades and the marine production is now about 30 million tons annually. With an increasing world demand for seafood, a significant further expansion in aquaculture is expected. This chapter focuses on marine aquaculture (incl. aquatic plants) which is currently a stationary activity, operating in waters under national jurisdiction. The regulatory frameworks and their implementations vary a lot from country to country and the Food and Agriculture Organization of the United Nations (FAO) publishes regular updates through fact sheets on aquaculture laws and regulations for the top 40 aquaculture-producing countries (FAO, 2018a).

Scaling up marine aquaculture requires addressing a series of challenges ranging from the availability of ocean space and better management of problems such as disease and escapees, to dealing with the effects of climate change and reducing animal protein in feed based on wild fish catch (OECD, 2016).

Some progress has been made towards reducing the use of wild-caught fish as feed, primarily by using soybean meal as an alternative, and the development of new modified crops rich in omega-3 fatty acids could accelerate this process. Many countries are also updating their regulations focusing on topics such as new density of fish rules.

Governance of aquaculture is also complex as it interlinks with many different regulatory bodies such as those responsible for regional planning, spatial planning, industrial development, environmental issues, food safety etc. The EU has put integrated maritime policy on the agenda but there is a big job ahead to establish adequate regulatory frameworks to address the competing interests.



Global Salmon Initiative (GSI): publishes an annual sustainability report that increases transparency on the working methods of each member company and at the same time puts pressure on setting higher goals, both for GSI members and other companies in the industry. The 15 member companies in GSI cover 50% of the world's farmed salmon production and one of their ambitions is that all salmon from member companies is certified under the Aquaculture Stewardship Council (ASC) by 2020. As of today, 40% of the GSI production is ASC certified. It is believed that this will further increase the market pressure for certifying the remaining production of farmed salmon.

Combined with a further development of the sustainability indicators in the standard, this initiative of keystone companies will increase the pressure for sustainability documentation of farmed fish from this species.



Sustainable Shrimp Partnership (SSP): launched in 2018 by seven founding companies in Ecuador, and aiming for global expansion.

The SSP operates at a CEO-level, and includes commitments by all members to achieve certification from the Aquaculture Stewardship Council (ASC), completely eliminate the use of antibiotics in production activities, and achieve full transparency and traceability for all products.

Figure 12: Examples of industry initiatives for marine aquaculture.



The Food and Agriculture Organization of the United Nations (FAO) has published a report which explores the nature of the 2030 Agenda, its goals and targets, and their relevance to aquaculture development (FAO, 2017). It examines the potential contribution of aquaculture development to the SDGs, and the strengths and weaknesses of existing aquaculture guidance to support implementation of the agenda.

Almost all the SDGs, and many associated targets are relevant to aquaculture development. Existing guidance and initiatives designed specifically to promote sustainable aquaculture development (including the Code of Conduct for Responsible Fisheries (CCRF) and associated Technical Guidelines; the Bangkok Declaration & Phuket Consensus; the Blue Growth Initiative) will support delivery of the SDGs. These guidance instruments and initiatives should be strengthened in some key cross-cutting areas.



Figure 13: Industry contribution towards the SDGs



MARINE FISHERIES

Since the 1980s, annual catches from marine fisheries have hovered around 80 million tons, constituting a crucial pillar of global nutrition, and providing 3.2 billion individuals with some 20% of their animal protein (FAO, 2018).

The international dimensions of marine fisheries management are complex due to the variation in marine fish stocks. These include stocks that exist exclusively within a single state's jurisdiction, shared stocks (those extending across one or more national jurisdiction), straddling stocks (those that also extend into the high seas), and highly-migratory stocks (mainly tunas and other species with vast ranges across multiple jurisdictions and the high seas and specified in Annex II of UNCLOS). By volume, over 95% of the catch from marine fisheries comes from within the jurisdiction of coastal states (Schiller et al., 2018)

A network of international governance institutions has evolved over the past decades to address the complexity of fish stocks. Under UNCLOS, states are granted broad rights regarding the conservation and use of living resources within their respective EEZs. For transboundary stocks, states must "seek [...] to agree upon the measures necessary to coordinate and ensure the conservation and development of such stocks" (Article 63). Straddling and highly-migratory fish stocks were addressed by the UN Fish Stocks Agreement (UNFSA), which entered into force in 2001. It defines principles for the conservation and management of

such stocks, including that management measures be precautionary in nature.

In line with UNFSA, the mandates of regional fisheries management organizations (RFMOs) were updated to reflect these new principles and new RFMOs have emerged to facilitate international cooperation to manage straddling and highly-migratory stocks. This regionalized approach has resulted in a complex governance landscape. RFMOs differ, for instance, in terms of their geographical scope and the number of species managed. In some cases, the geographical remit of different RFMOs overlap, but they manage different species. The performance of RFMOs also varies significantly, with some being criticised for ineffectiveness and high levels of non-compliance by fishing entities.

National governments have the main responsibility for managing fisheries. Some states are significantly improving their capacity to manage fisheries effectively by, for example, ratifying and implementing the Global Port State Measures Agreement to fight illegal, unregulated and unreported (IUU) fishing, and through emerging traceability tools such as catch



A number of certification schemes have emerged to recognize fisheries managed in a sustainable manner, most prominently from the Marine Stewardship Council.

documentation schemes. Ineffectiveness in regulatory systems is compounded by failure by some flag states to ensure compliance with regulations by vessels flying their flag. Such “flags of convenience” are disproportionately likely to be involved in violations including IUU fishing (Galaz, et al., 2018), (Miller & Sumaila, 2014).

According to the UN Food and Agriculture Organization (FAO), the state of the world’s marine fisheries has declined in the past decades, with 33.1% of fisheries currently fished at biologically unsustainable levels, an increase from 10% in the 1974 (FAO, 2018). Notably, millions of tons of fish are discarded at sea, and more millions of tons are lost after landings due to poor post-harvest practices. Addressing these issues as well as IUU fishing has the potential to substantially increase the volume of fish available for consumption.

