Marine Renewables Industry Association

22 February 2019

Submission to Public Consultation on *Ireland's Draft National Energy and Climate Plan (NECP) 2021-2030*

Foreword

The Marine Renewables Industry Association (MRIA) represents the Marine Renewables Emerging Technologies (MRET) of wave, tidal and floating wind on the island of Ireland[1]. More details may be found at www.mria.ie while MRIA is located on Twitter at @Marineireland.

The MRIA welcomes the opportunity to comment on the Draft NECP. We are particularly concerned about the zero level or minimal forecasts in the Draft Plan for both installation and output for ocean energy i.e. electricity generated by wave and tidal energy conversion devices.

Table 1: Forecast ocean energy capacity and generation. Source: Draft NECP

Scenario	*Core Assumption*	*Ocean Energy Installed Capacity MW*	*Ocean Energy Generation ktoe*
1	Existing measures + high oil price	0	0
2	Additional measures + high oil price	5	0
3	Existing measure + low oil price	0	0
4	Additional measures + low oil price	5	0

[1] Wave + tidal energy = *ocean energy* + wind (bottom-fixed, floating and 'hybrids' of wind and wave) *= marine renewable energy* or marine energy or offshore renewable energy

The Draft NECP (see Tables 12-15 in the Draft Plan) examines a number of scenarios for the period 2017 to 2040. Table 1 above shows the forecast position in 2040.

Our concern is focused around four issues. The forecasts do not take account of Ireland's substantial offshore renewable energy resource; of the economic benefits which would arise from exploiting the resource; of the progress and international plans for ocean energy technology; and, in particular, of the EU and other Irish Government *policies* which advocate ocean energy.

We recognise that the Draft NECP forecasts may reflect also the nature of the forecasting models used. The SEAI report[2] of November 2018, which the Draft NECP clearly draws on, refers to ocean energy only in passing:

> *'Ireland does not currently have any wave or tidal energy-producing installations; however, deployment of 5 MW of ocean energy is modelled in the Advanced scenario from 2023 to take account of planned deployment of demonstration projects'* (p81)

It is beyond the scope of this Submission to critique these models but we believe that they may underestimate/fail to take full account of ocean energy.

Summary

The forecasts in the Draft NECP for ocean energy capacity and generation are the outcome of a modelling exercise but do not match, in MRIA's view, the likely position, particularly in 2030 and 2040. In effect, the 'forecast' of e.g. 5MW of wave capacity in 2040 is a token number, a 'placeholder'.

There would be at least two adverse reactions to the forecast figures if they were allowed to stand in the final Irish NECP submitted to the EU. First, they would impact on the overall credibility of the submission. Second, they would damage Ireland's standing and national ambition, reflected in Irish Government policy, in ocean energy worldwide.

Ireland has about one-third of all of the current European Union's total renewable energy resource based on all sources of energy. The offshore resource of wind and wave in Ireland is of remarkable scale. There are clear, well documented and substantial economic benefits to be derived from exploiting this resource both to meet domestic energy needs, to enable major

[2] *National Energy Projections to 2030 Understanding Ireland's Energy Transition* Sustainable Energy Authority of Ireland November 2018. The reference to 5 MW of ocean energy from 2023 presumably refers to the WestWave project.

new exports and to prompt the emergence of a global supply chain base in Ireland. Ocean energy is developing on a well signposted technology journey and it will deploy at scale from c2030. Irish Government policy recognises and supports the national ocean energy ambition while the European Commission's appetite for ocean energy is growing. This is clear from the Commission's *Strategic Energy Technology* (SET) *Plan* for the sector which aims to accelerate the development and deployment of ocean energy at scale (which will drive costs as the Learning Curve effect impacts) - see 4. below. MRIA suggests a new set of forecast capacities at various dates for ocean energy at 5. below.

1. Ireland's Ocean Energy Resource

Table 2: Ireland's marine renewables resource. Source: OREDP[3]

Assessment Area	Total amount of development (MW) that could potentially occur within each assessment area without likely significant adverse effects on the environment (taking into account mitigation).				
	Fixed Wind (MW)	Wave (MW) 10 to 100m Water Depth	Wave (MW) 100m to 200m Water Depth	Tidal* (MW)	Floating Wind** (MW)
1: East Coast (North)	1200 to 1500***	–	–	–	–
2: East Coast (South)	3000 to 3300****	–	–	750 to 1500	–
3: South Coast	1500 to 1800	–	–	–	6000
4: West Coast (South)	600 to 900	500 to 600	3000 to 3500	–	5000 to 6000
5: West Coast	500	5000	6000 to 7000	–	7000
5a: Shannon Estuary	–	–	–	Limited potential	–
6: West Coast (North)	3000 to 4500	7000 to 8000	6000 to 7000	750 to 1500	7000 to 8000
Total Development Potential (MW) (without likely significant adverse effects)	**9800 to 12500**	**12500 to 13600**	**15000 to 17500**	**1500 to 3000**	**25000 to 27000**

Ocean Energy Europe (www.oceanenergy-europe.eu) reports[4] that there is a 14 GW - 26 GW potential of wave and tidal capacity in Europe even if not all technological barriers are overcome and this includes forecasts of 5 GW of wave potential in Portugal; 10 GW of wave and 3 GW of tidal in France etc. Towering over every EU country in terms of potential for wave energy is

[3] *Offshore Renewable Energy Development Plan* February 2014 Department of Communications, Energy and Natural Resources
[4] *Industry Vision Paper 2013* Ocean Energy Europe

Ireland with a forecast wave potential capacity of 14-31 GW together with up to 3 GW of tidal energy. The Irish resource is set out in detail in Table 2 above. It should be noted, however, that Northern Ireland has a substantial tidal resource whereas the lower tidal flows in the Republic of Ireland require significant further technological development before cost-effective exploitation can take place.

The island of Ireland has one-third of all of Europe's renewable energy resource[5]; the West of Ireland wave resource is the most energy intensive in the world. Ireland, therefore, has the potential to become a major source of energy for Europe over the next 30 years with all of the profound political and economic implications that such a development implies.

IMPLICATION OF IRISH OCEAN ENERGY FORECASTS FOR NECP

The forecast in the Draft NECP of effectively no ocean energy capacity or generation by ocean energy by 2040 implies that Ireland's enormous wave resource in particular will lie fallow despite technology and market development - see also 4 below.

