

Regulating marine renewable energy development: a preliminary assessment of UK permitting processes

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Abstract

While the UK has implemented a number of reforms to permitting processes to support the emerging marine renewable energy industry, research into the effectiveness of such reforms has been limited. The present paper presents a preliminary assessment of two key aspects of the UK's regulatory framework: the seabed leasing process and the permitting process. In particular, the Crown Estate seabed leasing process and Scotland's 'one-stop shop' for permitting are discussed. Some concluding thoughts are given regarding the efficacy of these processes, laying the foundation for further research and analysis.

Keywords: marine renewable energy, marine governance, marine licensing, seabed leasing, Crown Estate leasing process

1. Introduction

The UK is widely considered to be a world leader in the nascent marine renewable energy (MRE) industry.¹ This is undoubtedly true in terms of the number of devices deployed, and the level of government support. However, while reforms to permitting processes have been implemented, limited research has been conducted into how effective they have been, if they represent good practice, and whether the UK can be used as a model for emerging jurisdictions.

The present paper presents a preliminary assessment of two key aspects of the UK's regulatory framework: the seabed leasing process and the

permitting process. The procedural processes are often considered in tandem with substantive elements of the regulatory process, particularly Environmental Impact Assessment (EIA) requirements. However, the present paper deals exclusively with the procedural aspects, as substantive matters such as EIA require substantial separate analysis and are outside the scope of this paper.

First, the present paper provides an overview of the context for MRE: the 'blue economy' agenda, ocean industrialisation, and the evolution of marine governance. Second, an overview of the licensing regime for MRE projects is given to set the licensing process in context. Third, some general principles for seabed leasing are discussed, and the seabed leasing process undertaken by the Crown Estate is outlined and critically assessed. Fourth, the problems with unreformed permitting processes are set out. This provides a starting point for the discussion of the one-stop shop approach, as well as some potential alternatives to streamlining permitting processes. A comparison of the English and Scottish permitting regimes is provided. Finally, some concluding thoughts are given regarding the efficacy of these processes, and the extent to which they can be a model approach for other jurisdictions.

2. The 'blue economy': an industrial revolution of the oceans

The seas and coasts have long been strong drivers of economies worldwide, and coastal communities and ports have traditionally been hubs for ideas and innovation owing to their outward-looking geography (European Commission, 2012). However, the potential for industrial activity and innovation in the marine environment has grown exponentially in recent decades owing to three main factors.

¹ Marine renewable is used in the present paper to refer to wave and tidal energy technologies. These technologies have followed a similar development path, distinct from ocean thermal energy conversion (OTEC) and salinity gradient technologies, and are the main focus of current development efforts. For an overview of development in the UK, see Plant (2013a, 2013b).

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First, rapid technological progress has opened up new possibilities for the exploration and exploitation of marine areas. In addition, land and freshwater resources are finite, a fact that has become ever more apparent as population and demand for resources grow. Finally, the need to mitigate climate change by reducing greenhouse gas emissions has increased interest in sustainable innovation in the marine environment.

This process of ocean industrialisation² is adding a lengthening list of new uses to traditional shipping and fishing activities, with a concomitant increase in the potential for negative environmental impacts. While the industrial revolution on land precipitated the climate change era, the industrial revolution in the oceans has the potential to be part of the solution, if managed appropriately. Though some marine activities, such as the established oil and gas extraction industries, present an inherent challenge to sustainability, a number of new offshore industries have great potential to contribute to the climate mitigation effort and to sustainable development. For example, well-managed aquaculture could provide a much needed source of food to coastal communities while preserving natural ecosystems (Benedict, 1999); carbon capture and storage could remove carbon from the atmosphere and store it offshore (Offshore Technology, 2010); and sustainable tourism can lead to improved resource management (Shah et al., 2002).

In addition to these, MRE has the potential to generate clean energy from the oceans, thereby contributing to the climate change mitigation effort. One commentator notes that ‘given the challenges posed by climate change, the orderly but rapid development of the [MRE] sector will be highly desirable for both present and future generations’ (Leary and Esteban, 2009).

Nonetheless, the number and intensity of these activities have the collective potential to generate significant cumulative impact and place pressure on fragile ecosystems. The need to balance new economic and social opportunities with conservation is encapsulated by the EU’s Blue Growth agenda, which focuses on the opportunity to ‘harness the untapped potential of Europe’s oceans, seas and coasts for jobs and growth ... whilst safeguarding biodiversity and protecting the marine environment’ (European Commission, 2012).

This new wave of industrial activity in the oceans and the need to balance this with environmental

protection necessitates evolution in legal and regulatory structures. Marine governance structures have traditionally focused on single-sector management and environmental protection, whereas now a more holistic approach that can accommodate a range of ocean uses and users is needed. This evolution is explored in the following section of the present paper.