A number of certification schemes have emerged to recognize fisheries managed in a sustainable manner, most prominently from the Marine Stewardship Council. The private sector has also been very active in a range of initiatives focused on improving practices within certain segments of the fishing industry (e.g. the Global Dialogue on Seafood Traceability), while others have focused on specific fisheries (e.g. the Coalition of Legal Toothfish Operators).

SeaBOS

Seafood Business for Ocean Stewardship

(SeaBOS) initiative: brings together CEOs of ten of the world’s largest seafood companies, united by a shared commitment to lead a global transformation towards sustainable seafood production and a healthy ocean. The theory of change is influenced by the keystone species concept, in which a small number of species have a disproportionately large impact on the functioning of an ecosystem – in this case, motivating the world’s largest seafood companies to act as keystone actors in the seafood industry is intended to have a positive impact across the sector by elevating stewardship principles to industry norms (Österblom, Jouffray, Folke, & Rockström, 2017). The SeaBOS initiative was launched in November 2016, with the Stockholm Resilience Centre acting as the initiative’s scientific partner



Coalition of Legal Toothfish Operators

(COLTO): launched in 2003 to eliminate illegal practices in the Patagonian and Antarctic toothfish fisheries. Currently, COLTO comprises 50 members across 12 countries, representing 85% of the world’s toothfish catch. The coalition has reported a 95% drop in illegal, unreported and unregulated fishing of toothfish since its establishment, and members have committed to a range of precautionary measures to reduce bycatch of other fish species or seabirds.

Figure 14: Examples of industry initiative for marine fisheries.



SEABED MINING

Seabed mining refers to mineral retrieval processes that take place on the ocean floor. The most common mineral resources with a potential to be extracted are polymetallic nodules, polymetallic sulphides, and cobalt-rich crusts.

The seabed mining industry is in its infancy and the regulatory framework for activities is still under development both for the deep seabed and on continental shelves.

The international legal framework is laid down in Part XI of the 1982 United Nations Convention on the Law of the Sea (UNCLOS) and in the 1994 agreement relating to the implementation of Part XI. UNCLOS provides coastal states exclusive rights to resources on the continental shelf. The deep seabed beyond the continental shelf, "the Area", and the minerals contained in it, are considered the common heritage of mankind. The regime is regulated by the International Seabed Authority (ISA). States which have ratified UNCLOS are automatically members of ISA.

The regime that applies to the Area (see Figure 2) is based on four key principles (Ringbom & Henriksen, 2017):

- UNCLOS Article 137(1) ensures that the Area will not be subject to national jurisdiction of any state.
- All rights over the resources of the Area are governed by the principle of Common Heritage of

Mankind. The access is supplemented by a principle of equitable sharing of financial and other economic benefit derived from the activities.

- The regime is supported by an institutional framework which notably includes the establishment of an Authority (ISA) to manage the activities in the Area on behalf of 'mankind as a whole'. All state parties to UNCLOS are members of the ISA, which administers seabed mining-related activities through an Assembly and Council, as advised by a Legal and Technical Commission.
- Seabed mining activities are to be regulated to ensure effective protection of the marine environment.

To date, regulations for prospecting and exploration for the different mineral resources are not in place. A draft regulation for exploitation of minerals was issued in August 2017 and has been through a hearing for stakeholder submission (ISA, 2018).

The private sector has the opportunity to engage in the development of ISA governance through attending workshops, attending seminars, or attending (or



The Deep Ocean Stewardship Initiative (DOSI)*:

a union of experts from across disciplines and sectors formed to develop new ideas for sustainable use and management of deep-ocean resources. A main objective will be capacity building for developing countries in whose waters many deep-water seabed resources are located. DOSI works by assembling experts to address priority areas, to develop tools, strategies and resources to maintain ecosystem integrity, and to develop programs that promote sustainability and responsible use of the deep ocean. DOSI engages with industry and regulators, scientists and civil society to increase awareness and build capacity for support of initiatives that will lead to sustainable use and management of deep-ocean resources within and beyond national jurisdiction now and for future generations.

*DOSI is a researcher network which engages with industry and other stakeholders. Specific sustainability initiatives for seabed mining industries have not been identified, but an example of an initiative for the broader mining industry is included below.



International Council on Mining and Metals (ICMM): is an international organisation dedicated to a safe, fair and sustainable mining and metals industry.

Bringing together 27 mining and metals companies and over 30 regional and commodities associations to strengthen environmental and social performance. Aiming to serve as a catalyst for change; enhancing mining's contribution to society.

Figure 15: Examples of industry initiatives for seabed mining.



The United Nations Development Programme, the World Economic Forum, the Columbia Center on Sustainable Investments and the Sustainable Development Solutions Network have jointly prepared a report that illustrates how mining can contribute to the achievement of the Sustainable Development Goals (SDGs) (UNDP, WEF, CCSI and SDSN, 2017).

The aim of the report is to guide the mining industry to:

- Map its roles, responsibilities and opportunities across the 17 Sustainable Development Goals;
- Demonstrate how the mining industry can ensure that social and economic benefits of mining are widely shared and environmental impact minimized;
- Map the relationship between mining industry and the SDGs by using examples of good practice in the industry and existing knowledge and resources in sustainable development.

While the main target audience of the report is the mining industry, it is also intended to be useful for other stakeholders in this sector, including national and local governments, communities, development organizations, academia and others who have an interest in ensuring that the sustainable development outcomes from the mining sector are optimized.



Figure 16: Industry contribution towards the SDGs.

coordinating with an NGO attending) meetings of the Assembly, Council, or Legal and Technical Commission (as an observer). At ISA workshops, experts from academic institutions, private and public enterprises, contractors, members of the Legal and Technical Commission, and member states exchange information on scientific and/or technical issues, discuss the ISA's programs of work, and make recommendations to the ISA. ISA seminars bring together legal and scientific experts from the international community with national and regional governments for the purpose of improving regional cooperation in scientific research and marine mineral development.

