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Dear Sir/Madam,

Thank you for providing us with the opportunity to comment on the Mid-term Review of the Offshore Renewable Energy Development Plan (OREDP) Review Report. We have read with interest the contents of the Review Report and had previously contributed through the associated survey with key stakeholders. The SFI MaREI Centre is a multi-institutional Research Centre (comprising University College Cork, University of Limerick, National University of Ireland Galway, Maynooth University, University College Dublin and Cork Institute of Technology) at the forefront of research and development on the marine, renewable energy and marine renewable energy and has a long, proven track record in the areas of offshore renewable energy, energy management, marine governance and climate change. Accordingly, this submission represents a multi-disciplinary response. We hope you find our comments useful and we would be happy to discuss them further with you, should that be required.

Action 1: Put in place a robust Governance Structure for the OREDP

1. Do you have any suggestions or additional measures to support and enhance the governance structures of the OREDP?

Whilst it is stated in the Mid Term Review document that the Environment and Infrastructure Working Groups will “consider licensing and environmental monitoring regimes with a view to informing design of the new regime proposed under Maritime Area and Foreshore (Amendment) Bill”, this needs to also link with the Department of Housing, Planning and Local Government officials responsible for, and working towards implementation of, Maritime Spatial Planning (MSP) and the National Planning Framework (NPF). Both the consenting system (foreshore) and future strategic planning systems (MSP and NPF) need to work together. Industry needs to be involved in the design of the MSP process to future-proof the needs of the sector from a strategic planning process which is also central to delivery of many of the objectives of the OREDP.

Action 2: Increase Exchequer Support for Ocean Research, Development and Demonstration

2. Do you think that the Exchequer support for Ocean Energy RD&D has been sufficient?

Funding may be sufficient but the focus seems to concentrate on low TRLs and proof of concept type designs. It might be prudent to look at the middle TRLs where funding is extremely difficult to secure but which is critical for full-scale demonstration and ultimately commercialisation. It would also be good to know the non-technical results of the PDF testing, e.g. where have the developers gone after PDF funding, does it lead to the next TRL level, etc.? In Scotland and France, stage-gate development approaches in offshore renewable energy development seem to be proving successful in promoting greater cooperation and convergence. A similar approach could be beneficial in Ireland. This approach could: enhance the added-value and impact of public funds; avoid duplication/re-invention of the wheel; foster standardisation; and establish cross-sectoral approval.

Additionally, more attention might be considered in the area of offshore wind and hybrid technologies. The synergy of different technologies may have many complementary benefits to the individual technologies in both cost reduction and availability increase of offshore renewable energy production.

3. Has the distribution of the Exchequer support been appropriate and can you suggest alternative areas that require additional Exchequer support?

See above.

Action 2.1: Atlantic Marine Energy Test Site (AMETS)

4. Do you think sufficient progress has been made on the development of the Atlantic Marine Energy Test Site in County Mayo?

Whilst progress has been made, it would appear that further focussed developments in the offshore energy area are required to leverage this opportunity. This is probably symptomatic of the development status of wave energy devices so perhaps it is necessary to look at funding supports for those devices that would suit AMETS. A very large investment will be required to make the site operational and, in advance, the state needs to assess that this investment is justified.

Action 2.2: Galway and Cork Test Sites

5. Do you agree that significant progress has been made on the Galway Bay Marine and Renewable Energy Test Site and that it is having a positive impact on the development of the offshore renewable energy sector in Ireland?

While we acknowledge that progress has been delayed somewhat at the Galway Bay Test Site due to licensing/regulatory issues, we would qualify this by stating that the current situation is probably not through the fault of any individual actors (SEAI, MI, SmartBay) but rather lack of a fit-for-purpose consenting systems.

Action 2.3: Integrated Maritime Energy Resource Cluster

6. Do you think that there is a positive impact from the development of the MaREI Centre and Lir National Ocean Test Facility?

The consolidation of research activities across MaREI's partner institutions to create a critical mass of internationally-leading researchers in the areas of marine and marine renewable energy has been the prime driver for enhanced research excellence and productive academic-industrial partnerships. MaREI has also proven to be instrumental in attracting international talent and in leveraging Non-

Exchequer funding, with a particular emphasis on Horizon 2020 and industry funding. This has enabled MaREI to create a dynamic research ecosystem that is responsive to the needs of industry, and is better-positioned to comprehensively address both fundamental and applied research topics that are relevant to the Centre’s remit, with the necessary governance structures and transparency to support these goals. Key achievements of the Centre to date have included:

250 Academic Collaborations in 36 Countries	4 Industry Fellowships
117 Non-Academic Collaboration Partners	16 Enterprise Ireland Commercialisation Awards (innovation vouchers and awards)
7 Invention Disclosures	48 Industry Partners (33% MNC/57% SME)
1 patent application filed	Contributing €3.5m Cash
4 License Agreements	€11m Non-Exchequer Non-Commercial Sources
58 Joint Publications with Industry (journals, conferences, chapters – Section 6)	

Lir National Ocean Test Facility (Lir): Lir is now recognized as being one of the leading testing facilities in Europe for Marine Renewable Energy (MRE) research. In association with the MaREI Centre, it provides unparalleled support for technology developers in assisting them to advance their devices to higher Technology Readiness Levels (TRLs). The testing facilities are also integral to National and International funding applications and contribute significantly to the sustainability of MRE research in Ireland and the attractiveness of Ireland as a destination for foreign investment in this sector.

