OCEAN STEWARDSHIP COALITION

# ENABLING DATA AND KNOWLEDGE SHARING IN THE MARINE SPACE **THE ROLE OF OFFSHORE RENEWABLE ENERGY**

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# TAKEAWAYS & RECOMMENDATIONS FROM A MULTI-STAKEHOLDER DIALOGUE

# INTRODUCTION

In October 2022, the United Nations Global Compact Ocean Stewardship Coalition's working group 'Ocean Business Leadership for Sustainable Ocean Management: Offshore Renewables and Sustainable Ocean Planning' organized a series of meetings to discuss how best to improve and enable greater ocean data and knowledge sharing with a particular focus on the role of the offshore renewable energy (ORE) industry. These working meetings gathered ocean industry, UN specialized organizations, public authorities, policy actors, academics and other knowledge brokers specialized in ocean data. The outcome of these meetings is a set of key takeaways and accompanying recommended actions to engage a broad range of stakeholders in improving ocean data and knowledge sharing and harmonization across borders to support data-driven maritime/marine spatial planning (MSP) and better informed sustainable ocean management. In order to begin operationalizing these outcomes, each key takeaway offers a set of case studies to guide best practice and to highlight innovative solutions. This non-exhaustive set of case studies was shared during the working group meetings and a wider consultation.

# OVERVIEW OF KEY TAKEAWAYS AND RECOMMENDED ACCOMPANYING ACTIONS

The table below provides a visual overview of these key takeaways and accompanying recommended actions. It uses visual signalization to address the main relevant actors for the implementation of the actions. However, it is important to note that the actions can be applicable to several actors including some who are not explicitly referenced in this document. Most importantly, there is a need for collaboration and partnership-based approaches. You may click on each takeaway or individual action to navigate directly to the relevant page. Once there, additional information and relevant case studies are provided.

| Key Takeaways | Recommended Actions | Governments and Authorities | Data Platforms | Industry |
|---|---|---|---|---|
| **1. Data-driven approaches must be adopted to support integrated, holistic and ecosystem-led MSP:** | a) **Communicate the advantages of supporting well-informed data-driven MSP.** | ● | ● | ● |
| | b) **Improve the visibility of the relevance of ORE data and knowledge to MSP by building specific use cases to support further adoption by the industry globally and other stakeholders.** | ● | ● | ● |
| | c) **Work towards addressing data gathering, collation and sharing challenges in emerging or developing ORE markets.** | ● | ● | ● |
| **2. Greater standardization, including a globally common data architecture and toolkit, would enable greater data and knowledge data sharing:** | a) **Develop a common data architecture and toolkit to enable knowledge and data sharing globally.** | ● | ● | ● |
| | b) **Improve and encourage the move towards digitalization.** | ● | ● | ● |
| | c) **Enhance the integration of national requirements and international standards for ORE data sharing by building partnerships for operational data infrastructures to allow for interoperability in MSP.** | ● | ● | ● |
| | d) **Establish nationally or internationally acknowledged standards**. | ● | | |
| | e) **Collect and process data according to internationally acknowledged standards.** | | ● | |
| | f) **Adopt internal standards.** | | | ● |
| **3. Reframe and reinforce the advantages of data and knowledge sharing with better communication and with the right incentives:** | a) **Create the right incentives.** | ● | | |
| | b) **Develop standards, guidelines and regulatory frameworks that incentivize data sharing without stifling growth.** | ● | | |
| | c) **Communicate the advantages for the ORE industry and for other ocean industries to share data with platforms.** | | ● | |
| | d) **Redefine the competitive advantage of data sharing.** | | | ● |
| **4. There is a need for greater collaboration, knowledge sharing and development of best practices across geography sectors and stakeholder groups:** | a) **Enhance collaboration across multi-sectors for sharing and applying the ORE data and knowledge for sustainable ocean planning and management applications in a systematic way.** | ● | ● | ● |
| | b) **Facilitate data sharing through government-led initiatives and through public-private partnerships.** | ● | | |
| | c) **Promote a collaborative transboundary approach to data sharing.** | | ● | |
| | d) **Increase collaboration across data platforms.** | | ● | |
| | e) **Continue to develop industry-led data sharing initiatives**. | | | ● |

CASE STUDIES

# AN INTRODUCTION TO DATA

The ORE industry relies heavily on primary data collection to inform all phases of the development cycle, from early spatial planning at the government level (e.g., the identification of suitable concession areas through strategic environmental assessment), to project development (e.g., environmental impact assessment), ongoing monitoring and operation (e.g., inform construction and operational protocols and mitigation actions) to decommissioning. Multiple types of data are collected, including physical, geotechnical, ecological and social. Published in the United Nations Global Compact's **Roadmap to Integrate Clean Offshore Renewable Energy Into Climate-Smart Marine Spatial Planning** (p. 21), Table 1 gives a non-exhaustive overview of data types and collection methods applicable to ORE

| DATA COLLECTED | METHODS | TYPES OF DATA | STAGE COLLECTED AT |
|---|---|---|---|
| Metocean | Meteorological masts/LIDAR | Wind speed and direction | PP & OP |
| | Acoustic Wave and Current Metres | Wave and current data | PP & OP |
| | Directional Waverider Buoys | Wave height and direction | PP & OP |
| | Acoustic Doppler Current Profilers | Tidal speed and direction | PP |
| Geophysical | Bathymetry | Seabed bathymetry and texture; morphological features; shallow geology; seabed habitats; archaeology; potential unexploded ordnance | PP |
| | Side-scan sonar | | |
| | Magnetometer | | |
| | Seismic | | |
| Geotechnical | Boreholes | Site geology; archaeology | PP |
| | Cone Penetration Tests | | |
| Seabed Communities | Grab samples or drop-down video or camera | Infaunal and epifaunal species composition; fish species composition | PP & OM |
| | Trawl samples | | PP |
| Marine Mammals | Aerial surveys and/or acoustic monitoring | Marine mammal species densities | PP, OM & CO |
| | Boat-based surveys | | |
| Birds | Aerial surveys | Bird species densities | PP & OM |
| Shipping and Fishing | AIS Information | Shipping and fishing types and densities | PP |
| | Site-specific radar surveys | Live monitoring during construction and operations via marine coordination centres | |

(PP – Pre-planning, OM – Ongoing monitoring, CO – Construction, OP – Operation)

**Note:** The following publication focuses largely on quantitative data. However, there are many different types of knowledge and information, in particular from Indigenous Peoples and local communities, that can and should be used to inform processes such as sustainable ocean management. While this is not the focus of this publication, the importance of these different types of knowledge and information cannot be understated.

OVERVIEW >

Use this button to navigate back to the Accompanying Actions overview page (Page 4).

# 1. THE APPLICABILITY OF ORE DATA AND KNOWLEDGE FOR ALL MARINE USERS

The ORE industry shares some of its data, in particular Environmental Impact Assessment (EIA) related monitoring data, with the public authorities responsible for environmental and natural resource management. This is often done through annual reporting or through submission to central data repositories. These data submissions are largely used to grant permits for ORE projects, for strategic environmental assessments (SEA) and for the monitoring of developers' operations. ORE developers typically collect a great variety of data such as metocean, geophysical, seabed communities and bird data. In some cases, that data is made available to other marine users beyond the relevant public authorities. For example, in the United Kingdom all survey data collected during the lifetime of an ORE project is shared and made publicly available on the Marine Data Exchange. However, in many other cases, access to this data for other marine users is limited.

The ORE industry, which is able to continuously and autonomously collect high-quality and real-time data at operational sites, is in a unique position to collect marine data that informs integrated sustainable ocean planning and management, that improves operational efficiency and that supports research and innovation. If shared, this data can help fill critical knowledge gaps with respect to:

1. **Informed Sustainable Ocean Management:** In an increasingly congested marine environment with spatial complexity and competition, access to ORE data is critical to assessing and understanding the cumulative impacts at sea and to improving informed decision-making in sustainable ocean planning and management. For example, the range of data collected (e.g., wind resource and geotechnical assessments, ecological surveys and socio-economic studies) can help to identify areas suitable for ORE development (e.g., zoning) that consider other marine uses alongside physical constraints and environmental and social sensitivity in an increasingly busy marine space. The data collected by the ORE industry can also enhance sustainable ocean planning and management by:
    a) Supporting the identification of areas suitable for designation as protected areas, as well as consideration of safety at sea measures (e.g., related to ORE cable corridors).
    b) Being used to generate the science-based sensitivity maps to indicate where protection status is needed in view of biodiversity targets.
    c) Supporting, particularly in data-scarce areas, coastal management and ocean management objectives aimed at building long-term resilience (e.g., for coastal risk assessments).
2. **Enhanced Environmental Impact Assessments**: The environmental data collected (e.g., seabed communities, marine mammals, seabirds, fish and other aquatic organisms) can help better understand the potential environmental impacts of site-specific ORE development and operation and can inform the design and siting of projects to minimize those impacts. It can also significantly benefit cumulative impact assessments which are essential in view of the accelerating pace of ORE development and in supporting decision-making on location and design of shared offshore transmission infrastructure. Greater access to data also improves the measurement of real change over time rather than potential impacts. This can help improve future EIAs by underpinning their assessments with real data.

