Ollscoil na hÉireann, Corcaigh

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Development of a conceptual model towards an innovative solution for marine energy decision-making

A thesis, presented by

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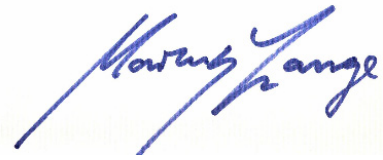
Declaration

This is to certify that the work I am submitting is my own and has not been submitted for another degree, either at University College Cork or elsewhere. All external references and sources are clearly acknowledged and identified within the contents. I have read and understood the regulations of University College Cork concerning plagiarism.

Signature: 

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Following University College Cork's 'Code of Research Conduct' (Version 1.0, approved by the UCC Governing Body, 14th June 2016) the PhD research received 'Ethical Approval' by the Social Research Ethics Committee (SREC) on 30th September 2016 (Application Log. No. 2016-091).

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Abstract

The key topic of research in this thesis is one of governance challenges with respect to marine energy. Marine energy (ME) refers to forms of hydrocarbons and renewable energy, including wind, wave and tidal energy that are extracted from marine resources. Increasingly, Marine Renewable Energy (MRE), namely from offshore wind, wave and tidal energy, is viewed as an opportunity to meet climate change obligations, with the added benefit of powering the economy and the creation of jobs. The marine energy sector faces a range of challenges including technological, and importantly, governance challenges. Large-scale energy infrastructure projects reveal a complex array of governance issues to be reconciled, including a failure to meet the expectations of the public affected by development. This focuses attention on the need to understand the governance framework, especially in order to facilitate the transition to a carbon neutral economy.

To date, some limited research has been undertaken on linear governance dimensions related to sectoral aspects of marine energy exploration. Even less research has been undertaken on integrating governance dimensions, from the broad perspectives of policy and regulation, industry development and civil society. The **research objective** was to develop a conceptual model that describes the different components of ME governance, with a focus on Ireland, with practical implications for governance in the future. This model was developed based on the analyses of case studies, including in-depth examples from the United States and Ireland. Given the understanding that transition from fossil fuels to renewables requires knowledge transfer and learning from past large-scale infrastructure development projects, and the way that stakeholders were engaged in such cases, case studies from both MRE and offshore oil and gas sectors were considered in the study. Each of the case studies illustrated different elements of marine energy governance, stakeholder analysis, policy framework analysis and literature analyses. High-level views on offshore energy developments in Ireland, the United Kingdom and Denmark were also provided.

In depth-analyses found that current governance frameworks lack efficacy in terms of policy integration and enforcement, government oversight to unlock the potential of yet untapped commercial resources, and trust on the part of local communities due to past

failures. The study concludes that there is a missing connection between governance and management, particularly in the domains of policy and regulation; industry development; and public engagement. The findings of this research address this gap and provide cornerstones of a practical model on how this disconnection can be avoided in the future. By weight of evidence these principles are the 'facilitation of governance collaboration and integration' and 'knowledge creation' as a result of a scientifically robust evidence base. The role of an honest broker is recommended to support 'facilitation and knowledge creation'. In terms of theoretical contribution of this research these two principles should be added to the list of good governance principles addressed in current literature on the topic.

The study harnessed an opportunity to engage with a wider range of multiple stakeholders representing various strands of governance and diverse cohorts of civil society. The extended gathering of information by means of 56 semi-structured interviews with 95 experts and stakeholders, group discussions in Ireland and the U.S. and the organisation of a national "Marine Energy Governance Workshop" are significant research contributions from this thesis.

List of Publications

Parts of this thesis have been published as open access articles in peer reviewed journals:

I. Governance barriers to sustainable energy transitions – assessing Ireland's capacity towards marine energy futures

Marcus Lange, Anne Marie O'Hagan, Robert Devoy, Martin Le Tissier, Valerie Cummins

published in: J. Energy Policy **2018**, 113: 623-632 (peer reviewed), https://doi.org/10.1016/j.enpol.2017.11.020

II. Governance challenges of marine renewable energy developments in the U.S. – creating the enabling conditions for successful project development

Marcus Lange, Glenn Page, Valerie Cummins

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Contributions of individual authors

I. I was responsible for the primary research activities and data collection. I analysed that data and wrote the manuscript. Valerie Cummins, Anne Marie O'Hagan, Robert Devoy and Martin Le Tissier provided direction and feedback on the manuscript and did some language editing. Valerie Cummins facilitated collaboration in the study process and had lead supervision.

II. I was responsible for the primary research activities and data collection. I analysed that data and wrote the manuscript. Valerie Cummins and Glenn Page provided direction and feedback on the manuscript and language editing. Glenn Page provided guidance on the study approach and facilitated collaboration in the study process.

Parts of this thesis have been presented at international conferences:

Innovative solutions for ocean renewable decision-making in Ireland – drawing from international best-practices

Marcus Lange, Valerie Cummins, Robert Devoy, Don Lyons

presented at: 2nd International Ocean Research Conference, 17-21 November **2014**, Barcelona, Spain

Development of a new governance model for marine energy decision-making in Ireland

Marcus Lange

presented at: Facing the Future Conference, 31 May-1 June **2016**, Aberdeen, United Kingdom

Managing a future with energy farms at sea – exploring governance responses to support marine energy developments

Marcus Lange, Valerie Cummins, Anne Marie O'Hagan, Robert Devoy, Martin Le Tissier

presented at: 56 Estuarine Coastal Sciences Association (ECSA) Conference, 4-7 September **2016**, Bremen, Germany

An innovative governance model for transformation towards sustainable energy futures

Marcus Lange, Valerie Cummins

presented at: Nairobi Conference on Earth System Governance, 7-9 December **2016**, Nairobi, Kenya

Abbreviations

ABP	An Bord Pleanála *(Ireland only)*
BOEM	Bureau of Ocean Energy Management *(U.S. only)*
CM	Coastal Management
CPO	Compulsory Purchase Order
CSO	Central Statistics Office
DAFF	Department of Agriculture, Fisheries and Food *(renamed in 2007)*
DAFM	Department of Agriculture, Food and the Marine *(renamed in 2007)*
DEA	Danish Environmental Agency
DCCAE	Department of Communications, Climate Action and Environment *(renamed in 2016)*
DCMNR	Department of Communications, Marine and Natural Resources *(renamed in 2002)*
DCENR	Department of Communications, Energy and Natural Resources *(renamed in 2007)*
DMNR	Department of the Marine and Natural Resources *(renamed in 1997)*
DHPLG	Department of Housing, Planning and Local Government *(renamed in 2017)*
DEHLG	Department of Environment, Heritage and Local Government *(renamed in 2003)*
DOI	U.S. Department of the Interior
DOE	U.S. Department of Energy
DTTS	Department of Transport, Tourism and Sport *(renamed in 2011)*
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statements

EPA	Environmental Protection Agency
EPAct	Energy Policy Act
FERC	Federal Energy Regulatory Commission *(U.S. only)*
FDI	Foreign Direct Investments
ICM	Integrated Coastal Management
IE	Ireland
IEA	International Energy Agency
IMP	Integrated Marine Plan
IOSEA	Irish Offshore Strategic Environmental Assessments
IPCC	Intergovernmental Panel on Climate Change
LNG	Liquefied Natural Gas
MaREI	Marine and Renewable Energy Ireland
MCC	Mayo County Council *(Ireland only)*
ME	Marine Energy
MCG	Marine Coordination Group
MGPO	Mandatory Green Power Option *(U.S. only)*
MLVC	Marine Licence Vetting Committee *(Ireland only)*
MRE	Marine Renewable Energy
MS-LOT	Marine Scotland's Licensing Operations Team *(Scotland only)*
MSP	Marine Spatial Planning
NOAA	National Oceanic and Atmospheric Administration *(U.S. only)*
Ocean SAMP	Ocean Special Area Management Plan *(U.S. only)*

OCS	Outer Continental Shelf *(U.S. only)*
OREDP	Offshore Renewable Energy Development Plan
OREC	Offshore Renewable Energy Credit *(U.S. only)*
ORESG	Offshore Renewable Energy Steering Group
PAD	Petroleum Affairs Division *(Ireland only)*
PPP	Public Private Partnership
PTC	Production Tax Credit *(U.S. only)*
RPS	Renewable Energy Portfolio Standard *(U.S. only)*
SID	Strategic Infrastructure Development
SIPO	Standards in Public Office Commission *(Ireland only)*
SME	Small- and Medium-sized Enterprise
SEA	Strategic Environmental Assessment
UN	United Nations
UNCLOS	UN Convention on the Law of the Sea
US	United States



1 Introduction

1.1 General introduction

The topics under research and analysis in this thesis are governance challenges of marine energy. Marine energy (ME) refers to forms of hydrocarbons (offshore oil and gas) and renewable energy, including wind, wave and tidal energy that are extracted from marine resources. Marine Renewable Energy (MRE) include offshore wind, wave and tidal energy. The global demand for energy is increasing and has triggered the exploitation of energy in more extreme environments around the world. In 2013, oil extracted offshore accounted for 37 % and offshore gas for 28 % of global production, with increasing trend expectation (World Ocean Review, 2014).

Economic activity in offshore areas, which requires connection to the mainland, often in rural areas, may result in negative impacts, with opposition arising from communities living close to the coast. 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 wind farms in the North Sea (Lange et al., 2010) and the large Cape Wind project off the U.S. East Coast (Whitcomb and Williams, 2007). Recently, by the end of 2017, the contentious Cape Wind project was cancelled after sixteen years of continued controversy and litigations. Opposition to such projects often occur 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 expectations of local communities (Florini and Sovacool, 2009). In order to develop innovative responses for a just and sustainable energy future an even broader view on the issues is needed than solely on the issue of energy. This must include considerations of the wider governance framework.

The need for innovation in governance has 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). There is a strong consensus within both science and policy domains that the global energy crisis is closely related to the challenge of global

change. There is also agreement that a 'business as usual' approach will not achieve the reduction targets needed to reduce global warming (Jackson, 2009; IPCC, 2014). In fact, a commitment to find new economic paradigms is needed. The commitment could be maintained through new strategies supporting sustainable development (Kubiszewski et al., 2013; Sachs, 2006). Thus, a rethinking of our way of living and the way we do business is needed (Klein, 2014). In the governance domain, the energy mix is just one element of a complex array of sectors and issues that need to be reconciled in light of global resource management challenges. Therefore, the value of this research is the development and provision of generic approaches and transferability of valuable lessons to other situations, and scales, such as the global level, and sectors with similar challenges.

The desire to identify lessons learned from large marine energy projects nationally and internationally, and to grasp the potential for innovative approaches to decision-making and governance was a major driver for this study. The successful implementation of new offshore projects depends on the ability to learn from previous experiences. Therefore, the thesis draws from a focal case study on Ireland and international examples from the United States (U.S.). It also provides high-level views on offshore energy developments again in Ireland, the United Kingdom (UK) and Denmark. The author brought in reference knowledge from the offshore wind energy sector and experiences in Germany. An important selection criterion of the cases was their potential for scaling up meaningful lessons learned from an energy transition perspective to the national level.

1.2 Rationale and motivation for research

The marine energy sector faces a range of challenges including technological, and importantly governance challenges (Lange et al., 2018a). In terms of governance of large-scale energy infrastructure, there is a complex array of sectors and issues that need to be reconciled, which in the past often failed to meet the expectations of the public and the people affected by developments in their daily life. There is a need to address people's perceptions, expectations and concerns of communities that host energy infrastructure while at the same time consider the needs of policy and

regulation, and industry development and path-dependencies between those (Armitage and Plummer, 2010; Berkhout, 2002). 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 systems and local communities (Feliciano and Berkhout, 2013). In the context of global change, research on governance challenges, such as those addressed by the underlying research, call for new modes of knowledge production, closer to people and local communities. As a matter of fact, the social science in international research initiatives, such as the *Future Earth* program and its core project, the *Earth System Governance* project, have paid increasing attention to the notion of co-production of knowledge (van der Hel, 2016). Contribution of multiple knowledge sources and input from different governance domains have become central to the generation of knowledge in the underlying study.