2. Economic benefits from ocean energy

There is a remarkable confluence of informed opinion regarding the long-term potential of ocean energy notwithstanding modest progress to date. *Ocean Energy Europe* has estimated that 100 GW of ocean energy could be installed in Europe by 2050[6]. *The Carbon Trust*[7] has projected that, as a high scenario, a cumulative, undiscounted market, of £460bn in wave and tidal is possible up to 2050 with the market reaching up to £40bn pa by then. This is based on estimates of 189 GW of wave and 52 GW of tidal energy being installed by 2050. The latest EU, *Ocean Energy Strategic Roadmap*[8], forecasts are similar. The *International Energy Agency*[9] estimates a worldwide potential of up to 200 GW of wave (65%) and tidal energy capacity, again by 2050. The global firm *EY* drew on *IEA Ocean Energy Systems* work when it reported that: 'Ocean energy technologies could start playing a sizeable role in the global electricity mix around 2030……. ocean energy may experience similar rates of growth

[5] Siemen's presentation, attended by MRIA, on file

[6] *Industry Vision Paper 2013* op cit

[7] *Marine Renewables Green Growth Paper* Carbon Trust 2011

[8] *Ocean Energy Strategic Roadmap Building Ocean Energy for Europe* 2016 Ocean Energy Forum

[9] *Energy Technology Perspectives 2014* International Energy Agency

between 2030 and 2050 as offshore wind has achieved in the last 20 years…. future developments could create 1.2 million direct new jobs by 2050'[10].

The most recent study[11] by the British Government sponsored *UK Offshore Renewable Energy Catapult* in mid-2018 forecast 4,000 new jobs in UK tidal energy by 2030 and 14,500 extra jobs by 2040; the equivalent figure for wave energy in 2040 is 8,100 new jobs in the UK alone. This report set a target of 1 GW of tidal energy by 2030 and 1 GW of wave energy by 2040.

Regardless of source, expert opinion believes that the ocean energy market will be enormous in 20 years time.

MRIA believes that, based on reasonably comparable development experiences[12] so far and the long-term forecasts for ocean energy by creditable sources and institutions, ocean energy will become a major enterprise opportunity for Ireland, certainly from 2030 or so onwards.

Ocean energy is unlikely to be a niche opportunity. It could conceivably grow to a scale beyond that of offshore wind: ocean energy may have the potential to generate a notable portion of the world's power requirements. The implications for Ireland are twofold.

First, Ireland's support for ocean energy should not just be about exploiting our abundant wave energy opportunity to meet domestic energy needs but also about export notably to the UK in the first instance, notwithstanding Brexit. The UK's electricity supply is heavily dependent on nuclear energy, as is shown in Figure 1 below.

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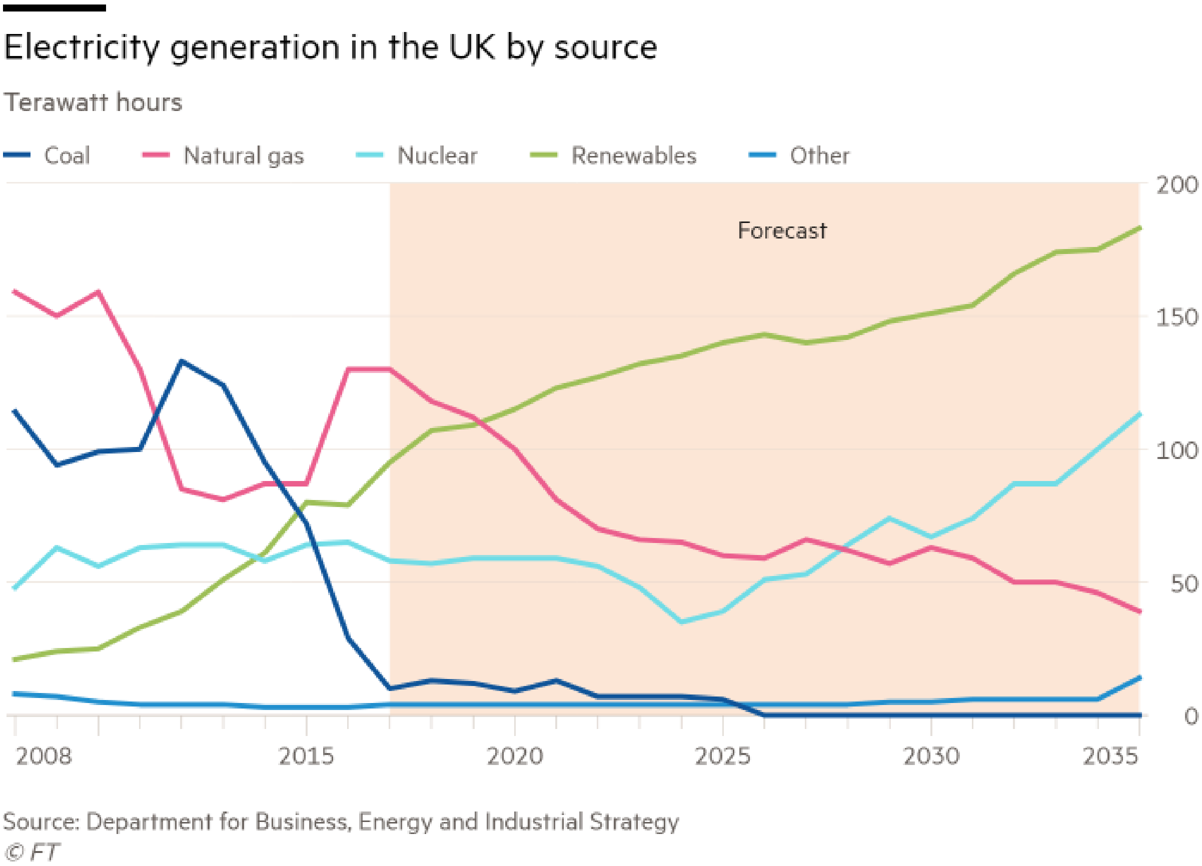
[10] *Rising Tide – global trends in the emerging ocean energy market* EY 2013

[11] *Tidal Stream and Wave Energy Cost Reduction and Industrial Benefit* May 2018 Catapult Offshore Renewable Energy

[12] The MRIA has examined in detail the development of offshore wind and has drawn well-founded parallels with the ocean energy experience so far and forecasts for its future. See www.mria.ie/publications

Figure 1: Sources of UK electricity generation. Source: *Financial Times*[13]