3. **Improving the Implementation of Monitoring Programmes**: Environmental and ecological monitoring data, ranging from seabed communities to marine mammals, seabirds, fish and other aquatic organisms, can be used to inform and help design better monitoring programmes and to develop, implement and adapt mitigation measures.
4. **Improving Operational Efficiency**: Access to increased data can help the ORE industry optimize its operations and maintenance strategies by, for example, understanding the influence of metocean conditions on weather windows. This can lead to improved performance and reduced costs for ORE developers. It can also help to support permitting and consenting and seabed site allocation (e.g., auctions, tenders) in view of the offshore multi-use applications and to better understand risks and minimize impacts of failures.
5. **Supporting research and innovation**: There are an increasing number of new entrants to the ORE market providing solutions in the form of products, services and technologies that address the complex challenges the industry faces. Greater access to data helps drive innovation and the development of these new technologies and solutions. Access to data can also be used in research to better understand the changes happening to the ocean and its variability. For example, access to collated annotated ecological data could be used for machine learning model development.

Some types of ORE data may be subject to commercial sensitivity and royalties. However, the ORE industry, both on its own and in public-private partnerships, can work towards de-risking data sharing so that information and knowledge can be shared widely to support the continued growth of ORE development in a sustainable manner that accounts for nature and people. Ad-hoc data sharing, whilst helpful and sometimes necessary, should not become the default as it is time intensive for both industry and users trying to innovate using the data. All ORE data currently referenced in this report will have a shelf life after which it is no longer commercially valuable or sensitive. Public-private partnerships can work with the ORE industry to define when these periods are to support more consistent sharing of ORE data.

**Case Study 1:** In the United Kingdom, The Crown Estate has worked with fixed offshore wind developers to define that wind resource data is commercially valuable for two years from the date that it is collected.

Use this button to navigate to the Case Study section of this report (Please look for your specific case study number as reference).

# 2. KEY TAKEAWAYS AND RECOMMENDED ACCOMPANYING ACTIONS

**TAKEAWAY #1:** DATA-DRIVEN APPROACHES MUST BE ADOPTED TO SUPPORT INTEGRATED, HOLISTIC AND ECOSYSTEM-LED MSP

Strategic planning supported by integrated whole energy system planning and integrated and ecosystem-led MSP is critical to meeting climate and nature goals in a just transition. Without adopting data-driven approaches, such as scenario modelling and data science analysis, built on an increasingly deep pool of underlying marine spatial data and knowledge, MSP will continue to be organic and consultation-led in many jurisdictions.

# RECOMMENDED ACTIONS

## A. COMMUNICATE THE ADVANTAGES OF SUPPORTING WELL-INFORMED DATA-DRIVEN MSP

GOVERNMENTS AND AUTHORITIES

DATA PLATFORMS

INDUSTRY

When the box is filled in a shade of blue, the recommended action is aimed at that actor. If the box is gray, it is not aimed at that actor.

The ORE industry can facilitate, accelerate and strengthen the MSP process by sharing relevant marine data and knowledge both within and outside the industry. By enabling MSP authorities to develop well-informed plans, the ORE industry can also leverage MSP to alleviate many industry challenges. Key messages regarding the advantages of supporting data-driven MSP are articulated below:

- Ocean industries must navigate the challenges associated with an increasingly busy marine space. The demand for ocean space is rising both in established sectors, such as fishing, aquaculture, tourism, shipping and defence and in new sectors, such as ORE and emerging forms of aquaculture. At the same time, the number of marine protected areas needs to increase. Data-driven MSP can help address these challenges by enabling a more efficient and sustainable use of marine areas by identifying potential cross-sectoral synergies and multi-use opportunities and by minimizing cross-sectoral conflicts.
- Sharing marine data to inform the MSP process can help lower investment barriers and risk for ocean projects. Although only recently applied on a global scale, the use of MSP can help improve the level of certainty, transparency and predictability of public and private investments. While limited information and scope regarding ocean planning can lead to the reluctance of investors to finance ocean projects and developments, data-driven MSP can help provide crucial information for investors and other decision-makers evaluating ocean investment opportunities.
- Data-driven MSP can enable informed planning and network optimization of internationally interconnected infrastructure corridors, such as ORE cable corridors and electricity grids, which are likely to increase efficiency and reduce costs. For example, well-informed data-driven MSP will become increasingly relevant to the planning and coordinating of more efficient hydrogen and electricity networks for transporting ORE to shore and across borders. Informed planning of internationally interconnected infrastructure corridors can also enable the safety at sea from the spatial perspective.
- MSP can help reduce the risks associated with ORE development, operation and decommissioning. For example, by identifying areas of high biodiversity or sensitive habitats, companies can avoid activities that cause harm to ecosystems and, in doing so, reduce the risk of regulatory or legal action.

**Case Study 2:** Climate-smart and data-driven MSP can help optimize the sustainable use of marine areas by identifying potential cross-sectoral synergies in an increasingly crowded marine space.

**Case Study 3:** A 2022 **joint press release** from the Renewables Grid Initiative (RGI), WindEurope and the Offshore Coalition for Energy and Nature (OCEaN) confirmed that "it is possible to speed up offshore wind and related electricity grid deplyment while protecting and resturing nature [with] robust and timely MSP.

**Case Study 4:** A correctly planned and executed baseline ecological survey can help to accelerate a more efficient planning process for industry.

GOVERNMENTS AND AUTHORITIES
DATA PLATFORMS
INDUSTRY

## B. IMPROVE THE VISIBILITY OF THE RELEVANCE OF ORE DATA AND KNOWLEDGE TO MSP BY BUILDING SPECIFIC USE CASES TO SUPPORT FURTHER ADOPTION BY THE INDUSTRY GLOBALLY AND OTHER STAKEHOLDERS S

Data collected by the ORE industry is not fully comprehended by marine planners and other stakeholders which is hindering the use of this data for MSP. The different use cases for ORE data, such as metocean and geophysical data, is not always evident to ORE developers and ocean planners. Building specific use cases can improve the relevance of ORE data and can support further adoption of ORE knowledge. Assessments of typical ORE datasets can determine how this data is useful to MSP or other ocean management purposes.

**Case Study 5:** Modalities of possible future applications of ORE data and knowledge.

**Case Study 6:** Met Office to develop a UK Wind Atlas

GOVERNMENTS AND AUTHORITIES
DATA PLATFORMS
INDUSTRY

## C. WORK TOWARDS ADDRESSING DATA GATHERING, COLLATION AND SHARING CHALLENGES IN EMERGING OR DEVELOPING ORE MARKETS

Whilst we are seeing positive steps towards integrated and ecosystem-led MSP in some geographies, there is still much to be done across developed and emerging offshore wind markets. Emerging ORE markets are often keen to develop rapidly but an Environmental and Social Impact Assessment (ESIA) process alone may be insufficient to guide marine planning without additional data. In addition, multi-sectoral MSP processes are long-term and require significant resources and capacity. There is a need for a pragmatic and proportionate sector-specific approach to guide near-term spatial planning for sustainable development, that can be rolled out at scale and as a precursor, compatible with SEA and multi-sectoral MSP initiatives or while these processes are underway. Countries with emerging or developing ORE markets, particularly those in the global south and/or with complex geographies such as island states, are likely to see multiple barriers and challenges to data gathering, collation and sharing. More research is needed to better understand and address these challenges including:

- The lack of existing datasets and sources, data standards and government requirements for collection of and sharing of data as part of offshore seabed lease agreements in emerging markets.
- Limited capacity within government departments and other organizations to support adoption of best-practice data sharing approaches. ORE companies and other stakeholders in emerging markets may not have the same level of technical expertise or access to resources as those in more developed markets.
- Emerging markets may not have access to the same level of technology or data management systems as more developed markets.
- Case studies in developed offshore wind markets may have little relevance to emerging markets that are likely to have different data environments. However, the digitalization of approaches can still enable emerging markets to learn from the mistakes and successes of developed markets.
- Small companies in the country of implementation may not meet the insurance or other risk profile criteria of lenders. Larger companies may agree to take on the contract risk and sub-contract to the smaller company.

**Case Study 7: World Wildlife Fund summarize** the work still needed in the EU to meet EU climate and nature goals.

**Case Study 8:** The challenges to data sharing in emerging markets require further examination, building on work carried out by the **World Bank's Energy Sector Management Assistance Program**.

**Case Study 9: Environmental and Social Sensitivity Mapping: Guidance for Early Offshore Wind Spatial Planning (SenMap)** will support government planners in emerging market countries to identify potential areas for offshore wind development with the lowest environmental and social sensitivity.

## KEY TAKEAWAYS AND RECOMMENDED ACCOMPANYING ACTIONS

**TAKEAWAY #2:** GREATER STANDARDIZATION, INCLUDING A GLOBALLY COMMON DATA ARCHITECTURE AND TOOLKIT, WOULD ENABLE GREATER DATA AND KNOWLEDGE DATA SHARING

There are currently limited regional standardized approaches to data sharing and no standardized approach to data collection in the ORE industry. This results in a situation where there is:

- Inconsistency in data sources, quality of the data and meta-data, format, frequency and storage approach. Offshore wind data comes from a variety of sources and may be collected using different methods or standards. This can make it difficult to compare or combine datasets, which can limit the usefulness of shared data.
- Inconsistency in taxonomy and terminology leading to confusion as to what data has been captured and whether data is comparable and combinable.
- Limited data interoperability, which should also be addressed prior to data collection.
- Poor visibility, availability and accessibility of data (data is sometimes available for sharing, but not provided through a suitable platform to make it readily accessible to different potential users).
- Intellectual property concerns, where companies are reluctant to share data related to proprietary technology or processes. Additional barriers arise where assets are jointly owned.
- ORE data and knowledge is more commonly being shared on a local level but not on a regional or basin level. This is due to the variance of regulations by country and the clearer incentive for sharing data with local impact.

