

SEAI Response to Draft Future Framework Policy Statement

Key SEAI messages:

The definition or scope of the upcoming Offshore Renewable Energy Technology Roadmap needs to be redefined throughout the statement. Suggested text included in this document. It only includes ORE generation technologies and not other innovative supporting or enabling technologies.

The FFPS could point to future updates of the Offshore Renewable Energy Technology Roadmap to monitor future ORE technology innovation. The updates could be specified as periodic (e.g. every 3/5 years) or when significant changes in technology or technology breakthroughs occur.

To support ORE RD&D, Ireland could benefit from the establishment of regulatory sandboxes to deliver demonstrator projects and enabling policy environments. These measures would significantly contribute to cost reductions for Ireland's ORE sector in the future by trialling and identifying optimal technologies, locations, O&M regimes through experiencing different weather windows and metocean conditions.

Alternative off-take and, in particular, the discussion on green hydrogen potential needs to be consistent with the accompanying Work Stream 3 economic analysis and other analysis (such as the National Heat Study) on the role of hydrogen in the Irish energy system.

Demonstrator projects, such as AMETS (Atlantic Marine Energy Test Site) will play a crucial role in technology commercialisation and market development. The FFPS should explicitly mention innovation DMAPs for RD&D. As these will not be income-generating sites and are unlikely to have generation supports such as ORESS or CPPAs, there should not be a CBF obligation, however, that would not exclude good will contributions to local communities.

Feedback on individual sections:

Components of an ORE System:

A. Technologies (PDF page 14) –

The statement on what the SEAI ORE Technology Roadmap could be misleading as the technology roadmap covers ORE generation technologies only. Suggest separate bullet for other items from "Innovative technologies will also play a role...".

C. Storage:

suggest the following changes in red

Due to the inherent intermittency of wind and ocean energy, discrepancies between supply and demand necessitate energy storage mechanisms including batteries, pumped hydro, electric vehicles, and ~~renewable hydrogen~~ **low-carbon gases**. There are several battery options available including short-term lithium-ion batteries ranging from two to eight hours and longer term 100-hour iron-air batteries. Other options are thermal storage via phase change materials. Energy storage options should consider storage duration, generation technology cost, additional storage costs, reliability, **storage space and the end of end efficiency of the energy storage technology or vector**.

E. Renewable hydrogen:

For an unbiased comparison mention efficiency loss in the production, storage and use of renewable hydrogen i.e. add a final sentence that states.

There are considerable losses in the production, storage and subsequent use of renewable hydrogen.

Practical considerations

1.1. The future of ORE

Table 1 – is there duplication in action items 2 & 3?

1.2.1.3 Route to Market

PDF Page 23 – design parameter for new support scheme

- 1st bullet - the time of generation is less relevant for variable renewable energy, so there will be a need for modelling to determine the parameters for any new support scheme to avoid unintended consequences, such as high supports for a time when it happens to be windy.
- 2nd bullet - capacity auction and system service – while agree in principle that such supports are required, variable renewables are limited in their ability to provide these services.
- 3rd bullet - support for hydrogen or wider than electricity - need to insure not incentivising a self-reinforcing a support system. There will be a need for modelling to avoid any unintended consequences.

1.3.1. Marine Data

Suggest a data base and risk retirement approach similar to Tethys - <https://tethys.pnnl.gov/>

1.3.2 ORE resources

Table 3 - some environmental and technical constraints were included. Note there was inaccurate feedback received as part of the OREDPII draft consultation. SEAI ORE team are happy to clarify any comments on this section.

2.2 Domestic demand - Page 30

With both growth in demand and growth in renewable required a lot of ORE will need to be delivered before "~~additional build-out~~" of domestic demand is needed. Suggest inclusion of a comment on the fast rollout of electrification as the most effective decarbonisation method instead, consistent with overarching government and EU energy policy.

2.4.1 Security of supply - Page 33

Thermal fleet

Expand "~~thermal fleet~~" to "thermal fleet or other dispatchable generation"

Suggest that the "~~capacity of the thermal fleet~~" be changed to the "capacity of the dispatchable generation technologies", as it could be thermal generation of low carbon gases or BECCS (bioenergy carbon capture and storage) or other dispatchable generation.