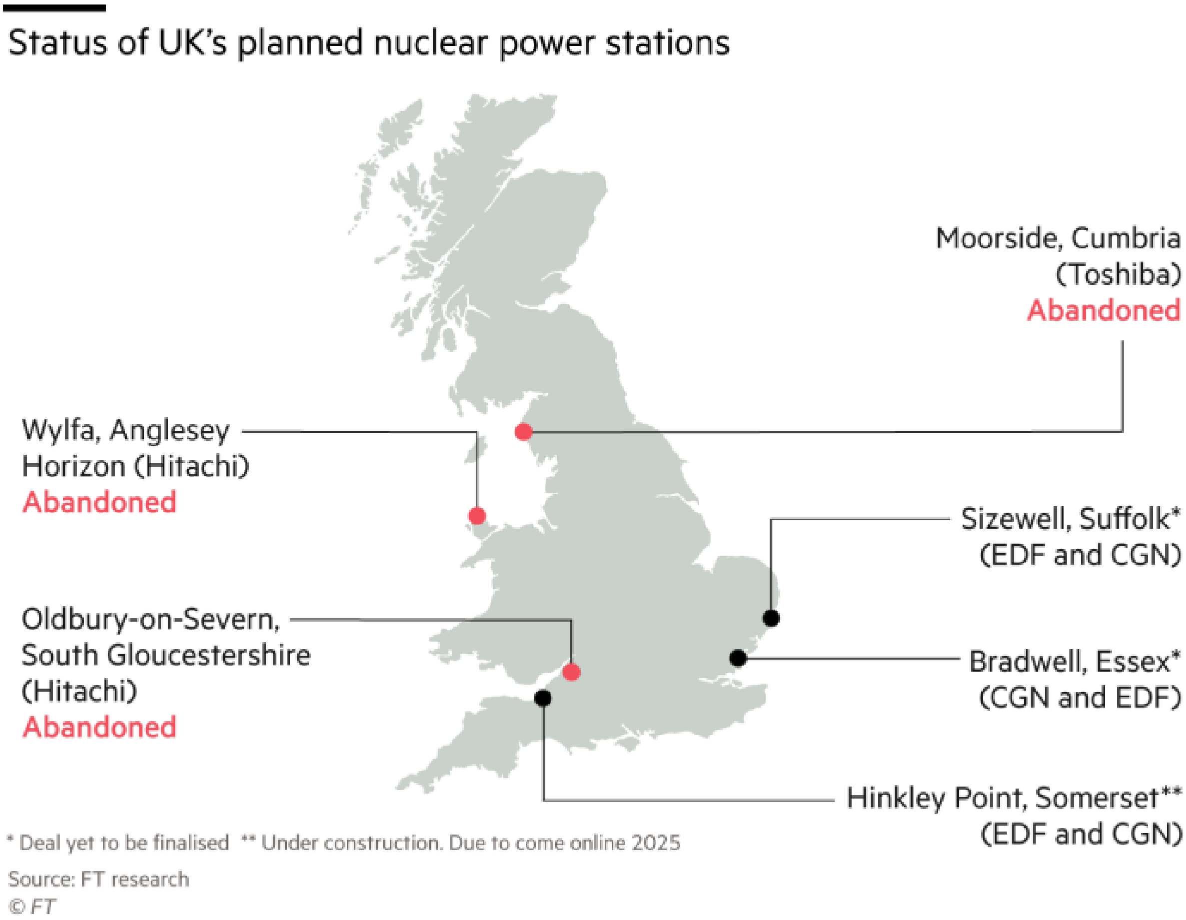


Despite generous Government support (e.g. guaranteed prices to 2035, debt guarantees), three of the key nuclear projects have recently been abandoned (see Figure 2), essentially on grounds of technical and, therefore, financial risk. The indications are that the remaining projects may be at risk.

The consequences of this situation are likely to move to the forefront of political and public concern after the Brexit issue has been determined: the UK will scramble for substantial new electricity generation capacity (both to provide for growth and to replace worn-out capacity) and Irish offshore energy, commencing with wind projects in the Irish and Celtic Seas, should be well placed to exploit this exceptional opportunity.

[13] *Hitachi pull-out throws UK nuclear policy into disarray* Financial Times 17 January 2019.

Figure 2: Nuclear challenges Source: *Financial Times*[14]



Second, Ireland should aim to exploit the extraordinary opportunity for job and income creation represented by world offshore renewables, including wave and tidal, and become a force in the global ocean energy supply chain.

There is a popular assumption that the bulk of the supply chain opportunity in ocean energy lies in the fabrication of the wave and tidal energy conversion devices 'hulls'. Therefore, the popular argument goes, Ireland will lose out on the economic opportunities in ocean energy, despite its enormous natural resource, as the country allegedly does not have a heavy engineering tradition or deep engineering base. In fact, there is a notable and sophisticated engineering sector (e.g. to support the large pharmaceuticals cluster in Cork) in the Republic of Ireland and, of course, Northern Ireland has excellent heavy engineering capabilities highlighted by Harland and Wolff Heavy Industries in Belfast.

[14] Financial Times op cit.

In any event, *hull manufacture represents a relatively small proportion of overall device costs* as illustrated by Alcorn[15] in a study which broke down the cost of an actual full-scale prototype wave energy device (name supplied to MRIA): hull manufacture accounted for under 12% of the total project cost. This example highlights the point that device development and manufacture is not solely, or even mainly, involved in heavy engineering and that there are many different activities along the value chain where Ireland has capability also such as site works, engineering design, transport, electrical etc.

Is Ireland taking sufficient steps to address the huge strategic opportunity presented by ocean energy? The indications so far are reasonably encouraging. Against a background of a vast natural resource, we are investing in the all-important R&D and test facilities and in human resources while Government policy measures have been supportive and generally appropriate to this stage of development of ocean energy although the slow trek of draft legislation to govern the 'consenting' of offshore energy efforts is a big disappointment.

IMPLICATION FOR NECP IRISH OCEAN ENERGY FORECASTS

There is an enormous potential economic benefit from Irish ocean energy and the Draft NECP's forecast of effectively no ocean energy capacity or generation by 2040 is simply unrealistic, once the technology matures, particularly given the political forces likely to focus on this sector in light of the job creation possible, principally in peripheral west of Ireland coastal locations.

3. Technical progress and prospects of ocean energy

The journey down the technology and cost 'learning curve' of fixed offshore wind is illustrative[16] of what can happen to an energy technology once it 'industrialises'. This point is well made by the recent UK Contract for Differences (in Irish terms, RESS) auction which delivered dramatically lower prices (on average, 47% lower in offshore wind) compared to the previous auction in 2015. The nascent marine renewables emerging technologies - wave, tidal and floating wind - have the potential to reduce costs significantly once their technologies mature and the related sub-sectors start to scale.

