CONSENTING PROCESSES FOR OCEAN ENERGY

UPDATE ON BARRIERS AND RECOMMENDATIONS

JULY 2016

OCEAN ENERGY SYSTEMS

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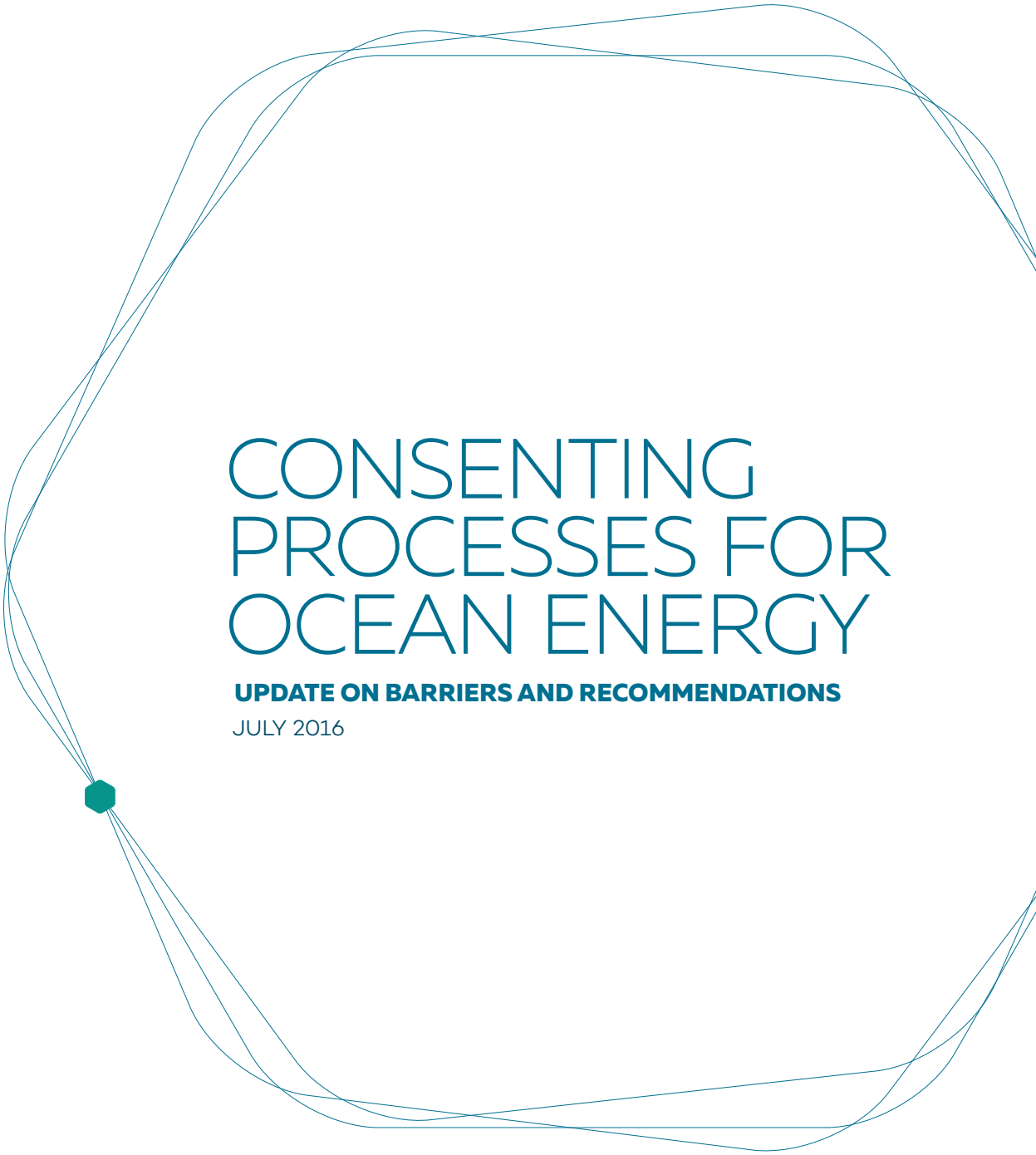

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JULY 2016

Ocean Energy Systems (OES) has commissioned MaREI Centre (Ireland) to outline the main barriers and recommendations of the consenting process for ocean energy based on the OES collection of information from its member countries and from interviews to developers.

This study was prepared under the OES Task 8 - Consenting Processes for Ocean Energy on OES Member Countries with support from:

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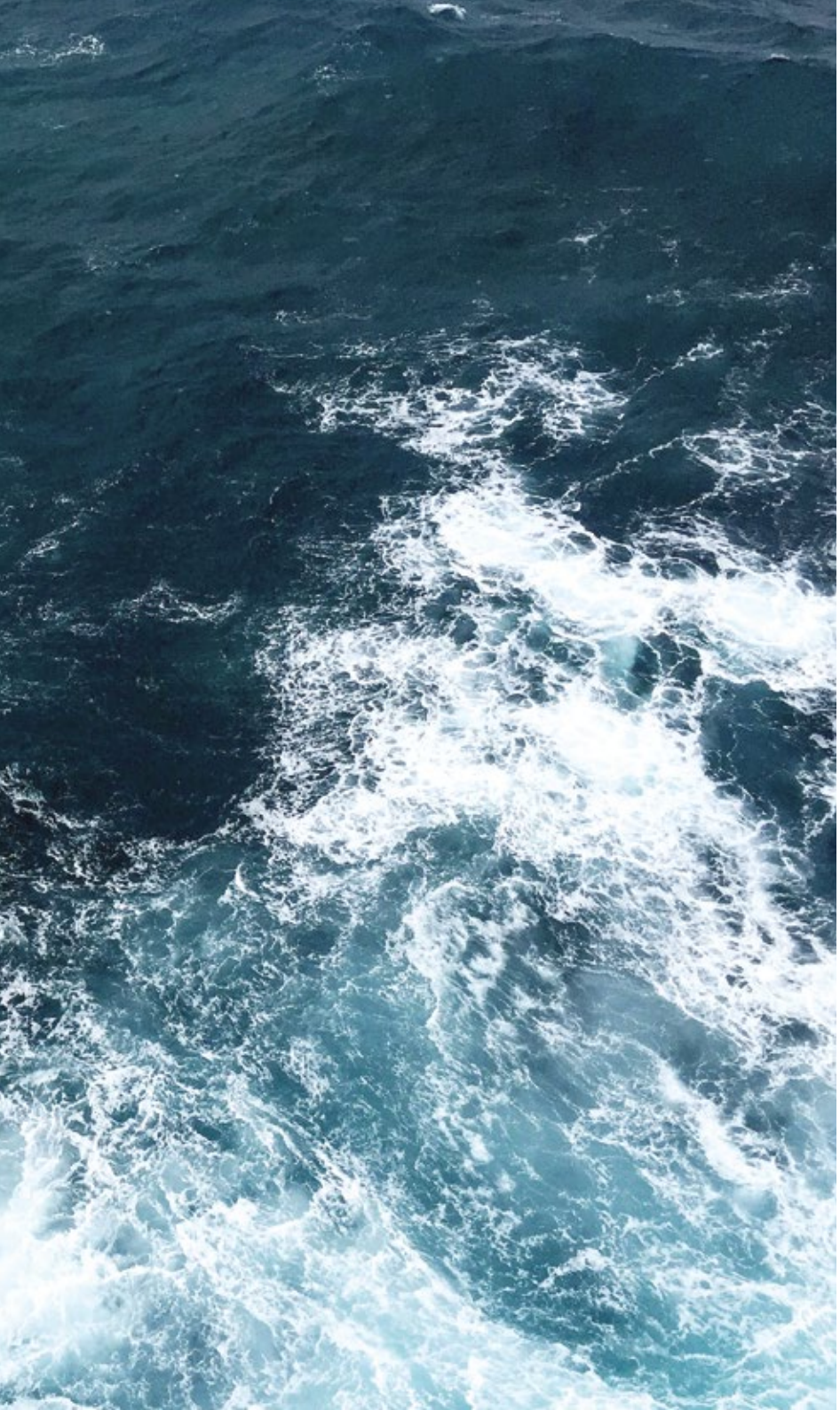
Acknowledgments
The OES would like to thank and acknowledge all of the developers who have contributed with opinions on key barriers and suggested changes to the consenting process.



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COUNTRY INFORMATION **SYNOPSIS**

This report features information garnered from OES members. Specifically, this refers to the countries of **Canada, China, Denmark, France, Germany, Ireland, Korea, Mexico, Monaco, Nigeria, Norway, Portugal, South Africa, Spain, Sweden, the United Kingdom and the United States of America** giving the following report a wide geographic dimension.

The progress of ocean energy projects in all the OES member countries continues to face challenges in relation to consenting processes. This can be detrimental to the sector and may also lead to delays in realising operational projects with consequences for budgeting and real costs to developers.

Particular emphasis has been placed on investigating the main barriers associated with permitting and licensing with a view to advising regulators and decision-makers on the key needs of the ocean energy sector from consenting processes. Developers were also given the opportunity to provide their views and insights on barriers as experienced by them in consenting of their ocean energy projects to date.