Long Duration Energy Storage

Also add a final sentence on the low efficiency and resulting losses as well as the storage expenses of renewable hydrogen.

3.2 Renewable Hydrogen

Remove "must" in first sentence or preferably delete entire sentence.

2nd paragraph Replace "will play a role" to "could play a role", for the text to reflect the WS3 economic analysis.

As per the SEAI National Heat Study analysis, increasing domestic demand of renewable hydrogen would slow down the decarbonisation of the energy sector and Irish economy. An electrify first approach should be consistent through government policy. Fundamentally disagree with the statement that there is a

requirement to “significantly increasing domestic demand”. If the market is not there and establishing a market would result in net overall increase in emissions and costs to the exchequer or consumer, which it is not a viable option.

Note of caution that to increase ammonia would go against national GHG emissions reductions targets.

Can there be a “first mover advantage” if the Irish supply is such a small share of the market as identified in the WS3 analysis? Is it not more accurate conclusion that the possible maximum supply from Ireland inconsequential to the market in DK?

Definition of the scope of the SEAI Offshore Renewable Energy roadmap is incorrect – it includes ORE generation technologies only.

Responses to discussion questions:

1(a). Has this section adequately identified the general key priorities for ORE delivery in Ireland? Are there additional priorities that should be integrated into the holistic, plan-led approach?

Future Framework Key Priorities:

SEAI is aligned with the general key priorities set out in the Future Framework:

- i. Environmental considerations**
- ii. Public and Stakeholder consultation (in line with NMPF)**
- iii. Return to the State and local communities**
- iv. Cost competitiveness**
- v. Delivery of targets**
- vi. Availability of relevant data**
- vii. Technology and Supply Chain Development**
- viii. Industrial alignment including infrastructure, port facilities**

1(b) Has each key priority been adequately described and considered all relevant components? For each key priority please provide any additional concerns, aspects or commentary for inclusion.

Included below is a summary of SEAI’s commentary on additional considerations we recommend in relation to these key priorities. Further detail on each of these priority areas can be found in our discussion chapter.

Table 1 Additional concerns, aspects or commentary in relation to the Future Framework Policy Statement’s key priorities.

Priority Area	Additional concerns, aspects or commentary
i. Environmental considerations	-Consider assessing best practice for Net positive environmental impact and producing guidelines. -Consider feasibility of setting Net positive impact standards and incentives.
ii. Public and Stakeholder consultation (in line with NMPF)	No comment
iii. Return to the State and local communities	-Aligned with Action 21. -Inclusion of CBF requirements in ORESS successor scheme in addition to MAC criteria as a failsafe measure. -Considerations for non income-generating projects regarding CBF and royalty payments
iv. Cost competitiveness	Evidence-based assessments of technology cost (and other metrics e.g. grid balancing benefits) needed to assess technology costs to the end consumer, viability of export market development and technology deployment feasibility.

v. Delivery of targets	- Action 4 be amended to include a statement that the ORE Technology Roadmap be updated by SEAI either, on a regular basis (e.g. every 3-5 years) or as required by DECC, when significant technological developments demand it.
vi. Availability of relevant data	No Comment
vii. Technology and Supply Chain Development	Consider Regulatory Sandbox feasibility for Demonstration Projects
viii. Industrial alignment including infrastructure, port facilities	No Comment

(i) Environmental Considerations:

SEAI fully support environmental considerations being held at the forefront of ORE DMAP identification, project commissioning and project decommissioning. Beyond the current statutory environmental processes, establishing standardised procedures to assess the net-positive impact of ORE projects on the environment could be considered. The potential for these criteria to play a role in future ORE leasing is considerable, particularly with reference to the below action set out under the European Wind Power Action Plan¹.

A collaborative assessment, utilising the joint expertise of the state, e-NGOs and research experts regarding international best practice and lessons learned could realise a pathway to robust environmental & biodiversity management guidance for ORE in Ireland and the potential criteria for non-price incentives for environmental enhancement measures should they be build into future auction design.

Considering one of the primary challenges facing offshore wind project development is stakeholder acceptance, introducing incentivisation's for environmental and biodiversity enhancements support the strengthening of the Offshore wind sectors relating with concerned parties such as Fishers, e-NGOs and members of the public whilst also delivering marine ecosystem benefits and services. Consideration should be given on how they can be implemented whilst looking to practices from other markets such as the sustainable industry reward system proposed in the UK's AR7². Data acquisition would have to be built into this process which also aligns with the Future Frameworks goal of improving "access to high-quality data on our seas and maritime environment".