To date, some research has been undertaken on governance dimensions related to offshore oil and gas in the marine environment of the Arctic and the Gulf of Mexico from either a law, policy, environmental, civil society and property right perspective (Gulas et al., 2017; Johnson et al., 2013; Liu, 2015; Quist and Nygren, 2015). Studies in this field have been focused on sectoral issues related to social assessments, technological, economic and 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). Research at the interfaces of the challenges is needed in order to address the issues effectively.

Energy research is challenged in two respects: *First*, research needs to carry out analysis on governance environments that can facilitate the successful transition from fossil fuels to renewable energies. Concerning future developments in the marine environment this entails a transition from ME to MRE. The idea is to use indigenous resources in a combined approach. This involves the exploration of indigenous oil and gas resources as bridging energy resource, while at the same time encouraging MRE resources before phasing out fossil fuel based resource extractions. Energy transitions in particular form part of a wider discussion on the potential for

transforming human-technological interactions to achieve sustainable patterns of production and consumption (Schellnhuber et al., 2011). The transformation towards ME futures requires an understanding of the dynamics of both transitions and the governance arena, to conduct research that addresses global challenges in socio-economic, technological and / or ecological systems. Therefore, and *second*, research is challenged to carry out practical research in a multidisciplinary setting of various stakeholders to support co-production of knowledge. Young (2013) showed that governance is often reactive in terms of particular events, such as human interventions and their impacts in environmental systems, rather than proactive in terms of finding sustainable solutions for the future and initiating change. The underlying research seized an opportunity to draw from multiple lessons by analysing the enabling conditions from the perspective of concrete large-scale ME projects to learn for the future and create proactive responses for change.

The **research objective** was to develop a conceptual model that describes the different components of ME governance, with a focus on Ireland, with practical implications for governance in the future. This model was developed based on case studies from Ireland and the U.S., each of which illustrated different elements and challenges of ME governance. The methodological design was tailored to gather insights from the perspective of multiple stakeholders, and to draw valuable lessons for better decision-making in the future. Given the understanding of the author from the very beginning of the study that transition from fossil fuels to renewables requires knowledge transfer and learning from past large-scale infrastructure development projects, and the way that stakeholders were engaged in such cases, case studies from both MRE and offshore oil and gas sectors were considered in the study. Therefore, the aim was to transfer knowledge from established to emerging offshore sectors, including the governance aspects and stakeholder management lessons to be learned.

At the theoretical level, understanding of governance theory informed the development of the conceptual model. At the practical level, the study builds on various stakeholder perspectives and practical experiences from case studies, which also informed the new governance model. Therefore, **central research questions** focused on governance challenges from the perspective of major governance

domains. The *first* research question aimed to identify key issues in existing practices and lessons to be learned in the context of energy governance in multiple stakeholder relations at various levels, importantly the local level. The *second* research question addressed how to support decision makers in future programmes to better understand how to build the enabling conditions for programme implementation. Here the focus was on developments towards renewable energy at higher spatial scales of governance, importantly the national level. The questions were based on the concept of nested systems of governance at multiple scales and followed the governance baseline approach by Olsen et al. (2009). These questions were central to the study objective. The approach will be introduced in greater depth in Section 2.2.

The study stands out as it harnessed a unique opportunity to engage with a wider range of multiple stakeholders representing various strands of governance and diverse cohorts of civil society. The methodological approach in support of the study (see Chapter 3) was designed to identify key issues, gain an understanding of the interplay of multiple stakeholders and thereby address the interfaces between different issues. Knowledge created in this process enabled the development of the governance model further. At the practical level the model can be applied to contribute to innovative ME solutions in Ireland but also other situations and sectors nationally and internationally. Major contributions of the study are described in the following section.

1.3 Contribution of this thesis

The main contribution of this thesis is to enhance governance in response to the need to develop large ME projects that support wider energy transitions and to mitigate the impacts of climate change. It further contributes to the management of issues in situations and sectors with similar challenges. Here the focus of the thesis lies on the enabling conditions for project implementation. This research will help to understand perspectives of multiple stakeholders and to inform industry and policy on how to change the way decisions are made. On the basis of robust reviews of the context for energy and governance arrangements for offshore decision-making in Ireland and international case studies the research builds capacity to understand how the ME

community can develop innovative models for engagement, to drive this emerging sector forward. Findings further help to support integrated planning and foster cooperation across the governance domains.

The extended gathering of information by means of 56 semi-structured interviews with almost 100 experts and stakeholders, group discussions in Ireland and the U.S. and the organisation of a national "Marine Energy Governance Workshop" (referred to as the governance workshop in the following) is a significant research contribution from this thesis. Interviews helped to understand the local context represented by different stakeholder's perspectives in all kinds of governance domains in Ireland and in comparative case studies along the East Coast of the U.S. The governance workshop helped to understand the perspectives of industry developers in Ireland with a focus on ME implementation. It was the first time 20 actors with the power to influence decisions from both the renewable and the non-renewable energy sectors had come together to share multifaceted views on Irish ME futures. By using a timeline development process the group identified eras of governance and patterns of human activity, ecosystem conditions and management responses. Workshop outcomes helped to review the policy framework for energy in Ireland. Other contributions are a literature review and analysis of Ireland's policy framework for the implementation of ME. The literature review helped to establish a general understanding of governance and to set the context for energy challenges and governance. The policy analysis was undertaken to gain insights into the perspectives of those responsible for policy and regulation.

A focal research point of departure was the interplay across three governance domains grounded in governance theory, namely *policy and regulation*, *industry development* and *public engagement*. In the course of the study, these domains turned out as the key challenges of ME governance. Therefore, these domains were used as a category system for the explorations. In addition, a case study approach was applied to analyse Ireland's governance setup in the context of experiences from a large ME project. In this context, the large Corrib Gas project off the Irish West Coast was studied in depth. A set of international examples from the U.S. were also examined. As part of an extended three-week study visit in winter 2015, a range of MRE initiatives in the States of Maine, Rhode Island and Maryland along the East Coast of the country

became complementary case studies (Lange et al., 2018b). The emphasis of the U.S. examples was to highlight challenges and opportunities of MRE developments at the local level and to identify prerequisites for successful developments at national government level. The federal government as the national government level of the U.S. was chosen because strategic decisions at this level allow the creation of some of the enabling conditions for wider energy transitions nationally with relevance even globally. Therefore, governance dynamics and priorities at the federal level related to marine renewable energy developments and emerging pilot programmes in this field at the state and local level were analysed. Thereby, all three governance domains were evaluated by exploring the factors that could hamper developments, such as failures in policy and regulation and poor communication with the public. A comparative approach was chosen to understand the decision-making power at various scales and interconnections across different stakeholders.

Baseline information of the governance study can be readily compared with similar studies. However, the different country and regional contexts need to be considered. Detailed appraisal of the research limitations are summarised in Chapter 8. Findings should be used for follow-up studies. In this regard, analyses of how perceptions of stakeholders may change as successful project implementation unfolds and the projects extents expand is important.

The thesis comprises an introduction to the topic that highlights the importance of the research (Chapter 1). The introduction includes a section on the rationale of and motivation for the research supported by evidence from literature. This chapter also highlights the contribution of this thesis to existing knowledge and governance in practice. Chapter 2 serves as a literature review and provides background information on energy and MRE challenges. It puts emphasis on the global energy challenge, energy transitions (Section 2.1.1) and marine renewable energy system challenges in particular (Section 2.1.2). Section 2.2 highlights governance challenges and the underlying understanding of governance, its theory and establishes the three governance domains. This section also provides an introduction into good governance principles and public engagement from the literature, providing the context for the analysis of the framework for ME governance in Ireland. Chapter 3 provides a summary of the materials, methods and the approach used. It highlights

the importance of the case studies identified and outlines the engagement process as a central ingredient of the study approach. Results from governance dynamics generated from the Irish case examples are presented in Chapter 4 and the Corrib Gas in-depth analysis in Chapter 5. The chapters highlight different stakeholder perceptions on the implementation of the Corrib Gas project and provide a qualitative analysis of the issues in dispute. Chapter 6 provides results from the comparative U.S. case studies from a knowledge transfer and learning perspective across governance domains and scales. Chapter 7 elaborates on the results from the case studies by governance domains and discusses the lessons learned in light of the entire research. Chapter 8 draws overall conclusions by bringing together the traditional governance understanding together with practice. Section 8.3 is particularly devoted to present the new conceptual model as a basis for a future governance.

2 Literature review

This chapter highlights the review of the literature in the field of energy and marine renewable energy challenges (Section 2.1), as well as governance challenges (Section 2.2). It addresses global energy challenges and energy transitions in detail (Section 2.1.1) and puts emphasis on marine renewable energy in particular (Section 2.1.2). In Section 2.2 the author approaches governance challenges associated with energy transitions and the underlying understanding of governance. In this section the author also establishes the three governance domains. In order to address the practical implications for governance, the section establishes a link between good governance principles and its theory and the literature on acceptance of energy projects and public engagement as one of the central governance pillars.

As the research questions were developed to fulfil a rather practical objective, literature was used to inform and address this practical objective. Together with the references in the subsequent chapters, that set the context for the case studies (Section 3.2; Chapters 4, 5, and 6), the reviewed materials serve as a literature review of the entire study. In total 402 articles, books, book chapters and reports were reviewed to inform the study objectives. References were categorised and stored using a digital literature referencing system.

2.1 Energy and marine renewable energy challenges

At present, globally ubiquitous system dynamics are linked to issues in the marine domain. In terms of energy these dynamics include energy demand and consumption as well as issues around scarcity in light of global demographics. The world population is projected to rise to over 9.8 billion by 2050 (UN DESA, 2017). As new economies emerge and more people around the world strive for better living standards, the global energy demand will increase further and raise greenhouse gas emissions (IEA, 2014, 2015). Energy demand in emerging economies like China, India and Brazil is projected to double by 2050, with similar tendencies globally. Understanding the dynamics of energy supply and demand is therefore necessary to understand the dynamics of energy transitions in different parts of the world.

2.1.1 The global energy challenge and energy transitions

Historically, crude oil explorations were expected to peak around late 1960 to early 1970 (Hubbert, 1962). Yet, recent advances in extraction technology, such as hydraulic fracturing, the exploration of unconventional resources, such as tar oil sands and shale oil, and last but least the exploitation of resources in more extreme environments led to significant increase in production. Such environments are the Gulf of Mexico, the North Sea and marine environments in offshore areas of Alaska and Norway (Centre for Geographic Analysis, 2018). Advanced technology deployed in these areas and intensive extraction led to an oversupply of global markets causing a significant drop in oil prices at the early part of the decade. According to the IEA (2013), growth in global oil demand will be significantly characterised by production growth by the end of the decade. This means that decision makers are challenged to make decisions favouring sustainable concepts of energy supply, in closer collaboration with the people that are hosting energy extraction projects in their area.

The current energy system is vulnerable to volatile shifts. Prominent recent examples are the 2010 Arab spring and the 2011 Fukushima incident in Japan, which caused fundamental realignments of strategic energy policy towards the decommissioning of the nuclear sector and alternative energy supply solutions in countries like Japan and Germany, with signal effects for other countries around the world. Today, global primary energy demand is met by oil (31 %), coal (28 %), natural gas (21 %), biofuels (10 %), nuclear (5 %) and hydro energy (3 %) and others (2 %) (IEA, 2016). Other sources include renewable sources such as geothermal, solar, wind, tide, wave, ocean, heat. Scenarios from the IEA (2016) show that growth of renewables is faster than other energy sources. As global energy demand is expected to grow 30 % by 2030 (with developing countries accounting for almost the entire share), and according to IEA (2014), CO_2 emissions need to reduce by half simultaneously, there is a need for energy transitions globally. Hence, decision makers around the world are challenged to work towards energy transitions and to develop more sustainable forms of energy supply.

Transitions in general are seen as large-scale changes over a long period of time with often significant and revolutionary symptoms that fundamentally change a social

subsystem (Berkhout et al., 2012; Smith et al., 2005; Turnheim et al., 2015; Loorbach, 2007). Geels and Schot (2007) consider transitions to change adaptive systems on the one hand. On the other hand they see transformation as a possible pathway towards transition. Loorbach et al. (2017) focus their understanding of transition on societal subsystems (e.g. energy, mobility, cities) and the interactions of social, technological and institutional actors. Transitions depend on perceptions, values and cognition. Processes that shape transitions are deeply political, involve power struggle and value conflicts (Patterson et al., 2016). Transition and transformation are often used "to express the ambition to shift from analysing and understanding problems towards identifying pathways and solutions for desirable environmental and societal change" (Hölscher et al., 2018, p. 1). A comprehensive comparison of how both terms are interpreted in scientific literature can be found in Hölscher et al. (2018).