The report has paid particular attention to Marine Spatial Planning and how this is influencing consenting processes and ocean energy device deployments.

In addition, OES member representatives provided information on the authorities involved in consenting, the procedures within the consenting process, Environmental Impact Assessment, legislative and regulatory developments, consultation, guidance and test centres. This forms a succinct overview of current practice with the aim of providing a holistic picture of the situation in each OES member country and draw tentative conclusions on whether more integrated approaches to planning are fully operational within OES countries.

The input to this report is based on information provided by decision and policy makers in the majority of cases. In an effort to balance the content, developers were asked about their experience of barriers to consenting of ocean energy projects, what changes could address those barriers and what opportunities and solutions would more widespread implementation of Marine Spatial Planning offer ocean energy developments.

Marine Spatial Planning (MSP)

Of the seventeen country countries analysed, there is perhaps little uniformity between them in terms of approaches to consenting and more strategic level Marine Spatial Planning (MSP).

The majority of countries presented have some form of MSP in place, however, this often does not reflect ocean energy in terms of either reserved or pre-allocated use zones or future ocean energy activity.

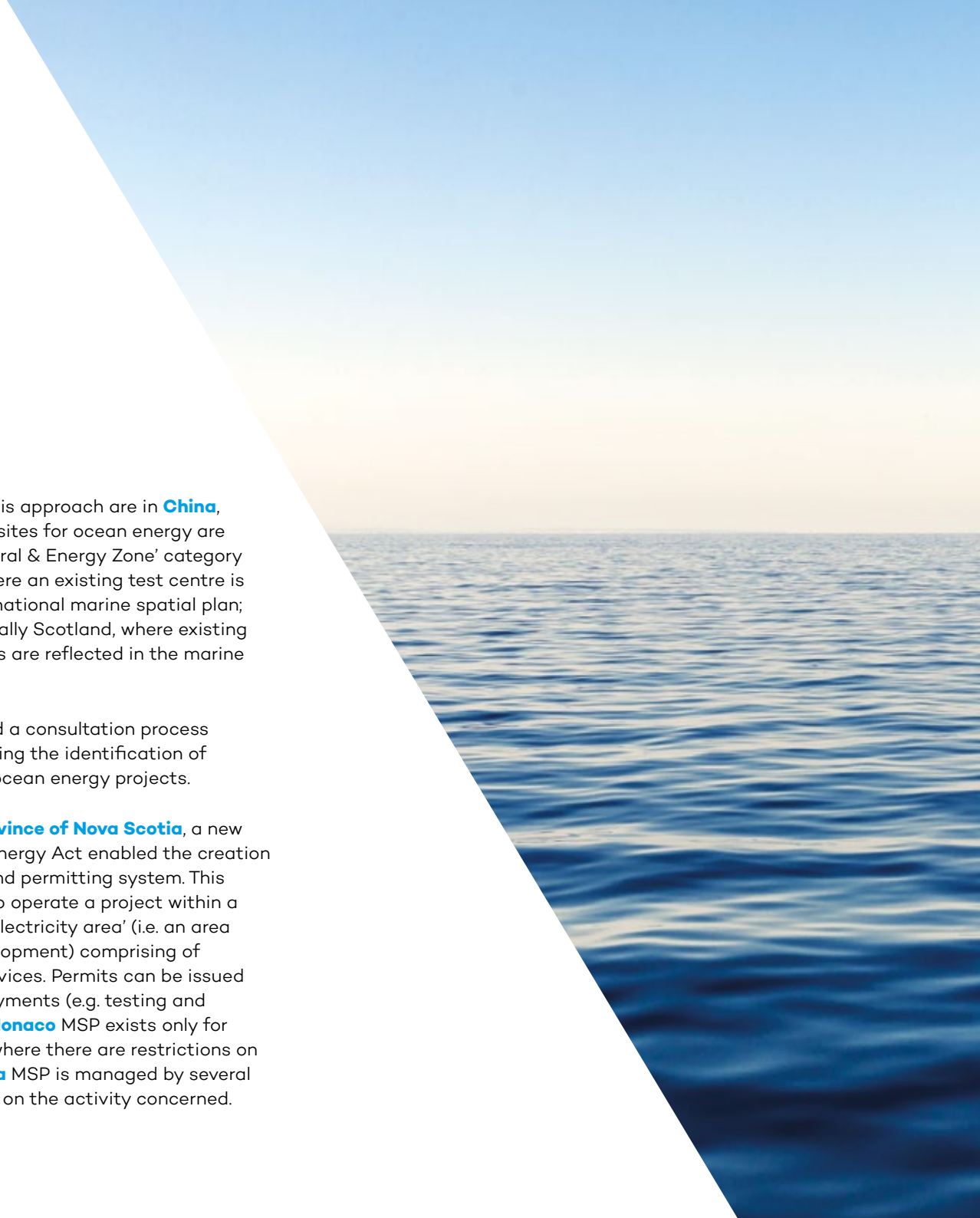
Five countries (the majority of **Canada, Ireland, Korea, Mexico and Spain**) have no form of MSP currently whilst **Norway, South Africa and the USA** have systems in place that reflect certain principles of MSP though they may not be specifically applied to ocean energy (**Norway**) or currently operate at different geographic scales (**USA**).

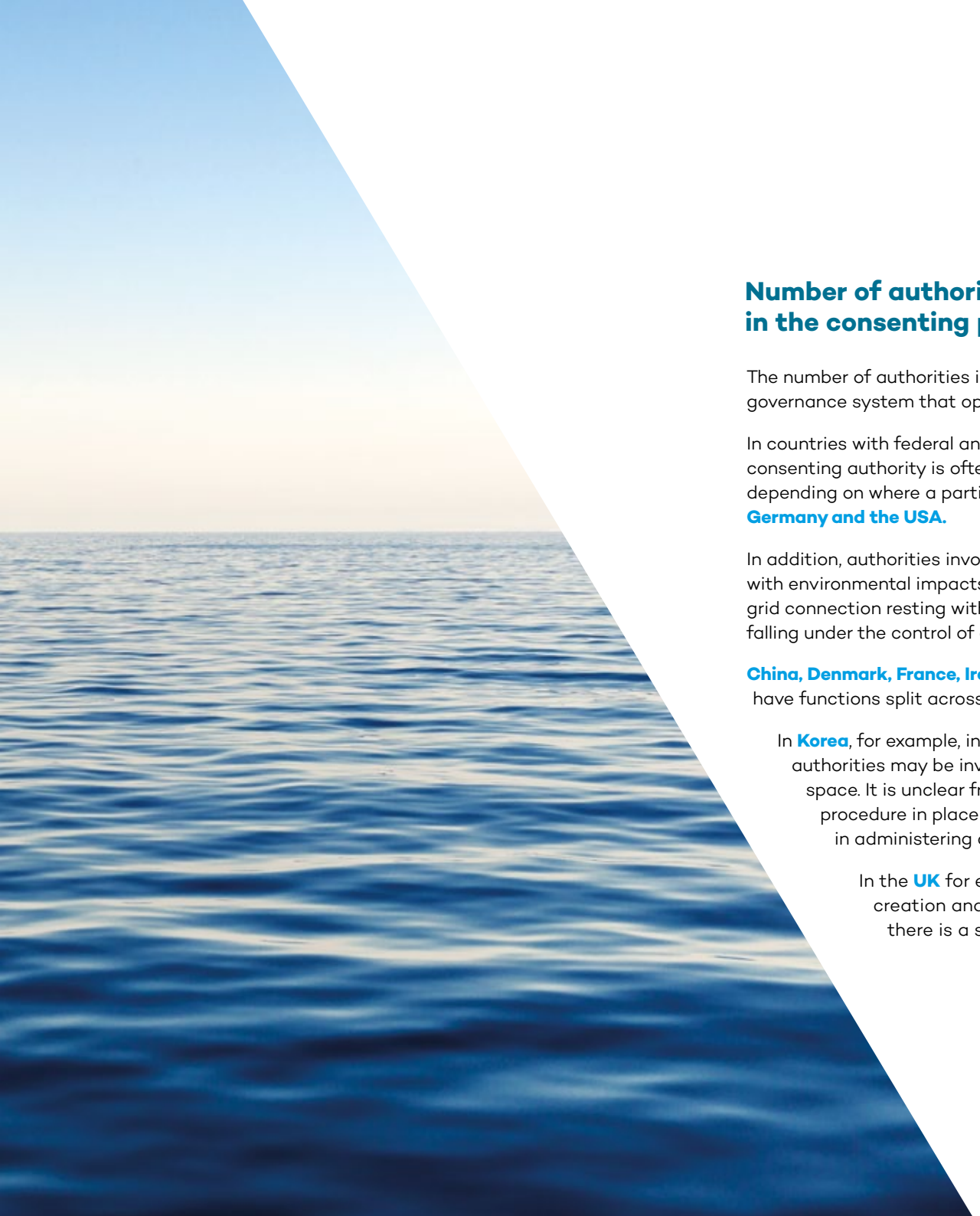
Of the countries that do have MSP, marine renewable energy tends to feature as a specific use within operational marine spatial plans but, in **Denmark, Germany and Sweden** offshore wind is the only form of marine renewable energy identified, included and allocated a spatial area.