3. Marine governance

Within their own waters, states have traditionally managed marine activities on a single-sector basis. This was fairly functional where uses of oceans were limited and conflicts were few, and where the oceans were not imperilled by industrialisation. However, this paradigm has severe limitations when marine activities increase, conflicts between users become more common and the environment is put under pressure.

The rise of systems thinking and the negotiation of the UN Convention on the Law of the Sea saw the decline of single-sector management and its replacement by integrated management concepts, such as marine protected areas (MPAs) and integrated coastal zone management (ICZM). These mechanisms improved on single-sector management, but have also been the subject of criticism, particularly for failing to balance ecological with social considerations (Christie, 2011).

A large review of MPAs published in 2011 noted the challenges involved in successfully implementing MPAs and the perils of focusing solely on conservation, concluding that they can *only address some causes of biodiversity loss* (Mora and Sale, 2011). Similarly, ICZM has been criticised as being ineffective: Meltzer notes that there are ‘relatively few, if any, successful models of ICZM internationally’ (Meltzer, 1998).

As ocean industrialisation has advanced, both MPAs and ICZM have been criticised as being deficient, having a strong environmental focus without the ability to adapt to, and incorporate, new marine industrial developments.

As ocean uses and the conflicts between them intensify, the oceans are likely to become a site for ‘imagining and creating future social institutions and relations, for land as well as for sea’ (Steinberg, 2001). Increased industrialisation of the oceans is leading to new discourses, and governments are now in the process of restructuring the rights and rules of the oceans, taking up new regulatory models and innovations in their modernisation of marine governance.

This new period in the evolution of marine governance has seen a move towards a broader

² In this context, this refers to the increasing industrial production uses and extraction, and increasing scope and intensity of non-production uses of the oceans. Many authors have used the term ‘ocean industrialisation’ in a range of contexts (see, e.g., Salcido (2008, 2011) and Charter (2007)).

objective of applying a coherent governance framework to the entire marine environment in order to realise economic benefits while maintaining social and environmental values. In this new paradigm, policymakers and managers will be required to evaluate the trade-offs between these considerations, and between the various uses and users of the marine environment.

This shift in thinking about marine governance is well articulated by Oshenko (1982), who issues a compelling call to advance the evolution of approaches to the governance of marine spaces.

The UK has advanced this evolution by enacting specific legislation – among the first in the world – to provide a legislative framework for modern marine governance arrangements through the *UK Marine and Coastal Access Act 2009* and the *Marine (Scotland) Act 2010*. Nichols et al. (2000) suggest that the following elements are at the core of modern governance frameworks for the marine environment:

- the management of the resource (allocation of rights);
- regulation of resources and use (e.g. environmental protection, rights to economic/social benefits);
- management of spatial and other types of information to support these functions;
- monitoring and enforcement and dispute adjudication.

Oshenko (1982) adds questions of ownership and tenure to this list, while Salcido (2008), applying a similar framework in the MRE context, believes the management of environmental concerns to be a distinct part of the overall marine governance framework warranting separate discussion. Given the foregoing, modern marine governance arrangements can be viewed in terms of four key constituent parts:

1. Rights and ownership.
2. Management of the resource.
3. Managing ocean space.
4. Managing environmental interactions.

4. Managing MRE resources

As set out earlier, the management of marine resources is a core function of modern marine governance arrangements. As industrial activity in the oceans increases, so will competition over the best resources.

Marine governance structures need to address a range of questions relating to resource management: Who has rights to access and use the marine resource? How are such rights determined, and

who is in charge of making such decisions? Who is granted access to the resource, and under what conditions?

MRE provides a good case study for resource management, as the most viable MRE resources are generally concentrated in particular locations. This is in contrast to other sources, such as wind and solar, which tend to be more spread out. The specific nature of MRE resources means that there will likely be competition over them as the cost of MRE technologies falls and more companies become involved.

Indeed, some large companies are already entering the field (Wright, 2012), and the UK is showing its potential to host a significant industry. This means that resource allocation and permitting processes for MRE need to be established to facilitate the sustainable growth of the industry. The UK has proceeded with developing such processes, and other jurisdictions are now looking to the UK as a model.

5. Unreformed licensing and permitting processes

Before assessing the UK's initiatives, it is pertinent to consider what regulatory frameworks generally look like in the absence of targeted reform. There are a range of activities related to the construction of an MRE facility that require or may trigger some sort of licensing procedure. In some cases there may be specific legislation relating to MRE installations or to a particular area, such as an MRE testing hub or defined park. In other cases, legislation regarding marine installations in general will be applicable.