These hurdles can make it difficult for ORE companies, who hold data, to be confident in sharing data, to know what data would be useful to share and to know how best to share data to make it available (under conditions) and accessible. There are however strong areas of guidance on data standards that can serve as building blocks towards greater standardization (e.g. **European Commission INSPIRE data specifications).**

# RECOMMENDED ACTIONS

ACTION

## A. DEVELOP A COMMON DATA ARCHITECTURE AND TOOLKIT TO ENABLE KNOWLEDGE AND DATA SHARING GLOBALLY

GOVERNMENTS AND AUTHORITIES
DATA PLATFORMS
INDUSTRY

Standardization is required to support a step-change in data sharing. There is a need for data standardization and a standardization of what data is shareable. In order to achieve standardization, there needs to be unifying data principles defining 'what is best practice,' a common data toolkit, a common data architecture, a common taxonomy and terminology and open data license schema (CC-BY).

**Case Study 10:** There are some key emerging case studies from the United Kingdom.

## B. IMPROVE AND ENCOURAGE THE MOVE TOWARDS DIGITALIZATION

GOVERNMENTS AND AUTHORITIES
DATA PLATFORMS
INDUSTRY

Adopting digitalization, including moving towards open-data by default, will lead to a more efficient, interoperable, future data ecosystem with benefits for data-driven MSP and for integrated ORE systems. Technology transfer programs that provide access to new technologies and best practices can help to promote data sharing and support sustainable ORE development. The digitalization of approaches can also enable emerging markets to learn from the mistakes and successes of developed markets.

**Case Study 11:** The Government of Ireland has set forth a strategy to pursue a 'digital first' agenda.

OVERVIEW >

## C. ENHANCE THE INTEGRATION OF NATIONAL REQUIREMENTS AND INTERNATIONAL STANDARDS FOR ORE DATA SHARING BY BUILDING PARTNERSHIPS FOR OPERATIONAL DATA INFRASTRUCTURES TO ALLOW FOR INTEROPERABILITY IN MSP

In addition to making informed decisions about the allocation of resources and the regulation of different activities at sea, planners and policymakers should be explicitly conveying their requirements for critical information to allow for interoperability in sustainable ocean planning and management. The integration of national requirements and international standardized data, data products and information is fundamental to sustainable ocean management, to informed policy decisions and to technology transfer. This integration can be achieved by building partnerships for operational data infrastructures that allow for interoperability. However, emerging markets may not have access to the same level of technology or data management systems that more developed markets have.



## D. ESTABLISH NATIONALLY OR INTERNATIONALLY ACKNOWLEDGED STANDARDS

Processing marine data according to internationally acknowledged standards encourages data collection, storage and access to be carried out in a holistic and non-fragmented way. In such a framework, data collection can be focused on meeting the needs of multipurposes by a wide range of private and public organizations, minimizing the work in isolation from each other. For example, geospatial intelligence in data platforms, such as the novel EMODnet Geoviewer, provides significant data resources and makes information freely available as interoperable data layers and data products.



## E. COLLECT AND PROCESS DATA ACCORDING TO INTERNATIONALLY ACKNOWLEDGED STANDARDS

Ocean data platforms managing data and information on the health of the ocean and on human activities are the foundation for succeeding in the digital transition. Data platforms, which serve the marine authorities, planners, research communities and other stakeholders, should aim to collect and process data and information according to internationally acknowledged standards to allow for the holistic analysis of collected information to increase knowledge for decision-making in sustainable ocean planning and management. The user-friendliness and functionality of data portals should also be considered in terms of user base, interface, simultaneous visualization and downloading of parameters.

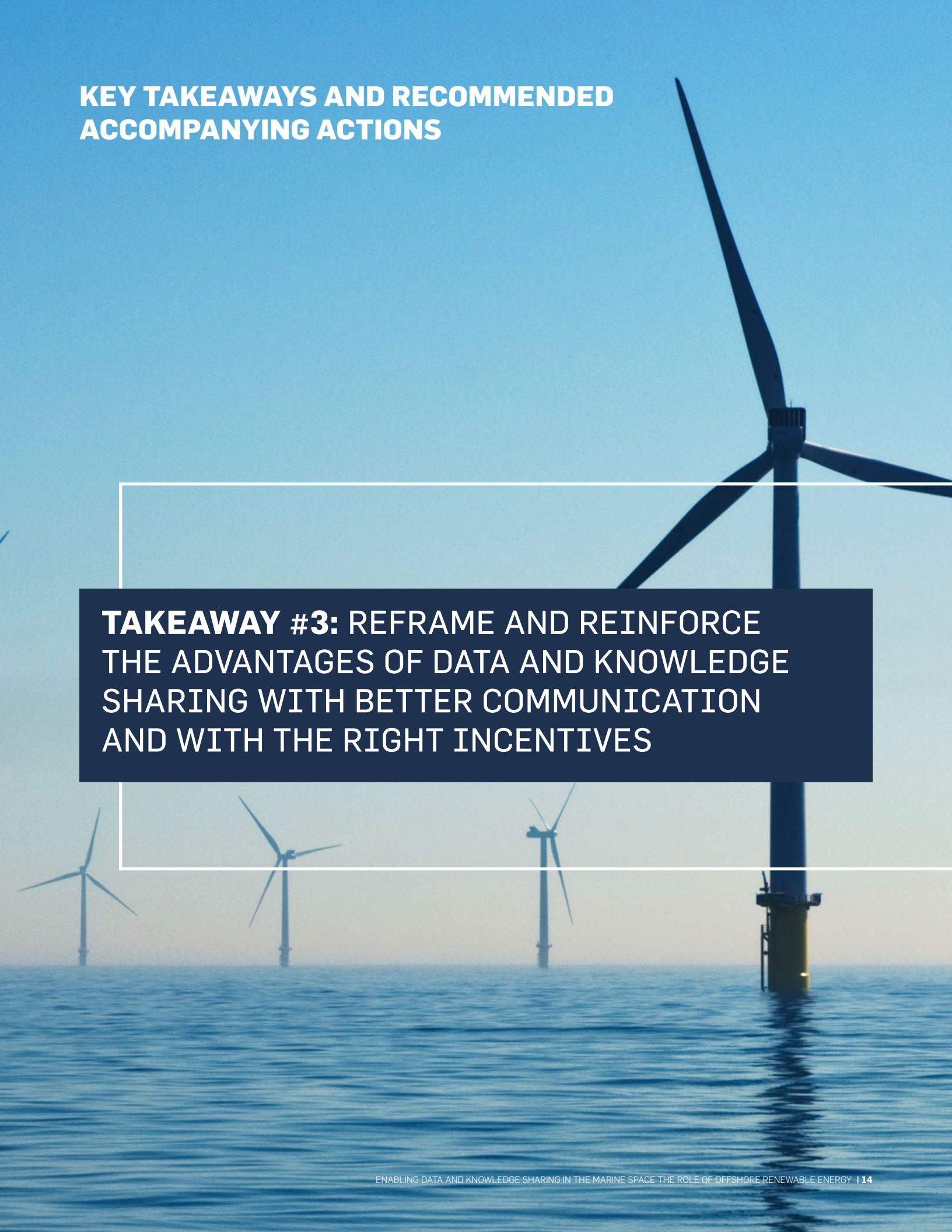


## F. ADOPT INTERNAL STANDARDS

The ORE industry should adopt internal minimum standards and requirements that go beyond the local government regulatory frameworks. Adopting internal standards will signal stewardship of sustainable ocean management to the public, to shareholders and to investors. This level of stewardship can attract greater investment opportunities and can help reduce the risks associated with ORE development in emerging markets where there are no minimum standards. ORE developers can also influence and benefit from a global standard developed amongst themselves. For example, ORE developers often follow investment bank standards on ESIA requirements, but it would benefit them if they worked together to collectively update global ESIA standards.

Multinationals can also play an important role in standardization in emerging markets. In some cases, companies are voluntarily adopting the same standards in emerging markets that are expected in developed markets. The private sector is often the link between developed and emerging markets and should adopt internal minimum standards and requirements that go beyond the local government regulatory frameworks.

# KEY TAKEAWAYS AND RECOMMENDED ACCOMPANYING ACTIONS



## **TAKEAWAY #3:** REFRAME AND REINFORCE THE ADVANTAGES OF DATA AND KNOWLEDGE SHARING WITH BETTER COMMUNICATION AND WITH THE RIGHT INCENTIVES

# RECOMMENDED ACTIONS



## A. CREATE THE RIGHT INCENTIVES

In order to promote data sharing in the ORE industry, governments need to create the right incentives. Examples include:

- **Regulatory Incentives**: Governments can offer regulatory incentives such as streamlined review and authorization processes for ORE companies that share their data.
- **Access to Government Data**: Governments can provide ORE companies with access to government data, such as oceanographic and meteorological data, to encourage collaboration and data sharing. Access to this data can facilitate resource-intensive activities such as feasibility studies, site assessments and geophysical surveys.
- **Research and Development (R&D) Funding**: Governments can create R&D funds and grants reserved for ORE companies that share their data.

In some cases, governments may also want to consider legislation that mandates data sharing in cases where public authorities are faced with a lack of data (see reference to DATA Act in the case studies annexure).