Enhanced Academic Excellence: MaREI’s Centre structure created opportunities that allowed MaREI researchers to take advantage of the scope, scale, synergy, multi-disciplinarity, duration, equipment and facilities that the Centre-grant enabled. This has resulted in a MaREI output of 266 journal publications, in addition to 255 conference publications to date, which has built considerably on previous outputs. MaREI’s scientific excellence has been recognised internationally.

Enhanced Academic Collaboration: MaREI has facilitated increased and enhanced multidisciplinary collaborations both internally and externally, with approximately 250 academic and 117 non-academic collaborations recorded during to date. Internally, cross-institutional collaborations have increased significantly as a result of internal symposia and seminar series, resulting in the formulation of multidisciplinary research projects across MaREI’s Research Programme.

Enhanced Industry Interaction: MaREI has acted as a key attractant to industry and has laid the foundation for effective and productive academic and industrial partnerships. This has been driven by the industry-led research programme, which has resulted in a substantial increase in collaborative research projects with industry, with joint-publications and commercialisation. By December 2017, MaREI had 48 active industry partners and availed of 16 innovation vouchers to support 14 different companies advance their research capabilities. In a sample of 60 departees, comprising graduates, researchers and admin staff, who have left a position in MaREI since 2013, approximately 40% have gone on to work in industry as a first destination. MaREI is aware that the sustained success of the Centre in terms of innovation requires the development of deep, long-term relationships between industry and academia. Significant efforts have focussed on the building of such relationships, involving the streamlining of access for industry partners to capabilities within MaREI, and the sharing of ideas, know-how, and next generation challenges through an open consultative process with industry partners. As a result, each of MaREI’s industry partners has been exposed to a wider range of direct and ancillary benefits. As part of this process, MaREI has identified and sought feedback from the industry partners on the impacts of engagement with MaREI’s research programme directly.

MaREI has developed case-studies and impact indicators for all industry collaborations to date, and details of these can be provided following approval from industry partners, as required.

Increased NE-NC Activity: MaREI has been extremely successful at leveraging non exchequer research funding through the Horizon 2020 Programme securing seventeen projects to date with a value of €60m (>€6m to MaREI) across a range of themes including Blue Growth, Societal Challenges, Sustainable Food Security, Low-Carbon Energy, and Research Infrastructures. MaREI's recognition as a centre of excellence amongst its peers across Europe is confirmed by its role as coordinator of four of these projects, including MARINET 2 (39 partners, €10.5m budget) which follows on from the successful MARINET project. Other EU funding has come through ERC funding with Prof. Frederic Dias building on his ERC grant to win a proof of concept grant in 2013 on Calibration of extreme wave measurement on the ocean surface and the European Space Agency (ESA) with which the Centre has won several projects including coordination of the CinMars (Combining Innovation Networks in Maritime and Space) project. In addition, the Centre holds significant grant awards from the Joint Programming Initiative (JPI) Oceans on marine pollution, JPI Climate on Adaptation, INTERREG 5B on eco-engineering solutions to coastal adaptation to climate change and a contract with DG MARE on Maritime Spatial Planning (MSP).

Increased Societal Impact: The increased profile and critical mass afforded to researchers through the Centre structure has resulted in significant opportunity for collaborating with Government and industry to achieve significant increased societal impact in the MRE area. MaREI has also secured the leading national role in advising Government on energy and climate policy, directly informing key national policy decisions and negotiations with the EU.

Increased Commercialisation: Due to the higher level of industry interaction under the Centre structure and associated focus on applied research activities, a higher level of commercial activity has been experienced relative to previous individual endeavours. Outputs have included two spin-out companies, four licence agreements, one patent filing, and 16 commercialisation awards (innovation vouchers and awards) during Phase 1 to date.

As of March 2017, MaREI has taken on responsibility for the Entrepreneur Ship at Ringaskiddy, Cork, which provides business incubation space for industry to engage in a cluster containing research and training opportunities, thus providing MaREI with a unique incubation function among SFI Centres. This provides a unique interface for the exchange of ideas, insights, expertise, human capital and culture between entrepreneurs and researchers at MaREI. This is further augmented by institutional support initiatives elsewhere across the partner research institutions, including UCC SPRINT and Blackstone LaunchPad (UCC and NUIG), Rubicon (CIT), NOVA (UCD), Maynoothworks and the University of Limerick Nexus Centre; each of which offer structured localised business development mentoring support and facilities. The entrepreneurship ecosystem within MaREI institutional organisations is thus very broad.

