EUROPEAN UNION

Committee of the Regions

ENVE-VI/004

114th plenary session, 13-14 October 2015

DRAFT OPINION

Developing the potential of Ocean Energy

(own-initiative opinion)

Rapporteur: **Rhodri Glyn Thomas** (UK/EA)
Assembly Member for Carmarthen East and Dinefwr

Deadline for tabling amendments:

3 p.m. (Brussels time) **on 28 September 2015.** Amendments must be submitted using the new online tool for tabling amendments (available through the Members' Portal at http://cor.europa.eu/members). All amendments already duly tabled to this draft opinion before it was deferred from the April to the June plenary session remain valid.

Number of signatures required: 6

In accordance with Rule 55.5 of the Rules of Procedure, no amendments may be tabled to the explanatory statement.

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Reference document

Own-initiative opinion

Draft opinion of the European Committee of the Regions – Developing the potential of Ocean Energy

I. POLICY RECOMMENDATIONS

THE EUROPEAN COMMITTEE OF THE REGIONS

Importance of Ocean Energy

1. underlines the important contribution of Ocean Energy to meeting the future energy needs not just of the European Union, but also globally; also welcomes its inclusion as one of the five priority areas of the Blue Growth Strategy and believes that the EU could be an important global player in the sphere of ocean energy;

2. notes that by providing a reliable and predictable renewable energy source Ocean Energy has the potential to:

   - help deliver the EUs Climate and Renewable Energy commitments;
   - contribute to diversification of the energy mix;
   - contribute to energy security goals and help reduce intermittency of energy supply;
   - create jobs and growth, contributing to diversification and regeneration of EU ports, island and coastal communities, many of which are in remote parts of the EU, and to tourism/leisure industries and aquaculture[1];
   - provide a rich source of intellectual capital, research, knowledge, innovation and skills enhancement (including in engineering, testing, manufacturing, transportation, installation, operation and maintenance of ocean energy facilities, port facilities);
   - providing wider environmental benefits, for example coastal flood defences, stimulating new marine ecologies;

3. points out that the fact that ocean energy involves so many different techniques means that it has to be developed at many different levels and in various contexts. The EU could be a successful global player in this sphere given its many coastal regions;

4. notes the European Ocean Energy Roadmap (EOER) 2010-2050 estimates:

   - Up to half a million jobs could be created in the EU by 2050, 26 000 direct jobs by 2020.
   - Ocean Energy could satisfy 10 to 15% of EU power demand in 2050 (100 GW[2] is suggested), powering 115 m homes.
   - Switching to ocean energy could see significant reductions in CO_2 emissions of 2.61m tonnes by 2020 and 136.3m tonnes by 2050.

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1 OJ C 62, 2.3.2013, p. 47. See for example the proposed Tidal Lagoon Swansea Bay.

2 SI Ocean project

5. recognises the Atlantic Ocean has the highest potential for Ocean Energy in the EU, however, underlines the important contribution from the EUs other seas and water basins, including North Sea, Baltic Sea, English Channel, and Mediterranean;

6. recognises, the potential of clean Ocean Energy to the EUs many islands; harnessing this energy could contribute to the energy autonomy of islands and of peripheral maritime regions[3] whilst also offering enormous economic and social development potential through creation of local employment in these communities, including opportunities for the many small and medium-sized ports in the EU;

7. emphasises that development of the Ocean Energy sector is of interest to the whole of the EU: opportunities to invest in research, knowledge, skills and development, manufacture and export of components, development of supply chains, are not restricted to coastal/island areas;

8. emphasises the importance of an holistic approach to offshore renewable energy. A number of the challenges facing the Ocean Energy are shared with other offshore energy sources, for example access to grid and connectivity, and skills development;

9. notes the different types of Ocean Energy *(see point 1 of the Explanatory Statement)*: Tidal Range (e.g. Tidal Lagoons), Tidal stream, Wave Energy, Salinity Gradient Energy, and Ocean Thermal Energy Conversion (OTEC)[4];

10. notes the technologies for these different Ocean Energies are at varying stages of maturity, and with the exception of Tidal Range all are at the research and development stage, mainly small-scale pilots, no commercial-scale arrays in operation, with no consensus yet on preferred technology devices;

11. stresses however that tidal stream and wave energy converters are attracting increasing commercial interest and may become increasingly relevant in the medium and long-term as they can generate energy at a wide range of locations.