Prior to implementing initiatives designed to facilitate MRE projects, regulators had to make do with a range of ill-fitting legal instruments. Salter (2008), one of the early pioneers of wave energy technology, called this a 'maze' of regulatory obligations and obstacles, while Krueger and Yarema (1981), in reference to the then-frontrunner MRE technology ocean thermal energy conversion, colourfully called these unreformed regulatory regimes 'hydra-like creatures'.

Given the range of substantive considerations in play, a clear permitting process is needed. Without targeted reform, regulators often rely on ad hoc permitting processes, created as a project develops, or using legislation that was not designed for MRE technology. Permitting processes can be a barrier for an MRE energy project when such processes are unclear or inconsistent, where regulators rely on bespoke processes and/or lack the requisite knowledge regarding the technology or legal context,

and where the process is overly onerous (Kolliastas et al., 2012).

Wavenet (2003) notes the negative impact of poor permitting processes, stating that developers may deal with a number of specific legislative frameworks, but ‘may in some cases also experience that the legal planning framework has not been fully developed yet, forcing the authorities to create such a legal framework during the development of the project’.

Such ad hoc permitting processes are unlikely to be fit for purpose or to be transferable from one project to the next, giving proponents no continuity or certainty. In many cases, the permitting process for a project, particularly a large- or commercial-scale project, can take several years, causing substantial delay and producing an undesirable level of uncertainty relative to the large level of investment required (Neumann, 2009). Where no established framework exists, developers have no choice but to seek relevant detailed information for each individual project (Wavenet, 2003), a considerable burden which would ordinarily be shared between a proponent and a regulator.

Given the foregoing, the difficulty and time-frames faced in obtaining the relevant permits through poor process has been called ‘the major threat to efficient implementation of this renewable energy source’ (Neumann, 2009). Clear, consistent and well-designed permitting frameworks for MRE projects can therefore help sustainably manage the resource and provide investor and developer confidence.

Not only are domestic legal arrangements still undergoing development but remaining unclear in many jurisdictions, national planning rules can vary significantly across jurisdictions, such as within the EU. On a national level, different legal frameworks exist within individual countries at the regional or local level (Wavenet, 2003). Even once appropriate regulations have been developed, a lack of harmonisation between different jurisdictions, whether intra- or inter-state or international, could hinder development of the industry.

From a regulator’s perspective, heavy and often complex administrative procedures can prevent translation of high-level policy measures, such as government commitments to renewable energy deployment, into concrete action, such as assisting developers in getting approvals. By their nature, regulators and public bodies are risk averse and are unlikely to assume responsibility for permitting projects they perceive as risky or to give priority to new technologies (Neumann, 2009). A discussion of the precautionary principle as implemented by regulators in relation to MRE projects would be an

interesting lens through which to discuss risk aversion, but this is beyond the scope of the present paper.

6. Unravelling the maze: reforming permitting processes for MRE

The poor suitability of pre-existing laws and regulations for permitting MRE projects has led to an interest in customised regulatory frameworks for this technology, and the UK has been particularly proactive in this regard.

Seabed leasing and permitting processes must aim to be both principled and practical. Firstly, they should ensure:

- Economic efficiency: as the rights being allocated are for the exploitation of a finite and valuable resource, they should be allocated in a manner that ensures the resource will be efficiently exploited and provide the most public benefit. This may involve a competitive allocation process.
- Equity: they should ensure that the resource is allocated equitably among proponents.
- Sustainability: it is crucial that regulatory processes ensure sustainable deployment of MRE devices.
- Financial return: the seabed is owned and controlled by governments, which have a duty to obtain the best financial return in exchange for the private use of public land.

Secondly, they must provide a simple and user-friendly process that will not add regulatory burden, and therefore time and cost, to an MRE project.

7. The relationship between licensing processes and substantive consenting issues

The substantive content of legislation pertaining to MRE projects and the issues faced by developers has already been extensively covered in literature (Simas et al., 2009; Woolf, 2011), and the present paper is therefore primarily concerned with the less discussed permitting processes implementing this legislation. Nonetheless, it is worth briefly noting these substantive issues and their relationship with the processes under discussion.

A range of issues may be relevant in the permitting process. These include: Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA); the rules regarding the use of ocean space, including compliance with any marine spatial planning instruments; mediation of conflicts of interest, such as with fishermen and surfers, and competing uses, like fossil fuel extraction. There are also likely to be rules regarding the

extraction of energy or water, requirements regarding construction, deployment and decommissioning, and established frameworks for the onshore components.

The consenting process is inextricably linked with environmental regulations. In European countries, such regulations exist in the context of relevant EU Directives, in particular the Habitats Directive (92/043/EEC). The Habitats Directive requires the conservation of natural habitats and of wild fauna and flora, and provides for the creation of special areas of conservation (SACs) for this purpose. Similarly, the Wild Birds Directive (79/409/EEC) enacts like provisions in relation to the conservation of birds.