On the continental shelf where coastal states have sovereign rights over natural resources, the regulatory frameworks vary between countries. Several islands in

the Pacific have a combined regulatory framework to cover the exploitation of mineral resources in that part of the seabed which is subject to national sovereignty (Coles, June 2017).



EMERGING GOVERNANCE ISSUES AND REGULATORY DEVELOPMENTS

There is an emerging global consensus that there is a need for more effective governance to address increasing pressures on the ocean, such as pollution, over-exploitation of natural resources, increasing competition for space, climate change, acidification and declining biodiversity (European Commission, 2016).

The key challenges to the oceans are being recognised at a global level as illustrated by the many international conventions and implementation agreements addressing them. However, some rules and arrangements that have been agreed are not implemented effectively or enforced. Late ratification or non-adherence by states to international instruments may delay their entry into force. Also, the difficult process of reaching agreement between countries on adequate measures may result in conventions that lack clarity and commitment.

Significant efforts are being made to enhance coordination between international organisations operative in oceans management. Continued strengthening of coordination and greater coherence in operations are still required in many areas. Although many ocean activities have an impact on each other, they are mostly regulated sector by sector. Linkages to onshore activities are also required as many challenges to ocean health are caused by land-based industries.

Several industries also highlight the need for improvement and alignment of regulations for ocean-based industries across national jurisdictions and collaboration between countries on best practices in

the management and use of the ocean and its resources. This could avoid unsustainable behaviour being pushed into jurisdictions with lower levels of enforcement capacity and preventing a level playing field for business. Several private sector initiatives are applying industry pressure to achieve uniformly high standards across jurisdictions.

The above challenges are common across ocean-based industries and in the next sections they are further discussed and exemplified for each sector.

SHIPPING

The maritime governance regime presented in Figure 4 consists of strong and mature international institutions. The system is considered to work relatively well, but does have challenges related to, for example, ratification of conventions and establishing consensus among different members as discussed above.

For many years, the International Chamber of Shipping (ICS) and its member national shipowners' associations together with the Comité Maritime International (CMI), the international association for maritime lawyers, have been engaged in a campaign to promote the



ratification of those IMO Conventions which the industry believes need to be ratified as a matter of priority. This is particularly the case if there is a danger that the vacuum might be filled by unilateral or regional regulation at variance to what has been agreed internationally (ICS and CMI, 2017). Examples include the HNS Convention of 1996 and the Hong Kong Convention of 2009 that still have not entered into force. In the case of the latter, ships continue to be demolished under conditions that are neither safe nor environmentally acceptable (DNV GL, 2017), (Forum for the future, 2018).

There are also examples of fast implementation of new or improved conventions. The Civil Liability Convention 1969 (CLC convention) was adopted early in the aftermath of the 'Torrey Canyon' disaster by efforts from e.g. P&I clubs. The Small Tanker Oil Pollution Indemnification Agreement (STOPIA) and Tanker Oil Pollution Indemnification Agreement (TOPIA) also illustrate the shipping industry's engagement and willingness to efficiently implement changes to liability and compensation regimes for oil pollution from tankers. These examples show the importance of private sector engagement in the ratification process.

Beyond the overall framework laid out in UNCLOS, port state control is further based on agreements between states (Rasmussen, 2016), granting states the authority to detain ships that are not compliant with international regulations. This is a well-functioning system that significantly minimizes the number of substandard ships operating internationally. However, regulatory gaps do remain and one example is the present discussions in

IMO on how to ensure high-seas compliance with more stringent sulphur emission regulations from 2020.

The combination of political pressures and differing domestic agendas among member states may in some cases also lead to overlapping international and national regulatory regimes. Examples are the overlap between the EU MRV and IMO DCS, both addressing greenhouse gas emissions reporting (DNV GL, 2018a), the US establishing domestic ballast water discharge regulations (Cornell Law School, 2018) paralleling the IMO's BWMC, and the EU establishing its own Ship Recycling Regulation being more stringent than the HKC (European Commission, 2018). This leads to a fragmented regulatory regime that is complex to navigate for the shipping industry.

OFFSHORE OIL AND GAS

Offshore oil and gas is a global industry with activities across diverse regions, from warm tropical oceans to deep-water and remote cold-climate seas. Some regions have strong regulations with stringent requirements while other regions are lacking in regulation. The industry as a whole has accumulated experience and developed technologies to support their engagement and is relatively mature in terms of risk management across the range of operating environments. This corporate governance led approach to performance standards is considered valuable given the differences in national regulatory requirements. There can however be cross border jurisdictional issues that are beyond the control of industry actors. Such issues may range from enabling baseline data collection and monitoring through to transboundary oil



Regulations need to be sufficiently robust to avoid harm to the ocean, the production basis of the industry, and simultaneously be flexible for new approaches that can take advantage of the present growth potential.

spill response planning and execution. Some border nations have very strong cooperation (e.g. UK and Norway), and international bodies such as the Arctic Council work to develop high level cooperative agreements, but there are opportunities to strengthen transnational governance principles at a more proactive, operational level.

OFFSHORE RENEWABLE ENERGY

Studies have highlighted that governance linkages increase the complexity of Offshore Renewable Energy (ORE) governance, especially in the public domain (Guerra, 2018). The reason is that many of the public arrangements that are active parts of ORE governance

within for example, environmental protection, conservation of the marine environment and energy governance, were created with another intention at first. This causes a diversity and complexity of state-led institutions since most of these institutions have incrementally claimed overlapping functions in regards to ORE governance in the absence of any hierarchical organisation. While there are specific private-led institutions for wind and ocean energy, there are virtually no public institutions that specialise in ORE. Instead a multitude of institutions are responsible for different parts of the governance. The policy and governance linkages between ORE and other issue areas might be the cause of the polycentricity and fragmentation found within ORE governance. This can be a problem if there is no coordination across different types of institutions, issue areas and functions.

A study assessing the situation in Ireland (Lange & et al., 2018) explored challenges and the enabling conditions for stronger contributions of marine renewable energy. They identified three barriers: The first barrier is a lack of policy integration and enforcement, the second is a lack of government oversight to unlock potentials of yet untapped commercial resources, and the third is a lack of trust on the part of local communities due to past failures.