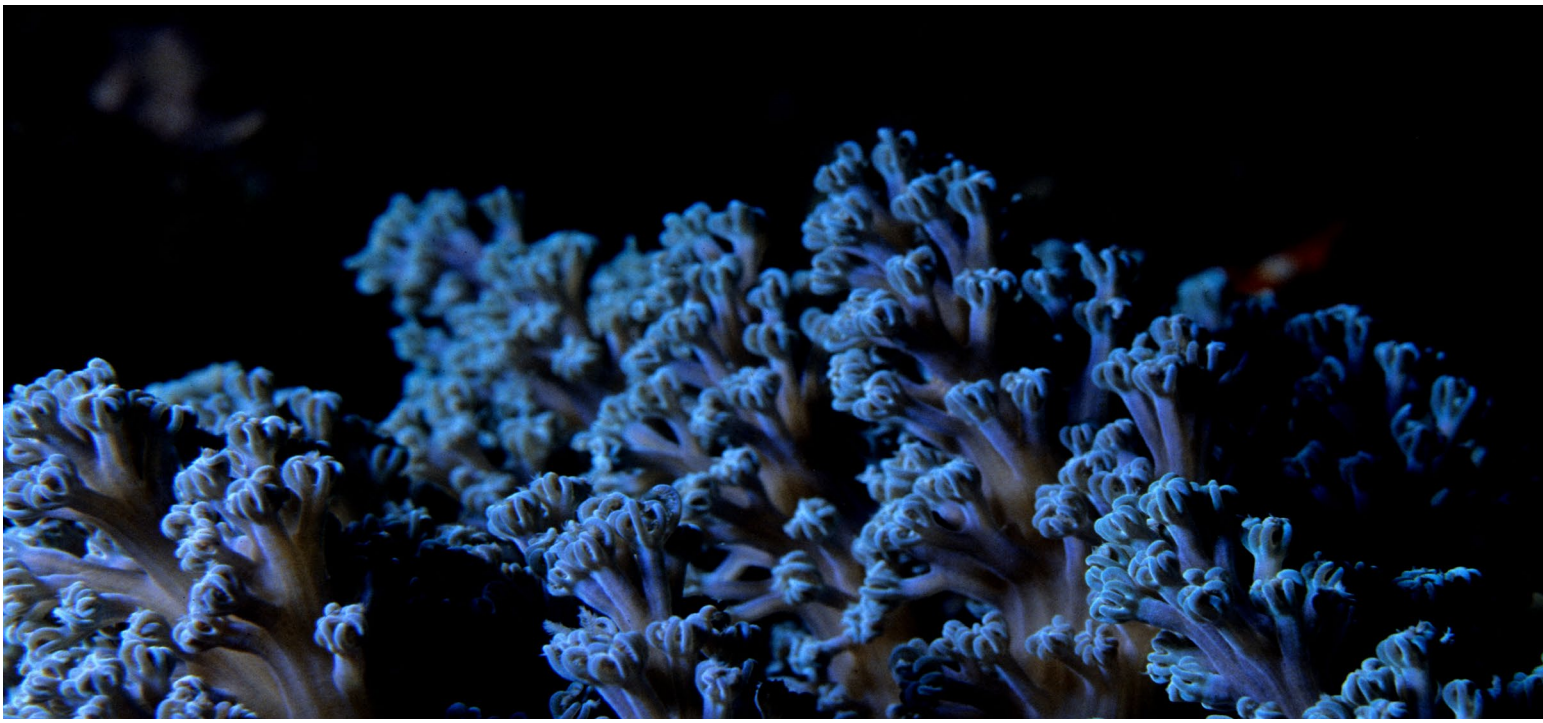
**Case Study 12:** The Offshore Energy Data Strategy Taskforce has set out seven recommendations.

**Case Study 13:** The Dutch Government set up a system for tendering that standardized lots of capacity.

**Case Study 14:** In Ireland, the **Maritime Area Planning Act 2021** mandates the establishment of an electronic Maritime Authorisation Database.

**Case Study 15:** The **DATA Act** mandates the sharing of private sector data with public sector bodies and institutions in the EU.

**Case Study 16:** The Crown Estate has been working with the ORE industry for over 20 years to promote the importance of data sharing.



## B. DEVELOP STANDARDS, GUIDELINES AND REGULATORY FRAMEWORKS THAT INCENTIVIZE DATA SHARING WITHOUT STIFLING GROWTH

There needs to be set standards and minimum requirements on data sharing that are succinct, realistic and practical. Governments can achieve this, and in some cases have achieved this, in a few ways including:

- **Create Clear Regulatory Frameworks**: Governments can create clear regulatory frameworks that require ORE companies to share certain types of data. Governments can require ORE companies to share their data as a condition for obtaining permits or participating in ORE projects. This can incentivize companies to share their data and promote collaboration in the industry.
- **Provide Regulatory Certainty**: Governments can provide regulatory certainty to ORE companies by establishing clear and consistent regulatory frameworks that promote data sharing and collaboration.
- **Establish Data Sharing Standards and Protocols**: Governments can build upon and utilize existing data sharing standards, policies and protocols that exist at National or Regional (e.g., regional sea-basin or regions such as Europe) to further promote interoperability and compatibility between different data systems.
- **Develop Guidelines and Standards**: Governments can develop guidelines and standards for ORE companies to follow when sharing their data. These guidelines should be designed to build (where possible and relevant) on existing guidelines and standards (e.g. MEDIN standards). The guidelines should also ensure that the data shared is not only of high quality but is also accessible and interoperable with established long-term data services that offer integrated Findable, Accessible, Interoperable and Reusable (FAIR) data (e.g. EMODnet pan-European offer). This makes the data relevant to other ocean users and stakeholders and makes it interoperable with the global ocean data ecosystem and with the UN Ocean Decade (e.g., OceanInfoHub metadata catalog of International Oceanographic Data and Information Exchange (IODE) and IOC-UNESCO).
- **Establish Data Access Protocols**: Define data ownership, confidentiality and liability, as well as outlining the procedures for accessing and using the data with the aim to make data as open as possible (utilizing Creative Commons BY4.0 license where possible), and as closed as necessary (respecting commercial sensitivities).
- **Developed Standardized Approaches:** Governments can work with industry stakeholders to develop standardized approaches to data sharing. This can help to ensure that data is collected, shared and used in a consistent and comparable way. It is important to also work at a global level underpinned by joint initiatives such as the United Nations Decade of Ecosystem Restoration and in coordination with multi-stakeholder groups such as the United Nations Ocean Decade Corporate Data Group.
- **Address concerns around data privacy and security**: Governments can work with ORE companies to address concerns around data privacy and security. This can involve developing clear guidelines around data protection, ensuring that sensitive data is only shared with authorized stakeholders or through the provision of decimated data (shared at a resolution less than that at which it was acquired) for the most sensitive data types and data. For biodiversity data, this is existing guidance on how this can be done.
- **Promote a Culture of Data Sharing**: Capacity development programmes that showcase successful examples of data sharing and that provide training, technical assistance and other resources can help build the necessary skills and infrastructure for data sharing initiatives.

ORE industry stakeholders noted that, for the private sector to participate and invest in data sharing, creating guidance, standards and minimum requirements is essential. This is most effective when governments develop guidance, standards and requirements in conjunction with industry-led collaborative bodies.

**Case Study 17:** The German Offshore Wind Energy Act installed offshore wind energy capacity to support the goal of the Revised Climate Protection Act.

**Case Study 18:** The **Infrastructure for Spatial Information in the European Community** (INSPIRE) Directive aims to create European Union (EU) spatial data infrastructure for EU environmental policies and policies.

**Case Study 19:** The **European Marine Observation and Data Network** (EMODnet) has developed a number of marine data and metadata guidelines, standards and protocols.

**Case Study 20:** The **Requirements for providing data to the Crown Estate** have been developed.

## C. COMMUNICATE THE ADVANTAGES, BEYOND IMPROVING MSP, FOR THE ORE INDUSTRY AND FOR OTHER OCEAN INDUSTRIES TO SHARE DATA WITH PLATFORMS

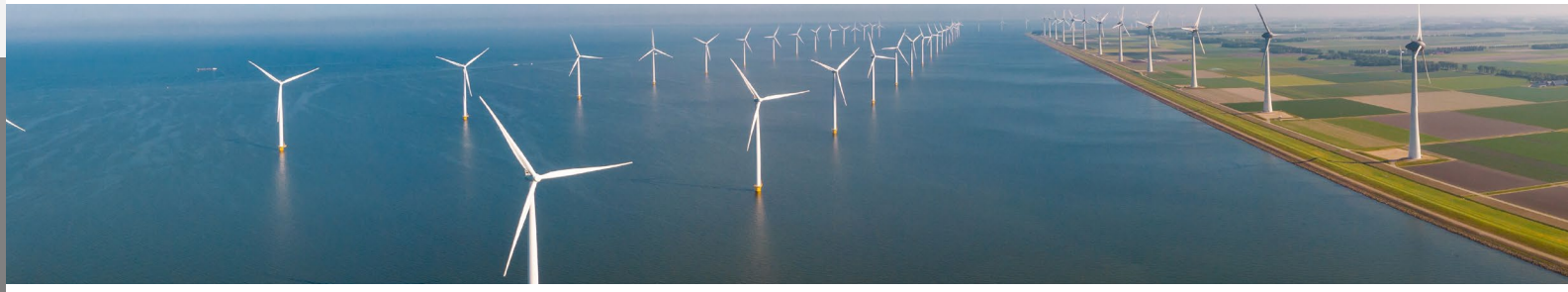
For companies, there are a number of advantages to sharing data with data platforms. These advantages, which must be effectively communicated with the ORE industry, include:

- **Providing Analysis and Standardization**: Standardizing and interpreting the data collected by ocean industries is often difficult, complex and resource intensive. Sharing data with platforms can help companies standardize and analyze data, helping save costs and resources. Sharing data with platforms allows for the data to be assembled, harmonized and integrated with other data of the same parameter from multiple and diverse data sets and providers like research institutions, government marine monitoring programmes, the wider private sector, civil society and others.
- **Creating a trusted and secure data sharing environment**: Data platforms can establish a secure and trusted data sharing environment that ensures the confidentiality, integrity and availability of data. ORE companies are more likely to share their data when they trust that the platform is secure and their data will be protected and properly managed.
- **Offering data management and analysis tools:** Data platforms can provide ORE companies with tools and services that enable them to manage and analyze their data more effectively. These services and tools include data cleaning, normalization and standardization, as well as data analysis and visualization tools. By providing these services, marine data platforms can make it easier for offshore wind companies to share their data and derive value from it.
- **Monetary value of data holding:** Access to data held on data platforms and exchanges can significantly reduce the cost for the ORE industry to re-collect survey data. For example, a quantitative assessment concluded that the total cost of re-collecting the survey data held on the Marine Data Exchange would be over £1.5 billion. As indicated in the assessment (p. 9), geotechnical, metocean, geophysical and ornithological surveys were the most expensive data themes to collect, which correlates with these types of surveys being the most common survey types carried out by offshore industries and therefore held on the Marine Data Exchange.