Increasingly, political and technology leaders and experts in the energy field around the world view MRE resources and ocean technologies as an opportunity to meet climate change obligations by developing a low-carbon supply of energy with the added benefit of powering the economy and providing the necessary conditions for the creation of jobs (REN21, 2015). IEA (2015) and Loorbach and Rotmans (2010) highlight the value of large MRE developments as a central ingredient for the global energy transition. Energy challenges and transitions to MRE have become amplified for two reasons: *First*, governments and societies around the world are facing the challenge to manage energy transitions and the decarbonisation of the energy sector (REN21, 2014; UNFCCC, 2015). *Second,* due to the current pre-development stage of marine technologies, MRE is unlikely to make a significant contribution to climate and renewable energy 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 mix. The author of this thesis argues that in light of current energy transition both resource types can contribute to a sustainable supply of energy as hydrocarbons serve as a bridging technology based on indigenous energy supply in the short-term. In addition, experiences from the hydrocarbons sector offer the opportunity to learn

from established large energy developments for better governance of activities in both hydrocarbons and MRE sectors in the future.

2.1.2 Marine renewable energy system challenges

The Intergovernmental Panel on Climate Change (IPCC) (2012) emphasises both challenges and opportunities to marine renewable energies and Magagna and Uihlein (2015) to ocean energy (from waves, tidal and currents, temperature and salinity gradients). Tides and ocean currents are very predictable and serve as powerful sources of energy exploitation (Serhadlıoğlu et al., 2013). However, some technological obstacles are fundamental, particularly for wave and tidal energy. Due to uncertainties around the commercial availability of wave and tidal energy at attractive investment costs, energy experts conclude that developments globally are still at R&D, pilot and demonstration stage (Borthwick, 2016).

Whereas wave and tidal technologies are at a nascent stage, offshore wind technology in some parts of the world, particularly in countries in Europe (Denmark, the UK and Germany), are deployed on a large commercial scale. A key driver in the context of MRE developments in these EU countries is the European Commission's Renewable Energy Directive (2009/28/EC). This Directive provides a legally binding framework to achieve a 20 % share of renewable energy across the EU by 2020. Increasingly, both the onshore and offshore wind sector is challenged to find technical solutions. Solutions are required for challenges around energy transmission, including the integration of unconventional energy into the existing grid, and the development of wind farms under deep-water sea conditions. In addition, the sector is challenged to overcome institutional barriers.

Institutional barriers are most importantly consenting regime issues, high costs of developments and public acceptance relating primarily to visual intrusion (Simas et al., 2015; IPCC, 2012). In terms of public acceptance, experiences of community opposition from Scotland and other countries emphasised that previous assumptions that marine renewable energy is "out of sight, out of mind" can be questioned (Kerr et al., 2015). The studies highlighted that local context referring to indigenous and local

communities' rights, ownership and individual intrinsic and non-intrinsic values matter, as these can strongly affect local perceptions of different marine technologies, whether it be visible from land or not (Gee and Burkhard, 2010). Given that in the meantime some countries have experienced getting large marine renewable energy developments off the ground and into the sea, the international context for learning for countries with similar ambitions is of crucial importance.

Leadership decisions by multinationals towards MRE developments, such as Statoil's investments (Equinor ASA, Norway, at the time of writing) to build the world's largest floating windfarm, Hywind, off the coast of Scotland, come in the aftermath of two major recent trends: The *first* is the low oil and gas price and the need for multinationals in the energy field to diversify their business from fossil fuels. The *second* is the adoption of the COP21 agreement by 190 countries around the world with the objective to limit global warming (Macalister, 2013). This makes an important argument for countries globally to use indigenous ME resources in a combined approach.

2.2 Governance challenges, understanding and theory

The following sections provide an overview of governance challenges, establishes an understanding of governance theory and provides a link between governance in theory and its practical implications. Governance of natural resources from an environmental governance perspective 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). Governance in the widest sense is seen as encompassing broader laws, regulations, policies and actions within 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. In this context

common principles, such as those identified in the following Section 2.2.1 in the context of 'good governance', serve as the basis for these rules.

Management, as 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). In light of global resource management challenges highlighted above, approaching energy challenges globally and in the marine environment requires a governance response that includes institutional innovation and changes in traditional forms of policy and regulation. It also needs new ways of thinking along the lines of complex and nested social-ecological systems (Boyd and Folke, 2012).

van Tatenhove (2013) focusses his research on governance of marine use activities and dynamics within a framework of coalitions of governmental and non-governmental actors. Therefore, his research points towards an understanding of governance dynamics in marine energy decision-making, which is needed to get a focused perspective on transitions towards ME. In his view these actors are working together to engage in a way to enable a process of negotiation of the rules for activities at sea between actors and nested institutions. These institutions are working together based on their access to resources and different abilities to mobilize those resources.

Figure 2.1 highlights the theoretical understanding of governance based on the authors referenced above. It also reflects the three governance domains of government, industry and civil society, and the instruments setting the rules for the management of human activities in a given place, either at the macro (and meso) or the micro level. In the over-arching study the three governance domains served as a system for categorising and structuring the data and analysis. In terms of scales the micro level was used to inform macro level decisions, i.e. the local perceptions of multiple stakeholders were analysed to inform decision-making at the national level to address major energy challenges.

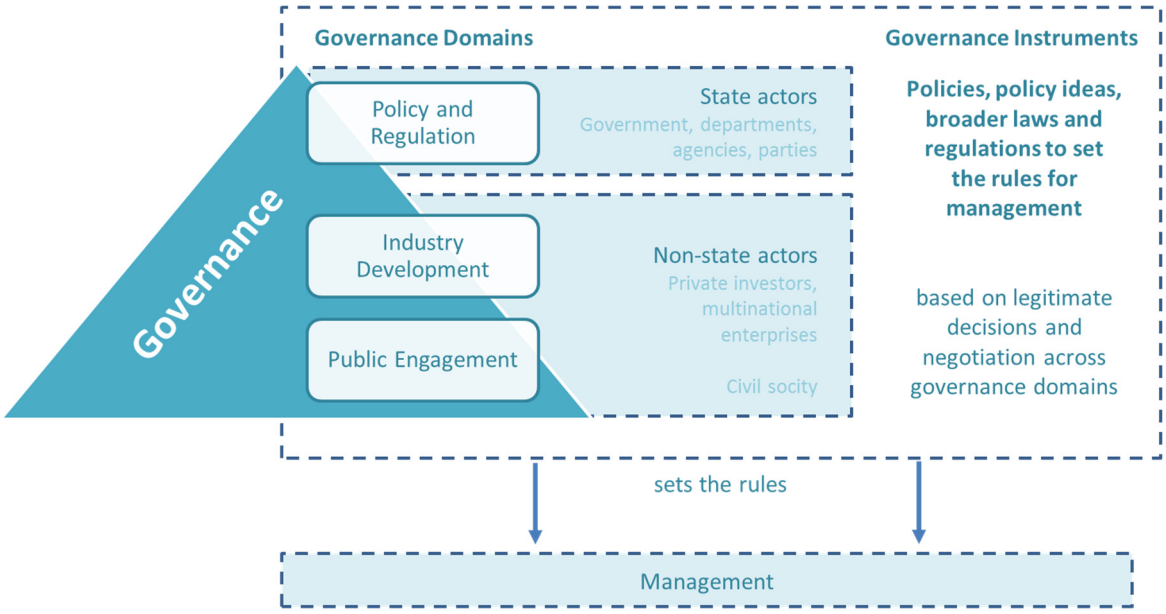

Figure 2.1: Governance setup in theory based on governance literature

In the broadest sense governance refers to how societies make decisions and take actions in response to diverse, dynamic and complex challenges (Kooiman, 2003). In this view governance can be seen as a suitable framework to respond to today's energy challenges. Comprehensive overviews of existing concepts and definitions can be found in Kotzé (2012) and Kjaer (2004).

Although different authors reveal the existence of a wide range of research approaching the term from different angles and disciplines within political science, economics, public policy, international relations with a variety of definitions and diverse understandings (see Pierre and Peters, 2000), this review identified two basic dimensions cutting across different concepts and definitions: The *first* is the dimension of governance that reaches beyond government. Governance in the traditional sense is concerned with governing a state. Kooiman and Bavinck (2013) conclude that governance theories share the same view by revealing that governance is broader than this and thereby adds to traditional forms of planning. The *second* dimension is the capacity of governance to provide space for interaction and integration. Rhodes (1996) and more recently Sørensen and Torfing (2009) understand governance as a means to establish and support formal and informal networks. Kooiman and Bavinck (2013) also pay attention to the interactive

dimension of governance by introducing "interactive governance" as an analytical concept. The concept emphasises the problem solving capacity of societies by creating opportunities through interactions between civil, public and private persons and organisations. Formulation and application of good governance principles (see Section 2.2.1) are central to this concept and to the formulation of rules. Principles are expected to steer interactions and identification of the enabling institutions laid out to tackle problems and create opportunities associated with common goods in opposition to private goods.

Olsen et al. (2009) introduced a governance baseline approach, which was used to assess and structure the case study analysis and the setup for the governance workshop. This approach forms part of an 'orders of outcome analysis' framework presented in the context of Integrated Coastal Management (ICM). Figure 2.2 highlights the critical components of this framework.

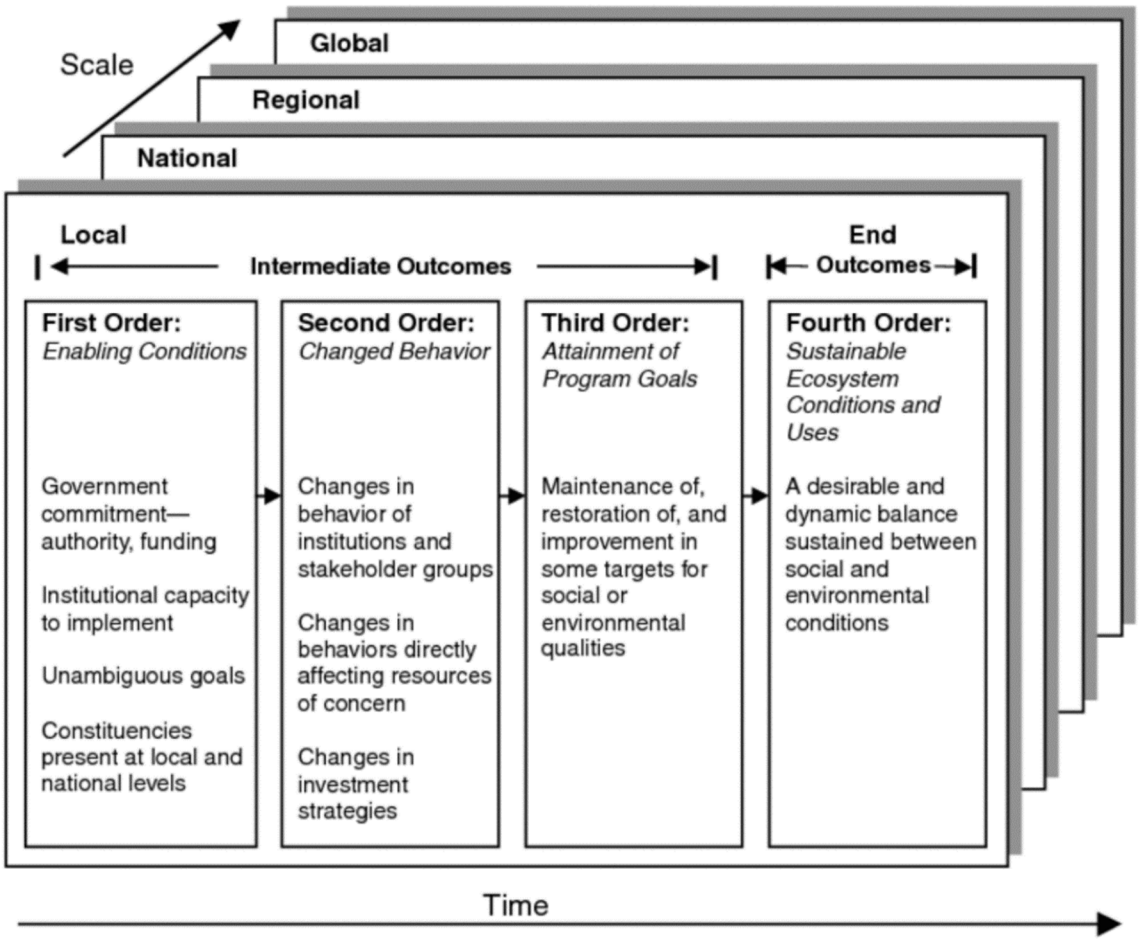

Figure 2.2: Four 'orders of outcomes' in ecosystem-based management (Olsen et al., 2011)

The governance baseline approach became a core component of understanding governance in the energy field. The framework is based on the analysis of governance response to ecosystem change and features the collection of selected case studies and profiles of stakeholders in current governance systems, namely from industry, governments and civil society as a core component of the framework (including understanding of power dimensions, decision-contexts around key issues that matter to residents and other key stakeholders). It suggests that all four of the enabling conditions outlined in the following are essential pre-requisites to sustainable project development: i). A core group of well informed and supportive stakeholder groups support the program; ii). sufficient initial capacity is present within responsible institutions to implement policies and action plans; iii). governmental commitment is in place to provide necessary authorities and financial resources required to implement a program; and iv). adoption of unambiguous goals are in place against which program efforts can be measured.