MARINE AQUACULTURE

Today we see a high innovation rate in parts of the aquaculture industry which can lead to farming concepts operating far off coasts and/or in mobile installations, as well as onshore in a few years' time

(DNV GL, 2018). This highlights the need for good regulatory frameworks for aquaculture also offshore, both in national and international waters. Initial response from the private sector includes for example DNV GLs rules for offshore aquaculture installations (DNV GL, 2017). These try to bridge needs from different regulatory regimes by drawing on both near shore standards (NYTEK 9415) and vessel regulations for international waters (IMO).

Regulations need to be sufficiently robust to avoid harm to the ocean, the production basis of the industry, and simultaneously be flexible for new approaches that can take advantage of the present growth potential. Knowledge and experience exchange between countries is one way to accelerate improved governance in national waters by nations learning from each other.

There is also need for improved transparency in the supply chain to ensure consumer information on the safety and the quality of the food and whether the farming is sustainable. The Global Salmon Initiative (GSI) is increasing the focus and pressure on these issues through a common use of the Aquaculture Stewardship Council (ASC) standard with sustainability criteria.

MARINE FISHERIES

Climate change and climate variability pose particular risk to sustainable fisheries management. Climate variability can cause unexpected seasonal or multi-year shifts in the distribution and abundance of fish stocks, while climate change can amplify such effects. By the end of the century, changing ocean conditions are predicted to result in up to a dozen new shared stocks in some individual national jurisdictions, and concerns exist that this could trigger state conflict (Pinsky, et al., 2018).

The regionalized approach to management of straddling and highly migratory stocks laid down in UNCLOS and the UNFSA has evolved considerably over the last two decades. All RFMOs now undergo systematic, periodic performance reviews. These reviews are an important step towards assessing

progress, yet they also highlight the diversity among RFMOs; for instance, few RFMOs have systematically assessed fishing impacts, including bycatch levels and discards. Moreover, much media attention has been focused on the depletion of certain tuna stocks under the mandate of RFMOs. As a result, despite the governance framework defined in UNCLOS and UNFSA, there have been calls to address fisheries within the forthcoming BBNJ Treaty (Sala, et al., 2018).

A suite of technological advances has reshaped the capacity for monitoring and enforcing activities along seafood supply chains. One initiative, Global Fishing Watch, uses the automatic identification system (AIS) signals from some 200,000 vessels to monitor their location in real time, and is already being used to identify transshipment events and other practices commonly associated with illegal, unreported and unregulated (IUU) fishing (Border, Miller, & Worm, 2018). Blockchain technologies and other transparency and traceability mechanisms are likewise making it possible to track seafood from ocean to plate.

SEABED MINING

For the Area, the ocean floor beyond national jurisdiction, a remaining regulatory gap is that not all nations have ratified UNCLOS. This is the case for, among others, the USA, and may lead to a regulatory vacuum for how actors from these nations will act regarding seabed mining in the Area.

In addition, seabed mining is an industry in its infancy and there is a need for standards and other private sector governance in order to ensure that the industry will operate in a safe and sustainable way. In the exclusive economic zones, many countries lack appropriate regulations. In areas beyond national jurisdiction (ABNJ), although commercial mining has not begun, the ISA has set the precedent in the Clarion-Clipperton Zone of pursuing a precautionary approach with environmental management plans that include 400 km x 400 km no-mining zones (Dunn, et al., 2018).



CROSS-CUTTING CHALLENGES FOR THE OCEAN



Most countries share a territorial boundary with the sea, constituting a direct entry point and connection to the rest of the world.

Even landlocked countries are influenced by climate patterns that are shaped across the ocean, and even the most isolated countries have industries and value chains that are crucially dependent on the ocean.

The global bounty provided by the ocean, however, is accompanied by a set of global challenges that also affect all countries. No single country can solve any of these challenges alone, and their magnitude reflects the need for urgent and concerted action by policy makers and industry leaders. Three of the most prominent of these challenges are climate change, conservation of biodiversity in areas beyond national jurisdiction, and plastics pollution.

CLIMATE CHANGE

Climate change is already fundamentally altering the conditions for life in the ocean. The ocean is growing warmer, increased levels of CO₂ leaves the ocean more acidic, sea levels are rising, and the frequency of extreme weather events like typhoons is increasing. Due to the ocean's role in regulating the Earth's climate, ocean systems are integrally linked to "tipping elements" that could set the Earth on a cascading trajectory towards catastrophic warming (Steffen, et al., 2018). Warming of 1-3 °C has already triggered mass bleaching of corals, melting of ice sheets in Greenland and the West Antarctic, and the loss of Arctic sea ice. Warming of 3-5 °C could reshape ocean currents, and major weather systems like the Indian summer

monsoon, changing life as we know it (Steffen, et al., 2018).

Ocean industries are already reacting to these changing conditions. In February 2018, for instance, a commercial vessel transported liquefied natural gas from South Korea to France, becoming the first commercial vessel to use the Arctic's northern sea route in the winter without the assistance of an icebreaker (Guardian, 2018). Aquaculture operations have seen increases in the frequency of bacterial disease outbreaks attributed to warming waters (Brander et al, 2017), and fish stocks have been shown to be shifting distribution at a predictable annual rate, referred to as "climate velocity" (Pinsky et al, 2013).

The existential scale of the challenges associated with climate change has resulted in myriad commitments, initiatives and funds dedicated to addressing the problem. In general, these efforts can be grouped into climate change adaptation (initiatives aimed at reducing vulnerability to climate change impacts) and climate change mitigation (efforts to reduce the magnitude of climate change impacts, most prominently through reducing carbon emissions). Ocean industries can play an integral role in both adaptation and mitigation, but the interplay between these can be complex. Aquaculture, for instance, can contribute to diversification of livelihoods in coastal communities, thereby increasing their resilience to climate change, but if these communities first clear mangroves to make

space for such activities, it can make them more vulnerable to extreme weather events.