The EU and its regions at the forefront … for how long?

12. notes that the EU is currently at the forefront globally in developing the sector, with a plethora of small-scale demonstration and research activities in place *(see point 2 of the Explanatory Statement)*, over 500 companies active in the ocean energy sector, and over 50% of the tidal energy activity globally; some projects have also reached financial close[5];

13. recognises that in many cases the drive towards developing ocean and marine energy is coming from sub-Member State level, for example, Cornwall, Brittany, Aquitaine, Pays de la Loire,

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3 Ocean energy converters demonstration: e.g. the Canary Islands, La Réunion and Martinique.

4 Source: Ocean Energy Europe.

5 For example Meygen Project.

Basse Normandie, the Basque Country, Cantabria, Galicia, Scotland, Wales, Flanders, Region Västra Götaland and more;

14. notes, however, that despite industrial interest the engagement of a number of multinationals and energy utilities in research and development activities, the scale of investment has not matched other renewables sectors and deployment targets envisaged for 2020 have not been met;

15. recognises that without sufficient action the EU risks losing its global leadership.

Challenges to development of Ocean Energy

16. highlights a number of inter-linked barriers to be overcome facing the growth of the sector:

- Technological
- Financial
- Administrative/governance (including consenting/planning issues and availability/access to data)
- Grid related issues (connectivity)
- Environmental impact.

17. underlines that whilst these challenges need to be addressed collectively, technology and financial challenges are particularly pressing, as without proof of concept and reliable technology the industry will find it challenging to achieve a breakthrough and prove viable;

18. expresses its concern that the early stage of much of the Ocean Energy technology, combined with the high costs associated with testing in the ocean and seas – particularly in harsh and unpredictable conditions – provides a major barrier to large-scale investment, thus hampering advancements in technological development; this is a particular problem for private investors as proof of concept and scalability of technology are both key factors in access to finance and in unit cost reduction;

19. reiterates the importance of environmental considerations set out in the Marine Strategy Framework Directive and its recent opinion on this subject[6]; supports further research and innovation to develop sustainable Ocean Energy solutions for testing and deployment activities, since the introduction of energy into the sea (noise, light, heat and radiation) affects the marine environment and marine ecosystems;

20. calls on lessons to be learnt from the wind and offshore wind sector, notably for companies and research institutes to collaborate to avoid duplication of efforts and funding, and in fostering standardisation within the industry, which is necessary to enhance cost competitiveness.

6 ENVE-VI-001.

EU level action and stronger coordination/cooperation

21. asserts that, given the scale of investments required to realise the potential of the Ocean Energy sector, coordinated actions between the different layers of governance in the EU is essential, including a pivotal role for the European Commission, the European Investment Bank, the European Parliament, and other EU institutions, working in cooperation with Member States, local and regional authorities (LRAs), research institute and universities, NGOs, the emerging industry, and potential investors;
22. welcomes the initiative of the European Commission to set up an Ocean Energy Forum tasked with the publication of an Ocean Energy Roadmap to steer the development of this sector and intends with its opinion to ensure the roadmap takes due account of the strong local and regional dimension in the development of this emerging industry;

23. calls on the European Commission to develop the Ocean Energy Forum into an industrial platform to drive forward delivery of the key actions set out in the Ocean Energy Roadmap;
24. calls for the establishment of EU level targets for Ocean Energy as a clear statement of intent in order to provide investors with certainty for long term commitments;

25. stresses the need for a coherent approach to all activities related to seas and oceans; argues that development of the Ocean Energy sector could provide the stimulus to the development of a Maritime Industrial Policy for the EU;

26. welcomes the development by Ireland and Portugal of national strategies for marine and ocean energy; welcomes the inclusion of ocean energy by eight Member States in their National Renewable Energy Action Plans: UK, Ireland, France, Portugal, Spain, Finland, Italy and the Netherlands; and initiatives in other Member States such as Denmark and Sweden;

27. calls for Member States to give strategic and political leadership in developing this industry through stronger support to research and demonstration projects on their territory;

28. reiterates its call for the creation of a specific Knowledge and Innovation Community for the Blue Economy[7], since the development of skills and the transfer of ideas from marine research to the private sector have a crucial role in the development of ocean energy;

29. stresses the need to capitalise on existing successful initiatives and partnerships[8], to make full use of the knowledge developed in the framework of the Strategic Energy Technology (SET) Plan and its research pillar, the European Energy Research Alliance; i.e. include SET Plan, Smart Cities and Horizon 2020 actors in the development of local and regional energy strategy;

30. points out the need to develop professional training for skills needed for the installation and maintenance of ocean energy plants which at the moment rest with oil and gas companies and encourage the sectors to share knowledge and learn from each other.