(iii) Return to the State and local communities:

SEAI agree with Action 21: "to include Community Benefit Fund provisions in MACs, applicable regardless of route to market". If CBF cannot be included as a MAC condition DECC may also consider the inclusion of CBF conditions in the ORESS successor scheme as a failsafe measure. The design of this CBF criteria should however consider that these conditions needn't apply to test sites, where there will not be continuous generation or non- income generation for RD&D purposes only. Considering that their purpose is not financial gain but the delivery of long-term sectoral benefit through technology demonstration, data acquisition and future project de-risking.

(iv) Cost Competitiveness:

¹ European Wind Power Action Plan COM/2023/669

² [Introducing a Contracts for Difference \(Cfd\) Sustainable Industry Reward - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/introducing-a-contracts-for-difference-cfd-sustainable-industry-reward)

Offshore technology readiness, commercial readiness and LCOE feed into the competitiveness of ORE Technologies. The first ORE Technology roadmap publication is an essential starting point for policy makers in assessing cost competitiveness of generations technologies. Further techno-economic assessments are needed for routes to the market and especially export market hydrogen and e-fuel derivatives. This is further assessed in our discussion of Hydrogen later in this document. There should be an emphasis of evidence-based assessments of technology cost (and other metrics e.g. grid balancing benefits) in order to address the potential impact to end consumer energy prices, viability of export market development and ultimately technology deployment feasibility. Sensitivity analysis on all scenarios need to be part of any evidence base for alternative offtake solutions.

(v) Delivery Targets:

Action 4 has set out that the ORE technology roadmap be delivered, however it is clear from this publication that continued updating will play a crucial role in assessing the future capability for various generation technologies. The ORE Technology roadmap should updated periodically or when significant technology changes occur, in order to assess the readiness of other ORE technologies for commercial project development in Ireland.

Wave energy has the most potential of the other or alternative ORE technologies than wind to play a role in the Irish market at present. However, it is far from cost competitiveness with offshore wind and the pathway to realising cost reduction is not clear.

(v) Technology and supply chain development:

Testing and validating products in regulatory sandboxes prior to wider market deployment has a number of benefits particularly in innovation (e.g. prototype testing and refinement) and business growth. Additionally, the supervision of innovative technology testing can reduce regulatory risk for innovators by providing facilitators with supervisory understanding of emerging technologies, which can inform an adequate policy response.

FF Q1(c). How best should the 2GW of non-grid limited offshore wind capacity be procured?

Given the projected electricity demand growth the non-grid ORE should be procured through CPPA or other large industry (incl. data centre) support. There should be protections put in place to ensure to avoid blue hydrogen by stealth i.e. a hydrogen electrolyser not running on curtailed renewables but rather production using grid electricity.

FF Q1(d) What are your views on the design parameters for the successor scheme to ORESS, what else should/should not be considered?

The considerations of incentivising non-price criteria such as environmental enhancement in the Environmental Considerations section should be included as part of the successor scheme design.

FF Q1(e) What frameworks and/or supports are required for alternate routes to market such as CPPAs, Power-to-X projects, interconnector-hybrid projects and export projects?

Security of Supply:

A temporal-economic assessment of grid balancing benefits for energy mixes would be beneficial in supporting decisions regarding the technologies most appropriate for increasing security of supply.

FF Q4(c) To what extent should an emphasis be placed on multipurpose sites for ORE delivery, including the colocation of devices? What Government structures should be developed to encourage and facilitate progress in this aspect?

As set out in the FFPS to meet ORE targets, government will need to support a diverse landscape of ORE technology. Demonstration projects will play a crucial role in the development of the Irish ORE market including through the provision of data on technology performance and economics. Multipurpose sites for ORE can be considered, to establish the reliability of technologies prior to commercial scale integration. Demonstrators will play an important role in providing the basis for scaling up to technology collocated pilot sites.

Supporting the diversification of Irelands ORE supply by delivering pathways for demonstrator projects has been slow to date. Demonstrators are at present required to follow the same regulatory processes as full-scale Offshore wind projects (DMAPs>MACs>Planning Application) leading to significant delays in demonstrator project certainty and mobilisation.