CONSERVING BIODIVERSITY IN AREAS BEYOND NATIONAL JURISDICTION (BBNJ)

Some two-thirds of the ocean exists in areas beyond national jurisdiction, comprising 95% of the volume of the ocean, and representing the largest habitat for life on the planet. Although ABNJ are outside the control of individual states, UNCLOS applies and a network of sectoral bodies regulates certain activities, including those related to shipping (IMO), fishing (RFMOs), and seabed mining (ISA). Yet considerable legal gaps exist in relation to the conservation and sustainable use of biodiversity in areas beyond national jurisdiction (BBNJ). For instance, no international mechanism exists to establish marine protected areas in ABNJ, although this capacity exists in a piecemeal fashion across relevant sectoral bodies. RFMOs, for instance, can designate vulnerable marine ecosystems (VMEs), the IMO can designate particularly sensitive sea areas (PSSAs) and the ISA has identified areas of particular environmental interest (APEIs). A parallel process under the Convention on Biological Diversity (CBD) has identified a network of ecologically or biologically significant areas (EBSAs). Yet these various areas share virtually no spatial overlap, and designation by one sectoral body does not restrict industrial activities by another sector.

Yet BBNJ is of significance for planetary health, as the biogeochemical cycles in the ocean regulate the Earth's climate, and form the foundation for vast food webs that help to feed the world's population (Jacquet & Jackson, 2018). Much of the vast ABNJ remain largely unknown, and the extremes of pressure, absence of light, heat and cold found in its ecosystems have caused life to evolve that has already attracted substantial commercial interest from a growing marine biotechnology industry (Blasiak et al., 2018).

The UN General Assembly agreed in December 2017 to start negotiations on a third implementing agreement under UNCLOS on the conservation and sustainable use of BBNJ, with the first meeting of an intergovernmental conference in September 2018. Negotiations are not expected to conclude before 2020 at the earliest.

The UN General Assembly has identified four elements that a treaty would address, all of which could have impacts on ocean industries active in ABNJ: (1) area-based management tools such as marine protected areas; (2) marine genetic resources, and issues of access and benefit sharing; (3) environmental impact assessments; (4) capacity building and the transfer of marine technology. In the ad-hoc working group and preparatory committee meetings leading up to the current treaty negotiations, private sector actors have played little formal role, while NGOs and states from highly-industrialized countries have been well represented (Blasiak, et al., 2017).

OCEAN PLASTICS POLLUTION

There is also a pressing need for improved management and regulation of land, water, coastal and marine linkages. This challenge is, among others, receiving increased global attention due to the millions of tons of plastic that enter the ocean from land based sources each year (SIWI, 2018). Human activity has left a footprint of novel compounds and pollutants across ocean ecosystems, with ocean plastics an increasingly prominent concern among environmental groups and industry alike. Mass production of plastics for commercial use has only existed since the 1940s, and it was not until the late 1960s that researchers began recording examples of plastic ingestion and entanglement of marine organisms (Ryan, 2015). In the past 20 years, concerns about ocean plastics have entered the popular consciousness through the discovery of vast "garbage patches" in remote parts of the ocean, nature documentaries, and reports of whales and other charismatic species that have succumbed to the ingestion of ocean plastics (Ryan 2015). Sources of ocean plastics are diverse, but much comes from packaging, and a recent study found that fishing nets comprised 46% of plastic in the "Great Pacific Garbage Patch" (Lebreton, et al., 2018). The vast majority of plastics do not biodegrade naturally, but instead break into smaller and smaller pieces, described as microplastics, which have entered oceanic food chains with largely unknown health impacts in urgent need of further research (Lancet, 2017).

There is a legal gap in the global governance structure relating to marine plastic litter and microplastics. The World Wide Fund for Nature (WWF) highlights that

“There is currently no legally binding instrument dedicated to tackling marine plastic pollution, no agreed pollution reduction targets, no agreed uniform obligation to develop national action plans, no agreed safe plastic production rules, no globally agreed standards for reporting and monitoring of plastics discharge and effectiveness of pollution reduction measures” (WWF, 2017). This could change, however, following the decision at the United Nations Environment Assembly (UNEA) in December 2017 to establish an ad hoc open-ended expert group to make recommendations to strengthen international governance structures for combating marine plastic litter and microplastics. This could lead to the proposition of a global convention or treaty, yet such agreements often take many years to be negotiated and subsequently enter into force, and there is a particularly strong potential for voluntary action by corporations to promote progressive norms of reduced dependence on single-use plastics, a greater commitment to recycling and reuse, and other associated best practices (Haward, 2018).



The global bounty provided by the ocean, however, is accompanied by a set of global challenges that also affect all countries.

No single country can solve any of these challenges alone, and their magnitude reflects the need for urgent and concerted action by policy makers and industry leaders.





CONCLUSIONS: THE ROLE OF THE PRIVATE SECTOR AND THE UNGC ACTION PLATFORM

This report provides an overview of ocean governance and regulations through the lenses of ocean-based industries. These industries are at different levels of maturity in relation to ocean governance and operate within different maritime zones. The future of all ocean industries is inextricably linked to the health of the ocean, and each industry impacts the ocean in a variety of ways along its value chains. Ocean-based industries are perfectly positioned to make tangible and immediate progress towards mitigating negative impacts of their activities on the ocean.

Stable and predictable regulatory regimes are the foundation for long-term operational strategies that can enable economic growth in both traditional and emerging ocean-based industries. Such regimes create a level playing field and efficient mechanisms for business development, including with regard to intellectual property rights, incentive mechanisms and regulations that enable the sustainable use of the ocean. Moving forward, it will be essential that governance bodies are able to incorporate future developments into existing regimes in order to provide coherence across thematic areas and cross-cutting ocean challenges.