At a more general level there are also EIA and SEA Directives. The EIA Directive (85/337/EEC, as amended by Directives 97/11/EC, 2003/35/EC and 2009/31/EC) does not require EIA for wave and tidal projects. Wave and tidal projects appear to fall into Annex II, meaning that the necessity of an EIA process is left to the discretion of member states, although in practice there will usually be an EIA process in place.

By contrast, the SEA Directive (2001/42/EC) applies to strategic programmes and plans. It requires that potential environmental impacts are identified and integrated into the programme at the planning stage. SEAs provide broad context and environmental information to complement project-level EIAs, and it is likely that national authorities will complete an SEA ahead of significant MRE development.

Procedural and substantive issues, as well as regulatory processes led by different bodies, are interlinked and interdependent. While the processes have developed along different tracks, the substantive issues involved cross boundaries and require coordination between different bodies. This is seen in the two processes: the Crown Estate's seabed leasing process and Marine Scotland's consenting process (discussed later in sections 8.1.5 and 8.2.4). The Crown Estate initially enters into an agreement for lease with a developer, which gives it a conditional right to request a lease over the seabed. In some cases (presumably where a developer makes an application outside of the usual rounds process), the Crown Estate may also offer a developer an exclusivity agreement – a 'reservation' over an area of seabed. Under such an agreement, the developer does not receive rights to construct a development, but a contractual commitment that the Crown Estate will not permit any other development on the site.

An agreement for lease between the Crown Estate and a developer provides the latter with

exclusivity over an area, an enforceable option to require the Crown Estate to grant a lease, and temporary rights to undertake ancillary activities. However, the option is conditional on the developer obtaining the necessary statutory consents for the project. Legislative and regulatory requirements include licences under the *Food and Environment Protection Act 1985* and consents under the *Coast Protection Act 1949*, and, if over 1MW in capacity, consent under section 36 of the *Electricity Act 1989*.

8. The UK's reformed permitting processes

The following sections of the present paper deal with each of the two aspects of permitting processes in turn: first, by looking at models for tenure allocation, examining the UK as a case study; and second, by considering the process itself, with a discussion of the new regulatory bodies created in the UK.

8.1. Part one: tenure allocation

As is the case with any limited resource, decisions regarding allocation of rights to the resource will need to be made. Broadly speaking, there are several possible mechanisms, or combination thereof, that can be used to make these decisions. Set out in the following paragraphs is a high-level conceptualisation of the main models.

8.1.1. Developer-led permitting

Developer-led permitting is essentially the 'first come, first served' approach. Under this model, developers apply for permits as and when they decide to do so. Each project then proceeds through the relevant regulatory processes in the order of application. This approach is the default position in jurisdictions that have not developed specific MRE permitting processes. This can occur with the regulator being perpetually open to new applications or opening up for applications during a particular window.

An open process can help to ensure transparency and fairness. However, there are some disadvantages. If allocation occurs too soon, there may be project proponents that are more suited to developing the resource, but may not yet be ready to secure tenure over a particular site. The number of potentially interested parties may therefore be too small to enable efficient and effective competition. This could result in speculation by a small number of participants obtaining leases in order to 'lock out' competition or with the intention of transferring the lease to another party at a premium later.

Developer-led permitting is not well-suited to maximising any of the policy objectives identified earlier in the present paper. It is not likely to be

economically efficient as it provides no basis for assessing the strength of particular projects. In addition, it is unlikely to be equitable as it could be open to exploitation and preferential treatment towards poorly prepared proposals, and therefore may not provide a good financial return. While the environmental impact of these proposals would be covered by EIA legislation, it is certainly true that projects put forward by well-prepared and experienced proponents will likely cause a smaller environmental impact in the long term.

Despite the clear inadequacies of this form of permitting, this model persists in jurisdictions where legal reform has not yet been forthcoming, such as Australia and New Zealand (see Wright and Leary, 2011; Wright, 2011). These jurisdictions provide an ongoing example of how unreformed frameworks can be problematic.

8.1.2. Qualitative assessment

Allocation of resources can be based on a qualitative assessment of proposals. This requires a detailed assessment and comparison of the expected performance of a number of projects over their useful life, and allocating leases based on which project best fulfils set criteria. The process would assess aspects such as likely lifespan of the project, electricity output, cost of generation, contribution to technology innovation and reliability, as well as social and environmental impacts.

Qualitative assessment will place more burden on regulators, as a decision to allocate resources will involve balancing of a range of factors. An informed decision requires an appreciation of all of these factors, the interplay between them and the need for trade-offs.

8.1.3. Competitive processes

A competitive process is most likely to meet a range of policy objectives and can vary from simple tenders to more sophisticated processes, such as online auctions. In any case, selection generally occurs with reference to bids that are assessed against key criteria (both qualitative and quantitative).