[15] *Supply Chain Opportunities* Dr Ray Alcorn, MaREI Centre, UCC 2014. Dr Alcorn was employed on the project in question.

[16] See MRIA's *Submission to Department of Communications, Climate Action and Environment* about the *'Mid-term Review of the Offshore Renewable Energy Development Plan (OREDP)' Consultation*. Available at www.mria.ie/publications

The research literature[17] suggests that ocean energy is in the 'formative phase' which is characterised as an 'era of ferment' with *'intense technical variation and selection, initiated by technological breakthrough and culminating with the emergence of a dominant design……the number of firms increases while sales remain relatively low'*[18]. This is the stage ocean energy is going through today while floating wind shows signs of moving on to the next phase.

The next phase typically sees a transition from experimentation and pilot products to an upscaling stage which can see big increases in unit size of a technology and a reduction in the number of 'actors'. This is the phase which bottom-fixed offshore wind went through from the late 1990's. The first commercial offshore wind farm of just 40 MW, located at Middelgrunden in Denmark, opened for business in 2000……. Europe now has a total installed offshore wind capacity of 18,499 MW! This corresponds to 4,543 grid-connected wind turbines across 11 countries[19].

The offshore wind experience indicates that once the transition from 'formative' to a mature setting takes place, the growth in ocean energy and the creation of jobs and income in first mover nations (Ireland could be one) and those with the feedstock e.g. energy intensive waves (e.g. Ireland) could be of historical importance and impact[20].

Ocean energy is in its formative phase and the current time horizons envisaged i.e. tidal energy being deployed from c2025 and wave energy from c2030, are in line with historic data and trends for *energy technologies as a whole.* Figure 3 shows the consensus European view on deployment timings.

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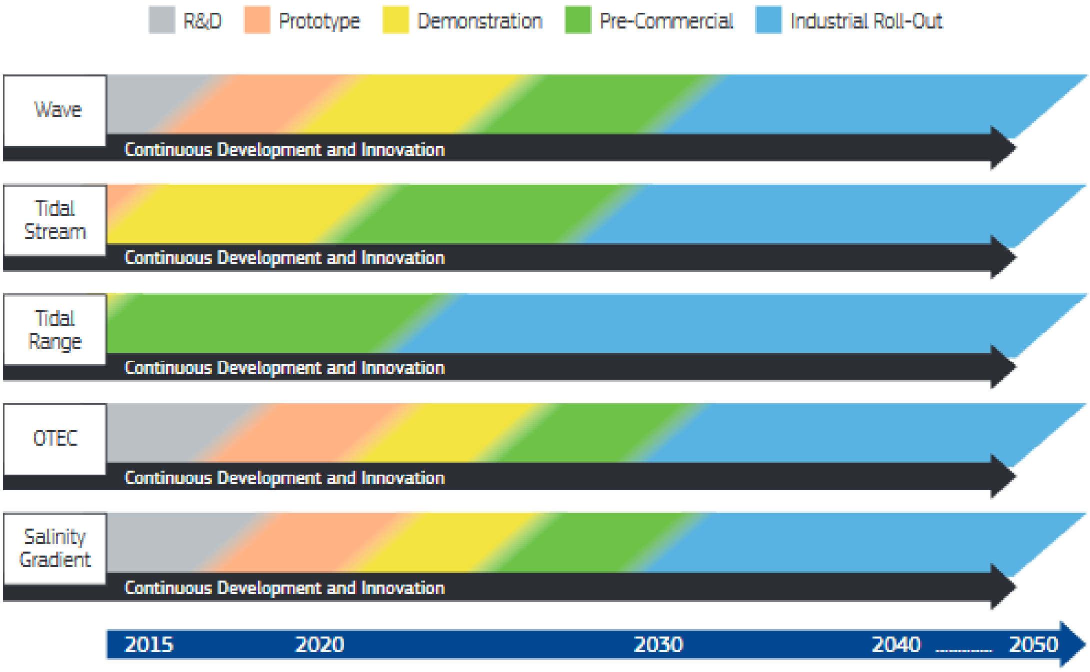
[17] Captured particularly well in *Measuring the duration of formative phases for energy technologies* Bento and Wilson published in *Environmental Innovation and Societal Transitions Journal 2016, Vol 21,pp.95-112.*

[18]Bento and Wilson op cit

[19] *Offshore Wind in Europe Key trends and statistics 2018* WindEurope 2018

[20] See *Collaboration and Innovation Challenges faced by the Ocean Energy Sector and Possible Solutions* available at www.mria.ie/publications

Figure 3: Time horizons for development and deployment of ocean energy. Source: Ocean Energy Forum[21]



Source: Generated through consultation with the Ocean Energy Forum.

IMPLICATION OF IRISH OCEAN ENERGY FORECASTS FOR NECP

Ocean energy is on a well signposted journey of technical development which should see tidal devices 'cross the bar' into commercialisation by 2025 and wave deployments will do so at an early commercial level by 2030. Accordingly, the NECP forecasts for ocean energy are out of line with reputable forecast development and commercial deployment of the technologies in question.

4. Ocean energy and national and EU policy

The most important recent policy development in Irish offshore energy was the publication of the *Offshore Renewable Energy Development Plan*[22] (OREDP) in February, 2014. The OREDP contained a number of new initiatives including extra financial support, an initial market support tariff for wave and tidal energy etc.

[21] *Ocean Energy Strategic Framework* op cit
[22] *Offshore Renewable Energy Development Plan* op cit

The OREDP set out Government's view of offshore renewables, including ocean energy, in blunt terms:

> *With one of the best offshore renewable energy (wind, wave and tidal) resources in the world, there is very significant potential in utilising these resources to generate carbon free renewable electricity. The development of this offshore renewable energy resource is central to overall energy policy in Ireland[23]. It can enable Ireland to develop an export market in green energy and enhance security of supply. Greenhouse gas emissions will be reduced, while growth and jobs are delivered to the economy. The OREDP is the key foundation stone in the development of offshore renewable energy in Ireland*

The mid-term review of the OREDP[24] made a number of important recommendations for consideration by Government including the extension of the initial market support tariff to floating offshore wind, an increase in the quantum (MWs) eligible for support and the introduction of a graduated dedicated (to emerging technologies) tariff range i.e. higher support for early projects and lower support as technology reaches maturity.