**Case Study 21: European Marine Observation and Data Network (EMODnet)**

**Case Study 22: Offshore Renewable Energy Catapult**

**Case Study 23: Offshore Wind Environmental Evidence Register** (OWEER)



## D. REDEFINE THE COMPETITIVE ADVANTAGE OF DATA SHARING

The ORE industry must work towards identifying the benefits of data sharing and communicating them internally, with shareholders and with the public. The ORE industry should recognize open data sharing as a competitive advantage rather than a risk. While many companies have built their business models around keeping their data private, there are numerous advantages to data sharing. These benefits include:

- **Increased Investor confidence:** Sharing data can increase investor confidence in ORE projects by providing evidence of their environmental and social impact, as well as their potential for long-term profitability.
- **Improved Stakeholder Relations**: Sharing data can improve relations with stakeholders, including local communities, regulators and environmental organizations. This can help to build trust and support for ORE projects, which can lead to smoother project development and a more favorable regulatory environment.
- **Increased Innovation:** By making data available to researchers, engineers and other innovators, ORE companies can inspire new ideas and technologies that can benefit the industry as a whole.
- **Costs and Resources:** Data sharing can help reduce the costs and resources associated with data collection and analysis. For example, by sharing data on seabed conditions, ORE companies can avoid costly surveys and assessments which can reduce project costs and accelerate development timelines.
- **Improved Efficiency and Decision-Making:** By sharing data companies can gain access to a broader range of data sources and insights which leads to improved efficiency by enabling companies to make more informed decisions and avoid unnecessary duplication of efforts.
- **Better Environmental Management:** Sharing marine data can help offshore wind companies better understand the impacts of their operations on the environment and develop more effective mitigation strategies to protect marine ecosystems.
- **Reduced Environmental Impact:** Collecting data once and using it multiple times is less environmentally harmful than multiple parties collecting the same data.

**Case Study 24:** Costs and Resources: A desk-based study, where data is gathered from literature and online sources, is a cost-efficient way to ascertain the limitations of an ORE project at the initial stages of inception.

**Case Study 25: 2023 Marine Data Exchange Impact Report**

# KEY TAKEAWAYS AND RECOMMENDED ACCOMPANYING ACTIONS

**TAKEAWAY #4:** THERE IS A NEED FOR GREATER COLLABORATION, KNOWLEDGE SHARING AND DEVELOPMENT OF BEST PRACTICES ACROSS GEOGRAPHIES, SECTORS AND STAKEHOLDER GROUPS

The collaboration and knowledge sharing of marine users and other ocean stakeholders across geographies and sectors can unlock new opportunities for innovation and can inform best practices that benefit everyone.

# RECOMMENDED ACTIONS

## A. ENHANCE COLLABORATION ACROSS MULTI-SECTORS FOR SHARING AND APPLYING THE ORE DATA AND KNOWLEDGE FOR SUSTAINABLE OCEAN PLANNING AND MANAGEMENT APPLICATIONS IN A SYSTEMATIC WAY

GOVERNMENTS AND AUTHORITIES
DATA PLATFORMS
INDUSTRY

While sound marine data and knowledge is key to determining the state of the seas and to guiding policy development, high-quality ocean data collected by the ORE industry is often not considered by marine planners in MSP due to a lack of appropriate opportunities for exchanges across multiple sectors. Collaboration for sharing and applying ORE collected data in a systematic way across sectors would greatly enhance its use for sustainable ocean planning and management. This type of collaboration can be implemented, for example, through public-private partnerships. These partnerships can leverage the resources and expertise of each partner to support the development of data sharing infrastructure and promote sustainable ocean management.

**Case Study 26:** The **Renewables Grid Initiative** (RGI) is a collaboration of 30 European non-governmental organizations (NGOs) and transmission system operators (TSOs) across Europe.

**Case Study 27: OCEaN** is a collaboration between wind industry, TSOs and NGOs who joined forces to accelerate the deployment of offshore wind energy and grid infrastructure.

**Case Study 28: The Copernicus Marine Service**

**Case Study 29:** The **Digital Twin Ocean** has been established to integrate a wide range of data sources to transform data into knowledge.

**Case Study 30:** The **Global Biodiversity Information Facility** (GBIF) is an international network and data infrastructure.

## B. FACILITATE DATA SHARING THROUGH GOVERNMENT-LED INITIATIVES AND PUBLIC-PRIVATE PARTNERSHIPS

GOVERNMENTS AND AUTHORITIES
DATA PLATFORMS
INDUSTRY

Governments can facilitate data sharing by launching government-led initiatives and by supporting public-private partnerships.

**Case Study 31:** The **Floating Offshore Wind Centre of Excellence** is a UK government-backed programme.

**Case Study 32:** The **European Marine Energy Centre** is a Scottish government-backed research center.

**Case Study 33: Marine Energy Wales** is a Welsh government-backed industry group that supports the development of marine renewable energy in Wales.

**Case Study 34: MarineCadastre** is a data sharing platform developed by the U.S. government.

**Case Study 35: SmartBay Ireland** is a collaborative project between the Irish government, academic institutions and industry partners.

## C. PROMOTE A COLLABORATIVE TRANSBOUNDARY APPROACH TO DATA SHARING

By sharing data across borders, marine users can gain a more complete understanding of transboundary ecological structures and infrastructure corridors in order to make more informed decisions regarding resource management and business in the sustainable ocean economy. Sharing data with a diversity of stakeholders across geographies can also help fill critical knowledge gaps in the marine environment. Filling these knowledge gaps can unlock new opportunities for innovation, multi-use and better-informed risk assessment. Marine users should continue to support platforms that host regional and transboundary marine data.

**Case Study 36: Global Wind Atlas**

**Case Study 37: Marine Environmental Data and Information Network (MEDIN)**

**Case Study 38: The International Oceanographic Data and Information Exchange (IODE)**

**Case Study 39: Global Ocean Observing System (GOOS)**

**Case Study 40: General Bathymetric Chart of the Ocean (GEBCO)**

**Case Study 41: North Sea Wind Power Hub**

**Case Study 42: North Sea Energy**

GOVERNMENTS AND AUTHORITIES
DATA PLATFORMS
INDUSTRY

## D. INCREASE COLLABORATION ACROSS DATA PLATFORMS

Where relevant, marine data platforms should collaborate and combine efforts to increase and improve data publication and to extend geographical reach. However, the challenges of sharing data across different platforms or systems must be further explored with case studies to address technical barriers that exist (particularly if the data is collected using different technologies or formats and has low interoperability). The following steps can help address these challenges:

- **Standardization of data:** To ensure that different marine data platforms can effectively communicate and share data, it is important to establish common standards for data collection, storage and dissemination. By adopting standard protocols, different platforms can work together seamlessly, regardless of their technical specifications.
- **Interoperability of platforms:** In addition to standardizing data, data platforms can work to ensure that they are interoperable with other platforms. This can involve developing application programming interfaces (APIs) or other mechanisms that allow platforms to share data with one another.
- **Data sharing agreements:** To facilitate data sharing between different platforms, it is important to establish clear data sharing agreements that outline the terms of data use, ownership and sharing. These agreements can help to build trust between different platforms and promote collaboration.

**Case Study 43:** HUB Ocean's **Ocean Data Platform (ODP)** is aggregating, unlocking and enabling a diverse range of ocean data, from existing open sources to 'locked' industry data.

**Case Study 44:** In partnership with ocean industry and in alignment with the United Nations Decade of Ocean Science for Sustainable Development (the Ocean Decade)

**Case Study 45: Integrated Biodiversity Assessment Tool (IBAT)**

**Case Study 46: UK Centre for Seabed Mapping**

## E. CONTINUE TO DEVELOP INDUSTRY-LED DATA SHARING INITIATIVES

The ORE industry should continue to develop and participate in industry-led data sharing initiatives. The commercial advantages of joining these initiatives must be clearly communicated.

**Case Study 47: Open Source Data Universe** is a group of commercial entities that share data amongst themselves.

**Case Study 48: HUB Ocean** is working with industry to help companies realize the value of sharing data from their assets and operations.