A competitive process can remove some of the issues with the developer-led permitting process by providing a structure to the approvals process and ensuring that a range of suitable proposals are considered, though issues with timing may still arise.

However, there are also risks with a competitive process. Competition usually relies on having a sufficient number of well-prepared competitors. In a young industry such as MRE, the competitive process may result in unrealistic or untested proposals. In addition, it may generate competitive sentiment between developers, instead of the more

advantageous scenario of working together to overcome common hurdles and develop a strong foundation for the industry, before they begin to compete for preferred sites.

8.1.4. Timing

A further issue for consideration is the timing of tenure allocation, i.e. at what point the tenure should be awarded, relative to the other elements of the regulatory process such as EIA and planning consents.

In all jurisdictions there are a range of legislative requirements associated with an MRE proposal. An important consideration is how to ensure that the tenure allocation process is structured and timed so as to create a logical regulatory sequence between:

- allocation of tenure, which provides security that a project can use the desired resource (and therefore provides investment security for proponents and investment); and
- legislative approvals, which determine whether a project can proceed in that location.

Essentially, the choice is whether allocation of the rights to occupy the seabed should be allocated prior to or after the completion of all legislative requirements.

If seabed tenure is allocated before all legislative requirements have been met, security of tenure will exist but there is no guarantee that the project will meet all legislative requirements. This would leave the seabed lease stranded. However, if tenure is only allocated after all legislative requirements are met, money and time may be spent obtaining the legislative requirements only for the preferred site to no longer be available. This will become particularly problematic as the industry grows and if there is no other undertaking or guarantee from government to reserve the preferred sites.

8.1.5. Improving seabed tenure allocation: the UK experience

The Crown Estate manages the UK seabed out to the 12 nautical mile territorial sea limit and is responsible for allocating seabed tenure for MRE projects in the UK. It is a useful case study for other jurisdictions owing to its express commitment to working with all stakeholders to develop the MRE industry.

The nature of the Crown Estate's mandate also highlights some of the principles discussed earlier, as it is a statutory body tasked by parliament with achieving particular goals. Specifically, the *Crown Estate Act 1961* states that the Crown Estate's duty in relation to the seabed is to 'maintain and

enhance its value and the return obtained from it, but with due regard to the requirements of good management’.

The Crown Estate has already provided leases for test and demonstration projects and facilities (such as the European Marine Energy Centre in Orkney and the WaveHub in Cornwall). It also held two commercial leasing rounds for seabed leases – one in the Pentland Firth and Orkney waters strategic area (north of Scotland) and the other in the Rathlin Island and Torr Head strategic area (Northern Ireland).

Its efforts to provide for MRE are therefore not a reluctant regulatory response to an emerging ‘problem’, but instead a concerted effort to assist the industry and lead a balanced process to allocate seabed resources. In addition to the leasing process described here, the Crown Estate has initiated 40 technical studies in order to de-risk project development, as well as published a study on MRE resources and conducted an industry engagement exercise on the future of the leasing process.

8.1.6. Pentland Firth and Orkney waters leasing round

The Pentland Firth and Orkney waters area was the first in the UK to be opened up for commercial-scale development of MRE projects. This entailed a competitive leasing round for demonstration- and commercial-scale project sites (and one site was re-tendered), which received considerable interest from industry.

The Crown Estate announced plans to hold a leasing competition in September 2008, and initial proposals for projects were invited from developers in November 2008, with an initial nominal target capacity of a total of 700MW. Thirty-eight pre-qualified proponents were invited to apply for leases: 20 bidders applied with a total of 42 applications. These ranged from small development to multinational energy companies, with projects from 10MW demonstration schemes to hundreds of megawatts.

8.1.7. A preliminary assessment

The Crown Estate’s process has been broadly successful in that it has attracted a range of developers to apply for leases. Pre-approval of bidders has ensured that the process bids have not been received from ill-prepared companies, and the process appears to have been a truly competitive one, thereby maximising adherence to the principles discussed earlier. One developer that both won and lost bids states: ‘the tender process has been fair, even handed and run in a way which leads us to believe that a fully competitive approach has

been taken at all times’ (House of Commons Treasury Committee, 2010a).

As the first process of its kind, it was always expected that it would generate institutional learning that could be applied in future processes and other jurisdictions. Indeed, there are a number of important lessons that can be learned.

While a competitive approach may work well for an established industry, it may have been unfavourable in the present context for four reasons. First, the Crown Estate’s process does appear to have limited site availability because, it was not open to other applications during the leasing process. This led to the assertion that the process ‘seems too rigid to accommodate the fast moving nature of the growing marine energy industry’. Consequently, a number of developers that were developing projects outside of the Crown Estate’s leasing rounds were suffered a disadvantage by its restriction on sites (House of Commons Treasury Committee, 2010a). Likewise, another commentator said that the Crown Estate’s approach should be one of ‘keeping constraints to a minimum and providing as much flexibility for deployment as possible’ (House of Commons Treasury Committee, 2010a).