The exceptions to this approach are in **China**, where pre-selected sites for ocean energy are included in the 'Mineral & Energy Zone' category of use; **Portugal**, where an existing test centre is included within the national marine spatial plan; and the **UK**, specifically Scotland, where existing and planned projects are reflected in the marine spatial plan.

France has launched a consultation process on MSP and is pursuing the identification of dedicated sites for ocean energy projects.

In the **Canadian province of Nova Scotia**, a new Marine Renewable Energy Act enabled the creation of a new licensing and permitting system. This allows a developer to operate a project within a 'marine renewable-electricity area' (i.e. an area designated for development) comprising of single or multiple devices. Permits can be issued for temporary deployments (e.g. testing and demonstration). In **Monaco** MSP exists only for protected areas or where there are restrictions on other uses. In **Nigeria** MSP is managed by several agencies depending on the activity concerned.





Number of authorities involved in the consenting process

The number of authorities involved in the consenting process very much depends on the governance system that operates within that specific jurisdiction.

In countries with federal and State or provincial systems of governance for example, consenting authority is often divided among federal and State/provincial/local entities depending on where a particular development is situated. This is the case in **Canada, Germany and the USA.**

In addition, authorities involved can also be split according to specific aspects of a project with environmental impacts the responsibility of an environmental protection authority, grid connection resting with the authority responsible for electricity and auxiliary land use falling under the control of an adjoining planning authority.

China, Denmark, France, Ireland, Korea, Mexico, Monaco, Portugal, South Africa and Spain have functions split across numerous ministries and agencies.

In **Korea**, for example, in addition to the energy and environmental ministries, further authorities may be involved depending on the size of purpose of the use of marine space. It is unclear from the information collected whether there is a specific procedure in place to help coordinate the activities of each organisation involved in administering consents in each of the countries.

In the **UK** for example, a significant focus in recent years has been on the creation and operation of a 'one-stop-shop' approach to consenting where there is a single point of contact for dealing with consents.

In the majority of countries, as a first step it is usual for a licence to be required to carry out preliminary investigations. This tends to be followed by a number of consents: a lease covering the rental of marine space, an authorisation to exploit the energy source or generate electricity, a grid connection agreement and permission for any onshore works.

Consenting Process

The consenting process itself remains largely similar to what was reported in an earlier report on "Consenting Processes for Ocean Energy in OES Member Countries", completed in 2014 (OES, 2014).

In **China** the process varies according to whether the project is funded from private or public (Government) sources but ocean energy projects are mostly funded by public (Government) sources.

In the majority of countries, as a first step it is usual for a licence to be required to carry out preliminary investigations. This tends to be followed by a number of consents: a lease covering the rental of marine space, an authorisation to exploit the energy source or generate electricity, a grid connection agreement and permission for any onshore works. In **China**, for example, developers require several different approvals; in Portugal four, and in **Denmark** three. The number of consents needed will be dictated by the law of the country as well as the administrative system in operation.

Only a few countries have streamlined their consenting process by introducing a single point of contact or 'one-stop-shop' (**Denmark, Monaco and the United Kingdom**) or amending their legal instruments (**Portugal and Spain**).

Elsewhere, in **France, Germany, Ireland, Korea, Mexico, Nigeria, Norway, South Africa, Spain, Sweden and the USA**, multiple authorities are involved in consenting ocean energy and other marine activities.

In **Canada** the province of Nova Scotia has been proactive in creating a "one window committee" that includes both federal and provincial government departments and agencies with an interest in the marine environment and ocean energy. This operates along the same lines as a 'one-stop-shop' where there is a single coordination point for advancing the various consent applications.

Environmental Impact Assessment (EIA)

The decision on whether an Environmental Impact Assessment (EIA) is needed depends primarily on the size, scale and location of the proposed project.

In **Nova Scotia, Canada,** for example, tidal current projects of 50 MW or greater require an EIA if located on federal seabed. This can be contrasted with a project located in provincial seabed of Nova Scotia where an EIA is required for tidal current developments over 2 MW.

In **Korea** an EIA is required for electrical power plants with 10 MW of capacity. In **Spain** all projects devoted to the production of energy on the marine environment are subject to evaluation through a simplified environmental impact assessment process.

In **China** the Environmental Protection Department will decide whether an EIA is needed on a case by case basis. This is also the case in **Denmark, Germany, Ireland, Mexico, Monaco, Nigeria, Portugal, South Africa, and the United Kingdom**.

In **France, Sweden and the USA** (federal lands), an EIA is always required, however, the level of detail and scope of necessary investigations naturally varies depending on the character of the project.

Post-consent monitoring is required in **Canada, France, Germany, Ireland, Korea, Nigeria, Portugal, Spain, Sweden, the UK, China and the USA**. It is not clear from the information submitted whether post-consent monitoring occurs in **Denmark, Mexico, Monaco, Norway or South Africa** as these countries have limited experience in dealing with ocean energy projects to date and so the need to implement monitoring programmes has yet to arise.

Nova Scotia may designate smaller areas for project development known as 'Marine Renewable Electricity Areas' (MREAs). The purpose of an MREA is to identify the locations most suitable for marine renewable energy projects and to provide transparency on the use of this marine space.

Legislation and regulations

Legislation and regulations governing ocean energy as a specific sector is rare. Rather ocean energy tends to be administered through existing legal instruments that pertain to marine development or renewable energy generally. The obvious exception to this is in **Nova Scotia, Canada** where a dedicated Marine Renewable-energy Act was introduced in 2015. This applies to two priority areas of the province, parts of the Bay of Fundy and Cape Breton Island's Bras d'Or Lakes. Within these priority areas, the Province may designate smaller areas for project development known as 'Marine Renewable Electricity Areas' (MREAs). The purpose of an MREA is to identify the locations most suitable for marine renewable energy projects and to provide transparency on the use of this marine space. At federal level this is complemented by the Marine Renewable Energy Enabling Measures Program which seeks to develop a federal policy framework for administering MRE activities in the federal offshore.

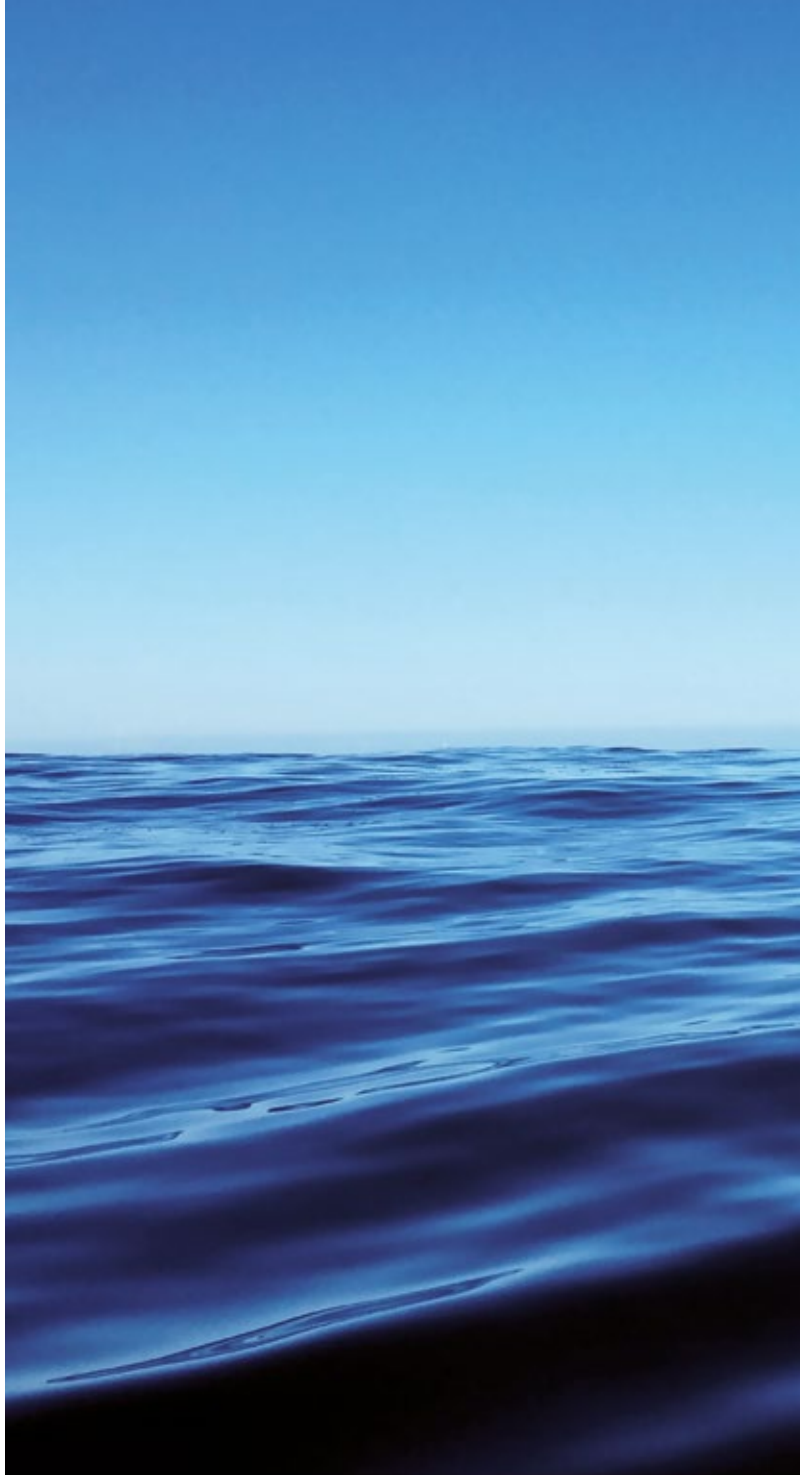
In **China, Denmark, Germany** ocean energy comes within the scope of renewable energy legislation, whereas in **France, Ireland, Korea, Portugal, Spain, Sweden and the United Kingdom** it falls under the scope of both energy legislation and marine environment legislation.