**Case Study 49:** The **Belgian Offshore Platform** is an industry association that represents offshore wind farm developers, suppliers and service providers in Belgium.

# CONCLUSION

Over the course of multi-stakeholder working meetings with UN agencies, public authorities, policy actors, academics, business leaders and other knowledge brokers, four key takeaways emerged. **First,** data-driven approaches must be adopted to support integrated, holistic and ecosystem-led MSP which benefit all marine users including the ORE industry. More work is needed to support emerging or developing ORE markets that face greater challenges to data gathering, collation and sharing. **Second**, greater standardization, including a globally common data architecture and toolkit, would enable greater data and knowledge data sharing. The limited regional standardized approaches to data sharing and the lack of any standardized approach to data collection in the ORE industry is creating inconsistency and poor accessibility to data and is limiting data sharing altogether. **Third**, the advantages of data and knowledge sharing must be reframed and reinforced with better communication and with the right incentives. Ensuring that all parties involved in data sharing receive fair and adequate benefits or incentives is essential. A lack of perceived benefits can discourage data sharing. **Fourth**, there needs to be greater collaboration, knowledge sharing and development of best practices across geographies, sectors and stakeholder groups.

The publication of this document is the first step in the United Nations Global Compact Ocean Stewardship Coalition's efforts to communicate these takeaways and recommendations to governments, the ORE industry, data platforms and other relevant stakeholders. The stakeholders listed above now play an important role in determining how best to operationalize these recommendations in their regional context but with a vision towards transboundary and global solutions.

# CASE STUDIES

Click on this button to navigate back and continue reading.

## TAKEAWAY #1: DATA-DRIVEN APPROACHES MUST BE ADOPTED TO SUPPORT INTEGRATED, HOLISTIC AND ECOSYSTEM-LED MSP

### **RECOMMENDED ACTION A:** COMMUNICATE THE ADVANTAGES OF SUPPORTING WELL-INFORMED DATA-DRIVEN MSP

1. In the United Kingdom, The Crown Estate has worked with fixed offshore wind developers to define that wind resource data is commercially valuable for two years from the date that it is collected. For floating offshore wind, this is three years for wind resource and wave heights. The role of The Crown Estate is to continue challenging and sense checking these assumptions as the sector matures and evolves to ensure that data can be published in a timely manner, but also to ensure that there is a consistent level of expectation across all ORE projects in the United Kingdom. A global approach to this may need to have regional differences but would ensure consistency and assurances to marine users who want to use ORE data in terms of when it is likely to become available. Marine users that want to use the data prior to these publication periods can then work with developers and/or appropriate bodies to negotiate the use of the data ahead of it becoming publicly available.

2. As noted in the **Climate-Smart MSP Roadmap** (2021), climate-smart and data-driven MSP can help optimize the sustainable use of marine areas by identifying potential cross-sectoral synergies in an increasingly crowded marine space. Climate-smart MSP is data-driven and uses an "evidence-based approach to engage and inform ocean constituencies, to improve coordination among marine stakeholders, to minimize cross-sector conflicts, to tap into synergies and to encourage decision-making that is based on the best available science and relevant information."

3. Read the entire joint press release **here**.

4. A correctly planned and executed baseline ecological survey can help to accelerate a more efficient planning process for industry. Not only does this save time and money for developers, it also highlights the value of robust and reliable scientific data for the offshore wind industry. In 2016 **APEM** undertook ultra-high resolution digital aerial surveys of the New York Offshore Planning Area (OPA). The project was designed to understand seasonal wildlife distribution, abundance and movement. Data collected in the first year of the project helped support New York State's effort to identify the area recommended to the Bureau of Ocean Energy Management (BOEM) for consideration for siting new wind energy areas. Findings from the three years of aerial surveys were **made accessible to the public in near real time**.

### **RECOMMENDED ACTION B:** IMPROVE THE VISIBILITY OF THE RELEVANCE OF ORE DATA AND KNOWLEDGE TO MSP BY BUILDING SPECIFIC USE CASES TO SUPPORT FURTHER ADOPTION BY THE INDUSTRY GLOBALLY AND OTHER STAKEHOLDERS

5. Modalities of possible future applications of ORE data and knowledge: Information on wind resource and oceanographic conditions is of great value for coastal risk assessments and building coastal resilience. This data can help determine and characterize the current disaster risk management of coastal communities and of other ocean use sectors. Detailed metocean data will be critical for proper meteo-hydrological assessments, high quality data for operational forecasting, for mid and long-term projections that guarantee safety of operations and infrastructure planning and to support policy and governance for real-time decision-making and monitoring programmes. Given that historical long-term measurement data helps validate long-term hindcast models, access to historical metocean ORE data (e.g., after project completion) would be of a high value to the public authorities and experts performing coastal risk assessments. Access to this ORE data would be particularly useful in emerging markets where this data is not typically collected.

OVERVIEW >

6. Wind resource data from ORE projects in the United Kingdom was fed into a project with the Met Office to develop a UK Wind Atlas which is the dataset used in MSP activities in the United Kingdom to understand wind resource. The outputs and information can be found **here**.

### **RECOMMENDED ACTION C:** WORK TOWARDS ADDRESSING DATA GATHERING, COLLATION AND SHARING CHALLENGES IN EMERGING OR DEVELOPING ORE MARKETS

7. **Recent analyses** conducted by the World Wildlife Fund summarize the work still needed in the EU to meet EU climate and nature goals. This is one example where ecosystem-led MSP has been supported but the journey to adopting a fully data driven and ecosystem-led approach to MSP is ongoing. This journey of adoption and realization of the benefits of better and more evidence-based decision making, will be slower without ORE data and knowledge sharing and the consistency, interoperability and accessibility required to make this successful.

8. The challenges to data sharing in emerging markets require further examination, building on the work carried out by the World Bank Group's Offshore Wind Development Program, which is a collaboration between the **World Bank's Energy Sector Management Assistance Program** (ESMAP) and the International Finance Corporation (IFC). One potential initiative that could be used to support addressing the challenges of data sharing across emerging offshore wind markets and globally is the **Global Offshore Wind Alliance**. Established by **the International Renewable Energy Agency** (IRENA), the Government of Denmark and GWEC, the Global Offshore Wind Alliance brings together governments, the private sector, international organizations and other stakeholders with the aim of accelerating the deployment of offshore wind power and to remove barriers to the deployment of offshore wind in new and existing markets.

9. The Integrated Environmental and Social Sensitivity Mapping: Guidance for Early Offshore Wind Spatial Planning (or SenMap – in press), developed by the World Bank Group's Offshore Wind Development Program and in alignment with United Nations Educational, Scientific and Cultural Organization (UNESCO's) Intergovernmental Oceanographic Commission (IOC) Guidance on Marine Spatial Planning, is designed to support government planners in emerging market countries to identify potential areas for offshore wind development with the lowest environmental and social sensitivity. The resulting outputs – environmental and social sensitivity maps – can help identify broad, potential areas for offshore wind, at the earliest stages of government-led spatial planning and can support strategic planning for avoidance, directing development away from areas where sensitivity is highest.

## TAKEAWAY #2: GREATER STANDARDIZATION, INCLUDING A GLOBALLY COMMON DATA ARCHITECTURE AND TOOLKIT, WOULD ENABLE GREATER DATA AND KNOWLEDGE DATA SHARING

### **RECOMMENDED ACTION A:** DEVELOP A COMMON DATA ARCHITECTURE AND TOOLKIT TO ENABLE KNOWLEDGE AND DATA SHARING GLOBALLY

10. There are some key emerging case studies from the United Kingdom where in recent years the Government, Ofgem (energy system regulator), research bodies and private sector organizations have collaborated to set out a taskforce and recommendations on (1) **Open Energy Data and Data Principles** (2) **Energy system Digital Spine** (3) **Offshore Energy Data Recommendations** and (4) **Offshore Energy Data Architecture pilot programme led by the Net Zero Transition Centre**. The Offshore Energy Data Recommendations are particularly relevant to this context and set out a series of 'strategic' and 'workstream' recommendations that should be adopted and built-upon in support of ORE data sharing for MSP.

### **RECOMMENDED ACTION B:** IMPROVE AND ENCOURAGE THE MOVE TOWARDS DIGITALIZATION

11. The Government of Ireland has set forth a **strategy** to pursue a 'digital first' agenda that includes objectives to increase capability, build to share and recognize **digital tools**, services and data as an enabler. As part of this strategy, the government is establishing a digital tool to communicate forward planning and share related data that we aim to develop in the coming years to encompass development management, monitoring and enforcement as well as facilitate data sharing from these stages. This tool is still in development.

**RECOMMENDED ACTION C:** ENHANCE THE INTEGRATION OF NATIONAL REQUIREMENTS AND INTERNATIONAL STANDARDS FOR ORE DATA SHARING BY BUILDING PARTNERSHIPS FOR OPERATIONAL DATA INFRASTRUCTURES TO ALLOW FOR INTEROPERABILITY IN MSP

**RECOMMENDED ACTION D:** ESTABLISH NATIONALLY OR INTERNATIONALLY ACKNOWLEDGED STANDARDS

**RECOMMENDED ACTION E:** COLLECT AND PROCESS DATA ACCORDING TO INTERNATIONALLY ACKNOWLEDGED STANDARDS

**RECOMMENDED ACTION F:** ADOPT INTERNAL STANDARDS

## TAKEAWAY #3: REFRAME AND REINFORCE THE ADVANTAGES OF DATA AND KNOWLEDGE SHARING WITH BETTER COMMUNICATION AND WITH THE RIGHT INCENTIVES

**RECOMMENDED ACTION A:** CREATE THE RIGHT INCENTIVES

12. The Offshore Energy Data Strategy Taskforce has set out **seven recommendations** that will enable the digitalization of offshore energy.