The long-awaited *Renewable Energy Support Scheme (RESS) High Level Design*[25] for Ireland was published in July 2018. The RESS Paper announced a model to allocate tariff support to renewable energy generally which holds out considerable hope for, initially, bottom fixed offshore wind and later the emerging technologies of wave, tidal and floating wind as they achieve technical reliability and some cost competitiveness.

The model presumes that *energy diversity* is natural as costs fall due to technology development, '......social acceptance challenges and limits to the amount of available land for onshore wind.... (p10)', competitive procurement and an active base of developers. Moreover, proposed amendments to the *Wind Energy Development Guidelines* are likely to have a direct (negative) impact on the volume of electricity that onshore wind will be able to deliver even though it will be the cheapest form of renewable energy, all of which the Paper recognizes (p11).

Consequently, offshore renewable energy will be important and the early importance of floating wind should not be underestimated. Figure 4 shows the relatively limited availability of 'sea space' with a depth of 50m or less - the parameter within which bottom-fixed offshore wind must operate. This consideration plus the likely impact of restricted areas due to environmental considerations and, also, the potential for public reaction to projects deemed visually intrusive (i.e. bottom fixed wind installed near to shore) all suggest

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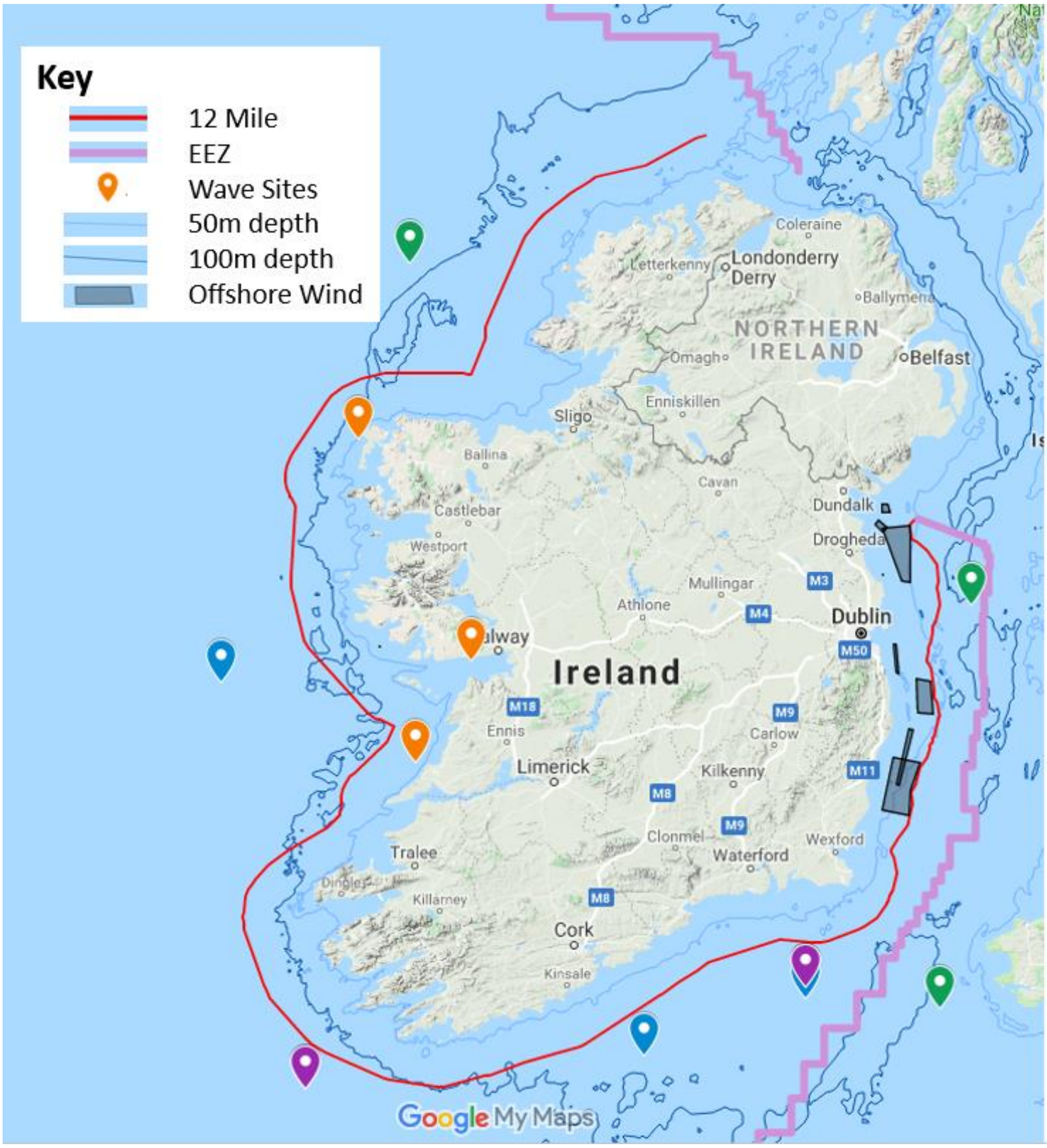
[23] Emphasis added by MRIA

[24] https://www.dccae.gov.ie/documents/OREDP%20Interim%20Review%2020180514.pdf

[25] https://www.dccae.gov.ie/documents/RESS%20Design%20Paper.pdf

that the need for floating offshore wind and wave energy (both normally require a minimum depth of 50m to operate in) will arise faster than currently anticipated.

Figure 4: Availability of sea space with depths to suit different marine renewable technologies. Source: MRIA[26]