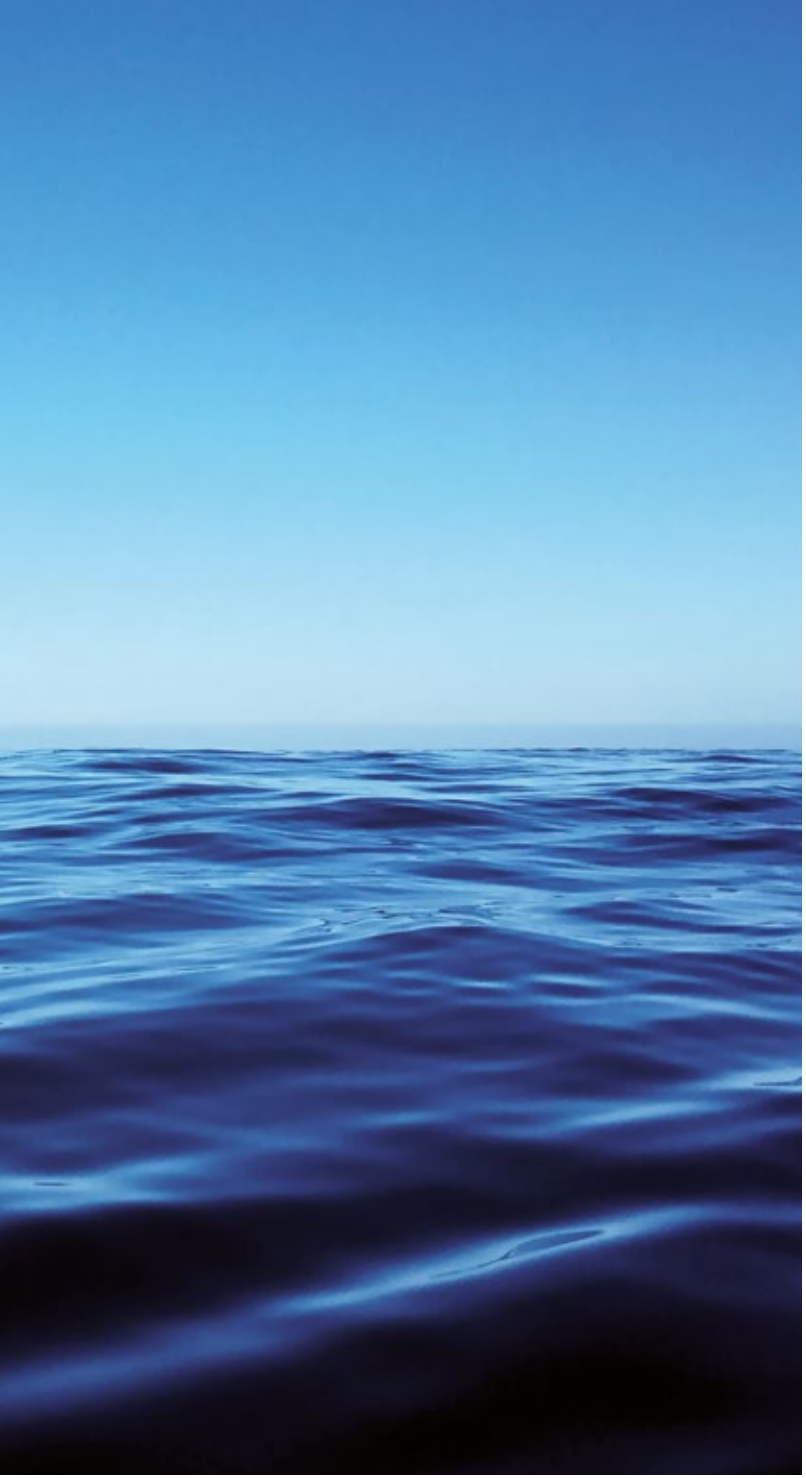
In **Mexico**, due to the fact that ocean energy has not been developed there as yet, there is no specific law to regulate ocean energy despite its energy legislation having just been amended.

Respondents from **Monaco, Nigeria and South Africa** commented that there was no specific legislation for ocean energy in their respective countries.

Norway has a specific Ocean Energy Act since 2010 but the finer details of its operation are still being decided upon. Portugal is unique in that all the consents required have been adapted to better suit wave energy developments.

The situation in the **USA** is, arguably, the most complex given the myriad of legislation that applies in State and federal waters. Certain States are endeavouring to address this for their area of jurisdiction and there is also a memorandum of understanding between the U.S. Department of the Interior's Bureau of Ocean Energy Management (BOEM) and the Federal Energy Regulatory Commission (FERC) to clarify jurisdictional responsibilities for marine energy projects on the Outer Continental Shelf.





Participation of Stakeholders

Early and effective engagement and participation of stakeholders is often cited as a key stage in consenting and wider project development process.

Within the **European Union**, public consultation is generally conducted as part of the EIA process reflecting requirements of both EU and international environmental law. Consultation also occurs during Strategic Environmental Assessment (SEA) where such assessments have been conducted for future planning of marine renewables.

In **Nova Scotia, Canada**, public consultation occurred as part of the SEA process but it continues beyond that process, for the complete lifecycle of the project. At the federal level, the Government of **Canada** has a legal duty to consult Aboriginal people when there are Aboriginal or treaty rights that may be adversely impacted by developments such as a marine renewable energy project approval. This is also the case for the provincial government. Similar requirements exist in **Mexico** for indigenous people.

In **China** there are formal mechanisms for consultation with a number of mandatory consultees but these focus on the technical aspects of the project. There can also be informal consultation with representatives of citizens and other organisations.

In **Denmark** consultation occurs at the preliminary site investigation stage whereas in **France**, **Germany, Monaco, Sweden, the United Kingdom and United State**s the process begins even earlier: once a project application has been submitted or initially reviewed.

In **Ireland, Mexico, Nigeria, Portugal, South Africa, Spain** consultation usually occurs during the EIA and other phases of consenting though more commonly now project and site managers are opting to hold meetings in local communities as a means of awareness raising and gaining public acceptance of the proposed project.

The majority of OES countries have mandatory consultees consisting of a variety of statutory agencies and other government departments. In **Korea** there is a specific process for obtaining the agreement of local residents.

Several open sea test sites are pre-consented meaning developers do not have to undertake a full consenting application but are required to demonstrate that they respect pre-defined test site conditions.

Guidance and advice

As consenting of ocean energy device deployments is a complex process across the globe, many regulatory bodies and other entities have produced guidance and advice on the process so as to help developers prepare and progress their application and project.

In **Nova Scotia**, the 'One Window Committee', referred to above, provides guidance on the approvals process, the permits required and review processes.

In **China, Denmark, France, Portugal, South Africa, the UK and the USA** guidance is also available to developers. Such guidance may cover all aspects of the consenting process or one aspect of it, such as EIA or public consultation, etc.

Whilst **Germany** does not have guidance specific to ocean energy, it does have guidance on the promotion of offshore wind and this is supplemented by detailed standards for baseline characterisation and (post-consent) monitoring of offshore wind projects which may assist ocean energy developers in future.

Sweden also has comprehensive information available on offshore wind consenting. In Ireland there are guidance notes pertaining to a number of the different consents required and work is on-going on the formation of guidance for Environmental Impact Statement (EIS) and Natura Impact Statement (NIS) [EU Habitats Directive assessment] as they relate to marine renewables as well as guidance on Environmental Monitoring of MRE developments; both of which are due to be published in 2016.

In **Monaco** there is no specific guidance for ocean energy but it was noted that technical services in the relevant departments could potentially assist applicants with the process. **Spain** is in a similar position with information clearly available but no single document on ocean energy offered.