Policymakers are aware that substantial gaps, inefficiencies and fragmentation exist in the global regulatory regime, yet governance processes to address these generally move slowly and carry uncertain outcomes. In such cases, there is significant potential to drive sustainable development by supplementing and improving current international regulations and conventions by leadership through industry principles, codes of conduct and standards. The UNGC Action Platform on Sustainable Ocean Business calls for joint action to explore commercially attractive and viable solutions, suggest industry standards and establish guidelines and best practices to ensure sustainable use and management of the ocean. The platform emphasises the importance of taking a holistic view of all the SDGs when addressing the ocean challenges. Concerted action can safeguard the future of ocean-based industries, while also contributing to a healthy ocean for this generation and those yet to come.





REFERENCES

- Ardron, J., & et al. (2015). Handbook of Ocean Resources and Management. Routledge Earthscan.
- Blasiak, R., Durussel, C., Pittman, J., Senit, C. A., Petersson, M., & Yagi, N. (2017). The role of NGOs in negotiating the use of biodiversity in marine areas beyond national jurisdiction. *Marine Policy*, 81, 1-8.
- Blasiak, R., Jouffray, J. B., Wabnitz, C. C., Sundstrøm, E., & Østerblom, H. (2018). Corporate control and global governance of marine genetic resources. *Science advances* 4(6), p.eaar5237.
- Border, K., Miller, N. A., & Worm, B. (2018). Global hot spots of transshipment of fish catch at sea. *Science advances* 4 (7), eaat7159.
- Brander, K., Cochrane, K., Barange, M., & Soto, D. (2017). Climate change implications for fisheries and aquaculture. *A Global Analysis*, 1, 45.
- Cerezo, M. A. (2018). Ocean Governance: Mapping the Institutional Architecture of Global Ocean Governance. Report from internship at Institute for Environmental Studies (IVM, Netherlands). Aalborg: Department of Development and Planning, Aalborg University.
- Coles, I. (June 2017). Deep Sea Mining - Current Status and Future Potential. *Mining World* 26.
- Cornell Law School. (2018). 33 CFR Part 151, Subpart D - Ballast Water Management for Control of Nonindigenous Species in Waters of the United States. Retrieved from <https://www.law.cornell.edu/cfr/text/33/part-151/subpart-D>.
- DNV GL. (2017). Rules for classification: Offshore fish farming units and installations (DNVGL-RU-OU-0503). Retrieved from <https://rules.dnvgl.com/docs/pdf/dnvgl/ru-ou/2017-07/DNVGL-RU-OU-0503.pdf>.
- DNV GL. (2017). Use of PFOS and other surfactants in firefighting foams onboard vessels. DNV GL report 2017-1129.
- DNV GL. (2018). Offshore aquaculture. Retrieved from https://www.dnvgl.com/feature/offshore_aquaculture.html.
- DNV GL. (2018a). Comparison of EU MRV and IMO DCS. Retrieved from <https://www.dnvgl.com/maritime/imo-dcs/index.html>.
- DNV GL and NSA. (2017). Sustainable Development Goals: Exploring Maritime Opportunities. Retrieved from <https://www.rederi.no/globalassets/dokumenter-en/all/fagomrader/smi/dnv-gl-sdg-maritime-report.pdf>.
- Dunn, d. c., Van Dover, C. L., Etter, R. J., Smith, C. R., Levin, L. A., Morato, T., . . . Halpin, P. N. (2018). A strategy for the conservation of biodiversity on mid-ocean ridges from deep-sea mining. *Science advances* 4 (7), p eaar4313.
- European Commission. (2015). International ocean governance infographics. Retrieved from https://ec.europa.eu/maritimeaffairs/sites/maritimeaffairs/files/docs/body/2015-international-ocean-governance_en.pdf.
- European Commission. (2016). Joint communication to the european parliament, the council, the european economic and social committee and the committee of the regions International ocean governance: an agenda for the future of our oceans. Retrieved from <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52016JC0049>.
- European Commission. (2018). EU Ship Recycling Regulation. Retrieved from <http://ec.europa.eu/environment/waste/ships/>.
- FAO. (2018). The State of World Fisheries and Aquaculture 2018 - Meeting the sustainable development goals. Retrieved from <http://www.fao.org/3/I9540EN/i9540en.pdf>
- FAO. (2018a). National Aquaculture Legislation Overview (NALO). Retrieved from <http://www.fao.org/fishery/nalo/search/en>
- Forum for the future. (2018). Ship Recycling Transparency Initiative. Retrieved from <https://www.forumforthefuture.org/media-centre/new-transparency-initiative-launched-accelerate-responsible-ship-recycling-practices>.
- Galaz, V., Crona, B., Dauriach, A., Jouffrey, J. B., Österblom, H., & Fichtner, J. (2018). Tax havens and global environmental degradation. *Nature ecology and evolution*, 1.
- Gjerde, K., & et al. (2008). Regulatory and Governance Gaps in the International Regime for the Conservation and Sustainable Use of Marine Biodiversity in Areas beyond National Jurisdiction. Gland, Switzerland.: IUCN.
- Guardian. (2018). Shipping first as commercial tanker crosses Arctic sea route in winter. Retrieved from <https://www.theguardian.com/environment/2018/feb/13/shipping-first-as-commercial-tanker-crosses-arctic-sea-route-in-winter>
- Guerra, F. (2018). Mapping offshore renewable energy governance. *Marine Policy* 89, 21-33.
- Gulas, S., Downton, M., D'Souza, K., Hayden, K., & Walker, T. R. (2017). Declining Arctic ocean oil and gas developments: opportunities to improve governance and environmental pollution control. *Marine Policy* 75, 53-61.
- Hambrey, J. (2017). The 2030 Agenda and the Sustainable Development Goals: The challenge for aquaculture development and management. Rome, Italy: FAO Fisheries and Aquaculture Circular No. 1141.
- Haward, M. (2018). Plastic pollution of the world's seas and oceans as a contemporary challenge in ocean governance. *Nature communication* 9(1), p. 667.
- ICS and CMI. (2017). Promoting maritime treaty ratification - the ICS and CMI campaign. Retrieved from <http://www.ics-shipping.org/docs/default-source/resources/treaty-ratification-campaign-2017.pdf>
- IMO. (2018). About conventions. Retrieved from <http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/Default.aspx>.