Second, the Crown Estate’s process does appear to have forced developers to compete at a time when they would have benefited more from cooperation. As one developer noted: ‘At this early stage, collaboration may be more appropriate if we are to overcome the substantial common hurdles and risks’ (House of Commons Treasury Committee, 2010a).

Third, in aiming to kick-start commercial-scale development, the Crown Estate may have inadvertently ‘shut out’ the demonstration-scale proposals that remain crucial to the industry’s overall development. The Crown Estate developed its process in the context of offshore wind, but MRE is at a much earlier developmental phase and therefore a full-scale commercial leasing round may not have been the most effective option.

An MRE project proponent must have a seabed lease granted by the Crown Estate to commence a project, and there are two ways to obtain this: either apply for a demonstrator lease (at 10MW or 20 devices), or bid in the competitive leasing process described earlier. However, once an area is under competitive tender, the Crown Estate is unlikely to approve any demonstration leases within this area (House of Commons Treasury Committee, 2010a), thereby effectively excluding demonstration projects from some of the best resources. This issue could easily be fixed by zoning an area for demonstration deployments within the larger leasing area.

The leasing process highlighted the need for collaboration and cooperation between different

bodies, particularly as marine spatial planning (MSP) becomes more widespread (House of Commons Treasury Committee, 2010a). This would ensure that the Crown Estate is focusing on the regions that are best prepared for MRE deployment and that permitting processes can be aligned with seabed leasing. Regarding that alignment, the Crown Estate recently asked stakeholders:

'How well matched are the seabed rights we provide, and the processes by which we provide them, to statutory consents and other legal and commercial requirements for UK projects?' (The Crown Estate, 2012).

This further suggests that aligning leasing processes with one-stop shops and regulatory bodies is of crucial importance.

The British Wind Energy Association (Renewable UK) and Scottish Renewables note that uncertainty about future leasing rounds created difficulty for business planning, and asserted that:

there is strong support within our wave and tidal membership for further leasing rounds to be open on a rolling basis, following SEA completion and market support, and for these to be set out in a planned programme so that industry can plan ahead. (House of Commons Treasury Committee, 2010b).

These difficulties could be described as inevitable teething problems. However, at their root the broader question is how a body like the Crown Estate can best balance the need to ensure a sustainable industry emerges in the long term, while also meeting the shorter-term requirements of innovative developers keen to deploy their devices.

It is important to note that while the Crown Estate process was successful in itself, the leasing rounds have proceeded in advance of formal MSP. A potential tension exists between these two processes and their relationship is an issue worth exploring in future research.

8.1.8. The future

The Crown Estate has recently undertaken an industry engagement exercise with the aim of gathering project developers' and other stakeholders' views regarding future seabed leasing for MRE projects. It is currently updating its approach to MRE leasing to reflect the feedback it has received.

It should be expected that the Crown Estate will develop its process by refining the application process to offer – alongside or as a replacement to tenders – recurring application windows, demonstration zoning and other processes tailored to different sizes of projects. Further collaboration is also

likely between the Crown Estate and developers, as most recently evidenced by the launch of an online data exchange (www.marinedataexchange.co.uk), as well as between the Crown Estate and other bodies involved in the overall regulatory process.

8.2. Part two: improving the permitting process

Innovators and developers from all fields recount tales of lengthy and complex consenting processes for new technologies, and MRE is no different. As early as 1975, one commentator complained of overregulation of permits and approvals for ocean space by an increasingly large and pervasive bureaucracy (Knight, 1976).

It has long been clear that complicated consent processes involving many statutory bodies are a significant barrier for the MRE industry (Ball, 2002). However, as MRE has developed, a number of jurisdictions have begun to tackle this issue. In particular, the idea of creating a one-stop shop for consent applications has gained credence. This section looks at these processes, first by setting out the default, unreformed position, and then by considering how the UK has approached reform.

8.2.1. One-stop shopping

The main response to the problems with poor consenting processes has been to create a one-stop shop for permitting applications. This essentially means concentrating the process in one regulatory body or authority. This authority can then liaise with the developer and work with the relevant government departments and authorities to obtain the necessary consents. In this way, the developer has to deal with only one body, rather than many, while the various licensing processes can be consolidated, coordinated and streamlined.

In theory, this can reduce the burden on applicants in a number of ways: by providing a single point of contact for developers; reducing the pressures on the licensing process through a more efficient use of available regulatory resources; enabling coordinated consultation with interested parties; and allowing for a more holistic assessment of projects.