Historically, the governance concept as discussed today roots back to the 1980s when concerns evolved to manage the growing demand for and use of shared resources, such as fisheries, grazing ground, the internet, space and air and, mostly relevant for this study, the ocean (Ostrom, 1990). Ostrom's work is relevant to understand the energy sector in the marine environment as a 'common pool resource'. Issues surrounding this concept have been discussed as the "environment of the commons" and the use of its resources became an issue of global concern. The World Commission on Environment and Development (1987) was key in establishing design principles for 'good governance' and puts forward the idea of sustainable development. The work led on to the 1st Earth Summit in Rio de Janeiro (1992) and the formulation of the UN Agenda 21, a non-binding, voluntarily action plan to establish concepts of environmental holism and sustainability as core elements. Ostrom drew from this development and brought forward design principles comprising the following:

1. Clearly defined boundaries,
2. Proportional equivalence between benefits and costs,
3. Collective-choice arrangements,
4. Monitoring,

5. Graduated sanctions,
6. Resolution mechanisms,
7. Recognition of rights to organise,
8. Nested enterprises.

The aim of the principles was to allow groups, increasingly represented by non-governmental actors and institutions from all sources of governance, to overcome institutional problems such as regulatory failure and government overload. The latter found expression in failing to meet expectations of the public due to limited capacity of traditional bureaucracy. Governance in the new framework was supposed to be ensured by equal balances of power instead of tightly hierarchical structures of management.

In practice governance most notably became a valuable concept within science and administration bridging disciplines, worldviews and integrating across scales (Schuppert, 2007). Kotzé (2012) reveals that governance has the function to become "useful and necessary to marry unlikely partners with a view to seeing scientific problems through a common lens and to finding answers to problems posed in a multidisciplinary context" (Kotzé, 2012, p. 12). The governance of energy projects needs to respond to this common view as these projects are developed in a multidisciplinary setting of often unlikely partners.

Florini and Sovacool (2009) address global energy governance challenges, such as those highlighted in Section 2.1.1. The authors point at the varied set of policy domains that are crossed by energy issues and other resource use interests. These are areas such as environment, military activities, sea lanes for oil shipments and last but not least societal interests, e.g. related to human rights issues in the context of resource extraction (Mellett et al., 2011). Globalization with competing energy markets and intertwined systems add to this complexity. In particular energy infrastructure developments in the marine environment are subject to overlapping property rights and overlapping jurisdictions (O'Hagan and Lewis, 2011).

To date, the most powerful mechanism in terms of regulating property rights and the state sovereign use of common pool resources is Article 56(1) of the international UN Convention on the Law of the Sea (UNCLOS). It is of particular importance for States

as it gives sovereign rights within areas of national jurisdiction to explore, exploit, conserve and manage the natural resources of the water column and seabed. Opportunities to harness MRE resources in areas beyond national jurisdiction may be relevant in the future but will not be discussed in this context, as marine energy developments that far offshore are currently not anticipated and not yet legally possible.

The literature review on governance with a focus on developments in the marine environment reveals that issues unfold as marine resources are extracted from the common pool that generate public goods (Florini and Sovacool, 2009). Ostrom (1990) created a set of solutions to overcome issues around the exploration of common pool resources. Recently scholars are picking up on these issues by providing the necessary integration between energy governance and technological energy transitions, e.g. in Berkhout et al. (2012). International institutions such as the International Energy Agency (IEA), the Renewable Energy Policy Network for the 21st Century (REN21) and the International Renewable Energy Agency (IRENA) play an important role in promoting integration in governance, supporting collaborations and the flow of information with regard to energy transitions. In addition, these institutions also address policy and regulation aspects. Another example is the Sustainable Energy for All (SE4ALL) initiative under the United Nations (UN) that operates at the interface of issues of global concern, such as climate, energy and justice whilst recent scholarship on governance in marine energies considers energy explorations either from a renewable or from a non-renewable resource perspective. These viewpoints support the need for integration between both types of marine energy resources.

2.2.1 Good governance principles for energy

The energy sector is multidimensional in nature and makes use of common pool resources. Common pool resources are derived from oceans, rivers and the atmosphere. Due to the occurrence of emerging demands formerly unregulated resources need to be fairly distributed. In a world of finite resources, Hardin (1968) identified the acquisition and dissipation of energy as a major issue in the future.

Such issues have become exemplified in the opposition towards energy projects in Mexico, West Africa and Alaska. This underlines the need for the formulation of principles to govern common pool resources (see Section 2.2). In her work Ostrom (1990) promoted the need to formulate governance principles. Ostrom expected that in a governance arrangement of non-governmental actors and institutions interaction will naturally achieve integration.

The understanding of 'good governance' can be traced back to the work of the World Bank (1989). Osborne and Gaebler (1992) view governance in light of failing governments. In their view governance has to meet the expectations of those whom they govern. As a consequence failures such as weak, unstable and even collapsing systems are what constitute the rise of actors from markets and civil society: "Where the state is unable to govern effectively, other actors from market and civil society move in prominent governing positions" (Kooiman and Bavinck, 2013, p. 10). Benz (2004, p. 20) views the objective of 'good governance' as serving a "political or normative programme to achieve the ideals of good governance" and that it exists to explain "how we ideally wish to see governance and the changes it must accomplish in society".

General principles of 'good governance' are grounded upon a normative governance understanding. As stated before these principles can serve as a basis for the rules of governance in practice. Forty-five papers out of the three hundred and ninety four were reviewed that specifically consider governance from different research disciplines. Of these, Biermann (2007), Chang (2012), Costanza et al. (1998) and Rhodes (2010) explicitly discussed principles of 'good governance'. A common set of principles emerged following a review of these four articles (see Table 2.1) as: "Participation", "transparency", "equity and inclusiveness", "adaptability" and "adaptive management".

Table 2.1: References addressing 'good governance' principles across governance literature

Reference	Principles (joint principles in bold letters)		Governance field	Joint governance principles
Biermann, 2007	▪ credibility ▪ stability	▪ **adaptability** ▪ **inclusiveness**	Earth system governance	▪ adaptability ▪ inclusiveness
Chang, 2012	▪ rule of law ▪ **participation** ▪ **transparency** ▪ consensus based decision-making	▪ accountability ▪ **equity and inclusiveness** ▪ responsiveness coherence	Legal governance	▪ participation ▪ transparency ▪ equity and inclusiveness
Costanza et al., 1998	▪ responsibility ▪ scale-matching ▪ **adaptive management**	▪ full cost allocation ▪ precautionary ▪ **participation**	Environmental governance	▪ adaptive management ▪ participation
Rhodes, 2010	▪ **transparency** ▪ credibility	▪ accountability	Political governance	▪ transparency

The author will refer to these principles in the conclusions and recommendations and justify what the study adds to the common theoretical understanding (Section 8.3).

2.2.2 Acceptance of energy projects and public engagement

In terms of governance of large-scale energy projects non-state actors, such as multinational companies and state actors, are challenged in three respects: The *first* challenge is that the energy system is vulnerable towards volatile shifts. Due to the need to decarbonize the energy sector, the *second* is the need to diversify enterprise's exploration portfolio and to expand investments in renewable energy technology. The *third* was recently formulated by the head of global Shell businesses who recognised that the "biggest challenge" multinational businesses are facing is to maintain public acceptance of the energy industry as "oil and gas industry risks losing public support if progress is not made in the transition to cleaner energy" (Bousso, 2017, p. 1). The author emphasises the huge importance of civil society support for global energy transitions as a prerequisite for change.

A large body of research has been undertaken on social acceptance of energy infrastructure in general and emerging renewable energy projects in particular and in the marine environment (Devine-Wright, 2005). Renewable energy focused studies

are primarily based on opposition to offshore wind farming activities around the world. Wüstenhagen et al. (2007) separate the concept of social acceptance into issues of *first* socio-political acceptance, *second* market acceptance, and *third* community acceptance. Whilst the *first* refers to support of both public and policy, the *second* issue refers to the acceptance of different types of renewable energy technologies by consumers, investors, and the power generation industry. The *third* issue deals with local opposition from residents or local government. Community acceptance is a fundamental prerequisite for project implementation. The concept of 'not in my back yard' (NIMBY) emerged from the level of social acceptance and has been applied in social science research to explore objections on the regional and local scale (Burningham et al., 2006). However, the concept uses assumptions excluding complex and dynamic social phenomena beyond attitudes among the population influenced by an array of factors, including perceptions of justice, voice and trust (Wüstenhagen et al., 2007; Wolsink, 2006). Whilst the research from Wolsink (2006) highlights the key role of the decision-making process within policy domains, which may lead to a NIMBY-type response and the failure to site wind farms in the siting process, Devine-Wright (2009) focusses attention on the roles of support and how objections are embedded in local places and communities. In particular Devine-Wright (2009) emphasises, that particularly in terms of emerging renewable energy projects, research and analysis are needed in order to provide prerequisite knowledge on people's attitudes and acceptance. In this context, Walker (1995) concludes that more research is needed in order "to gather a clearer and more sensitive understanding of public attitudes and how they are formed and developed" (Walker, 1995, p. 49). In addition to deliberation of the role of support, Devine-Wright (2012) assesses the role of intermediaries to address substantive issues of transitioning to sustainable development. The author points out that positive outcomes from the establishment of intermediaries are not a panacea as the success of early engagement is not guaranteed.

The understanding that people are central to the management of marine spaces and that they are agents of change has been highlighted by Pomeroy and Douvere (2008). This is because people and societies are shaping the future with their views, goals and expectations of possible futures (Bai et al., 2016). In this context the energy challenge

requires intense participation and engagement. Wesselink et al. (2011) understand participation "to mean any type of inclusion of non-state actors, as members of the public or as organised stakeholders, in any stage of governmental policy-making including implementation" (Wesselink et al., 2011, p. 2688). Engagement on the other hand serves as an active form of involvement that ideally seeks feedback from stakeholders and those responsible for decision-making. In his research Cantril proposed an approach based on public opinion research (Cantril, 1965). Cantril's Ladder (as adopted in the Gallup World Poll (Bjørnskov, 2010)) is a measurement instrument that asks people to rate their present, past, and anticipated future satisfaction with life. A scale is used based on the respondents own identified values. In this context, Renn (2008) proposed the use of analytic-deliberative methods of public engagement, including mechanisms such as citizen panels leading to enhanced legitimacy and trust.