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7 OJ C 19, 21.1.2015, p. 24.

8 Joint Programs, JPI Oceans, SI Oceans, Seas-ERA, Ocean Energy ERA-NET.

State Aids

31. welcomes the State Aid approval given in April 2015 to a Portuguese scheme to support demonstration projects (50MW installed capacity) producing renewable energy from the ocean (wave energy, tidal energy) and innovative offshore wind technologies;

32. notes many stakeholders describe the 2014 Guidelines on State aid for environmental protection and energy as being flexible to support demonstration projects in this area;

33. calls for further technical analysis to be undertaken by State Aid experts, working with the Ocean Energy Forum to ensure the State Aid regime is sensitive to the particular challenges facing this sector, and will enable major public investments for example in grid infrastructure and large-scale pre-commercial pilot phase projects.

Atlantic Area Macro Region

34. calls for future EU funding programmes supporting Territorial Cooperation including the Atlantic Area Transnational Programme, to be refocused around supporting the development of Ocean Energy;

35. recommends that strong consideration be given to developing an Atlantic Macro Region focused on developing Ocean Energy; such an approach would provide a clear focus for the five Member States and nations/regions in this area to cooperate, and could potentially lead to a coherent Maritime Industrial Strategy for the Atlantic Macro Region, centred around renewable energy and connectivity;

36. recommends that appropriate and tailored strategies/technologies be developed for all the different sea-basins, harnessing existing experiences/development of advanced technologies for regions with less/different marine energy potential.

Addressing financial challenges

37. argues that significant public support, including through innovative private public partnerships, is essential for the to the development of Ocean Energy;

38. recognises the essential role of the EIB's existing support mechanisms[9]; however, emphasises the need for new and innovative instruments at EU level that create a more favourable environment for supporting investments in "riskier" innovative energy technologies, especially those in ocean energy technology deployment;

9 EIB – EU institutions' joint programmes: The 2020 European Fund for Energy, Climate Change and Infrastructure, The Global Energy Efficiency and Renewable Energy Fund and the European Energy Efficiency Fund, European Strategic Energy Technology Plan (SET-Plan).

39. stresses the importance of investing in interconnections, especially between Member States and their regions, upgrading the transmission infrastructure to increase their capacity to absorb renewable electricity generation, investing in distribution grids, extending grids to remote areas as well as developing and implementing smart grid solutions;

40. calls on the EIB and European Commission to prioritise use of the new European Fund for Strategic Investment (EFSI) to support investments in the Ocean Energy sector, including looking at how this fund can be used to support grid development and connectivity;

41. welcomes the increasing focus on marine renewable energy in a number of Smart Specialisation Strategies (S3); welcomes the launch of the European Smart Specialisation Platform on Energy, and underlines the importance of ensuring this complements the Ocean Energy Forum's work;

42. welcomes the inclusion in a Regional Operational Programmes of priority to investments in marine energy;

43. stresses the importance of strengthening the link between the EU's energy policy and cohesion policy and calls on the European Commission to provide details of the priority given to Ocean Energy in the regional Operational Programmes for the ESIFs for 2014-2020 and to provide analysis of which regions are prioritising Ocean Energy in their S3s;

44. welcomes the decision of the October 2014 European Council to renew the NER300 programme, and notes that from now on small-scale projects will also be eligible[10];

45. calls for a stable higher price for CO_2 emissions and higher financing appropriations for (innovative) renewable energy projects under the new scheme;

46. welcomes projects like Ocean Energy ERA-NET which aims to co-ordinate activities between Member States and regions agencies to support research and innovation in the sector, and looks forward to seeing a plethora of Ocean Energy projects supported under Horizon 2020 and other programmes like Erasmus+;

47. reiterates its call for stronger political priority to be given to creating synergies between EU, Member State and sub-state (local and regional authority) budgets[11] to support investments of key European importance, such as Ocean Energy;

Environmental and consenting issues

48. asserts that Ocean Energy can be developed in a way that enhances the natural environment;

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10 The NER300 programme supports the demonstration of environmentally safe carbon capture storage technologies and innovative energy renewable energy technologies.