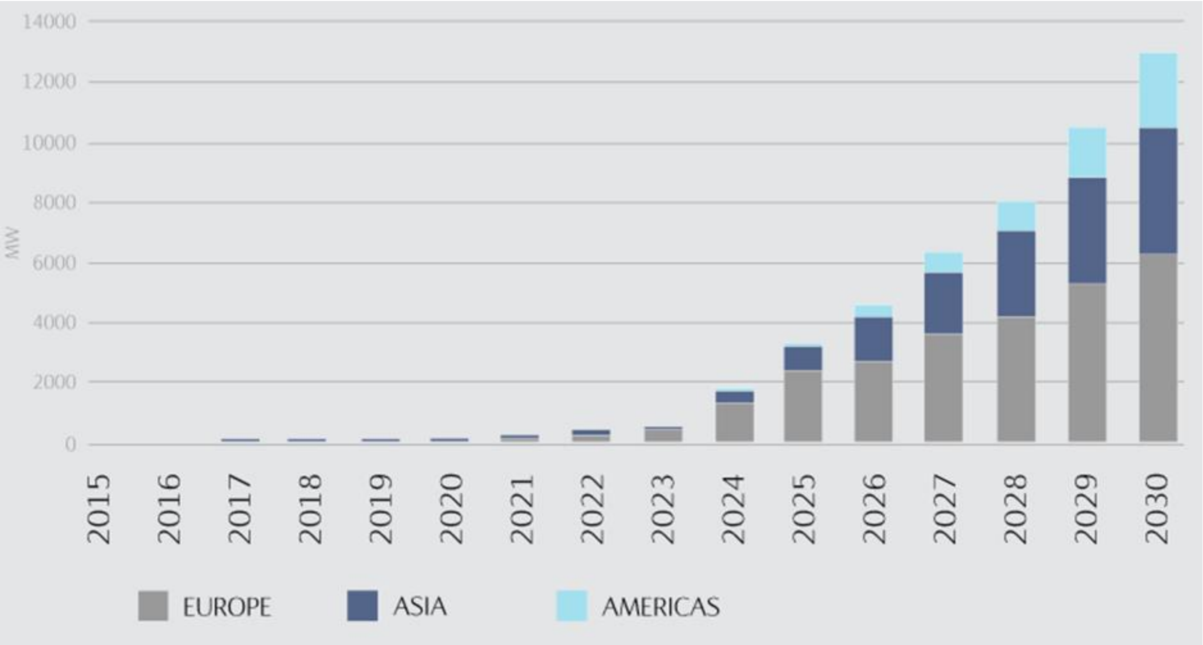


There is a growing consensus that floating wind will have developed in technology and, therefore, Levelised Cost of Energy terms by the early 2020s

[26] See *Marine Spatial Planning Needs of Marine Renewable Emerging Technologies 2018*. Available at www.mria.ie/publications

although today, the floating wind industry consists almost entirely of Equinor's[27] Hywind 30 MW park off the Scottish coast. Growth to at least 30 GW forecast by 2030 - see Figure 5 - will entail a more accelerated rate of growth than was seen for onshore and bottom-fixed offshore wind. The potential for Ireland is obvious: we have Europe's highest offshore wind speeds with a potential of 35-40GW (of which 25-27 GW is near to shore and thus economical to develop) of floating offshore wind electricity generation potential[28].

Figure 5: Forecast market for floating wind. Source: Equinor



Finally, the European Union has been taking a leading role in the development of ocean energy in Europe. The SET Plan[29] is the European Commission's latest and detailed plan to get tidal and wave energy 'across the line' of reliability and commercial deployment. It features an indicative timescale and ambition for this to happen for tidal by 2025 and for wave by 2030 as illustrated in Table 3.

[27] Previously known as Statoil
[28] Source: see Eirwind project at www.marei.ie
[29] *SET-Plan Ocean Energy - Implementation Plan Final 21 March 2018 adopted by SET-plan steering committee Prepared by Temporary Working Group Ocean Energy*
See https://setis.ec.europa.eu/system/files/set_plan_ocean_implementation_plan.pdf

Table 3: EU targets for ocean energy development Source: 'SET Plan'[30]

Indicative Timeline	2018-2020 Discovery	2021-2025 Development	2026-2030 Deployment	2030+ Delivery
Proposed activities under the implementation plan				
Monitoring Activities = Technology push = Market pull = Both	• Development of the management and monitoring process • Implementation support structures put in place. • Implementation group agree long term oversight of Technical, Finance and Environment Actions • Determine funding requirements for phase 2 and phase 3	• Ongoing monitoring with a view towards enabling large scale deployment of tidal and the convergence of wave technologies towards and tracking of LCOE development • Incentivise infrastructure and supply chain development	• Ongoing monitoring with a view towards enabling large scale deployment of tidal and the convergence of wave technologies towards and tracking of LCOE development • Incentivise large scale infrastructure and further supply chain development	• Incentivise market development to drive significant LCOE reductions
Tidal	Technology development	Large Scale Arrays	Commercial development	
Wave	Technology development		Large Scale Arrays	Commercial development

IMPLICATION OF IRISH OCEAN ENERGY FORECASTS FOR NECP

The Draft NECP forecast for Irish ocean energy is out of line with forecast technical progress and out of keeping with the likely needs of Irish policy-makers to require wave energy in particular to deploy alongside floating wind to fulfil overall national renewable energy needs. As a recent SEAI report stated: *'Increasing the deployment rates of sustainable energy technologies and practices across the entire economy is essential to achieving targets. This includes meeting our commitment to the Paris Agreement on climate change.'*[31]

5. Recommended new ocean energy forecasts for NECP

The MRIA Council comprises of key figures at all levels of the marine renewables industry both as members and as invited observers. Accordingly, the Association has unrivalled access to expertise and opinion and the suggested forecasts for ocean energy set out in Table 4 reflects the informed opinion of this body of knowledge.

[30] *SET-Plan Ocean Energy* OP CIT

[31]

Table 4: MRIA forecast of installed capacity. Source: MRIA

Year	*Tidal capacity MW*	*Wave capacity MW* *Low Scenario*	*Wave capacity MW* *Medium Scenario*	*Wave capacity MW* *High Scenario*
2025	5	5 in 2027/8	5	5
2030	10	20 in 2030 100 in 2035	100	130
2040	15	500+	1000	1400

COMMENTARY ON MRIA FORECAST OF INSTALLED CAPACITY

The forecast for the 2020s for both technologies - wave and tidal - is cautious and reflects a modest amount of installed test devices in the tidal area and some pre-commercial devices too in wave energy (perhaps the WestWave project?).

The 2030 and 2040 forecasts for tidal energy reflect the assumption that various tidal devices are installed, tested for a period and then removed i.e. a regular turnover in the source of tidal devices. It also reflects the constraint of relatively low Republic of Ireland tidal flows i.e. only some tidal devices are suitable for test in Ireland due to local conditions. This position may change in future as technology develops.

The forecast for wave energy in 2025//2027/8 assumes early devices under test, probably in the WestWave project.

The wave energy forecasts for 2030/35 and 2040 are considered under three scenarios: low, medium and high

The low wave energy forecast reflects the possibility that a combination of factors, notably the pace of technology development, will see the full deployment of the first devices through WestWave by no later than 2028.