Stakeholder participation in the marine environment has become increasingly discussed in the context of Marine Spatial Planning (MSP). MSP is a policy tool that allows "public authorities and stakeholders to coordinate their actions and optimize the use of marine space to benefit economic development and the marine environment" (EC, 2008). Engagement is seen to be crucial for the effective design and implementation of MSP (Ehler and Douvere, 2009). In their work Pomeroy and Douvere (2008) emphasise that stakeholder participation ranges between two extremes: One is communication, which caters for no actual participation. The other is negotiations, which cater for decision-making power that is shared among the various stakeholders. In between different levels such as information and consultation and dialogue serve as possible modes of interaction. In this context, the authors propose that participation should be early, often and sustained. It should be further maintained by a continued process spanning from planning, plan evaluation, implementation to post-implementation.

van Tatenhove (2013) emphasises negotiations with primary stakeholders as the ideal means of integration to enable the management of activities in the marine environment. In this context Vierros et al. (2006) bring into debate who the main stakeholders in the marine environment actually are. In their work Pomeroy and Douvere (2008) emphasise the need for stakeholder analysis by stating that in order

to be effective, stakeholders in a process "must reflect, or at least address, the existing complexity in reality" and "need to be empowered to enable them to be fully engaged in the process" (Pomeroy and Douvere, 2008, p. 817). Accordingly, in the research design for this research, stakeholders were identified based on a stakeholder mapping and analysis techniques from this body of literature.

In order to seek valuable information on perceptions and expectations towards ME developments, stakeholder interactions by means of new models and techniques for stakeholder involvement have been proposed and commonly used (Pahl-Wostl et al., 2004; Pomeroy and Douvere, 2008). In order to overcome opposition, as happened in infamous cases from the oil and gas sector in places like Nigeria (Frynas, 2005) and Equatorial Guinea (Frynas, 2004) and from the emerging offshore wind sector and to bring about change towards new forms of energy supply systems, good governance principles, such as those identified in Section 2.2.1, can become one of the key enabling conditions. Historically increasing application of market models to address institutional failures led to critical debates on political institutions and their ability to deal with common pool resources. Representing the sole domain of government, governing the state and its common pool resources at that time shifted from the traditional understanding of state-centred, hierarchical and bureaucratic forms of administration to broader more integrative approaches of politics (Kotzé, 2012). How integrative approaches of negotiations and participation can be embedded into wider political and societal concepts at state and larger scale will be highlighted in the following section. This highlights the concept of deliberative democracy as an appropriate concept to link governance principles and governance in practice.

2.2.3 Deliberative and direct democracy, and conflict resolution

A way to overcome a lack of engagement that can lead to NIMBY-type responses is a deliberative model of democracy. There is a whole body of literature that addresses the decision-making power of the citizen in the context of direct democracy and deliberative democracy (Chambers, 2003). Under deliberative democracy, citizens make political choices, following extensive debate and discussion at an early stage of the political process. Deliberative models prioritise the importance of citizens'

opinions. Models are based on idealistic assumptions rational and carefully considered decisions (LeDuc, 2015). Habermas (1992) emphasise that for decisions of the political system to be legitimate they must be based on appropriate and preceded articulated public opinions. No decision should be adopted unless all those affected by a decision have an opportunity to persuade each other (Habermas, 1981). Therefore, "deliberative democracy affirms the need to justify decisions made by citizens and their representatives" (Gutmann and Thompson, 2004, p. 3). In their work Gutmann and Thompson (2004) define four characteristics of deliberative democracy: i). Political decisions must be backed by reasons in order to be legitimate and to express respect for citizens; ii). reasons for decisions must be publicly accessible; iii). decisions should be binding; and iv). decision-making should be dynamic, i.e. a decision does not necessarily end deliberation. This requires the establishment of appropriate formats in practice that allow people to raise concerns and discuss pros and cons of developments. This is supported by the work of Chambers (2003), which states that deliberative democratic theory has moved beyond a "theoretical statement" into a "working theory". Whilst this is true the current literature still lacks concepts to implement structures and processes in practice. A recent concept takes a step further and links traditional political theory and practice. Nanz and Leggewie (2018) emphasise the establishment of a fourth power adding to the traditional separation of power, which is the 'consultative'. As part of this approach pros and cons of a project are discussed and considered at the local and supralocal level before support informing legislation.

The deliberative democracy concept is distinct from the idea of 'direct democracy', which finds expression in public referendums that are supposed to prioritise votes in election-type approaches. LeDuc (2015) highlights that referendums are often initiated to solve a particular issue and that citizens are involved at the very end, whereas a deliberative democratic process aims at discussing issues rather than resolving them. The concept can be contrasted with traditional forms of decision-making, such as those planning processes looked at in this thesis and that are characterised by non-participation and lack of transparency. In this context, deliberative democracy may serve as a starting point to address engagement flaws in current decision-making processes.

At the practical level deliberative democracy is intended to identify issues for policy development, shifting, choosing, and modifying policy, and sometimes facilitating decision-making on behalf of various levels of political and legal action (Menkel-Meadow, 2011). Another stream that has been discussed in parallel over the past decades is the concept of conflict resolution. Whilst deliberative democracy has emerged within political science and therefore addresses deliberation in political decision-making, conflict resolution concepts draw from discussions in the broader social science to develop models of decision-making, dialogue and dispute settlement (Menkel-Meadow, 2006). Practical techniques to address conflicts in this concept incorporate processes of negotiation, mediation, arbitration and adjudication along with consensus building fora and collaborative decision-making. Both streams have one thing in common; they aim to develop processes and institutions that can best facilitate increased participation in dialogues, mutual understanding and decision-making. This improvements can be created whilst refining the ideologies of both concepts.

Deliberative democracy requires processes that can best facilitate various formats of increased participation, intense dialogues, mutual understanding and decision-making and are core elements of the approach (Menkel-Meadow, 2006). In her work the latter author emphasises the application of principles as measures for success evaluation, such as those identified above. Therefore, further linking theory and practices and further refine existing principles will be followed in this thesis. In order to improve decision-making, facilitators of a decision need to assess where things went wrong in the past. Only then, increased science uptake will be able to support evidence-based decisions.

The literature and policies analysed as part of this work provided a broad understanding of key governance challenges. Literature relevant for governance of ME in Ireland as the ones referenced above as well as the references in the subsequent chapters with a focus on Ireland in particular (see Section 3.2; Chapters 4, 5, and 6), the reviewed materials serve as the literature review of this thesis. Yet, the analysis alone could not provide deep perspectives into important governance issues and existing practices that need to be addressed at various levels. Consequently, semi-structured interviews and focus group workshops, as part of a case study

approach, were conducted. Chapter 3 will highlight the elements of these methods as part of the overall methodological framework.

3 Methods and approach

3.1 Methodological framework

This section provides a summary of the methodological framework developed to meet the study objectives. It summarises the methods and materials used. The sections below highlight the case studies and sites identified, and justify their selection. In this research, a form of sequencing was applied, whereby the results of one method informed the subsequent application of the next method, and so on. This allowed the use of diverse methods for focusing particularly on emerging and dynamic issues. Figure 3.1 highlights key elements of the methodological framework, which will be explained in more detail below.

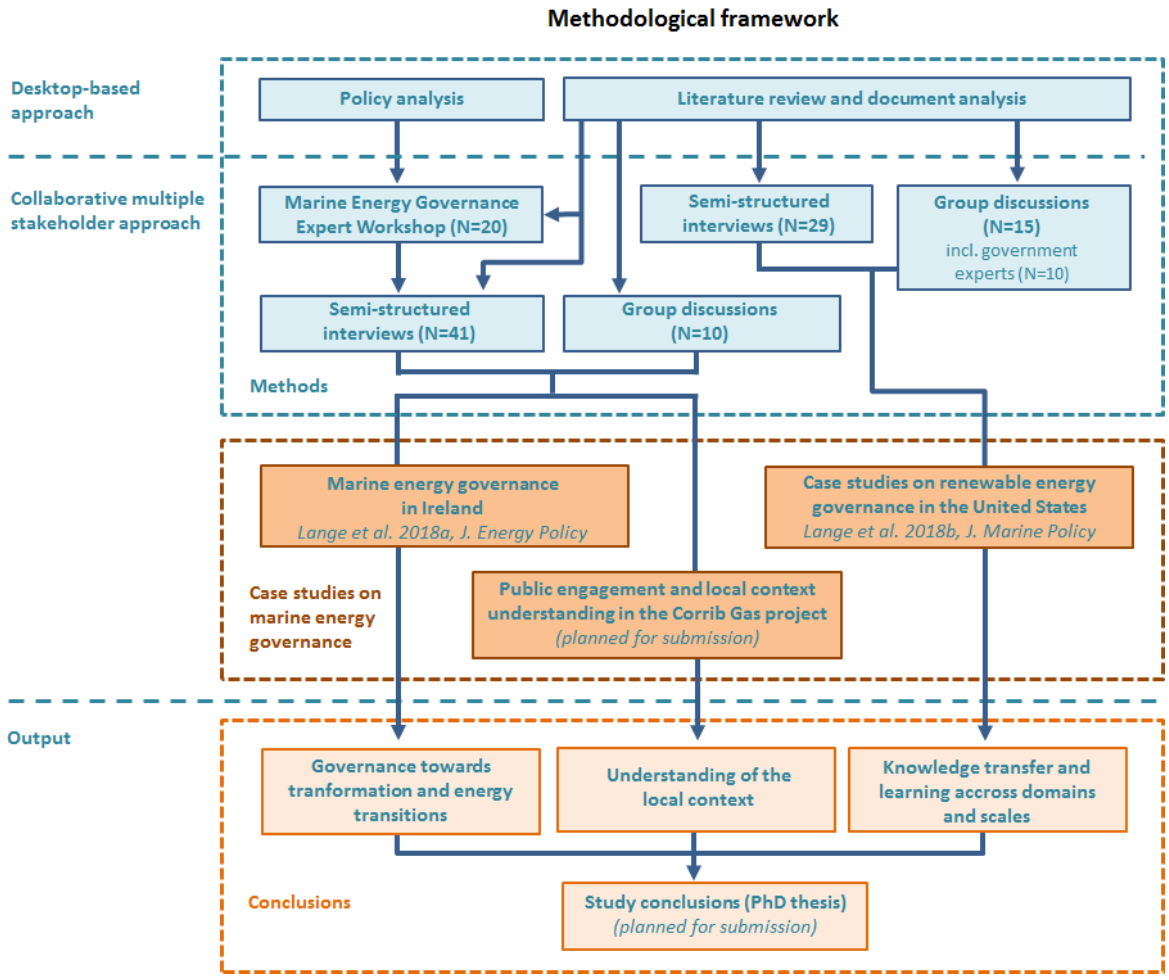

Figure 3.1: Methodological framework of the study

The methodology entailed two key steps to inform the study objectives. The *first* included a desktop piece, which helped to analyse literature on governance (Chapter 2) and documents (including policies, policy briefs and visions, documentation and technical reports) related to the case studies on ME governance selected. This step also entailed a policy analysis focusing on Ireland's policy framework for ME (Section 4.1). The *second* step formed part of a multiple and participatory stakeholder approach based on collaboration with diverse stakeholders using a mixture of methods. An expert workshop (governance workshop), semi-structured interviews and group discussions were central to this approach. The governance workshop was informed by the policy analysis, whilst the literature informed the entire study. The approach included formal types of interactions, such as planned interviews, discussions, and the workshops; but also informal interactions within unstructured conversations, e.g. in the cultural centre and rural areas of the study region. This enabled the author to gain an appreciation of peoples' general attitudes and beliefs, their specific perceptions of the issues and their general approaches. A unique value-added element of the approach, was the opportunity to meet people in local areas and living conditions.

The multiple stakeholder approach (*second step*) served to gather qualitative data. The approach to framing and analysis of the data was neither deductive (to test a theory) nor inductive (to draw general conclusions based on single cases in order to develop a theory). Instead, a form of abductive research (Peirce, 1992) was used to assemble the data and discover surprises arising from them. This allowed the author to identify new explanations and interpretations of the stakeholder feedback. Essentially, the author decided to use an approach that allowed the data to speak for itself. In order to distil and structurally assess key issues from a vast amount of qualitative data garnered, a limited quantitative approach was applied, where quantification helped to understand emerging trends from the stakeholder feedback, or helped to convey key points. This approach was used to enhance the qualitative approach and to show why emphasis was given to any given topic in the write-up of the data. As a result, graphs with figures on key issues arising from past practices could be produced and substantiated by quotes of the anonymous interviewees.

