



## Governance barriers to sustainable energy transitions – Assessing Ireland's capacity towards marine energy futures



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### ABSTRACT

Marine energies (ME), including offshore hydrocarbons along with marine renewable energies (MRE), such as offshore wind, wave and tidal energy, are increasingly important in the future energy mix of many nations. We observe that ME governance is complex, as development offshore involves engagement and may often result in conflict.

This paper examines the Irish case, where offshore gas and oil remain relatively undeveloped, and yet have provoked extensive controversy. Moreover, Ireland exhibits very ambitious plans for MRE developments. Against a background, where ME development seems to have stalled, the objective of the paper is to analyse the Irish governance setup and its capacity to deliver ME and whether the current system is equipped to enable transition to MREs. Current governance systems lack efficacy in terms of policy integration and enforcement, government oversight, and public trust due to past failures. Although, management approaches have been developed to address some of the barriers, domains such as policy/regulation, industry development and public engagement are disconnected.

Results presented may not simply be generalised, as each country context is different. An analysis of examples with similar issues must focus on studying the context of the governance setup and balances of power across domains.

### 1. Introduction

The world today is at a critical stage with regard to the management of its energy resources. Governments and societies around the world are facing the challenge to manage energy transitions and the decarbonisation of the energy sector (REN21, 2014). These challenges have become even more amplified since the adoption of the COP21 agreement, that aims to limit global warming to at least 2 °C by 2050 (UNFCCC, 2015). In this regard the importance of harnessing Marine Renewable Energies (MRE) has been recognized (IPCC, 2012; World Ocean Review, 2014). It is widely considered to be a promising means

of economic development and job creation, whilst at the same time mitigating the impacts of climate change (IEA, 2014). However, due to the current pre-development stage of marine technologies, MRE is unlikely to make a significant contribution to climate and RE targets in some countries in the short-term, e.g. before 2020 (Berkhout et al., 2012; IPCC, 2012). For that reason and given the fact that in some countries indigenous offshore hydrocarbons provide the only resources for domestic energy supply both renewable and non-renewable resources have to be considered when discussing the short- and long-term priorities and targets for a future Marine Energy (ME) mix. In this context, ME includes offshore gas and oil along with MRE resources.

**Abbreviations:** DAFM, Department of Agriculture, Food and the Marine; DCCAE, Department of Communications, Climate Action and Environment; DCMNR, Department of Communications, Marine and Natural Resources; DHPCLG, Department of Housing, Planning, Community and Local Government; EEZ, Exclusive Economic Zone; FDI, Foreign Direct Investments; IMP, Integrated Marine Plan; IOSEA, Irish Offshore Strategic Environmental Assessments; LNG, Liquefied Natural Gas; MCG, Marine Coordination Group; ME, Marine Energy; MRE, Marine Renewable Energy; OREDP, Offshore Renewable Energy Development Plan; ORESG, Offshore Renewable Energy Steering Group; PAD, Petroleum Affairs Division; R&D, Research and Development

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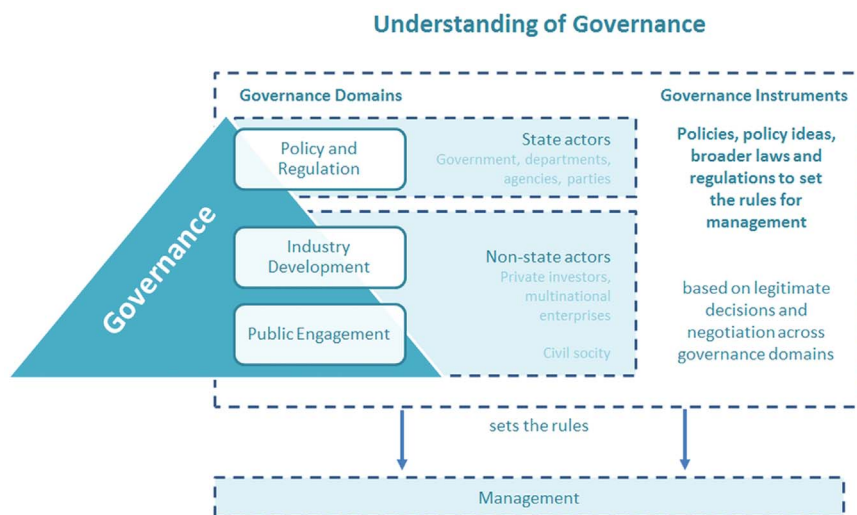


Fig. 1. Governance setup towards the setting up of rules for the management of human activities.