The development of a successful one-stop shop takes political will. This is needed not only to ensure that the one-stop shop is amply resourced, but also to dismantle existing regulatory structures. The government must overcome resistance from existing regulatory bodies that may perceive this streamlining as an unwelcome 'centralisation and de-democratisation of decision-making' (Muñoz Arjona et al., 2012). The success or failure of a one-stop shop – and MRE policy in general – is likely to turn on how highly MRE is prioritised by government.

While the impact of a one-stop shop has not been investigated in any detail, the idea has garnered much praise from developers and proponents of the MRE industry (see, e.g., HM Government, 2010; Forum for Renewable Energy in Scotland (FREDS) Marine Energy Group, 2009; Jeffrey and Sedgwick, 2011; Soerensen and Rousseau, 2010; Muñoz Arjona et al., 2012). Waveplam states that the one-stop shop 'has been accepted as the most convenient system seen from a developer's point of view' (Soerensen and Rousseau, 2010). Similarly, the SOWFIA project states that the one-stop shop has 'emerged as a preferred method for consenting wave energy development proposals' (Muñoz Arjona et al., 2012).

Indeed, the idea has a history of being a preferred reform for developing offshore energy industries, having been implemented in the US as part of early ocean thermal energy conversion efforts (Krueger and Yarema, 1981) and in the wind industry. This was particularly apparent in Denmark, where the one-stop shop is generally considered to have been a key driver of strong wind energy development (Soerensen and Naef, 2008; Neumann, 2009).

8.2.2. Alternatives to the one-stop shop

One alternative to the one-stop shop option is to develop parallel consenting procedures that enable different issues to be evaluated simultaneously by existing regulators and expert groups. The coordination of such parallel processes in the absence of a one-stop shop clearly creates additional administrative demands, but may prove an attractive alternative for countries facing constraints in developing a single licensing authority (Muñoz Arjona et al., 2012).

Another alternative is the lead agency approach (Krueger and Yarema, 1981; Humphreys, 1973), which could be seen as a weak one-stop shop approach. This is where an existing agency takes on the responsibility for coordination of parallel consenting procedures. The identification of a lead agency therefore eliminates the burden of dealing individually with a number of bodies in much the same way that a one-stop shop does, however, it will not be invested with the same additional powers or authority. The lead agency will also retain its existing statutory mandate, roles and functions, which will mean that it will not align as closely to the MRE industry as a one-stop shop. Nonetheless, this approach could be effective where there is insufficient momentum for a devoted one-stop shop, or where there are state/federal issues – for example, the US Federal Energy Regulatory Commission offers an 'integrated licensing process' which resembles the lead agency model.

Finally, an as yet unexplored option would be to establish an interagency taskforce or commission, whose members would be representatives of all potentially affected regulatory bodies. This could be used as a process for granting approvals in its own right, or as a model for consultation and coordination between departments, which could then feed into departmental decision-making.

8.2.3. Improving the permitting process: England

The *Marine and Coastal Access Act 2009* (MCAA), effective since 6 April 2011, reformed marine licensing in England by consolidating and replacing some previous statutory controls. The Marine Management Organisation (MMO) is now responsible for most marine licensing in English inshore and offshore waters, and for Welsh and Northern Ireland offshore waters. The Secretary of State is the licensing authority for oil and gas-related activities, and administers marine licences through the Department for Energy and Climate Change. A marine licence granted by the MMO is required for many activities involving a deposit or removal of a substance or object from the sea or a tidal river, and therefore incorporates MRE projects.

There are two separate regimes for projects in English waters: one for renewable energy projects over 100MW capacity, processed by the Planning Inspectorate³; and one for projects under 100MW of capacity, which is the responsibility of the MMO. However, while the MMO licenses marine elements of a project, other components of the project are licensed under different regulations, including:

- Section 36 consent (required under the *Electricity Act 1989*) to build and operate an energy generation site.
- Safety zones consent (required under section 95 of the *Energy Act 2004*) and the European Protected Species licence.
- The Department of Energy and Climate Change is responsible for project decommissioning under the *Energy Act 2004*.
- The local planning authority is responsible for onshore planning.

8.2.4. Improving the permitting process: Scotland

Consenting procedures for MRE in Scotland are broadly similar to those for England and Wales, but involve a distinct administrative system. Under the *Marine (Scotland) Act 2010*, entered into force on

³ Nationally significant infrastructure projects, processed by the Planning Inspectorate, which makes recommendations to the Secretary of State to decide whether to grant consent (section 15 of the *Planning Act 2008*). The MMO is a key consultee and remains responsible for monitoring compliance and enforcement of licence conditions under a deemed marine licence.

6 April 2011, the Scottish Government is responsible for the new marine licensing system for activities carried out in the Scottish waters out to 12 nautical miles.