The basis and outcomes of the assessment of key issues are explained in detail in Section 5.4. The assessment provides an in-depth analysis of the perceptions of those involved in the governance of the Corrib Gas project. Section 5.4.1 is specifically devoted to provide insights into the setup of the interview study, the material and the analytical techniques used for further analysis. Once the transcribed data were gathered, and organised using Excel spreadsheets preliminary observations were made to get an initial feel for the data. The data were then examined in detail to identify themes. The next step involved the application of a coding system to group common issues. The interpretation of the data used frequency of occurrence (i.e. absolute number of respondents who mentioned a particular issue), to determine how much emphasis to give to a specific theme in the overall analysis. In addition, key issues were broken down to respondents from the three governance domains in order to conceptualise causal relationships.

To draw from a variety of perspectives, the selection of stakeholders was balanced by involving individuals from all pillars of governance. In total 115 individuals, including 20 invitees of the **governance workshop** and 95 involved in **semi-structured confidential interviews** and group discussions were engaged between January 2015 and March 2017. Table 3.1 highlights the number of interviews and group discussions as well as interviewees and participants relative to the profiles of the interviewees in both Ireland and the U.S. The numbers of the interviews and of interviewees in Table 3.1 and the subsequent tables (Tables 3.2 and 3.3) differ because some interviews provided an opportunity to engage with more than one person in small group conversations.

Table 3.1: Total number of interviewees and participants in group discussions and national governance workshop involved over the entire study, their profiles and role in government, industry and civil society in both Ireland and the U.S.

Governance Domain	Profile of interviewees and participants of group discussions	Number of interviewees/ participants	Number of interviews	Number of group discussions
Civil society	Local citizens (opponents, activists, advocates)	29	17	2
Industry	Industry leaders in the energy sector (hydrocarbons, marine renewable and marine energy	23	11	1
Government	Senior officials from local, state, semi-state and Federal governments, connected agencies and a global funding agency	22	11	1
	Practitioners from NGOs and at the science-policy interface engaged in public engagement	9	8	-
Academia and Research	Scientific peers (involved in marine energy projects, with a background in technology, energy, climate science and marine policy)	12	9	-
	Subtotal	**95**	**56**	**4**
National "Marine Energy Governance Workshop"	Industry leaders in the energy sector (chief executive officers offshore gas and oil and marine renewable energy), senior officials from semi-state, department, government, civil service), governance, coastal and ocean experts	20	-	1
Total number		**115**	**56**	**5**

The extended interview process facilitated by collaboration with multiple stakeholders informed the case study analysis. Detailed methods adopted to review the case studies are highlighted in the following. Case study 1 focussed on Ireland and included an in-depth analysis of the Corrib Gas project. Case study 2 provided a comparative example on good practices, and knowledge transfer and learning across governance domains and scales in the U.S.

3.2 Case studies, methods, approach and material

3.2.1 Ireland as a case study

Ireland as a country example stands out in three respects: *Firstly*, the Irish government has a stated aim of maximizing the benefits to the country from indigenous oil and particularly gas resources and is ambitious to drive developments in the marine environment forward (DCENR, 2014b). At the time of starting the PhD research, growth in overall maritime economic development was targeted to increase in turnover to € 6.4 billion per year by 2020 (€ 3.5 billion in 2010) and to double in GDP to 2.4 % by 2030 (Government of Ireland, 2012). Ambitions were stimulated by the fact that Ireland has one of the largest maritime areas to land mass in the EU with the potential to derive added value from the ocean and its vast sources of marine energies. Yet Irish ambitions appear stalled and little activity in the commercialisation of the MRE sector is underway. The only offshore wind farm operating in Irish waters, the Arklow Bank Wind Farm off the East Coast (25-MW capacity) was commissioned in 2007. No further offshore wind farms have been installed since.

Secondly, in terms of MRE, the country has seen investments in MRE research and developments and policy support is significant. The country has become a test-bed for energy devices and smart grid electricity solutions (EirGrid, 2012). It has also seen large investments in world class facilities around MRE research and development and the set-up of the Prototype Development Fund (administered by the Sustainable Energy Authority of Ireland), a principle funding mechanism for the sector (SEAI, 2014). The goal of the government is to use abundantly available indigenous MRE resources on a commercial scale, alongside other sources of renewables such as onshore wind and solar, thereby transforming the energy system from imported fuel dependency (DCENR, 2014a). Yet the Irish government appears to have made little progress in its ambition to become a global leader in MRE. This has been emphasised by interviewees and participants involved over the course of the study. In particular, offshore wind, whilst developed commercially in EU countries like Denmark, the UK and Germany, lacks progress. The *third* reason arises from Ireland's recent history and the opportunity to learn from conflicts in the gas extractive industry, such as the

development of the Corrib Gas project (Cox, 2014; Murphy, 2013). The project is an example of an extreme community dispute and resulted in considerable opposition in response to failures in the management of project implementation (OECD, 2012). By the end of 2015, twelve years behind the initial schedule, the project went on stream. Community developer relations and even relations within the community remain divided. Chapter 5 will highlight the Corrib Gas project in detail. Other examples are the ongoing opposition towards overland pylons and large onshore wind developments in the Midlands. Changes to the 'Programme for Government' are underway. A central pillar is to engage with stakeholders more strongly. However, Government has not yet convincingly succeeded to gain trust and support for energy infrastructure related decisions.

Methods to review Ireland as a detailed case study were a policy analysis, the governance workshop and an extended interview process, including semi-structured interviews and group discussions. The **policy analysis** drew out the policy dynamics in terms of the implementation of ME developments. For the case study on Ireland, the institutional framework and policies for energy, offshore renewable energy developments and the maritime economy were analysed. These included the consultation document (Green Paper) on Energy Policy (DCENR 2014a) (published as White Paper on 16 December 2015 (DCENR, 2015)), the Offshore Renewable Energy Development Plan (OREDP) (DCENR, 2014b) and Our Ocean Wealth – an Integrated Marine Plan (IMP) for Ireland (Government of Ireland, 2012). These policy documents were analysed because at the time of starting the study and reviewing literature and policies those were the most relevant policy statements, to which everyone in the energy sector referred. Whilst the Energy Policy and the consultation process (Green Paper) covers the entire energy sector and the IMP covers the entire marine economy, including offshore oil and gas as well as MRE activities, the OREDP was chosen. This was due to the fact that it covers a distinct priority of the Irish Government, which was a priority target at the time of starting the study.

The **governance workshop** helped to understand the perspectives of those responsible for industry development and the current policy framework for ME in Ireland. It brought together twenty experienced leaders from across industry (chief executive officers from both the offshore gas and oil and MRE sectors) and

government (semi-state, department, government, civil service) with governance, coastal and ocean experts. It was held in May 2015 in Newbridge, County Kildare, Ireland. Attendance of the event was by invitation only and it was held under Chatham House Rules. Participants were ensured confidentiality and anonymity when writing up the workshop results. As the ethical approval process at UCC was only recently at the time of research investigations established, participants were ensured confidentiality following the same procedure as after ethical approval was granted for the PhD study. Individuals from both groups were committed to the workshop, its format and they supported the event. International peers working in the ocean and coastal governance research field facilitated the discussion. The author together with one of the facilitators interviewed seven participants ahead of the event to gain insights on the governance landscape and expectations from the workshop. Participants were selected as part of a **stakeholder analysis**. The selection process was based on stakeholder mapping techniques and facilitated by scientific advisors with extensive networks in ME. *First*, a snowball sampling approach was applied by asking experts to suggest interview partners and stakeholders who they thought to be relevant to talk to. *Second*, a list of all potential participants was developed following the different sectors involved in the development of large marine and energy projects. As the aim was to limit the group of participants to roughly twenty participants, the workshop organisers ultimately selected stakeholders given their expertise, their stake in marine economic developments, their broad perspective and their power to influence the transition towards ME in Ireland.

As a central ingredient of the workshop, a timeline development process was used to look back in Irish governance history and to identify eras of governance and patterns of human activity, ecosystem conditions and management responses. In this context the group came up with seven most relevant elements describing the strengths and weaknesses of the existing governance system. These were namely “technological breakthroughs”, “market/economic development”, “key infrastructure development”, “proactive/reactive public movements”, “awareness of marine ecosystems”, “system of control and regulation” and “organisational structures”. A workshop report came out of the event, which can be found in Appendix E. Retrospective observations based on a timeline enabled valuable lessons from the past to be drawn and validation of

different stakeholder perspectives. This approach was adopted and a timeline was created as part of the Corrib Gas study (Chapter 5). The timeline was processed by the author based on stakeholder feedback from the interviews and literature review (Figure 5.4).

The material on the Irish case study consists of 34 **semi-structured interviews** and two **group discussions** with 51 stakeholders. The large number of interviews carried out for this case study helped to understand the context of multiple stakeholders. Interviews helped to reflect on the perceptions of local citizens of a community in the West of Ireland that was heavily affected by a large energy development. Interviews also helped to understand the perspectives of those working for local and national governments and industry development officials. **Group discussions** helped to take a joint look back into the history of project implementation and to reflect on how to do business better in the future. A timeline approach was used to discuss key events and responses with members of a company liaison office. This helped to understand the context and perspectives of both staff of the industry developer and of an activist group opposing the Corrib Gas project.

In the study stakeholders involved in the governance of ME developments from civil society, industry development and government were targeted and identified based on **stakeholder analysis**. Table 3.2 highlights the number of interviews, interviewees and participants of group discussions balanced across the governance domains and community cohorts. The interviewees and participants were individuals from all cohorts of a local community in County Mayo (N=24), government officials (N=10) (senior officials from local government, N=3, and State government, N=7) and industry leaders (N=17). Seven of these interviewees (State government officials (N=4); industry leaders (N=3)) were interviewed in preparation of the governance workshop to inform on ME related issues. They did not specifically respond to the issues relating to Corrib. Therefore, feedback was considered as part of the workshop responses.

Table 3.2: Profiles and community cohort of interviewees and participants of group discussions and their role in industry development, government and civil society in Ireland

Governance Domain	Profile/community cohort of interviewees and participants of group discussions	Number of interviewees/ participants *	Number of interviews *	Number of group discussions
Civil society	Moderate opposition, general public	5	5	-
	Advocacy	4	3	-
	Extreme opposition, activists, lawyers	15	9	1
	Subtotal	**24**	**17**	**1**
Industry Development	Industry leaders in the energy sector, developers, CEOs in the offshore gas and oil and MRE sector, lawyers	17	8	1
	Subtotal	**17**	**8**	**1**
Government	Senior officials from local government, semi-state and connected agencies	3	3	-
	Central government officials, departmental staff, civil servants	7	6	-
	Subtotal	**10**	**9**	**-**
Total number		**51**	**34**	**2**
		* including seven interviewees (State government officials (N=4); industry leaders (N=3)) interviewed in preparation of the governance workshop		

The interview questions were non-standardised, deliberately broad and partly open-ended to shed light on the various perceptions of the conflict and what caused the relationship in developer-community relations to break down (see Appendix A and B). Interviews were confidential. Information and notice on confidentiality was given either verbally or by sharing an "Information Sheet and Consent Form" (see Appendix D). The aim was to explore key dispute issues that helped to elaborate on lessons learned for the future. Non-standardised questions allow for deeper exploration of experiences of a variety of stakeholders than would be possible using standardised survey techniques.

Individuals from civil society (N=24) listed in Table 3.2 were members of the local community in County Mayo, Ireland. They were interviewed first. Individuals were engaged within scoping and interview visits in three parishes (districts) (Kilcommon,

Belmullet and Kilmore) in the barony of Erris at the West Coast between January 2015 and March 2017. No pilot testing of the interviews was undertaken before starting the interview study. However, the scoping visit with informal talks in the centre of the three parishes had the character of testing questioning techniques and getting used to the interview situation in this area. Given low population densities in this area and the fact that people in the area are well connected and often know each other, even if they are living quite distant from each other, the people of the three parishes living close to the technical components of the gas infrastructure are categorised as the 'community'. Subsequent to the interviews in the local community, interviews with government officials and industry leaders including the developer of the gas project were carried out in Dublin, in other parts of the country and via phone.