IPIECA, UNDP & IFC. (2017). Mapping the oil and gas industry to the SDGs. Retrieved from <http://www.ipieca.org/resources/awareness-briefing/mapping-the-oil-and-gas-industry-to-the-sustainable-development-goals-atlas/>.

ISA. (2018). Ongoing Development of Regulations on Exploitation of Mineral Resources in the Area. Retrieved from <https://www.isa.org/jm/legal-instruments/ongoing-development-regulations-exploitation-mineral-resources-area>.

Jacquet, & Jackson. (2018). High stakes on the high seas. Retrieved from <http://advances.sciencemag.org/content/4/8/eaau8235>

Lancet. (2017). Microplastics and human health an urgent problem. *The Lancet Planetary Health* 1, no. 7, e254.

Lange, M., & et al. (2018). Governance barriers to sustainable energy transitions – Assessing Ireland’s capacity towards marine energy futures. *Energy Policy* 113, 623-632.

Lebreton, L., Slat, B., Ferrari, F., Sainte-Rose, B., Aitken, J., Marthouse, R., . . . Noble, K. (2018). Evidence that the Great Pacific Garbage Patch is rapidly accumulating Plastic. *Scientific reports* 8(1), p. 4666.

Miller, D. D., & Sumaila, U. R. (2014). Flag use behavior and IUU activity within the international fishing fleet refining definitions and identifying areas of concern. *Marine Policy*, 44, 204-211.

NOAA. (2018). NOAA Facts. Retrieved from <http://www.noaa.gov/oceans-coasts>.

Norwegian Ministry of Climate and Environment. (2015). Update of the integrated management plan for the Barents Sea-Lofoten area including an update of the delimitation of the marginal ice zone. Meld. St. 20 (2014-2015). Report to the Storting (white paper).

OECD. (2016). *The Ocean Economy in 2030*. Paris: OECD Publishing.

Pinsky, M. L., Reygondeau, G., Caddell, R., Palacios-Abrantes, J., Spijkers, J., & Cheung, W. W. (2018). Preparing ocean governance for species on the move. *Science* 360 (6394), 1189-1191.

Pinsky, M. L., Worm, B., Fogarty, M. J., Samiento, J. L., & Levin, S. A. (2013). Marine taxa track local climate velocities. *Science*, 341(6151), 1239-1242.

Rasmussen, J. (2016). *Maritime Governance and Control*. Malmö WMU Publications.

Ringbom, H., & Henriksen, T. (2017). *Governance Challenges, Gaps and Management Opportunities in Areas Beyond National Jurisdiction*. Washington D.C.: Global Environment Facility – Scientific and Technical Advisory Panel.

Ryan, P. G. (2015). A brief history of marine litter research. *Marine anthropogenic litter*, Springer, Cham., 1-25.

Sala, E., Mayorga, J., Costello, C., Kroodsma, D., Palomares, M. L., Pauly, D., . . . Zeller, D. (2018). The economics of fishing the high seas. *Science advance* 4 (6), eaat2504.

Schiller, L., Bailey, M., Jacquet, J., & Sala, E. (2018). High seas fisheries play a negligible role in addressing global food security. *Science Advances*, 4 (8), eaat8351.

SIWI. (2018). Action Platform for Source-to-Sea Management (S2S Platform) . Retrieved from <http://www.siwi.org/what-we-do/source-to-sea/>.

Steffen, W., Rockström, J., Richardson, K., Lenton, T. M., Folke, C., Liverman, D., . . . Donges, J. F. (2018). Trajectories of the Earth System in the anthropocene. *Proceedings of the National Academy of Sciences*, p. 201810141.

UNDP, WEF, CCSI and SDSN. (2017). Mapping mining to the SDGs. Retrieved from <http://www.undp.org/content/undp/en/home/librarypage/poverty-reduction/mapping-mining-to-the-sdgs--an-atlas.html>.

UNSDSN. (2018). Mapping renewables to the SDGs. Retrieved from <http://unsdsn.org/news/2018/02/27/mapping-renewables-to-the-sustainable-development-goals>.

WWF. (2017). Ad Hoc Open-ended expert group on marine litter and microplastics . WWF Recommendations, Global Policy and Advocacy, 16 April 2017.

Österblom, H., Jouffray, J. B., Folke, C., & Rockström, J. (2017). Emergence of a global science-business initiative for ocean stewardship. *Proceedings of the National Academy of Sciences*, 114 (34), (pp. 9038-9043).

GLOSSARY/ ACRONYMS

| | |
|-----------------|--|
| the Area | The seabed and ocean floor and the subsoil thereof, beyond the limits of national jurisdiction |
| DOSI | Deep Ocean Stewardship Initiative |
| EEZ | Exclusive Economic Zone |
| IEA | International Energy Agency |
| IOGP | International Association of Oil & Gas Producers |
| IPIECA | International Petroleum Industry Environmental Conservation Association |
| IRENA | International Renewable Energy Agency |
| ISA | International Seabed Authority |
| OEE | Ocean Energy Europe |
| ORE | Offshore Renewable Energy |
| UNCLOS | United Nations Convention on the Law of the Sea |

ABOUT THE AUTHORS



Bente Pr

**Programme Director, Ocean Space
Group Technology & Research
DNV GL**

Bente Pretlove is the Programme Director for Ocean Space in DNV GL Group Technology and Research. In this role, she manages DNV GLs research efforts related to the sustainable development of ocean-based industries and she represent DNV GL in the UN Global Compact Action platform for sustainable ocean business. Bente has held a number of different positions in DNV GL both within research and commercial operations.

She has more than 20 years' experience in climate change, sustainability and environmental management; working with different industries, NGOs, UN organisations and governments. She is a member of the Board of "Klimaforsk", in the Norwegian Research Council and a member of the Transdisciplinary Advisory Board (TAB) for JPI Climate. Bente Pretlove holds a Master of Engineering degree in Chemical and Bioprocess Engineering and a PhD in Environmental Systems Analysis from the University of Surrey (UK).