No information was reported on the existence of guidance and advice from **Korea, Mexico, Nigeria or Norway**, possibly attributable to the lack of projects currently planned.

Test Centres

Though commercial scale ocean energy projects are not widely visible as yet, quite a number of Test Centres exist around the world for research and demonstration purposes. In some cases, the consenting requirements are less within the bounds of test centres or they have been uniquely tailored for devices undergoing testing and time-limited sea deployments.

In **Canada**, FORCE is perhaps the best known test centre. Within it, developers do not have to undergo individual EIAs but still have to submit applications to other relevant regulatory agencies.

In **Denmark**, a temporary permit is available for time-limited deployments of devices in either the DanWEC test site or in other Danish waters.

Two test sites, SEM-REV and SEENEOH are currently operational in **France** and are pre-consented meaning developers do not have to undertake a full consenting application but are required to demonstrate that they respect pre-defined test site conditions.

In **Ireland** one operational quarter-scale test centre (Galway Bay) is pre-consented whereas at the full-scale test centre (AMETS) individual developers will be required to obtain foreshore consent.

In **Portugal** a specific regulation for the Portuguese Pilot Zone, Ocean Plug, has been produced and provisionally approved by the governing entity.

In **Spain** deployment at BIMEP is already pre-consented so developers do not have to submit a full application. This is the same for testing in **UK** test centres providing certain initial conditions are met.

Normally test centres should go through the whole permit process in **Sweden** but if the facility is regarded as small with limited effect on the environment and other interests, or only running for a short period, only a notification could be enough.

The **USA** is in a somewhat distinctive situation as there is currently no ability under U.S. law to allow for “pre-permitting” of test sites. Responsible authorities are currently trying to develop a permitting procedure for the planned Pacific Marine Energy Test Site (PMETS).

DEVELOPER PERSPECTIVES ON CONSENTING AND **MARINE SPATIAL PLANNING**

A short survey consisting of three questions was conducted with key wave and tidal energy developers in OES countries. The results are presented in next pages and salient points have been incorporated into the next section of this report on barriers and recommendations. Developers surveyed are not identified in the interests of privacy. The questions posed were:

1. **In your experience what has been the key barrier to consenting ocean energy projects?**

2. **In your opinion/experience what key change would make consenting more efficient?**

3. **In your opinion/experience, what opportunities and solutions would more widespread implementation of Marine Spatial Planning offer ocean energy developments?**

Evolving consenting systems can result in two main problems. Firstly, constant uncertainty makes planning and costing a project very difficult which in turn can result in financiers becoming reluctant to invest in a project. It can also have consequences for the supply chain, parts of which, through the nature of their own industry, require clearly defined time frames - time frames which can be lengthy.

Lack of clarity in the consenting process

With respect to barriers to consenting projects, experience varied between developers. On a positive note a few developers stated that they had only deployed at recognised test centres and as a result they had experienced no barriers to consenting.

The most frequently cited barrier was the lack of clarity in the consenting process and the fragmentation of consenting authority across multiple consenting agencies which can create delays. The fragmented approach suggests there is limited experience with one coordinating authority or a 'one-stop shop' approach.

In order to get consent for a 10 device farm in an EU country, for example, a developer was required to prepare 35 copies of the technical report which were then submitted to 35 different institutions. One developer said that within certain jurisdictions the consenting system is constantly changing and the effect of this is that parameters that the industry need to deal with are also constantly changing. Another developer said that their initial experience with consenting in one OES country was largely positive with consenting taking only three months, however, more recently the process has been more difficult. This was attributed to continuous changes in the responsibilities of governmental bodies and the co-operation between them. As changes occur there is a loss of knowledge within the consenting authorities which can also hinder efficiency.

Evolving consenting systems can result in two main problems. Firstly, constant uncertainty makes planning and costing a project very difficult which in turn can result in financiers becoming reluctant to invest in a project. It can also have consequences for the supply chain, parts of which, through the nature of their own industry, require clearly defined time frames - time frames which can be lengthy. Planning environmental investigations and monitoring in the context of evolving requirements is also challenging for developers. Secondly, there appears to be a lack of "learning" applied to subsequent developments.

As the consenting landscape changes it means that information and details garnered from previous deployments cannot be directly applied to future deployments. This is particularly evident in relation to monitoring of environmental effects where previous EIA specifications were based on prescribed schemas not on an understanding of the environmental interactions of the technology and its operational environment. If monitoring was based on the latter, the understanding of the environment gained could have been applied directly to future technological development and deployment.

Lack of coherent knowledge about the technology

All but one respondent said that the key barrier currently is that regulators are still relatively unfamiliar with ocean energy technologies and that this has resulted in a precautionary approach to consenting of projects. Lack of coherent knowledge about the technology, the marine environment and the interaction of the two is the critical issue in consenting. This has led to EIA specifications being designed according to 'what' a consenting authority wants a developer to assess, not 'why' these issues need assessing. There can be a number of consequences from this type of approach. One result has led to prescribed actions being required, such as the collection of two years of baseline data, without any understanding of why this was being done or even whether it was sufficient or not. A second aspect to this type of approach is that developers are being asked to verify the effects of a single device as if it were a multi-megawatt farm which is more likely, by scale, to have significant environmental effects. It was recognised that for both developers and consenting authorities this represents a paradoxical situation.

One developer felt that the disproportional cost of EIA on small developers was beginning to be addressed in some locations. A phase shift from prescription to understanding will aid clarity and assist both developers and regulators in planning and managing projects. A lack of appropriate data and the need for more data sharing is critical to addressing this barrier.

Suggested changes - procedures and authorities

The next question focused on suggested changes to the consenting process which would make it more efficient. A host of suggestions were put forward.

These can be broadly categorised into three areas, namely procedures and authorities; data and dissemination; and new approaches. With respect to consenting authorities there was a suggestion from multiple respondents that one consenting authority should be responsible for coordinating the efforts of the other consenting bodies that have a role in relation to ocean energy developments. This could be formalised through legal changes to the mandates of consenting authorities but it could also be achieved through less formal arrangements such as through memoranda of understanding between the authorities concerned.

Where multiple authorities are involved in granting consents, developers would like to see better communication between those authorities so as to avoid any potential duplication of effort. Where responsibilities change, in light of a change of government or internal restructuring, there should be a requirement for training where the person that has been processing consents can pass on his or her knowledge to the new person tasked with that role. Information on all aspects of consenting a project, regardless of the responsible authority, should be made available to a developer. The option of having an administrator 'talk' a developer through the process was also cited as desirable.

Suggested changes - data and dissemination

In relation to data and dissemination, developers were of the opinion that not enough success stories about ocean energy projects come to the attention of the public or consenting authorities. This would help to ensure that there is a basic level of awareness in society about this relatively unfamiliar technology and possibly lead to greater acceptance of proposed projects.

In order to disseminate information on projects and their impacts, there was a strong urge for a centralised database where data could be stored and shared amongst consenting authorities. This database should then be publicised so that consenting authorities could actually use it and base an increasing number of their decisions on the information in it.

Whilst there is a need to share data there will always be a need to reflect the local specificity of the site in question so total reliance on information and experience from elsewhere is not realistic.

Increased sharing of experience was suggested as being of use to the implementation of adaptive management approaches as management interventions are based on evidence. Risk-based approaches can be used where data is scarce. These approaches would also help address the problem of overly burdensome monitoring requirements on those intending to deploy a single device rather than multiple devices in a multi-megawatt farm.

Increased sharing of experience was suggested as being of use to the implementation of adaptive management approaches as management interventions are based on evidence. Risk-based approaches can be used where data is scarce.

A collective lack of understanding of the interactions of devices with their receiving environment was the major issue that has been holding back advancements in the ocean energy sector.

Suggested changes - new approaches

A lengthy response from one developer advocated the need to change from traditional EIA practices and subsequent monitoring to newer approaches which focus on "impact pathways" which focus on the direct and indirect ways in which the actions taken by a developer in deploying a device affect the environment around that device or a specific habitat/species within that environment. That developer was of the opinion that a collective lack of understanding of the interactions of devices with their receiving environment was the major issue that has been holding back advancements in the ocean energy sector.