Local community interviewees were individuals from moderate opposition (N=5) and advocacy (N=4) for the project and extreme opposition (N=15). Interviewees reflected on their own perspective, whereas six of them informed on broader community perspectives (teacher, local government officials, leaders of opposition groups and activists). These key informants served as knowledgeable and central individuals in the community.

Figure 3.2 shows the location of the study area within the borders of the currently designated shelf of Ireland's offshore territory. The map also shows current gas fields in operation.

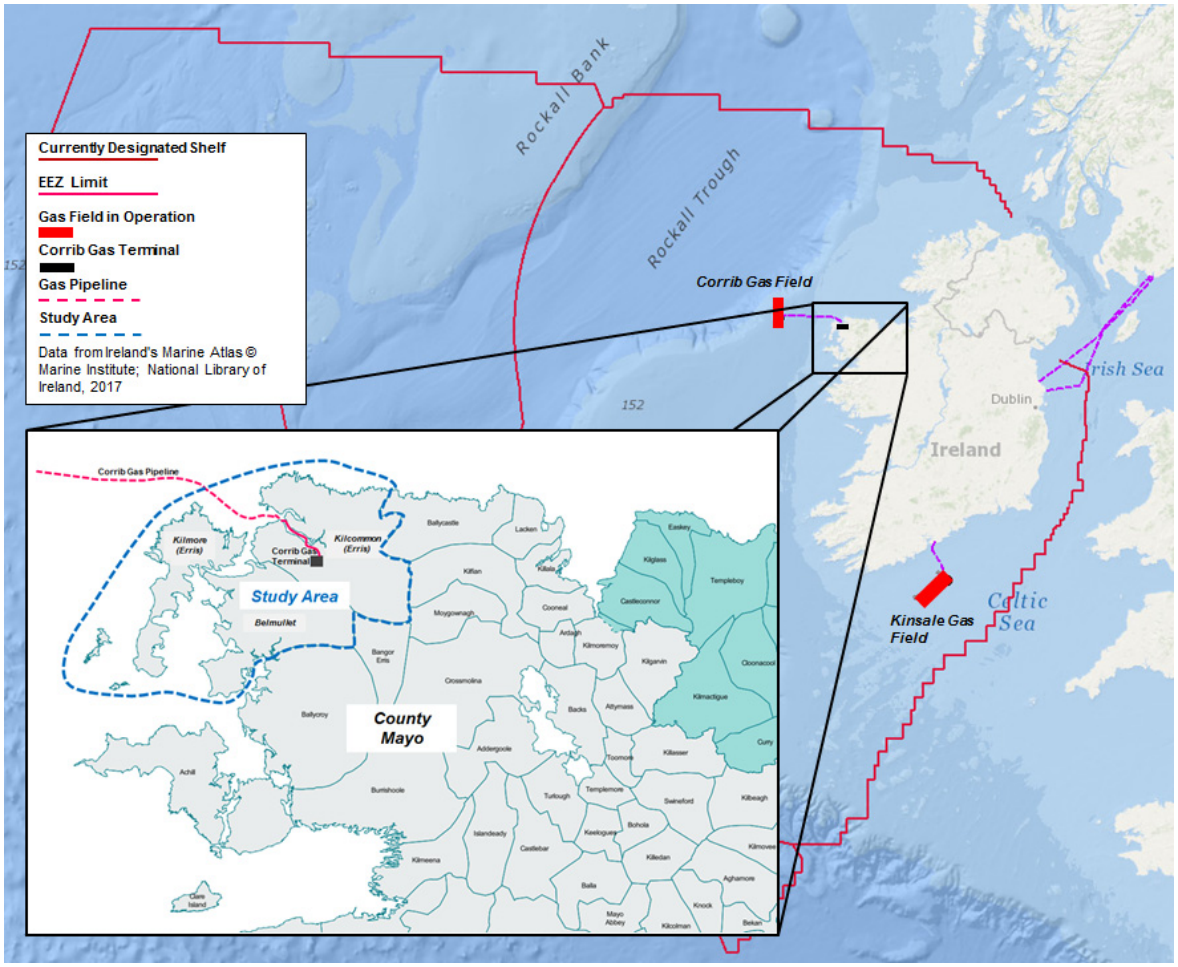

Figure 3.2: Map of Ireland including the extent of the currently designated shelf and the current gas fields in operation (underlying map); Map of study area including the parishes of Kilcommon, Kilmore and Belmullet in the barony of Erris at the West Coast of Ireland (overlaying map) (Source: Ireland's Marine Atlas © Marine Institute, 2016; National Library of Ireland, 2017) (Abbreviation: EEZ = Exclusive Economic Zone)

The identification of stakeholders from *civil society* was also based on **stakeholder analysis** and mainly followed a targeted sampling identifying interview partners from those community cohorts relevant to the conflict (moderate and extreme opposition and advocacy). Members from advocacy were interviewed to get an atmospheric picture of the arguments in favour of the project and therefore to balance evaluation on the issues in dispute. Based on the premise to select a varied sample of the community a relatively broad form of variation sampling (critical case sampling) was employed but even snowball system was applied (Patton, 2002). Within unstructured conversations individuals in the cultural centre Belmullet and rural areas of the study region were asked to suggest interview partners and stakeholders who they thought to be useful and relevant. Other suggestions were

given by experts familiar with the case not necessarily from the place. Industry leaders and government officials were selected given their expertise, knowledge of governance dynamics in the Corrib Gas project, a background in ME developments and their power to influence the transition towards ME.

Given the broad scope of targeted sample selected for qualitative research, the study does not claim to have a representative set of responses. Sampling ended when critically assessing sample saturation, meaning that little new information being revealed by further respondents. Chapters 4 and 5 launch the results of the case study analysis. Section 5.4 draws specifically from the interviews and provides evidence on stakeholders' perceptions of dispute issues related to the Corrib Gas project.

3.2.2 Comparative case studies along the U.S. East Coast

The U.S. East Coast was chosen as a case study location for three reasons: *First*, significant work was underway in pilot-testing to leverage vast wind energy resources for potential electricity generation. *Second*, new policy windows were opening at the time of the analysis and *third*, ambitious development was underway by a range of actors who are driving progress in the sector at pilot scale and positioning the area to become a major provider of green and blue energy (New England Governors, 2009; U.S. Energy Information Administration, 2016; NROC, 2015). While onshore wind became the most important new renewable energy technology in the U.S. in 2006, leaving behind geothermal and solar energy, offshore wind has been a topic of much debate and controversy in the coastal zone (Petrova, 2013; Petrova, 2014; NREL, 2010). By way of an example, the offshore wind farm Cape Wind in Massachusetts engendered the difficulties in U.S. consenting of marine energy developments and wide spread public opposition (Whitcomb and Williams, 2007). Opposition, resulting in litigations, was based principally on visual intrusion and expected environmental impacts. Applications for permits first emerged in 2001. Developers initially looked for the construction of the first offshore wind farm in the U.S., consisting of 130 x 3.6-MW turbines with a capacity of 468 MW powering more than 220,000 homes (NROC, 2015). However, no turbine planned in this project has been installed by the end of 2017. In December 2017 the developer ceased

development of project in response to the termination of the lease rights issued by the Bureau of Ocean Energy Management (BOEM) in 2017 (Chesto, 2017).

In 2015, the U.S. Departments of the Interior (DOI) and Energy (DOE) enforced policy changes relevant for federal offshore developments. The measures comprised the issuing of leases and funding for demonstration projects in federal waters. This together with promising externalities in market conditions unlocked potential for 23 planned projects in various development stages. At the same time in August 2016 the first wind farm was commissioned in U.S. State waters. The 30-MW Block Island Wind Farm is expected to power homes on the island and onshore. In December 2016, the company Statoil won an offshore license off the coast of New York after submitting a bidding bit of $ 42.5mi US (BOEM, 2016). The company views the U.S. East Coast as a key emerging market for offshore wind, bottom fixed and floating. The lease comprises an area that could potentially yield more than 1-GW of offshore wind.

Methods adopted to review the U.S. examples as comparative case studies were a desk based context piece and insights from group discussions and semi-structured interviews. In total 44 experts and stakeholders were involved during a three-week period in March 2015. The **desk based context piece** included an analysis of the policy framework and the context for energy governance at the national level. An **expert-led approach** via a focus group discussion was applied at the national level. The aims were to identify perceptions of issues around the current governance framework for energy purposes, both terrestrial and at sea. The focus group meeting was held at the headquarters of the National Oceanic and Atmospheric Administration (NOAA) (subordinated authority to the U.S. Department of Commerce) in Washington D.C. on 20th March 2015 and involved a group of ten senior officials and staff of the authority. Participants were selected based on their expertise and their ability to provide insights into perceived issues at the federal level as the authority has a remit for multiple energy sectors. Qualitative data was acquired through a moderated discussion and analysed using tape- and note-based analysis.

In order to highlight challenges and opportunities of MRE developments, in total 22 **semi-structured confidential interviews** and an additional group discussion were held with community activists. Interviews were confidential and confidentiality was

ensured verbally. The identification of stakeholders mainly followed a targeted and snowball sampling (Friebertshäuser and Langer, 2010). To draw from a variety of perspectives, the selection of stakeholders was balanced across governance by involving stakeholders from all domains and academia and research. Participants were also selected given their power to influence decisions at the respective levels. The interviewees and participants of group discussions were industry leaders in the MRE sector (N=6), government officials (N=12) (senior officials and federal authority staff, N=10 (involved in an expert group discussion), State government, N=2) and individuals from civil society (N=14). In addition 12 individuals were senior researchers from academic institutions.

Table 3.3 highlights the number of interviews, interviewees and participants of group discussions relative to the profiles of the interviewees in the U.S. Again, the numbers of the interviews and of interviewees differ because some interviews provided an opportunity to interview more than one person in small focus groups.

Table 3.3: Profiles of interviewees and participants of group discussions and their role in industry, government and civil society in the U.S.

Governance Domain	Profile/community cohort of interviewees and participants of group discussions	Number of interviewees/ participants	Number of interviews	Number of group discussions
Industry	Industry leaders in the marine renewable energy sector	6	3	-
Government	Senior officials from Federal and State governments, connected agencies and a global funding agency	12	2	1
Civil society	Practitioners from NGOs engaged in public engagement	6	5	-
	Practitioners at the science-policy interface engaged in public engagement	3	3	-
	Members of an opposition group	5	0	1
Academia and research	Scientific peers (involved in marine energy projects, with a background in technology, energy, climate science and marine policy)	12	9	-
Total number		**44**	**22**	**2**

The interviews comprised of a set of open-ended questions (see Appendix C). Central generic questions were, if consenting regimes were in place to support marine renewable developments, if processes were in place to engage with local communities, if governance frameworks exist that added to traditional forms of policy and regulation, and if planning towards marine renewable developments and targets were clearly formulated? Questions were developed to examine whether the enabling conditions for a successful project were in place (see Olsen et al., 2009). Section 6.1 presents the results from the desk-based study. It focusses on the policy context and related issues for energy governance at the U.S. national level. It put only limited emphasis on technological aspects of energy sources, such as device development and grid connection, and economic conditions, such as the efficiency and security of the supply. International examples provide comparative desk-based review on EU country examples for marine renewable energy consenting.

The research method in support of this international study was designed to provide insights on the interplay between the local level and higher levels of governance, by adopting a multiscale and multiple stakeholder approach. For the purpose of this study the state level was considered local as it was the next smaller level from the federal level. This better suited the comparative nature of the study approach. At the local level three case studies were identified to reflect the different stages of development in site-specific marine renewable projects (two completed, one ongoing) relating to one of the three governance challenges (policy and regulation, industry development, public engagement). The only example not related to offshore wind energy development is on tidal energy. Even if technology systems pertain to very different issues, the example was analysed in detail. This is because it provides a different perspective on overcoming some of the issues related to community opposition (e.g. due to the absence of visual intrusion of technology). Selection criteria in general pertained to a variety of preconditions for effective and sustained implementation of planned energy projects.

An important selection criterion of the cases was their potential for scaling up meaningful lessons learned from an energy transition perspective to the national level. Figure 3.3 summarises the case studies by highlighting the lead partners in each case, the projects' status and the case study locations.