The experience of WestWave, international learnings from other wave deployments, the impact of the development of floating wind from c2025 (e.g. learnings in areas vital to wave such as moorings), the impact of the planned SEAI Pre-Commercial Technology Fund and the EU SET Plan actions etc should then see a growth in deployment to at 100 MW by 2035 at least, perhaps in the form of early scale deployments of around 30 MW each. Thereafter, wave energy should deploy at a commercial scale and we forecast a cumulative deployment of 500+ by 2040

The ambitious forecasts for wave energy set out in the medium and high forecasts above are based on the relevant precedent set by bottom-fixed wind and likely to be emulated by the much more technically challenging floating wind.

The relevant track record of offshore wind deployment - see Figure 6 below - shows a rate of installation of new offshore turbines which ramped up from minimal level in 2000 to a rate of around 2500 MW annually today. This record represents about 10 countries so an average rate of installation of 250MW pa per country is a reasonable judgement. A similar pattern - see figure 5 earlier - is forecast by the reputable and major Norwegian State energy company, Equinor, in respect of floating wind. The growth of offshore wind over the past c20 years corresponds to the view of expert opinion on the timeframe for the development and deployment of large wave devices (e.g. Ireland's Ocean Energy Ltd device now nearing completion at a US shipyard).

Figure 6: Cumulative and annual offshore wind installation 2000-2018 Source: WindEurope

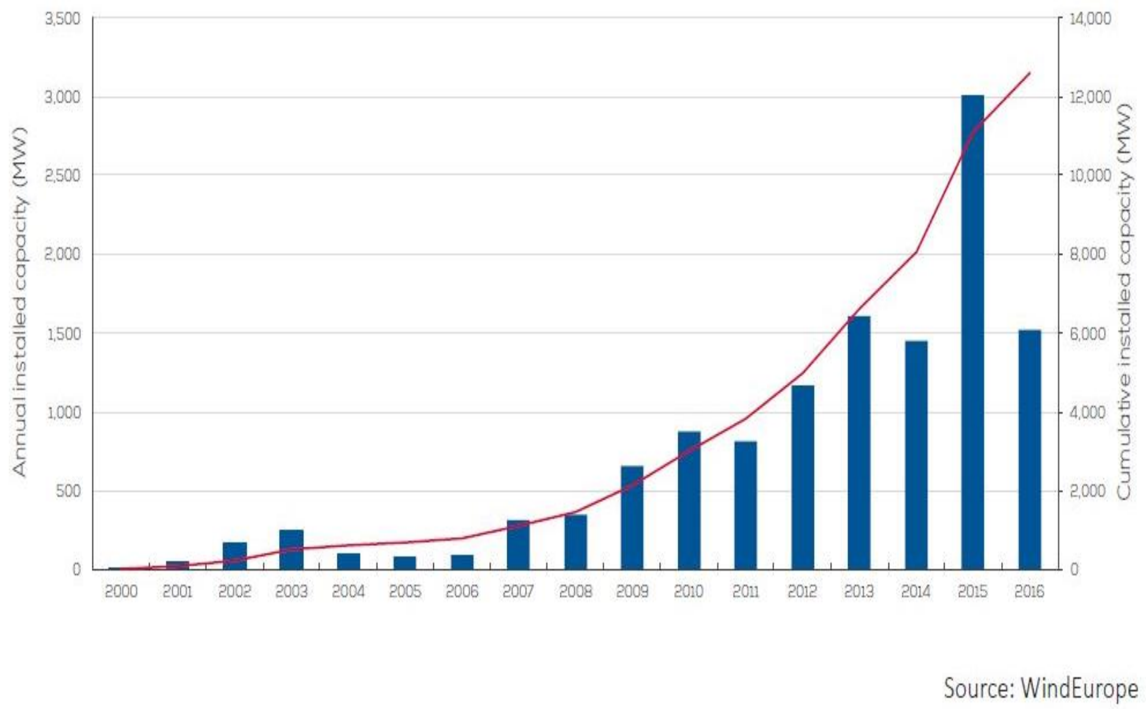


Figure 7 below applies the relevant offshore wind trajectory - as illustrated and argued above - and applies it to wave energy and reflects the MRIA's medium wave energy forecast. The graph assumes a start date of c2023 (possibly with the WestWave project) and assumes too a significant rollout after 2030. The forecast, therefore, is for 100 MW installed by 2030 and 1GW by 2040 which is in line with the UK forecast (see 2. above).

Figure 7: Forecast for wave energy. Source: Professor Tony Lewis[32]