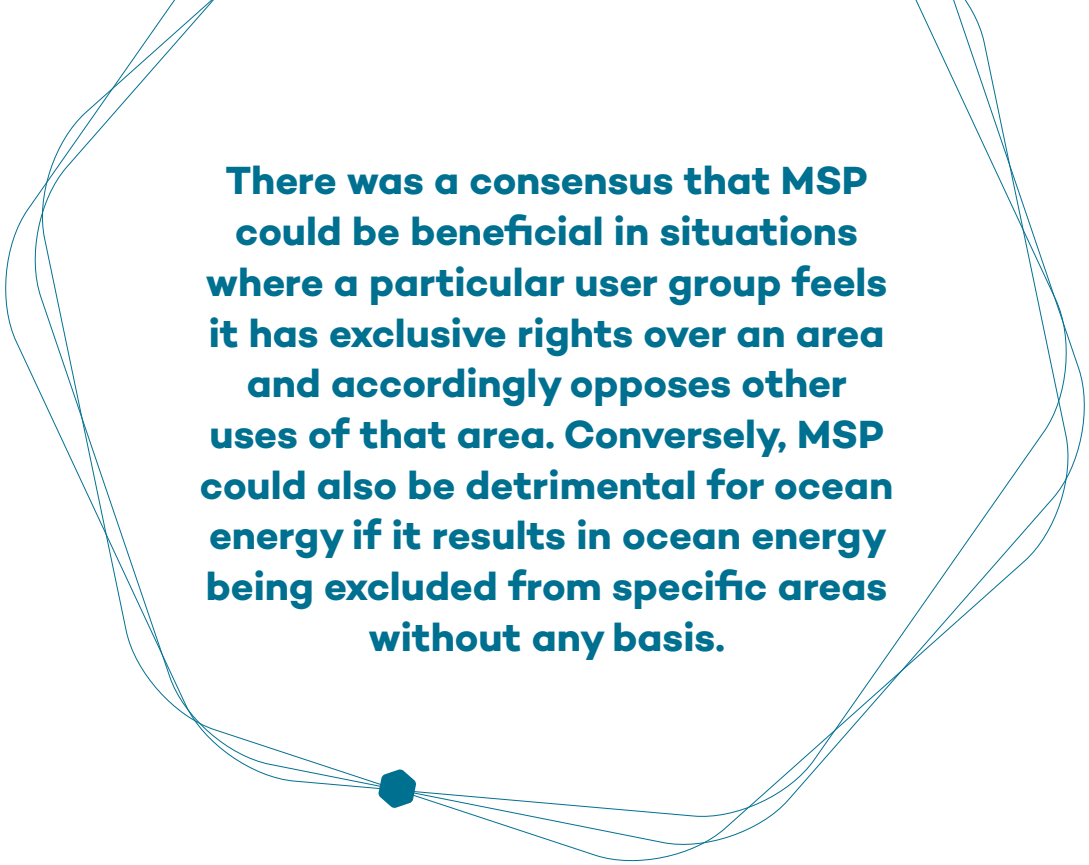
In Wales, for example, the consenting authority requires that the developer identifies impact pathways. This is a valid approach as it requires the developer to actually understand the environment into which they are planning to introduce their technology. How the developer achieves this is, however, left up to them (perhaps in conjunction with the consenting authority), thus a developer can plan ahead and can be confident that as long as they fulfil this requirement for evidence-based understanding, they will not be overburdened with further requirements in future. This approach has more extensive advantages as, if done to a sufficiently appropriate level, it is applicable across all locations and environments. This can be contrasted with the current approach reliant on survey data which, no matter how comprehensive, is often only ever applicable to one location, season or specific species.

The alignment of underlying fundamental principles should allow for a much smoother consenting process; with both sides agreeing on what needs to be done, engaging on how it should be achieved and both then having the actual data as evidence. This data then provides a very good basis, or may be directly applicable to any subsequent deployment meaning neither the developer nor the consenting authority has to start from zero for each proposed development project.

In the longer term this could form the basis of an ecosystem-based approach where impact pathways can be combined into an ecosystem wide-web, albeit with reference only to the immediate environs of the device in the initial phase. This interactive web, if modelled even at a basic level, can assist in the prediction of wider impacts that may otherwise not have been spotted with specifically targeted surveys.

International environmental law advocates an ecosystem-based approach to management and impact pathways assessment could be expanded to cover other sectors and help in the implementation of holistic and integrated management.

Under many UN Regional Seas Conventions, integrated ecosystem assessments are being encouraged. In the European Union there is a legal requirement to achieve good environmental status of marine waters by 2020. Marine waters extend to 200 nautical miles offshore in the majority of countries and so monitoring the marine environment so far offshore is a very tangible challenge. Currently ocean energy devices are located relatively close to the shore but devices could be used for environmental monitoring requirements given that some devices will be sufficiently large to place a variety of sensory devices on. Such an approach is not only advantageous to a developer but it also provides a greater good to society by generating data to be used to inform better management decisions.



Opportunities and solutions associated with Marine Spatial Planning

The opportunities and solutions associated with Marine Spatial Planning (MSP) for ocean energy developments are largely unknown to developers at this time. This is natural given it is still in the process of being implemented in many countries across the world: its effects on ocean energy are not yet known and can only be surmised.

One developer felt that whilst the rationale for MSP may be legitimate and well-intended, in that it seeks to achieve a level playing field for all marine activities, this is highly ambitious and will be difficult to achieve in practice.

There was a consensus that MSP could be beneficial in situations where a particular user group feels it has exclusive rights over an area and accordingly opposes other uses of that area. Conversely, MSP could also be detrimental for ocean energy if it results in ocean energy being excluded from specific areas without any basis.

It was accepted that exclusion of devices from active shipping lanes, military areas, conservation and archaeological sites could be warranted. Developers have one key concern in relation to the implementation of MSP and that is that it will be overly prescriptive. These was a suggestion that only certain uses (i.e. active shipping lanes, military areas, conservation and archaeological sites) be 'zoned' and that all other marine areas be considered 'multiple use zones'. A possible analogy was drawn with land-based planning where the development plan system was intended to create a presumption in favour of development but rather over the years it transpired that there was a presumption against development that did not comply with the development plan.

Pre-allocated zones for ocean energy

Developers had mixed views on whether pre-allocated zones were actually of benefit to the sector. Some developers were of the opinion that pre-allocated zones have not created the benefits that were intended and in reality had resulted in very low levels of deployments. The obvious exception to this is Test Centres but arguably that is what developers needed at that particular time, not sites for full, commercial scale development.

There is concern among developers that pre-allocated zones could make it more difficult for developers to deploy in 'other' areas of the sea in practice. This is a particularly relevant consideration in respect to ocean energy which has many different technologies and hence operating environments. Other developer respondents were of the opinion that if MSP led to the designation of dedicated areas for marine energy then this could lead to shorter times for consenting and less risks. Any initiative or approach that could reduce the number of procedures associated with consenting and reduce the timeframes involved would be viewed as beneficial.

Another possible opportunity associated with MSP implementation that was cited by a developer was the fact that MSP as an over-arching plan could provide a strategic home for ocean energy and in that sense actually help realise development of the sector. In keeping with new approaches to environmental management it was stressed that any future MSP system be based on evidence and understanding.

OUTLINE OF MAIN BARRIERS

Marine Spatial Planning

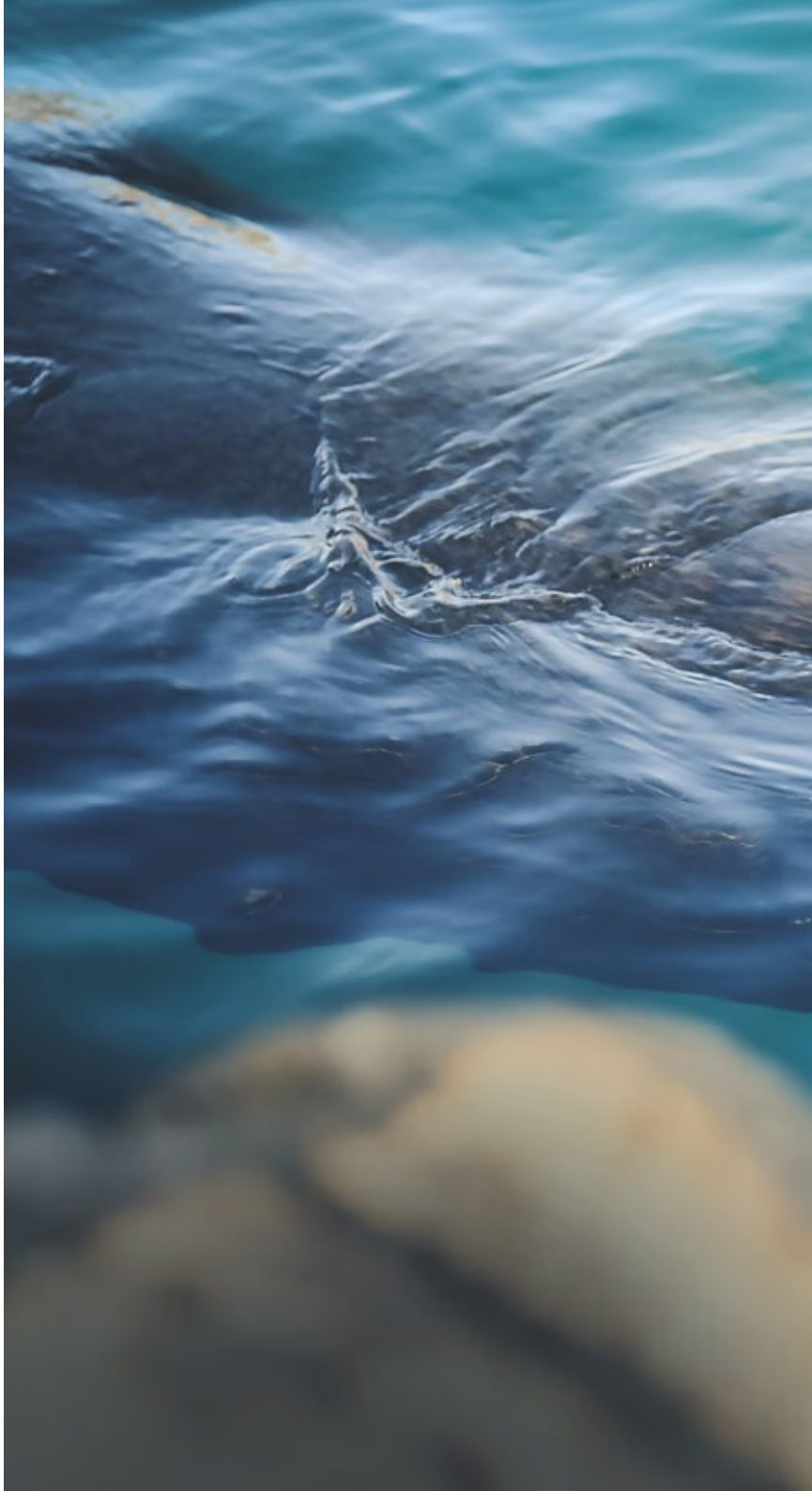
The information collected to populate this report presents a number of interesting findings that may individually or cumulatively combine to act as a potential barrier or hindrance to the growth of ocean energy worldwide. A governance framework that enables the development of the ocean energy sector is still required in most OES member countries. Consenting processes are one element of this framework but ideally they should be considered within much wider management structures that are now beginning to include Marine Spatial Planning and risk-based approaches as well as continued environmental protection and the increasing need to ensure public acceptance. An OES report from 2014 focused exclusively on consenting processes for ocean energy in OES Member Countries. Whilst discrete aspects of the consenting system for ocean energy may have changed in certain countries, the overall situation remains largely similar to that which existed in 2014. It would appear that in comparison to other maritime industry sectors, ocean energy still has a limited visible 'presence' worldwide. This observation is based on the information submitted by respondents in relation to Marine Spatial Planning in their respective countries. Whilst some countries do not have MSP in place, those countries that do have marine plans rarely reflect ocean energy developments or future needs of the sector. This could be ascribed to the current lack of deployments but it may also be attributed to a lack of interaction with ocean energy representative associations or inconsistent messages from the sector. Developers appear undecided about the advantages and disadvantages of MSP, with its implications largely unknown at this time.