Action 2.4: Prototype Development Fund

7. Do you believe that the PDF is a suitable funding structure for the sector?

It is suitable for early stage developers at the lowest TRLs. It is not fully clear if/how those developers progress to higher TRLs following successful trials using PDF support.

8. What if any improvements would you suggest?

Whilst the PDF is obviously designed for prototypes, there is a risk that the same types of prototypes could be tried and tested repeatedly which would not progress the sector. Some thought could be given to selecting the top three performers, for example, for a next stage of funding to try and progress them to a new intermediate or pre-commercial technology fund. The PDF should prioritise and incentivise projects that involve collaboration between technology developers such that to promote convergence. In addition funding should concentrate on a limited number of WEC types - for instance if a particular WEC has reached a high TRL then as a general rule funding should not be provided to another developer with a similar device at a lower TRL unless it had a game changing innovation. It would be useful to include a 'map' of how current funding relates to the different TRLs to communicate the Irish funding landscape for ORE.

Action 2.5: Additional Exchequer Support Requirement

9. Do you have any suggestions for additional Exchequer support required for the development of the offshore renewable energy sector in Ireland?

See Above.

Action 4: Develop Renewable Electricity Export Markets

12. Do you have any suggestions on further measures that can be taken to support the implementation of this action?

Serious consideration and work is needed in light of Brexit and the implications this will have for the all-island Single Electricity Market. In terms of offshore renewable energy, it should also be noted that there are no formally agreed maritime boundaries in Loughs Foyle and Carlingford. The existence of a MOU recognising both Government's (Ireland and UK) promotion of ORE development from 2011 does not address this problem.

Action 6: Communicate that Ireland is Open for Business

15. Do you think that Ireland has been presented at home and abroad as open for business in offshore renewable energy?

Whilst there is considerable need and value in promoting the country, its resources and infrastructure, indicating that we are fully open for business without addressing the issues highlighted above could limit the true value of our capabilities.

16. Do you have any suggestions on how to further implement this action?

The Maritime Area and Foreshore (Amendment) Bill has been on the Programme for Government for a number of years, but little progress has yet been made. We need to continue to ensure that this is highlighted in the appropriate forums.

Action 7: Explore Potential for International Collaboration

17. Does the progress section capture all the relevant information and activities that have taken place for this action since publication in 2014?

It may be a good idea to emphasise that Ireland is active internationally not solely from a technical perspective but also wider collaboration relating to, for example, environmental effects through IEA-

OES Annex IV (SEAI and MaREI), ICES Working Group on Marine Renewable Energy (MaREI), OSPAR Working Groups (DHPLG) etc. Whilst some of these initiatives operate outside Government Departments and State Agency representation it goes to show our capabilities and capacity beyond technical aspects that still have a positive bearing on the OREDP and its objectives.

Action 8: Introduce a New Planning and Consent Architecture for Development in the Marine Area

19. Do you think that sufficient progress has been made on the action to introduce a new planning and consent architecture for development in the marine sector?

No. It should also be noted that the current legal definition of foreshore extends to the 12 nautical mile territorial sea limit. Whilst there is no operational system beyond the 12-mile limit, as acknowledged in the mid-term review document, there are issues with the current system as demonstrated by recent experiences with the Galway Bay Test Site.

20. Do you have any suggestions on how to best implement this action?

Implementation requires enactment of the proposed legislation. This also needs to align with the requirements of the Maritime Spatial Planning Directive and associated Maritime Spatial Plan for Ireland in whatever form that will take.

Action 9: Environmental Monitoring

21. Does the progress section capture all the relevant information and activities that have taken place for this action since publication in 2014?

Other data collection projects are relevant to ORE such as the ObSERVE programme¹, co-funded by DCCAE and NPWS. Whilst this is designed to fill data gaps relating to oil and gas exploration and exploitation, it provides essential baseline information on marine mammals and seabirds that can be utilised for other maritime sectors including ORE.

22. Do you have any suggestions on how to further implement this action?

Acknowledge other projects that have outputs relevant to ORE. From a developer perspective, it would also be useful to know how the guidance document published this year is actually used in making consenting decisions.

We look forward to seeing the outcomes of the review process and look forward to contributing towards the next phase of OREDP implementation.

Kind regards,



MaREI Centre Director

¹ <https://www.dccae.gov.ie/en-ie/natural-resources/topics/Oil-Gas-Exploration-Production/environment/Pages/ObSERVE-Programme.aspx>