11 OJ C 62, 2.3.2013, p. 32.

49. underlines the importance of ensuring engagement of regional authorities, environmental organisations and other NGOs in the Ocean Energy Forum and other strategic initiatives at EU level, and urges Member States, LRAs and industry, to work fully with such bodies, to ensure that this new industry is developed in a sustainable way, minimising impact on the environment;

50. underlines the critically important role of Maritime Spatial Planning (MSP) in supporting the development of the Ocean (and marine) Energy industry, as this provides a mechanism bringing together the different users of the sea/ocean (energy sector, marine transport, aquaculture, fishing, recreation and nature conservation) to engage in a dialogue, to exchange information and take coordinated decisions regarding the use of marine spaces, helping to avoid conflicts between sectors, to develop synergies and to reduce negative impacts on ecosystems; urges Member States and LRAs involved in the preparation of MSPs to plan Ocean Energy development into this process;

51. stresses the importance of simplifying administrative procedures for planning and consenting at LRA and national level, and highlights the recognised good practice in Scotland in this, where they have introduced sectorial marine planning, environmental research and strategic monitoring programmes, a one-stop-shop consenting body and consenting guidance;

52. highlights the importance of access to data and information sharing, to avoid duplication, to reduce the costs of starting operations, and as part of the wider public interest in understanding the marine environment and potential impact of developments on the marine eco-system;

53. underlines the importance of understanding, monitoring and researching the marine environment and ecology, in order to build a more comprehensive data set than currently exists, including carrying out extensive environmental impact studies, using an ecosystem-based approach to consider biodiversity hosted in these regions, and quantify the potential effects of devices on the marine environment.

Awareness and communication

54. believes that communicating the benefits and potential of Ocean Energy, should be a key priority in winning over the "hearts and minds" of EU citizens;

55. underlines the importance of dialogue and communication with all interested stakeholders, including fishermen, the aquaculture sector, and other marine/maritime users;

56. underlines the role that the European Commission and the Committee of the Regions can play in raising awareness of Ocean Energy, for example through Sustainable Energy Week, Open Days Week of Cities and Regions, Covenant of the Mayors, and potentially through establishing new schemes.

Brussels,

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N.B.: Explanatory statement overleaf.

Explanatory Statement on the main ocean energy technologies and on the main ocean energy projects

1. More details on the main Ocean Energy Technologies

- **Tidal Range**: energy created by the difference in sea level (or head) between high and low tides, using the same principles and similar technology to conventional hydropower. Tidal range power generation is not new, with several tidal barrage schemes in existence worldwide, the first at La Rance in Brittany, which opened in 1966, is still operational (EDF) with installed capacity of 240MW. More recent proposed projects have centred on tidal lagoons, which utilise the same turbine technology but do not span an entire estuary, which can be located entirely offshore, and with considerably less environmental impact than tidal barrages.

- **Tidal stream**: generated by gravitational forces of the sun and moon, which in combination with the rotation of the earth on its axis, cause movements of the oceans and seas. Tidal energy converters extract kinetic energy from tidal flow, and through mechanical motion (rotor or a foil) produce electrical energy. There have been a number of small-scale wave energy demonstration projects but to date no commercial scale arrays have been established and as there is as yet no consensus on preferred technology devices.

- **Wave Energy**: this forms as kinetic energy from the wind is transmitted to the upper surface of the ocean. The height and period of resulting waves varies depending on the energy flux between the wind and the ocean surface. Wave energy converters extract the energy and can be designed for operation in different water depths. Device design is dependent on the location of the device and the intended resource characteristics. As with tidal energy there has been much research, trying many different devices, and in small-scale pilots and demonstrations, and similarly no consensus on preferred technology.

- **Salinity Gradient Energy**: energy available from the difference in salt concentration between freshwater with saltwater. Estimated energy value of 2 000 TWh per annum available, giving this form of energy a huge potential if it can be captured effectively. The potential cost of energy from this source is higher than most traditional hydropower, but is comparable to other forms of renewable energy that are already produced in full-scale plants. In Europe the research is concentrated in Norway and the Netherlands, in both places small pilots are tested. As with wave and tidal this is still unproven technology, and requires further research development activity.