Whilst discrete aspects of the consenting system for ocean energy may have changed in certain countries, the overall situation remains largely similar to that which existed in 2014.

In the majority of countries, numerous consents are still required for an ocean energy device deployment. It is probably unrealistic to suggest one integrated licence/consent for an ocean energy project but, to assist in streamlining the functioning of the consenting process, it should be possible to have a single point of contact for consenting.

Number of Authorities

Previous OES reports and research projects have indicated that there can be a large number of authorities involved in the consenting of ocean energy projects, reflecting the sea use, environmental, electricity and other aspects of such deployments. Generally, countries that have complex jurisdictional arrangements tend to have more authorities involved, and more types of consent, which can make it difficult for a developer to navigate the process. This can act as a barrier to development as it may take some time for a developer to become clear on who should be involved, at what stage and for what purpose. Where multiple authorities are involved it is not clear to developers how often or closely they communicate with each other. Different consenting authorities may operate in different maritime jurisdictional zones. Whilst there are no ocean energy deployments in EEZs worldwide as yet, there are many offshore wind farms in that zone in Northern Europe and so deployment in different maritime jurisdictional zones could become a barrier in the longer-term. Some countries stated that as they had no ocean energy deployments in their waters as yet, no consenting process could be described or said to apply. This would suggest that anyone proposing a project in such a country may face an unclear development path. As a new and developing sector it is imperative that consenting authorities are in a position to apply a process, albeit a modified one, to this new marine activity. In terms of best practice, it would appear that the province of Nova Scotia and the United Kingdom system are the most streamlined, operating a 'one window' or 'one-stop-shop' approach to the administration of consents.



Consenting processes

Consenting processes have not changed significantly in the past two years. According to developers, however, changes in government structures or internal organisation, can result in knowledge being lost within the authority. In the majority of countries, numerous consents are still required for an ocean energy device deployment. It is probably unrealistic to suggest one integrated licence/consent for an ocean energy project but, to assist in streamlining the functioning of the consenting process, it should be possible to have a single point of contact for consenting (related to above paragraph).

The prospect of combining various types of survey work, impact assessment and monitoring should also be explored so as to ensure there is no duplication of effort. It is probably impractical to suggest legislative reform to streamline processes and procedures so alternative mechanisms need to be explored. Norway is the only country to have dedicated ocean energy legislation though there is provincial level legislation in Nova Scotia on marine renewable energy. The purpose of that instrument was to ensure that projects proceed with appropriate licensing, environmental protection, community benefits and provincial revenue.

The advantage of a dedicated instrument is that it can provide certainty and transparency to developers trying to operationalise a project. Whilst dedicated legislation for ocean energy may not constitute a barrier per se some of the features it prescribes could actually facilitate development.

The Portuguese practice of having a specific law or instrument on every subject was heralded as a good approach by one developer as the laws were then clear and easy to understand.

Another feature of dedicated ocean energy legislation is the allocation of zones for development or preferred areas. Obviously such an approach could also be advanced through Marine Spatial Planning (MSP).

Information on time taken to obtain consent was not explicitly requested from Member Countries though in some countries there is a policy target of making a decision on an application within a certain timeframe e.g. in Scotland. This is helpful to developers as they can plan and budget for their project more precisely.

Environmental Impact Assessment (EIA)

With respect to EIA, there is widespread variation across the world on whether an EIA is always requested or if the need is decided on a case by case basis. In certain countries capacity thresholds dictate whether an EIA is required or not (e.g. above 50 MW an EIA is required). This is not advocated as a best practice as it very much depends on the proposed site and its environmental sensitivity. An absolute requirement to conduct an EIA may also present a barrier to ocean energy development. This is because there is no consideration given to the longevity of the deployment or the scale of the device being deployed. For projects that consist of a single unit being deployed for a defined, short period of time to be subjected to the same requirements as a large scale, permanent project seems vastly disproportionate, both in terms of survey work required and in terms of cost. One attempt to overcome this barrier, is to have pre-consented areas for development. Current experience of this approach is almost exclusively limited to Test Centres. Nova Scotia, Canada has been progressive in this regard by defining Marine Renewable Energy Areas. Given the range of consents required the situation can arise where an EIA is required for different aspects of a development, for example, occupation of sea use may require an EIA, as may laying of submarine cables and onshore works.

An innovative solution to this in the EU, comes in the form of the most recent EIA Directive (2014/52/EU) which now mandates Member States to simplify their different environmental assessment procedures and allow integrated assessments to be submitted. Another possible solution to this is for consenting authorities to adopt a risk-based approach to consenting. This means that the level of impact assessment required is based on the environmental sensitivity of the site, the technology risk and the scale of deployment. It can reduce the time taken to obtain consent in less sensitive locations where projects are of lower risk. A tailored monitoring plan will help reduce environmental uncertainty by gathering information on how marine renewable energy devices actually interact with the environment. These findings can then be utilised by the consenting authority when dealing with future project applications. There was a strong urge from developers for EIA and post-consent monitoring requirements to be based on evidence and understanding of interactions.

It is clear from the information submitted that Strategic Environmental Assessment (SEA) is an under-utilised approach for assessing the potential impacts of development at a strategic level.

SEA is a systematic decision support process, which aims to ensure that environmental and other aspects of sustainability are considered effectively in plan and programme making. A SEA would identify the likely significant environmental effects of implementing plans to develop marine/ocean renewables and could lead to certain environmental aspects being addressed at a more strategic level, rather than falling to the developer, which is more appropriate for certain environmental concerns e.g. effects on migratory species.

In Canada, site selection in the Bay of Fundy was determined in part by a SEA on tidal energy development in that area. The UK and Ireland have also conducted SEAs for marine renewables, the results of which are taken into account before developments are fully consented. In the UK the Crown Estate, in advance of publishing tenders for wave and tidal areas, carry out SEAs so as to inform the selection of their areas for lease.

A SEA can also highlight the parameters or features that may need to be monitored subsequent to implementation of a plan or development including site level mitigation measures, which is also useful to developers.

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Consultation

Consultation is a legal requirement and intrinsic part of the consenting process in OES countries. Early and effective engagement has been cited as being key to successful project planning, development and operation. It can prevent objections or lack of acceptance of a project at a later stage. Approaches to consultation can vary: in some countries there is guidance available on consultation with detailed information on who a developer should consult with about their project. In other countries there will be a list of mandatory consultees that must be included as part of the statutory process. Developers continually indicate the importance of consultation and engagement at an early stage in the project. One possible barrier in relation to consultation is the fact that, when part of the SEA or EIA process, the focus of consultation tends to be on environmental effects of device deployment. Whilst many consultees and the public are interested in this information more and more frequently they would like information on the benefits of the project to their locality and community, the openings in relation to employment and, in some cases, the opportunity to invest. Developers should be prepared for these types of socio-economic questions as far as possible and be able to highlight the benefits of their project to the receiving community as well as on the receiving environment. Similarly, there is probably a national need to advocate the benefits of ocean energy to the general public.