Under the *Marine and Coastal Access Act 2009*, it is also the licensing and enforcement authority for the Scottish offshore region from 12–200nm (other than reserved matters). Proponents will still require a section 36 licence under the *Electricity Act*, a European Protected Species licence and decommissioning approval, each issued by separate bodies. Consent through the *Town and Country Planning Act 1990* is also required. Marine Scotland aims to include this in its portfolio allowing for consideration of onshore works.

It is intended that the new system will enable consistent decision-making about what activities are allowed to take place at sea. Through the process of marine licensing and the conditions placed on licences, economically and socially beneficial activities are promoted while minimising adverse effects on the environment, human health and users of the sea. Licensing should also simplify the way we reconcile development and nature conservation at sea.

In contrast with other parts of the UK, however, Marine Scotland has adopted a one-stop shop system to provide a single contact for advice, enquires and applications to simplify consenting and reduce the burden on applicants, regulators and other parties. The system is also intended to facilitate coordinated consultation with nature conservation bodies and other parties, so as to promote interaction and more holistic assessment of proposed projects. Marine Scotland in its role as regulator is also tasked with ensuring compliance with the conditions of section 36 licence under the *Electricity Act* and the marine licence.

8.2.5. A preliminary assessment

The consenting system in England continues to involve a number of authorities granting different licences, and the resulting sequential process can still be ‘arduous’ for project proponents (Muñoz Arjona et al., 2012). The MMO and the Crown Estate have agreed a Memorandum of Understanding, which may in time lead to a more coordinated approach. In addition, the senior licensing manager of the MMO has suggested some ways in which consenting procedures could evolve to become more effective, including (Muñoz Arjona et al., 2012):

- early engagement of key actors to streamline regulatory processes;
- all parties agreeing on regulators taking the lead to streamline consultation (this may be difficult

where competence is spread across departments that may wish to retain their control over certain aspects of the process);

- implementing MSP with the aim of increasing the likelihood of MRE projects receiving consent (these still need to comply with relevant legislation); and
- increasing regulator knowledge through a range of mechanisms.

Scotland’s one-stop shop has been well received and is generally perceived as providing developers with the greatest confidence in the regulatory process (Muñoz Arjona et al., 2012). Some industry participants with real-life experience of one-stop shops have found that it is not always a truly integrated process (Dominguez Quiroga and Huertas Olivares, 2013), and Marine Scotland must ensure that as the industry develops, it keeps a hold on the process.

The section leader of the Licensing and Operations Team at Marine Scotland identifies early strategic engagement with all parties as key in improving consenting regimes. He additionally notes that there is a need to ‘stop re-inventing the wheel for every project’ (Muñoz Arjona et al., 2012), suggesting that processes have not yet been standardised.

There is the question of whether the one-stop shop concept can be replicated effectively in other jurisdictions, and there has so far been little discussion of how well its processes will fare once the industry has grown to its full potential. At least one commentator has identified that the one-stop shop ‘may come under greater scrutiny as the sector continues to develop and larger, more contentious developments are proposed’ (Muñoz Arjona et al., 2012). Large-scale developments are likely to put considerable strain on a single authority, and it is yet to be seen whether a one-stop shop can cope with the range of issues that such developments will likely bring.

9. Conclusion

The Crown Estate leasing process, reform of marine licensing in general and Scotland’s one-stop shop are clearly important steps towards providing more effective regulation of the MRE industry. The overall assessment on the UK experience to date is that the reforms are broadly fit for purpose, but that there is still scope for further optimisation of the consenting process.

The extent to which other jurisdictions can adopt such processes may ultimately depend on government priorities. The Scottish one-stop shop has been strongly supported by a government keen

to develop renewable energy as a strategic priority. Likewise, the Crown Estate has been a strong proponent of MRE and as the regulator of seabed tenure, has enabled the development of a robust process. While these progressive reforms have helped position the UK as a world leader, weaker political commitment may hamper reform.

As MRE straddles a number of legal and regulatory areas, any regulatory body or process aiming to manage MRE effectively will have to be equipped with considerable expertise and resources to provide suitable support for a full-scale industry. Again, this will require considerable commitment from a number of parties.

The Crown Estate is currently asking whether there are 'good practices in site leasing, or equivalent provision of development rights, in other countries which the Crown Estate should consider adopting' (the Crown Estate, 2012). This highlights the need for a much deeper and nuanced analysis of reformed regulatory processes and provisions in all jurisdictions that are developing MRE, as well as enhanced international cooperation.

The present paper has provided an overview of reforms to the permitting process in the UK and a preliminary assessment of the efficacy of these reforms. This provides a basis for further research into how processes for MRE can be improved and how marine governance can begin to better facilitate the allocation of resources to emerging new marine industries.

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