The idea is to use indigenous resources in a combined approach. This involves the exploration of indigenous gas and oil resources, while at the same time encouraging MRE resources before phasing out fossil fuel based resource extractions.

In terms of large-scale energy infrastructure and governance, there is a complex array of sectors and issues that need to be reconciled. This is basically due technological innovation that has triggered the exploitation of energy in more extreme environments and rural areas around the world often resulting in strong opposition. Prominent examples are the on-going opposition towards oil exploration in the Gulf of Mexico, to the extraction of tar oils sands in Alberta, Canada, and anticipated oil drilling in locations such as the Arctic, West Africa and Brazil. Large offshore wind projects also face widespread public and political objections, such as the large Cape Wind project off the U.S. East Coast (Williams and Whitcomb, 2007; Petrova, 2014) or wind farms in the North Sea (Lange et al., 2010). Opposition often occurred due to weak implementation of projects, reflected in persistent failures of the regulatory system and the way projects have been managed by developers not meeting local communities' expectations (Florini and Sovacool, 2009).

To date, some research has been undertaken on governance dimensions related to offshore gas and oil in the marine environment of the Arctic and the Gulf of Mexico from either a law, policy, environmental, civil society or property right perspective (Gulas et al., 2017; Liu, 2015; Quist and Nygren, 2015; Johnson et al., 2013; Simas et al., 2015). Studies in this field have been focused on sectoral issues related to social assessments, technological, economic or environmental aspects. However, only limited research has been undertaken on governance dimensions covering a broad range of issues associated with specific developments in the marine environment (Kerr et al., 2014). As the pace and scale of global environmental challenges grow and social problems become more apparent there is a need to develop governance responses that are approached from a science perspective and other knowledge systems, such as indigenous, traditional or local communities (Feliciano and Berkhout, 2013).

There is also a need to address people's perceptions, and expectations and concerns of communities that are hosting energy infrastructure while at the same time considering the needs of policy, regulation and industry development and path-dependencies between those (Armitage and Plummer, 2010; Berkhout, 2002). In the context of research on global change, governance challenges call for new modes of knowledge production. The notion of co-production of knowledge in social science has been emphasized by international research initiatives, such as Future Earth (van der Hel, 2016).

For energy research this means that it is challenged to carry out

research on governance environments that can facilitate the successful transition from ME to MRE. It is also challenged to carry out research in a multidisciplinary setting of various stakeholders to support co-production of knowledge. In the context of our research, this was a starting point to draw from lessons learned for the future by analysing the enabling conditions from the perspective of concrete large-scale ME projects. This article sets out to support an understanding of this knowledge transfer and learning.

### 1.1. Governance understanding and theory

Governance of natural resources describes how societies make decisions, share power, ensure accountability and take actions in response to diverse dynamics and complex challenges today (Folke et al., 2005; Kooiman, 2003). It addresses multiple possible modes of decision-making and involves multiple possible actors from government, industry, research and civil society (Biermann et al., 2009). It encompasses broader laws, regulations, policies and actions with which natural resources are managed (UNESCO, 2017). Governance from a policy perspective is the assemblage of institutions, instruments and individuals within civil society in order to enhance the legitimacy of the public realm (Kjaer, 2004). Central to this are formal and informal institutions, policies and policy ideas that are in use to set the rules for collective decision-making. Management distinct from governance is concerned with the application of these rules and operationalisation of policy visions (Folke et al., 2005). Thus, governance sets the stage within which management occurs (Olsen et al., 2011). van Tatenhove (2013) focusses on governance of marine use activities and dynamics within a framework of coalitions of governmental and non-governmental actors. Both groups are working together to engage in a way that enables a process of negotiation of the rules for activities at sea. In this regard, negotiation aims at reaching agreement between actors and nested institutions based on access to resources and different abilities to mobilize resources.

Fig. 1 highlights the theoretical governance understanding based on the authors referenced above. It also reflects the governance domains and the instruments setting the rules for the management of human activities.

### 1.2. Objective and justification of case study selection

Given the ambitions to develop its marine resources, including ME, we used Ireland as a case study for analysis. Against a background where ME development seems to have stalled, the objective of the paper is to analyse the Irish governance setup and its capacity to deliver ME,

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