Guidance and Advice

From the previous sections it is obvious that consenting of ocean energy projects have many facets and incorporate many unique considerations. As a developing sector currently involving small to medium enterprises primarily, it would be useful to provide those trying to operationalise a project with as much guidance and advice as possible in relation to getting their device in the water. For many it may be the first time to deploy a device at sea and consenting can appear daunting.

Regulators and those involved in the administration of consents may be very familiar with the system in which they work and know who to contact when and in relation to what. A developer will not know this information unless they have access to it either via a website or a specific point of contact.

Developers state that they often cannot access such basic information and so their time may be spent inefficiently trying to find contact details or other relevant information.

With respect to more technical aspects of development such as the EIA process, guidance was also deemed to be lacking by the developer community. This somewhat contradicts the fact that the majority of countries report that guidance does exist to cover different procedures. In addition to guidance and advice published by consenting authorities, other professional bodies and organisations also produce guidance on particular topics such as EIA. It then becomes unclear what guidance is best or what guidance should be adhered to if there is a conflict or discrepancy between different sources.

If consenting authorities do not have resources to produce their own guidance an option would be to endorse guidance that already exists with appropriate caveats where applicable. In some countries it is evident that guidance has been produced but this is tailored towards offshore wind and it is unclear to developers if it can also apply to ocean energy. This should be clarified in any future versions of the guidance.

Test centres

Test centres are common in the European Union and Canada with efforts to open similar facilities in the USA. Of the test centres that exist there are either less consents required or an initial project appraisal which dictates what other consents are necessary.

The success of test centres and the facilities they provide is widely acknowledged by developers, researchers and consenting authorities.

One possible barrier is where to go subsequent to test centre deployment. From the input received there appears to be no obvious pathway for the next phase of development and whilst there is guidance on how to proceed through phased product development for wave and tidal devices there could be a gap on where to deploy full-scale commercial projects. This is partly a commercial and financial decision on behalf of the developer but it could be addressed more explicitly by authorities in those countries that are wishing to develop ocean energy into an established maritime sector.

RECOMMENDATIONS

1. DEVELOP MESSAGES ON WHAT MSP CAN DO FOR THE OCEAN ENERGY SECTOR

This needs to be two-way. From consenting authorities developing MSP they need to explain clearly the benefits of MSP to ocean energy. Likewise, as marine spatial plans are being developed there is an onus on developers and industry associations to convey to regulators what the ocean energy sector requires from MSP. This could cover a range of themes including pre-allocated zones, coexistence with other marine activities, spatial requirements, technology-specific needs, etc.

2. REQUEST AUTHORITIES INVOLVED IN CONSENTING TO PROVIDE CLEAR INFORMATION ON THEIR RESPECTIVE ROLES AND RESPONSIBILITIES AND HOW THEY CAN BE CONTACTED

Where multiple authorities are responsible for consenting, information should be available to developers on who is involved, at what stage, their role and how they can be contacted. This should supplement any existing or planned technical guidance (see below).

3. WHERE APPROPRIATE, CONSENTING AUTHORITIES SHOULD HAVE AN APPLICABLE PROCESS FOR CONSENTING AN OCEAN ENERGY DEPLOYMENT AND PROVIDE INFORMATION ON THIS (LINKED TO REC.2)

This is only applicable to those countries that have stated no ocean energy device has yet been deployed in their waters and so no consenting process has been applied. Having this in place would assist prospective developers when choosing a potential site for development.

4. REQUEST CONSENTING AUTHORITIES TO IDENTIFY OPPORTUNITIES FOR STREAMLINING THEIR CONSENTING PROCESSES AND/OR PROVIDE INFORMATION ON HOW THEY COORDINATE THEIR ACTIONS WITH OTHER RELEVANT AUTHORITIES

Developers experience the 'user' end of the consenting process but often it is the personnel in the authorities themselves who are most familiar with what can act as a barrier to consent. In reality it is often easier to address these issues from within the administrative system than from outside it.

5. TAILOR CONSENTS AND ASSOCIATED PROCEDURES TO BETTER FACILITATE OCEAN ENERGY

This should be based on the findings of the previous recommendation. In some countries, for example Portugal, governing legislation has been amended to reflect the needs of ocean energy and in that way facilitate its development. This can relate to thematic legislation such as that governing electricity or cross-cutting legislation such as Environmental Impact Assessment regulations.

6. USE STRATEGIC ENVIRONMENTAL ASSESSMENT

This is an under-utilised approach for planning future sectoral development. Many countries already have a dedicated ocean energy or marine renewable energy plan or programme. Conducting a SEA in parallel to strategy development will help to ensure that environmental effects are taken into account as early as possible at the forward planning level. This can prevent poor site selection at a later date. It can also inform site level monitoring programmes by scoping out effects that are not significant.

7. PROPORTIONATE ENVIRONMENTAL ASSESSMENT AND MONITORING

As a developing sector, the costs of baseline characterisation and associated data collection can be burdensome on small companies seeking to deploy a device. Subsequent to obtaining consent, the environmental monitoring requirements can also be onerous and expensive. There is a need for decision-makers to ensure that compliance with EIA processes are proportionate to the project being proposed. This can be advanced through the incorporation of risk-based approaches into consenting which are based on evidence and understanding of device/environmental interactions.

8. EXPLORE THE FEASIBILITY OF CREATING INITIAL DEVELOPMENT ZONES / PRE-DEFINED AREAS

This could follow on from the creation and peration of already existing Test Centres where berths are pre-consented or require a lesser environmental appraisal to be submitted prior to devices being deployed. There are a number of possible advantages to this approach. It allows developers to progress from the Test Centre to a more advanced stage within the same jurisdiction. Pre-defined zones could form the basis of an area for lease (pre-cursor to a leasing round) for consenting authorities and also encourage developers to a specific location.

9. DEVELOP GUIDANCE DOCUMENTS FOR DEVELOPERS THAT COVER THE TECHNICAL ASPECTS OF CONSENTING PROCEDURES

Clarity of procedures in the consenting process is critical. It reduces uncertainty and regulatory risk. Environmental Assessment, navigational assessment and other regulatory requirements may be unfamiliar to developers and most would like to have a reference document on how to address these prior to employing consultants to conduct the necessary work. For professionals tasked with conducting site investigations they might also appreciate guidance on how to select the most appropriate methodology for highly difficult aspects such as noise in the marine environment, mobile species etc.

10. CREATE PROMOTIONAL MATERIALS THAT EXPLAIN HOW OCEAN ENERGY IS DIFFERENT!

As a developing sector there is still a general lack of information and knowledge available to the public on ocean energy. This gap needs to be addressed by both consenting authorities and project developers. It will help to encourage people to support future projects and explain not only why they are necessary but also the wider societal and community benefits. Offshore wind is often quoted as being similar to ocean energy but there can also be significant differences. It is not clear to developers whether guidance available for offshore wind projects is also applicable to ocean energy projects. Any promotional materials should highlight the differences between both sectors to ensure people understand the various technologies and how they operate.

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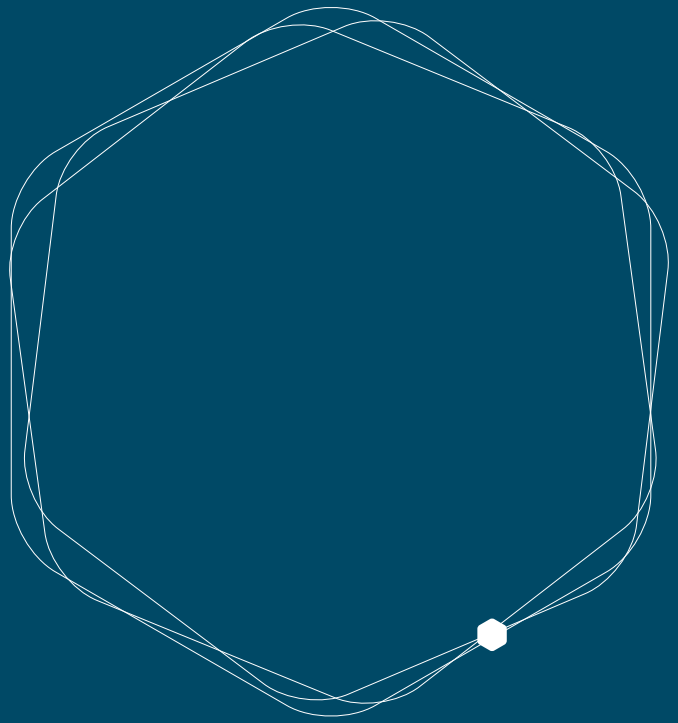

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