13. The Dutch Government set up a system for tendering that standardized lots of capacity (currently 700 MW each) combined with permits and guaranteed grid-connection. To assure the data quality for the ORE tendering in order to eliminate the risk for tenders and guarantee the high level of offers, the Dutch government provides the data (e.g., geological, metocean, etc.) for the ORE bidders. Also, the government decided to identify designated areas for offshore wind and perform environmental impact assessment studies themselves. For this purpose, detailed tender criteria were issued, including ecological criteria. Initially, a feed-in premium was part of the package too, yet the new approach led to the world's first subsidy-free offshore wind project in 2018. By 2031, the Netherlands **aims at having 21 GW offshore wind capacity**.

14. In Ireland, the **Maritime Area Planning Act 2021** mandates the establishment of an electronic Maritime Authorisation Database, which will be a key step in identifying projects in Irish waters in an accessible way. This database accumulates data relating to an authorization (license, consent, approval) of any relevant maritime usage or proposed maritime usage. For example, every time an application is submitted, the database will aggregate and update its datasets, making the data publicly accessible.

15. Adopted by the European Parliament and the Council of EU, the **DATA Act** mandates the sharing of private sector data with public sector bodies and institutions in the EU, where there is an exceptional need, for instance when "the lack of available data prevents the public sector body or Union institution, agency or body from fulfilling a specific task in the public interest that has been explicitly provided by law." However, the Commission should bring more clarity on the meaning of "public interest", regarding biodiversity and climate change challenges. The public interest clause only applies where public authorities are faced with a lack of data, but the regulation does not specify relevant thresholds in this respect. In its explanatory memorandum for the DATA Act, noted that "a clear majority of stakeholders (in particular citizens and public administrations) also expressed the opinion that business-to-government data sharing should be compulsory, with clear safeguards for specific use-cases with a clear public interest in emergencies and for crisis management purposes, for official statistics, for environmental protection and for a healthier society in general".

16. The Crown Estate has been working with the ORE industry for over 20 years to promote the importance of data sharing. Data clauses have been added to all ORE seabed agreements in the UK since 2003, which requires developers to deliver data to the Marine Data Exchange throughout the lifetime of their projects, from feasibility through to decommissioning. The **Marine Data Exchange** is a bespoke platform designed to manage industry survey data, research and evidence and The Crown Estate has worked with the ORE industry in the UK to develop consistent data management standards and practices. It is through the Marine Data Exchange that data is made freely available to benefit the marine community and to drive the sustainable development of the seabed.

## **RECOMMENDED ACTION B:** DEVELOP STANDARDS, GUIDELINES AND REGULATORY FRAMEWORKS THAT INCENTIVIZE DATA SHARING WITHOUT STIFLING GROWTH

17. Federal Maritime and Hydrographic Agency (BSH), Germany: The German Offshore Wind Energy Act aims for 30 GW by 2030, 40 GW by 2035 and 70 GW by 2045 of installed offshore wind energy capacity to support the goal of the Revised Climate Protection Act reaching carbon neutrality by 2045. For the German Exclusive Economic Zone (EEZ), the Federal Maritime and Hydrographic Agency (BSH) is responsible for most of the steps in the planning cascade: The Maritime Spatial Plan, the Site Development Plan, the site investigations and suitability assessment and the approval procedure. The usage of standards developed by internal and external experts guarantees that the ORE monitoring data are of sufficient quality and that the requirements are known to all those involved in the long term. These standards include 1) **Standard Investigation of the impacts of offshore wind turbines on the marine environment** 2) **Standard Ground investigations for offshore wind energy** and 3) **Standard Design**. BSH has also developed tools to accelerate and improve data collection, assessment and sharing. These tools include: 1) **PINTA**, a data hub for quick and easy access to the data provided from the preliminary investigation of sites conducted by BSH 2) **MarinEARS**, which contains data sets on impact pile driving noise events from monitoring during offshore construction and supports the monitoring of noise abatement measures and 3) **MARLIN** which aggregates ecological accompanying data as part of Environmental Impact Assessment studies.

18. The **Infrastructure for Spatial Information in the European Community** (INSPIRE) Directive aims to create European Union (EU) spatial data infrastructure for EU environmental policies and policies or activities that may have an impact on the environment. The Directive places requirements on public bodies that produce, receive, manage or update spatial datasets that cover all of the land and marine areas over which the State has to create such EU-related spatial data infrastructure. This European spatial data infrastructure will 1) enable public sector organizations to share environmental spatial information 2) facilitate public access to spatial information across Europe 3) assist in policy-making across boundaries.

19. The **European Marine Observation and Data Network** (EMODnet) has developed a number of marine data and metadata guidelines, standards and protocols. EMODnet offers physical metocean guidelines and support via its physics and ingestion service.

20. The **Requirements for providing data to the Crown Estate** have been developed in the United Kingdom alongside ORE developers and include delivery requirements, data standards, confidentiality review dates and more.

## **RECOMMENDED ACTION C:** COMMUNICATE THE ADVANTAGES, BEYOND IMPROVING MSP, FOR THE ORE INDUSTRY AND FOR OTHER OCEAN INDUSTRIES TO SHARE DATA WITH PLATFORMS

21. **European Marine Observation and Data Network** (**EMODnet**): EMODnet is an operational, public marine data service of the European Commission, which provides free access to in situ (field collected) marine data, metadata and data products and services from various disciplines (bathymetry, biology, chemistry, biology, human activities, physics and seabed habitats) and from different sources (e.g. academia, public administration, hydrographic offices, geological surveys, private sector and non-governmental organizations) across Europe. EMODnet also provides access to Member State National Maritime Spatial Plans (as harmonized geospatial data layers), in addition to data on human activities at sea. EMODnet Data Ingestion is a public service offered to support data collectors and providers, including the private sector, to submit their marine environmental and human activities data for wider societal use. This offers the benefit that the data are curated and standardized free of charge, the data collector is acknowledged in metadata and the data and metadata are made available for public discovery, use and uptake, increasing the visibility and impact of data for the ORE industry. EMODnet also conducts dialogues with the Blue Economy to stimulate the use of EMODnet's marine data offered by the private sector and to discuss data sharing opportunities. Reports from dialogues related to ORE are publicly available for the Northeast Atlantic, **North Sea and Baltic Sea** and the **Mediterranean Sea and Black Sea**.

22. **Offshore Renewable Energy Catapult:** The Offshore Renewable Energy Catapult is a UK-based innovation center that supports the development of offshore wind, wave and tidal energy technologies. As part of its mission, the ORE Catapult has developed a range of data sharing initiatives, including the creation of a digital platform that allows partners to share data on device performance, environmental conditions and other metrics. This data is used to support the design and development of ORE systems and inform future policy decisions.

23. The **Offshore Wind Environmental Evidence Register** (OWEER) will build a publicly accessible UK-wide register of evidence gaps and relevant research projects across three main areas – the seabed, marine mammals and seabirds – to support the knowledge base for the development of new offshore wind farms.

**RECOMMENDED ACTION D:** REDEFINE THE COMPETITIVE ADVANTAGE OF DATA SHARING

24. Costs and Resources: A desk-based study, where data is gathered from literature and online sources, is a cost-efficient way to ascertain the limitations of an ORE project at the initial stages of inception. It can be, therefore, preferred by clients as a first step in the optioneering process to rule out areas with sensitive environmental features (which may warrant more onerous mitigation measures to achieve consent) or areas which may be outright unfeasible, either due to environmental constraints or infrastructure limitations. With open data sharing, desk-based studies can utilize data gathered as part of previous, ongoing or operational projects and limit the need for on-site surveys, thereby reducing costs and expediting ORE development. As of now, these desk-based studies are limited by the quality, quantity and accessibility of open-source ORE data. Improvements in this field can be achieved with increased use of metadata standards and the creation of a centralized data access portal, expanding the usability of the data in a desk-based search. This would make desk-based studies more accurate, and thus help to de-risk many aspects of a project before on-site surveys are conducted, thereby reducing the risk that an on-site survey will reveal a previously unknown significant limitation, e.g., protected habitats and species, heritage assets or unsuitable seabed topography.

25. The **2023 Marine Data Exchange Impact Report** (p. 10-13) includes testimonials from ORE developers discussing the benefits of sharing data and having access to it publicly.

**TAKEAWAY #4: THERE IS A NEED FOR GREATER COLLABORATION, KNOWLEDGE SHARING AND DEVELOPMENT OF BEST PRACTICES ACROSS GEOGRAPHIES, SECTORS AND STAKEHOLDER GROUPS**

**RECOMMENDED ACTION A:** ENHANCE COLLABORATION ACROSS MULTI-SECTORS FOR SHARING AND APPLYING THE ORE DATA AND KNOWLEDGE FOR SUSTAINABLE OCEAN PLANNING AND MANAGEMENT APPLICATIONS IN A SYSTEMATIC WAY

26. The **Renewables Grid Initiative** (RGI) is a collaboration of **30** European non-governmental organizations (NGOs) and transmission system operators (TSOs) across Europe. Its goal is to promote fair, transparent and sustainable grid development to enable the growth of renewables to achieve full decarbonization. Since 2019, through the **Marine Grid Declaration** that aims to avoid, minimize and where possible eliminate negative impacts of offshore grid development on the marine environment, RGI Members and other partners have **supported the use of MSP** to guide grid activities at sea. To enable the MSP activities of EU Member States, the declaration emphasizes the importance of collecting necessary data, developing spatial management measures, encouraging knowledge generation and sharing and implementing a system of monitoring and enforcement.