Robert Blasiak

**Postdoctoral researcher
Stockholm Resilience Centre
Stockholm University.**

Robert Blasiak's research focuses on the conservation and sustainable use of the ocean and its resources. He is particularly interested in issues of equity as well as the capacity for industry to complement governance and regulatory systems by promoting norms of best practice.

His recent publications have focused on marine genetic resources, vulnerability of countries to climate change impacts on fisheries, and changes in the funding landscape for ensuring sustainable fisheries management. His work is supported by the Nippon Foundation Nereus Program, and he is a visiting research fellow at the Graduate School of Agricultural and Life Sciences of The University of Tokyo.

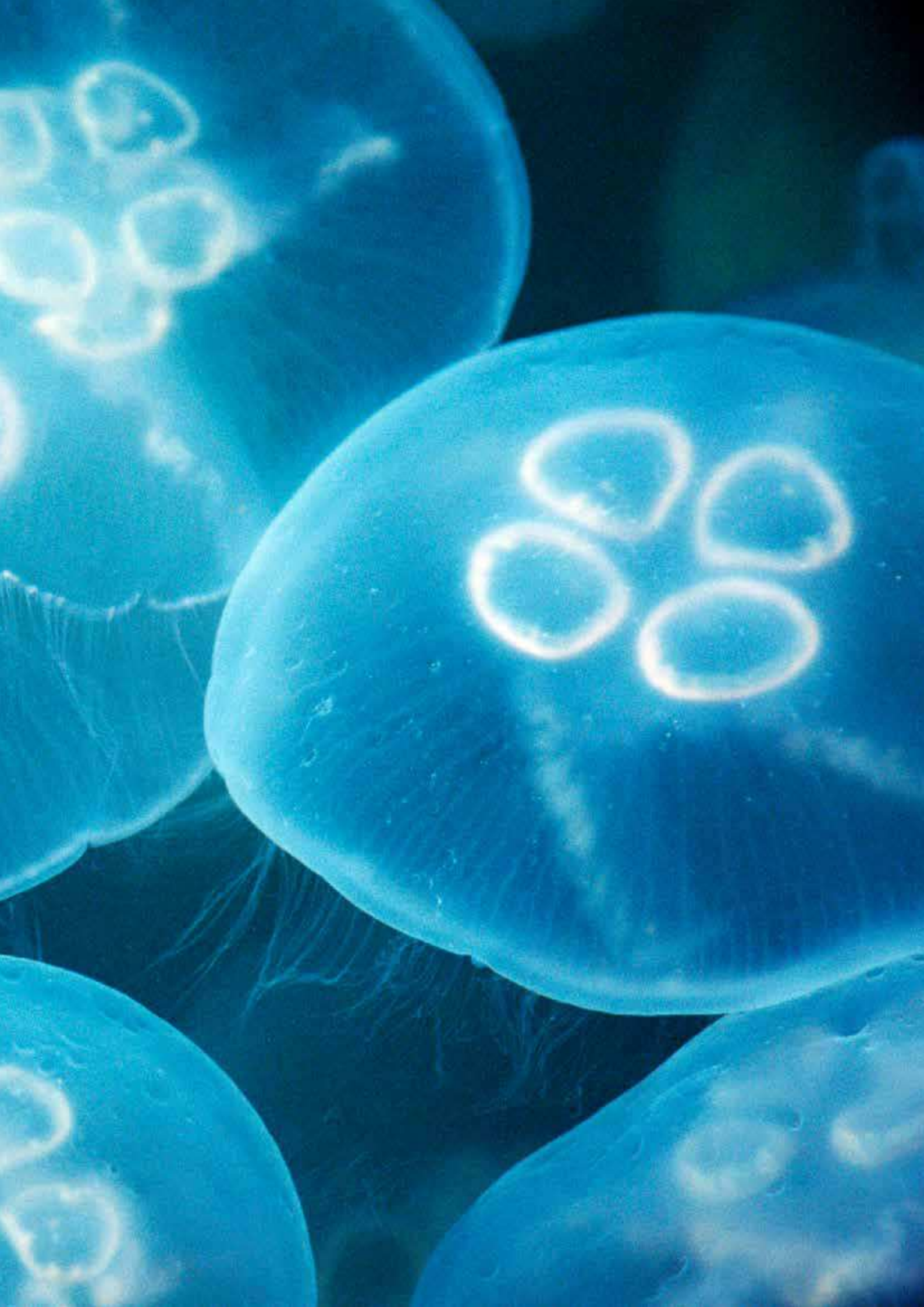




Image credits

Front page, 2, 23 (left), 45 : Getty Images.

Page 10, 20 and 22: DNV GL

Page 24, 39, 47: iStock

Page 26: Nina Eirin Rangøy

All other images Shutterstock



SAFER, SMARTER, GREENER



DNV GL AS

NO-1322 Høvik, Norway
Tel: +47 67 57 99 00
www.dnvgl.com

DNV GL

DNV GL is a global quality assurance and risk management company. Driven by our purpose of safeguarding life, property and the environment, we enable our customers to advance the safety and sustainability of their business. We provide classification, technical assurance, software and independent expert advisory services to the maritime, oil & gas, power and renewables industries. We also provide certification, supply chain and data management services to customers across a wide range of industries. Operating in more than 100 countries, our experts are dedicated to helping customers make the world safer, smarter and greener.

Group Technology & Research

At Group Technology & Research our focus is on new knowledge and technology areas that have a long term impact on the industries we serve. Our Position Papers highlight findings from our research programmes, and are intended to advance knowledge and to help prepare our customers, their stakeholders and our own organization for the future. Find out more at www.dnvgl.com/research

The trademarks DNV GL®, DNV®, the Horizon Graphic and Det Norske Veritas® are the properties of companies in the Det Norske Veritas group. All rights reserved.

©DNV GL AS 09/2018 Design: www.etngrafisk.no