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Wave energy in Europe: Views on experiences and progress to date

A.M. O'Hagan [a,*], C. Huertas [b], J. O'Callaghan [a], D. Greaves [c]

[a] MaREI, Environmental Research Institute, University College Cork, Co. Cork, Ireland
[b] Abengoa Seapower, Campus Palmas Altas, C/Energía Solar n° 1, Palmas Altas, Seville, Spain
[c] School of Marine Science and Engineering, University of Plymouth, Marine Building, Drakes Circus, Plymouth PL4 8AA, England, United Kingdom

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ABSTRACT

Through the Intelligent Energy Europe-funded SOWFIA project, the experiences of developers, regulators and stakeholders in relation to consenting wave energy deployments to date was assessed and analysed. The work focussed on wave energy test centres in Europe and involved consultation with wave energy device and project developers, regulatory authorities, stakeholders, environmental consultants and others through dedicated workshops and questionnaire surveys. Themes that arise in the analysis relate to planning and consenting processes, administrative procedures, Environmental Impact Assessment and stakeholder consultation. An analysis of the barriers as perceived by those consulted is presented and discussed, and recommendations are drawn from the analysis within each of the themes. In particular the need for Maritime Spatial Planning (MSP) to alleviate complex planning and consenting processes; the need for coordination of administrative procedures; the need for clearer requirements in the EIA process; and the need for early participation of stakeholders in consultation are discussed. Progress has been made in many EU countries but certain priority areas remain to be addressed if wave energy is to realise its full potential.

* Corresponding author at: MaREI Centre, Beaufort Building – Environmental Research Institute (ERI), University College Cork, Haulbowline Road, Ringaskiddy, Co. Cork, Ireland. Tel.: +353 21 4864325.
E-mail address: a.ohagan@ucc.ie (A.M. O'Hagan).

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1. Introduction

The wave energy industry is a new and developing industry which aims to contribute to the delivery of the EU's renewable energy targets whilst simultaneously supporting sustainable development in the EU's maritime sector and associated coastal communities [1]. As a pre-commercial industry, many technological and non-technological barriers exist, which can have the effect of inhibiting the development and further progress of the industry [2]. Technical barriers refer to those which require a technological solution and may include not only device-related aspects but also those surrounding cabling, vessels for deployment and data collection. In contrast, non-technical barriers are those factors that are not directly related to technology development but which can hinder deployment of wave energy devices. Common non-technical barriers are access to financial support, regulatory issues, potential environmental impacts and issues relating to social acceptance of development. Whilst the future success of wave energy will be dependent on technology convergence and efficient performance, the economic, environmental and social aspects of its development must also be resolved. To date, research findings on the non-technical barriers has tended to come from dedicated research projects and their outputs. Examples include the WAVEPLAM [2], EquiMar [3], ORECCA [4] and SOWFIA [5] projects, all of which identify consenting and environmental effects as two significant barriers to progress. There is a paucity of scientific literature pertaining to actual experiences of wave energy developments to date and how this experience can inform future planning and management approaches. This paper addresses these topics and is based on work carried out during the Streamlining of Ocean Wave Farm Impact Assessment (SOWFIA) project, funded by the EU's Intelligent Energy Europe programme administered by the EU's Executive Agency for Competitiveness and Innovation (EACI) [now EASME, the Executive Agency for Small and Medium-sized Enterprises].

Consenting processes and Environmental Impact Assessment (EIA) are commonly identified as two of the most significant non-technological barriers to be addressed by the wave energy industry. Currently wave energy devices tend to be deployed as single units either in dedicated test centres or independently in suitable locations. As the industry progresses, deployments will be in arrays of up to five device units and eventually in farms of multiple units, depending on the operating principle of the device. Accordingly planning and consenting process will need to be able to deal not only with this new maritime use but also to ensure the necessary consents are administered in a suitable, timely and transparent manner whilst also ensuring that environmental integrity is maintained and potential impacts minimised. In recent years, a number of EU Member States have had wave energy devices deployed in their adjoining waters. Experience has, therefore, been gained by wave energy developers, regulatory authorities and stakeholders in the maritime environment and surrounding communities. This paper presents these experiences along with perceptions of how the various aspects of consenting process are viewed with the aim of assessing whether consenting processes and EIA are still considered as barriers to the development of the wave energy industry. The paper culminates with a number of strategic and operational recommendations which could be implemented by all actors (regulators, developers and stakeholders) in an effort to streamline the process.

2. Law and policy context

Commitments at international level to cut greenhouse emissions and combat climate change have resulted in supranational organisations and national Governments developing and implementing ambitious climate change and energy policies. The European Union (EU) aims to get 20% of its energy from renewable sources by 2020. This will have the effect of reducing reliance on imported energy whilst also encouraging technological innovation and increasing employment across EU Member States. The EU's Renewable Energy Directive (2009/28/EC) provides the legal framework for promoting renewable energy and also sets renewable energy targets for all Member States to achieve by 2020. The Directive required Member States to submit National Renewable Energy Action Plans (NREAPs)

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