- **Ocean Thermal Energy Conversion (OTEC)**: exploit the temperature difference between deep cold ocean water and warm tropical surface waters to generate energy. Variety of different methods to achieve this. OTEC is naturally dedicated to tropical and equatorial seas and oceans. More than 100 countries and territories worldwide are potentially able to implement OTEC in their energy mix; including several European overseas territories. Estimates of potential: weighted installed base of 150GW, with a priority market of 60GW, emerge first with islands and isolated areas for 9GW total; by 2030, 1.5GW of OTEC should be installed.

Drawn from information available on the Ocean Energy Europe web-site:
http://www.oceanenergy-europe.eu/index.php/policies/technologies

2. Some examples of Ocean Energy projects

These are included for illustrative purposes:

- UK (Wales): planned development of six Tidal Lagoons, four of which will be in Wales, the most advanced of which is Swansea Tidal Lagoon (320MW). Estimated energy production: 30TWh per annum and £2.65bn economic benefit;

- UK (Scotland): MeyGen Tidal Energy Project in the Inner Sound of the Pentland Firth – phase 1a 6MW; first community-owned tidal power turbine grid in Shetland;

- France (Brittany): La Rance Barrage, world's first tidal power station 240MW and annual output of 600GWh; Brittany is home to 50% of French maritime sectors R&D skills including France Energies Marine (research institute) in Brest, and a commitment to establish two demonstrators, four pilot farms, two generation sites, using five Ocean Energy (and offshore wind) technologies off the coast of Brittany;

- France (Brittany):– "Pôle Mer Bretagne Atlantique";

- France (Réunion Island): number of marine energy projects including OTEC land-based prototype;

- Spain: Biscay Marine Energy Platform (bimep), Lemoiz. Capacity: 20 MW;

- Portugal: WindFloat, Aguçadoura. Capacity: 2.0MW

- Italy: small scale projects include number of projects sponsored by ENEL Green Power e.g. 40 South Energy, Elba island, 0.1MW, wave; Pisa, 0.1MW, wave; Wave4energy Island of Pantelleria, – 0.1MW, wave;

- Ireland: Wave Energy Test Site, Galway Bay. Capacity: 5MW;

- Denmark: Moorings for large wave energy converters (2014-2017); Wavestar Hanstholm, – 0.25MW, wave;

- Netherlands: Ocean Thermal Energy Conversion project in Curacao in the Dutch Caribbean; Bluewater Energy Texel, – 0.2MW, tidal stream;

- Belgium: Mermaid concession zone for offshore, wave and tidal energy, aims to install 20MW wave energy (currently has a permit to 5MW); national sea test facility at Ostend;

- Sweden: Sotenas, 1 MW, wave; Ada, 0.4MW, wave.

See also http://www.ocean-energy-systems.org/ocean-energy-in-the-world/

II. PROCEDURE

Title	Developing the potential of Ocean Energy
Reference(s)	Own-initiative opinion
Legal basis	Article 307(4) TFEU
Procedural basis	Rule 41(b)(ii) of the Rules of Procedure
Date of Council/EP referral/Date of Commission letter	
Date of Bureau/President's decision	18 March 2015
Commission responsible	Commission for the Environment, Climate Change and Energy (ENVE)
Rapporteur	Rhodri Glyn Thomas (UK/EA) Assembly Member for Carmarthen East and Dinefwr
Analysis	17 April 2015
Discussed in commission	30 June 2015
Date adopted by commission	30 June 2015
Result of the vote in commission (majority, unanimity)	Majority
Date adopted in plenary	Scheduled for 13/14 October 2015
Previous Committee opinions	Opinion of the Committee of the Regions on Renewable energy: a major player in the European energy market[12] Opinion of the Committee of the Regions on Blue Growth: opportunities for marine and maritime sustainable growth[13] Opinion of the Committee of the Regions on Blue Economy: realising the potential of our seas and oceans for jobs and growth[14]
Date of subsidiarity monitoring consultation	n/a

12 OJ C 62, 2.3.2013, p. 51.

13 OJ C 62, 2.3.2013, p. 47.

14 OJ C 19, 21.1.2015, p. 24.