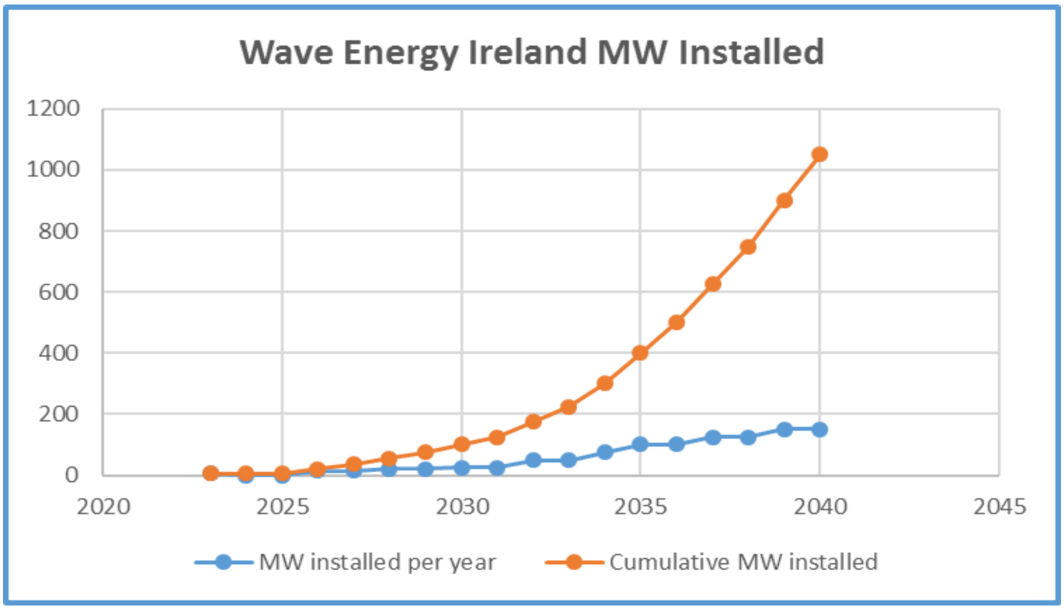
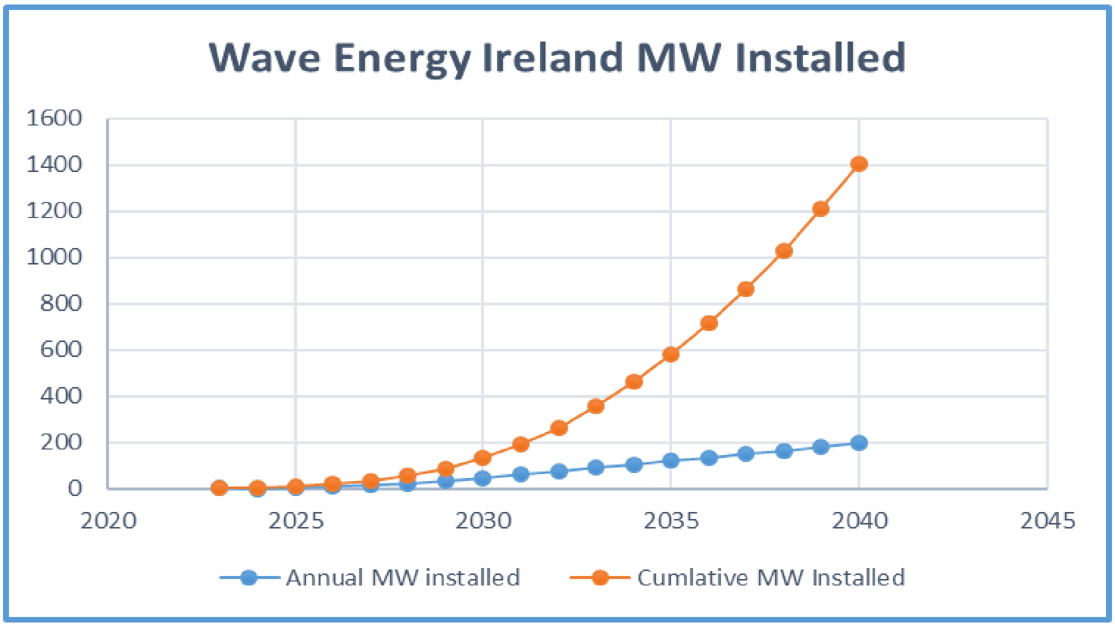


Figure 8: Aggressive forecast for wave energy. Source: Professor Tony Lewis



[32] Professor Lewis is the Chief Technology Officer of Ocean Energy Ltd and a leading researcher at MaREI.

The second graph above - contained at Figure 8 - takes a more aggressive approach in light of additional drivers of climate change, energy security and large-scale decarbonisation and represents our high wave energy forecast

6 Further points for consideration

There is neglect of the marine energy potential in the Draft NECP – this ranges not only from a technology perspective (specifically ocean energy as outlined earlier in this submission) but also in terms of planning and management.

The Draft Plan refers to the (terrestrial) National Planning Framework on numerous occasions throughout the document but nowhere is the respective marine dimension included. The NECP should take account of the work on the *National Marine Planning Framework* which will provide certainty and clarity for future offshore energy developers. It should also be included in Table 1 'Climate Policy Framework' of the final NECP. The only reference to maritime spatial planning in the Draft Plan relates to *North Seas Energy Cooperation* (NESC) work which is geographically focused on the North Sea and not on waters under Irish jurisdiction.

Moreover, the failure to introduce modern, fit for purpose offshore consenting legislation is a major obstacle to drawing renewable energy from the sea, as we must do in light of likely constraints on terrestrial wind energy. For instance, there is no operational planning and management regime for offshore energy development beyond 12 nautical miles which will become more crucial as floating wind technology matures and is realised.... the available sea space within 12 miles (the extent of coverage of the current, inadequate consenting regime) will likely be quite limited. There is a critical need to ensure that a reformed offshore consenting regime is introduced and enacted as a priority if Ireland is to develop ANY offshore renewables and meet its EU and international energy and climate obligations.

Whilst neither of the above two points are within the direct purview of the Minister for Communications, Climate Action and Environment, there must be a 'whole of Government' approach to climate action. This is actually referred to on page 124 of the Draft Plan too where it is stated that the Minister '...*is now preparing a new all-of-government plan, whose central ambition will be to make Ireland a leader in responding to climate change.'* … Offshore aspects have to be included as part of that climate action, be it in terms of renewable energy generation (as e.g. mitigation) or conservation (as adaptation e.g. migration corridors).

Other points:

- The short descriptions of various Government Departments on p.41 of the Draft Plan should include marine planning and foreshore consenting under the heading of the Department of Housing, Planning and Local Government (DHPLG).
- The text relating to An Bord Pleanála (ABP) also needs to be amended as the current text seems to confuse local authority planning powers with ABP's role in local planning i.e. as the appeals authority. Reference to local planning should come within the text on DHPLG (as the Department with responsibility for local authorities and planning legislation).
- The sentence at the bottom of page 50 – top of page 51 needs some context. Presumably, it relates to a submission received on the Initial Plan? If so, this should be stated. If it does not come from a submission, then it implies that ocean energy is being held to a different environmental regulatory bar than other energy sources and that is fundamentally untrue and factually incorrect.
- The Sustainable Development Goals (SDG) are referred to only in the context of climate change adaptation. Reference should also be made to the SDG on Affordable and Clean Energy (Goal 7) as well as the one on the marine environment (Goal 14: Life Below Water) not to mention Goal 13 on Climate Action.
- Reference to Wind Energy Guidelines in the Draft Plan should highlight that these will apply to ONSHORE wind only, not to offshore.
- Mention should be given to the *Offshore Renewable Energy Development Plan (*and the linked *Mid-term Review)* in the next iteration of the Draft Plan as well as to its associated Strategic Environmental Assessment and Appropriate Assessment. These represent a huge body of work on the part of the Government Departments and agencies involved and actually should put offshore renewable energy ahead in that it already has a dedicated Plan that has already gone through a number of the regulatory requirements (SEA, AA).
- There is a need to mention Interconnectors in the next version of the NECP, and not just in relation to the United Kingdom. It might be the obvious market but that may change with Brexit and it's not going to be

in the same market or regulatory system so France / EU interconnection may take on additional relevance.

- Northern Ireland should be labelled as such in Figure 19 of the NECP with UK appearing afterwards if thought necessary. This would ensure consistency with other maps in the Plan e.g. Figure 20.