27. **OCEaN** is a collaboration between wind industry, TSOs and NGOs who joined forces to accelerate the deployment of offshore wind energy and grid infrastructure while ensuring alignment with nature protection and healthy marine ecosystems. OCEaN has been addressing various topics in the ORE context, such as MSPs, environmental impacts and the need for centralized and harmonized data collection, outlined **here.** In 2021, RGI commissioned an **independent review** to assess the biodiversity data needs in the ORE sector with the specific focus on wind energy and associated sea cables in the Baltic Sea and the North Sea. **Key findings** from the review include (1) Adopt common core indicators, standardized data and monitoring protocols (2) Use harmonized monitoring methods (3) Adopt a set of key monitoring principles and approaches and harmonize technology usage (4) Conduct research around testing new technologies to improve monitoring focus and effectiveness and (5) Enhance regional and sectoral collaboration for data-driven decision-making and improvement of biodiversity protection in the offshore wind energy sector.

28. **The Copernicus Marine Service:** This platform, funded by the European Commission, provides free, regular and systematic authoritative information on the state of the Blue (physical), White (sea ice) and Green (biogeochemical) ocean, on a global and regional scale. It is designed to serve EU policies and international legal commitments related to Ocean Governance, to cater for the needs of society at large for global ocean knowledge and to boost the Blue Economy across all maritime sectors by providing free-of-charge ocean data and information.

29. The **Digital Twin Ocean** has been established to integrate a wide range of data sources to transform data into knowledge to make informed decisions, backed by science and data. The Digital Twin Ocean will provide a consistent, high-resolution, multi-dimensional and near real-time and future virtual description of the ocean that includes its physical, chemical, biological and socio-economic dimensions.

30. The **Global Biodiversity Information Facility** (GBIF) is an international network and data infrastructure funded by the world's governments aimed at providing free and open access to biodiversity data about all types of life on Earth.

## **RECOMMENDED ACTION B:** FACILITATE DATA SHARING THROUGH GOVERNMENT-LED INITIATIVES AND PUBLIC-PRIVATE PARTNERSHIPS

31. The **Floating Offshore Wind Centre of Excellence** is a UK government-backed programme that brings together offshore wind developers, academics and other stakeholders to develop best practices, share data and expertise on technical and environmental considerations and provide training for the emerging floating offshore wind sector.

32. The **European Marine Energy Centre** is a Scottish government-backed research center that shares data and expertise on marine resource assessments, environmental impact assessments and other key factors for marine energy development.

33. **Marine Energy Wales** is a Welsh government-backed industry group that supports the development of marine renewable energy in Wales. The group includes offshore wind developers, academic institutions and other stakeholders and provides a platform for data sharing, networking and collaboration.

34. **MarineCadastre** is a data sharing platform developed by the U.S. government that provides access to a wide range of authoritative marine and coastal data, including data on ocean currents, bathymetry and marine habitats and other key factors for offshore energy development planning.

35. **SmartBay Ireland** is a collaborative project between the Irish government, academic institutions and industry partners, with the goal of developing a smart ocean observatory for ORE and other applications. The project includes data sharing and research activities on oceanography, meteorology and other key factors for offshore energy development.

## **RECOMMENDED ACTION C:** PROMOTE A COLLABORATIVE TRANSBOUNDARY APPROACH TO DATA SHARING

36. **Global Wind Atlas:** A free, web-based application developed to help policymakers, planners and investors identify high-wind areas for wind power generation virtually anywhere in the world and then perform preliminary calculations.
37. **Marine Environmental Data and Information Network (MEDIN):** Provides a network for sharing the United Kingdom's marine data among stakeholders in government, industry and academia.
38. **The International Oceanographic Data and Information Exchange (IODE):** A global initiative whose purpose is to enhance marine research, exploitation and development by facilitating the exchange of oceanographic data and information among member countries.
39. **Global Ocean Observing System (GOOS)**: An international programme that supports the ocean observing communities in the coordination of the collection and sharing of ocean data globally.
40. **General Bathymetric Chart of the Ocean (GEBCO)**: Provides the publicly available bathymetry of the world's oceans.
41. **North Sea Wind Power Hub**: The North Sea Wind Power Hub is a private sector initiative, co-funded by the EU, that operates in three countries and that aims to develop a large-scale offshore wind project in the North Sea. As part of the initiative, a digital platform was developed that allows stakeholders to share data on wind conditions, grid capacity and other metrics. This data is used to support the design and development of the wind farm and inform future policy decisions.

## **RECOMMENDED ACTION D:** INCREASE COLLABORATION ACROSS DATA PLATFORMS

42. **North Sea Energy**: The North Sea Energy is a public-private research programme with over 30 international parties that investigate the benefits of smart linkages between the various energy functions in the North Sea. As part of the programme, the North Sea Energy Atlas was developed to provide an overview of activities in the North Sea in the fields of energy, transport, ecology, fisheries and defense. In the new phase of the programme (2023-2025) a key innovation will be to improve the North Sea Energy Atlas further and develop an open access modeling toolbox that allows for spatially explicit offshore energy system design, including planning, simulation and optimization.
43. HUB Ocean's **Ocean Data Platform (ODP)** is aggregating, unlocking and enabling a diverse range of ocean data, from existing open sources to 'locked' industry data. The ODP is designed to host data efficiently with rich metadata; facilitate access and sharing through geo-spatially performant APIs; and empower analysis with scalable cloud compute. The result is enabling the consumption of a variety of ocean data sources in a way that is standardized, powerful and 'FAIR' (Findable, Accessible, Interoperable, Reusable).
44. In partnership with ocean industry and in alignment with the United Nations Decade of Ocean Science for Sustainable Development (the Ocean Decade), the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (IOC-UNESCO) has established the **Ocean Decade Data Coordination Group**. This working group is comprised of 25 expert members from across various industries, fields and stakeholder groups and has a vision to create a trusted, inclusive and interconnected ocean data and information ecosystem that is actively used for decision-making to support sustainable ocean management. This digital ecosystem aims to improve data discovery, data access and data interoperability. The working group recently published the "Ocean Decade Data & Information Strategy."
45. **Integrated Biodiversity Assessment Tool (IBAT)** is an alliance between BirdLife International, Conservation International, IUCN, UNEP WCMC, which offers a 'one-stop shop' data search service for those seeking authoritative global biodiversity information and users can access the World Database on Protected Areas, IUCN Red List of Threatened Species and the World Database of Key Biodiversity Areas.
46. The **UK Centre for Seabed Mapping** looks to coordinate bathymetry data collection and re-use.

## **RECOMMENDED ACTION E:** CONTINUE TO DEVELOP INDUSTRY-LED DATA SHARING INITIATIVES

47. **Open Source Data Universe** is a group of commercial entities that share data amongst themselves. The benefit for the companies is that third parties can use that data to develop new tool kits (optimization tool kits for example) and other tools that will help grow the business of participating companies.
48. **HUB Ocean** is working with industry to help companies realize the value of sharing data from their assets and operations over the Ocean Data Platform. Metocean, environmental and ecology data can fuel insight to impact studies, ocean science, co-existence dialogues and marine spatial planning. The companies themselves benefit where the shared data can drive improved local ocean models, environmental risk assessments and sustainability reporting. Case examples include the sharing of ecology data gathered from an entire windfarm and using remotely operated vehicles (ROVs) to gather detailed water column data during routine monitoring of industrial assets.
49. The **Belgian Offshore Platform** is an industry association that represents offshore wind farm developers, suppliers and service providers in Belgium. As part of its mission, the BOP has developed a data sharing initiative that allows members to share data on wind farm performance, environmental conditions and other metrics. This data is used to optimize wind farm operations, improve performance and inform future development efforts.

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## THE TEN PRINCIPLES OF THE UNITED NATIONS GLOBAL COMPACT

### HUMAN RIGHTS

1 Businesses should support and respect the protection of internationally proclaimed human rights; and

2 make sure that they are not complicit in human rights abuses.

### LABOUR

3 Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;

4 the elimination of all forms of forced and compulsory labour;

5 the effective abolition of child labour; and

6 the elimination of discrimination in respect of employment and occupation.

### ENVIRONMENT

7 Businesses should support a precautionary approach to environmental challenges;

8 undertake initiatives to promote greater environmental responsibility; and

9 encourage the development and diffusion of environmentally friendly technologies.

### ANTI-CORRUPTION

10 Businesses should work against corruption in all its forms, including extortion and bribery.

The Ten Principles of the United Nations Global Compact are derived from: the Universal Declaration of Human Rights, the International Labour Organization's Declaration on Fundamental Principles and Rights at Work, the Rio Declaration on Environment and Development, and the United Nations Convention Against Corruption.

## ABOUT THE UNITED NATIONS GLOBAL COMPACT

As a special initiative of the UN Secretary-General, the UN Global Compact is a call to companies worldwide to align their operations and strategies with Ten Principles in the areas of human rights, labour, environment and anti-corruption. Our ambition is to accelerate and scale the global collective impact of business by upholding the Ten Principles and delivering the Sustainable Development Goals. With more than 18,000 companies and 3,800 non-business signatories in over 160 countries, and 62 Local Networks, it is the world's largest corporate sustainability initiative.

For more information, follow **@globalcompact** on social media and visit our website at **unglobalcompact.org**.

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