The European Commission provided guidance for member states on regulatory sandboxes (including those specific to renewable energy) within the New European Innovation Agenda. Regulatory Sandboxes are controlled real world environments which provide a structured context for direct testing of innovative technologies, products, services or approaches under regulatory supervision. Regulatory sandboxes typically include some degree of regulatory lenience in combination with certain safeguards. The Net Zero Industry Act sets out the concept of regulatory sandboxes for the renewable energy sector. Waivers from specific legal provisions within regulatory sandboxes can enhance innovation capacity whilst under the supervision of a competent authority.

FF Q4(d) How can Government ensure policy is kept in line with evolving technological innovation and developments in ORE devices? What structures and government procedures should be implemented to future-proof the ORE planning process and account for technological shifts.

As outlined above (see Delivery Targets), the ORE Technology roadmap should be updated and reviewed on an iterative basis (as required by DECC). Reviews of this roadmap will support government in building policies which reflect the current standing of ORE technologies. In response to the ORE Technology roadmap Industry has called for clarity regarding the frequency of ORE Technology roadmap updating and how it will be utilised in future policy decision making.

The FFPS has addressed this piece of work, however, it is necessary to amend the synopsis of the ORE Tech Roadmap in the FF publication. The FFPS sets out that both “*Key ORE technologies and future innovation*” form the basis for the roadmap, stating that “*Innovative technologies will also play a role in data collection and management facilitated by remote operating vehicles and artificial intelligence; advanced cabling and grid infrastructure design including interconnection; energy storage mechanisms; and hydrogen electrolysis and related technology.*” SEAI have drafted a new scoping statement for the ORE Technology roadmap as the reference to “innovative technologies” without further context introduces opportunities for misinterpretation of the roadmaps scope and has been the subject of feedback to both DECC and SEAI from the offshore energy industry. It needs to be clarified that the roadmap addresses ORE generation technologies and does not assess the techno-economics of other innovative technologies such as hydrogen electrolysis & battery storage. Stakeholders misreading the current description with the view that grid systems development or offtake solutions are included in the report is understandable, but this should be addressed.

The following statement in italics is an updated scoping statement on the Offshore Renewable Energy Technology Roadmap.

The Offshore Renewable Energy Technology Roadmap maps the pathway to harnessing Ireland's ORE potential. ORE deployment has a crucial role to play in driving the decarbonisation of the Irish electricity system whilst also unlocking economic and societal benefits for Ireland. Overall the ORE technology roadmap supports a coordinated Government approach to realising the potential of each key ORE technology. This is achieved by assessing the readiness of technologies and considering both the latest relevant technology innovations, and any future innovations, for relevant ORE generation technologies in the Irish context. Technology trajectories are examined through techno-economic modelling scenarios where metrics such as annual deployment rates, technology performance, costs (incl. CAPEX, OPEX, WACC etc.), LCOE, etc.) are utilised to produce projections of technology performance in the Irish market up to 2050. Techno-economic projections provide a basis for comparing the impact of different deployment pathways which vary the mixture of technologies utilised and the volumes of offshore renewable energy being delivered. In turn, the scenario analysis elucidates the critical decision points and options mapping, for successful implementation in Ireland for offshore renewable energy targets. By reviewing the Irish policy and regulatory landscape in addition to international best practices, the roadmap process elucidates the required policies, regulatory frameworks, Government supports, standards, skills for delivery, that need to be established, and when, to achieve the technology's decarbonisation potential. It also highlights the research opportunities for Ireland and identifies the skills needed to deliver this ORE sector.

Other comments:

PDF page 9 "~~Resourcing~~ off the coast of Ireland" suggest resources rather than resourcing.

PDF Page 12 suggest "devices" as opposed to "~~machinery~~".

PDF Page 15 suggest "access to a variety of vessels" as opposed to ~~various-vessels~~.

PDF page 27 "as we deploy our world-recognised ORE potential" suggest change deploy to "deliver on"

AI 16 page 28

future conditions - suggest future climate and environmental conditions

PDF Pg 31 "offshore grid in domestic ~~grid~~ and..." - there is one grid too many after domestic or consider rewriting this sentence.