Case study	Lead partners	Status
(1) Bay of Fundy Tidal Energy Project, Maine	Industry-led by a small and medium-sized enterprise (SME)	completed
(2) Business Network Offshore Wind, Maryland	Industry-cluster and policy-led	ongoing
(3) Block Island Wind Farm Project and Ocean Management Plan, Rhode Island	Policy, academic and plan-led	completed

Figure 3.3: Case study profiles highlighting lead partners, status and locations of project

In the following section, results from the detailed case study on Ireland and the comparative case study on examples from the U.S. are highlighted (Chapters 4-6). Each chapter is structured along the governance domains established in Section 2.3 (Fig 2.1). *First*, each chapter launches into results related to the national level. *Second*, a separate chapter (Chapter 5 on the Irish case study and the Corrib Gas project) and a section (Section 6.3 on the U.S. case study) provide perspectives relevant to marine energy governance at the local level.

4 Key issues for marine energy governance in Ireland at the national and local level

This chapter features the outcomes of the policy analysis, discussions at the governance workshop in May 2015 in Newbridge and interviews carried out in preparation of the workshop (see Section 3.2.1). The workshop report is included in Appendix E.

The chapter follows the structure of the governance domains established in Section 2.3 (see Fig. 2.1), namely *policy and regulation*, *industry development* and *public engagement*. Chapter 4 launches into results related to the national level. Chapter 5 will then highlight results relevant to the local level specifically by addressing the Corrib Gas project.

4.1 Policy and regulation: Institutional framework and policy analysis

Policy analysis and discussions at the governance workshop drew out challenges of the implementation of ME developments. Here the focus was on the policy and regulation context for ME. In the separation of power of political systems these two elements form part of the executive power of government and administration. In this context the executive enforces the law that is written by legislature and interpreted by the judiciary branches. In this study broader policies and regulatory frameworks were analysed as these affect the enabling capacity of the implementation process.

Based on an analysis of the policies that are relevant for the ME sector, complexities and weaknesses of the current framework were identified. The policies are the OREDP (DCENR, 2014b), Our Ocean Wealth – an Integrated Marine Plan (IMP) for Ireland (Government of Ireland, 2012) and the consultation document (Green Paper on Energy Policy) (DCENR, 2014a) in preparation of the Energy White Paper "'Ireland's Transition to a Low Carbon Energy Future 2015-2030" (DCENR, 2015). The consultation paper was reviewed because this was the relevant document in the energy field at the time of starting the study. In the following and *first*, roles and

responsibilities in terms of policy implementation will be highlighted. *Second*, findings from policy analysis on the vertical plan effectiveness will be presented.

In terms of roles and responsibility for strategic Energy Policy and the OREDP in Ireland sits with the Department of Communications, Climate Action and Environment (DCCAE), which has the remit for both renewable and non-renewable energy policy. Whilst there is no plan for the hydrocarbon sector in Ireland, there have been five licensing rounds and accompanying Strategic Environmental Assessments, so called Irish Offshore SEA (IOSEA).

The Irish licensing process for oil and gas is a mature process, which was triggered by the need to authorise corporate entities to explore Irish offshore hydrocarbon resources. Authorisations are issued by the Minister of the DCCAE under the Petroleum and Other Minerals Development Act, 1960. Authorisations are/were granted under two different terms, the current Licensing Terms for Offshore Oil & Gas Exploration, Development and Production and the Licensing Terms for Offshore Oil & Gas Exploration and Development, 1992, for authorisation awarded prior to 1 January 2007. Criteria for consideration of applications include the work programme, technical competence and offshore experience, the financial resources available of/by/for the applicant, its health, safety and environment policy and previous performance (DCENR, 2007). Generally, marine developments fall under the remit of the Department of Housing, Planning and Local Government (DHPLG), which has responsibility for foreshore licensing and leasing and general marine legislative functions (e.g. Marine Strategy Framework Directive, Water Framework Directive and is the designated competent authority for Maritime Spatial Planning). Nevertheless, the authorisation process is separated from the foreshore licensing and leasing other than for offshore oil and gas.

Management of aquaculture and fisheries rest with the Department of Agriculture, Food and the Marine (DAFM). Given that the government shares responsibility for marine activities between a number of central Government departments and State agencies, an Inter-Departmental Marine Coordination Group (MCG) was established in 2009 with representatives from each department (and relevant State agencies) with a marine remit. The MCG is responsible for the oversight, delivery and

implementation of the Government's Our Ocean Wealth, an Integrated Marine Plan. The MCG is supported by Task Forces that are independently chaired (Government of Ireland, 2012). Since the establishment of the group two Task Forces, comprising of participants from a broad range of expertise and knowledge (e.g. Departments, Agencies, Higher Education and Private Sector) have been established, the 'Our Ocean Wealth Development Task Force' and the 'Enablers Task Force on Marine Spatial Planning' (Our Ocean Wealth Development Task Force, 2015; Enablers Task Force on Marine Spatial Planning, 2015).

The complicated governance setup turned out to be a major reason for stalling ambitions. Participants of the governance workshop and interviewees emphasised limitations of the current setup and voiced reasons for it; one reason was seen in the lack of the decision-making power of the MCG, which hindered decisions towards greater certainty for investors. In addition participants mentioned that existing structures to address integration often only exist on paper. They stated that decisions are rather influenced by political decisions, which are enforced through non-standardised practices relating to timelines. Decisions are shifted from one State agency and Government department to the other, which creates a vacuum in the decision-making process. In this regard, several respondents from the workshop and interviewees advocated a one-stop-shop approach like in Scotland, where the government tried to blend complex agencies and interests that have to deal with getting an application for MRE developments approved under one heading to make implementation easier. They stated that much could be learned from this permitting process. In this regard, Marine Scotland's Licensing Operations Team (MS-LOT) is the one-stop-shop for all marine licence applications in Scottish waters. Statutory power to the MS-LOT has been given by the Marine (Scotland) Act. Other responsibilities are shared amongst the Planning Authority (land-based developments), the UK's Department of Energy & Climate Change (navigational safety and decommissioning) and Harbour Authorities (site-specific requirements) (Wright et al., 2018). The entire licensing process includes screening and scoping consultation, the delivery of a marine licence and the final decision by the Minister (The Scottish Government, 2011).

The comparative example above highlights, that Ireland has no robust institutional process such that the regulatory issues vested in one competent body as in the case of Scotland (Marine Scotland). In contrast, Ireland's marine portfolio has moved around and responsibilities are split according to sector, e.g. fishing, energy, environment etc. Ireland has a very complex and unwieldy inter-agency framework of multiple and parallel permitting and consenting processes. The only State agency with extensive scientific knowledge of marine environmental impacts, the Marine Institute, has only limited power, relating to consultation, in the planning and consenting process for offshore renewables in Ireland. Workshop participants emphasised that this created a power vacuum and the government yet fails to address it. In summary, the analyses show that the power struggle is also a major barrier in the context of the licensing process.

Figure 4.1 shows the different levels of integration across responsible Government departments and State agencies foreseen to implement applicable plans. At the centre of the coordination the MCG mentioned above and an Offshore Renewable Energy Steering Group (ORESG) are highlighted. Roles and responsibilities of these groups will be described in the following section.

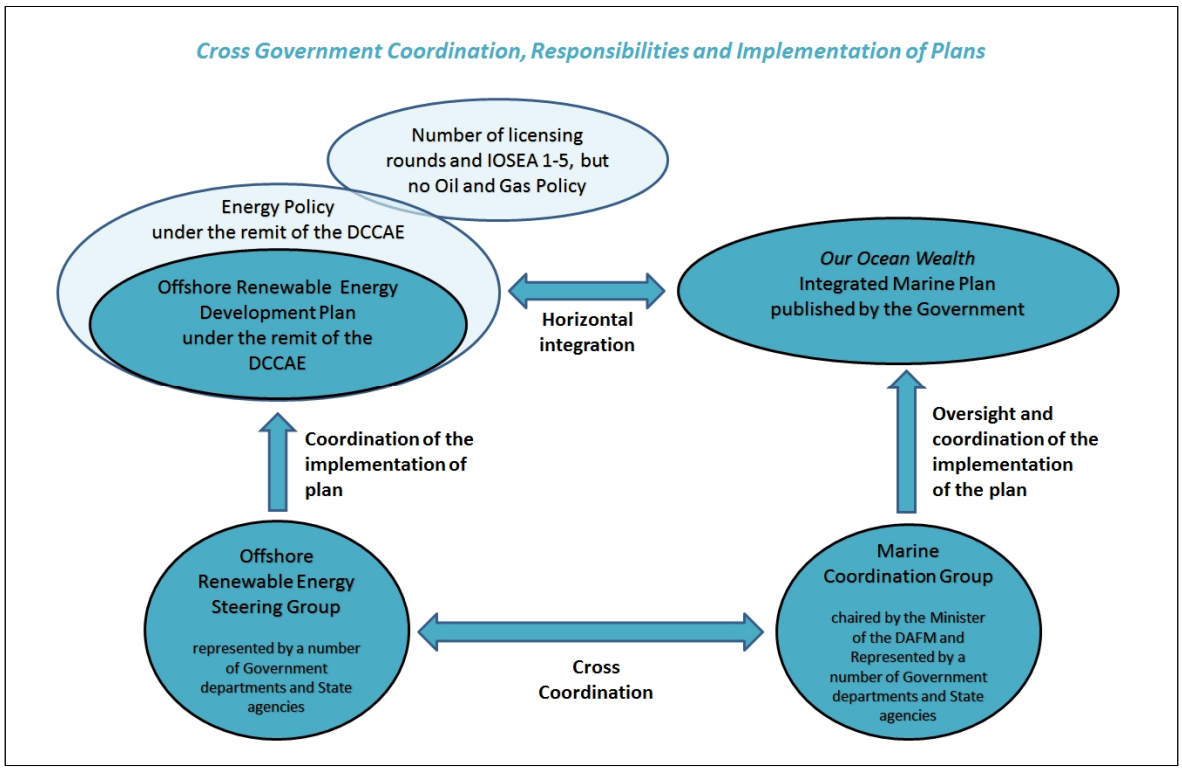

Figure 4.1: Interrelationships across responsible Government departments and State agencies implementing the plans for the marine economy and energy-related developments (Abbreviations: DAFM = Department of Agriculture, Food and the Marine; DCCAE = Department of Communications, Climate Action and Environment; IOSEA = Irish Offshore Strategic Environmental Assessments)

In terms of **horizontal versus vertical effectiveness**, an analysis of the current governance setup evidenced, that both the ORESG and the MCG have cross coordination (horizontal integration) in common. This is due to the fact that both processes cut across high levels of government. They further encompass meaningful regular evaluations of progress (DAFM, 2015; DAFM; 2014). However, current procedures lack integration and mechanisms, which enable processes to cascade down from these governance levels down to lower government bodies, local governments and the public (vertical integration). In the following findings from detailed policy analysis on vertical effectiveness of the plans will be emphasised.

In his foreword the then Minister responsible for the formulation and parts of the implementation of the **OREDP** emphasised the importance of civil society and public engagement in support of delivering "real economic benefit to Ireland [maintained through] transparent engagement with all stakeholders […]. Citizen must be at the

heart of the transition to renewable energy" (DCENR, 2014b, p. 5). Interviewees firmly believed that this government commitment only exists on paper.

More precisely the **Integrated Marine Plan** sets out the context to achieve improved stakeholder engagement by educating people and communities living close to the sea. Hence "engaging with the sea" is one chapter of the plan that is dedicated to link directly with the public (Government of Ireland, 2012). The subsequent two chapters ("your views" and "communication and engagement") are integral parts of IMP implementation. The first of the two chapters introduces the preceding consultation process. The second introduces cross cutting activities to deliver on the implementation of the plan and its major objectives. The document concludes by summarising the feedback from the consultation process along with enabling factors operating in the marine environment. "Inclusive stakeholder participation" is mentioned as first guiding prerequisite for an effective IMP (Government of Ireland, 2012). The IMP conclude that intense stakeholder participation must be maintained through "continued public consultation and participation in marine governance" (Government of Ireland, 2012, p. 20).

The Green Paper on Energy Policy turned out as the most concrete policy document in terms of setting priorities for stakeholder engagement with a focus on industry development and civil society involvement (DCENR, 2014a). Three out of six policy priorities identified in the document address public engagement. The first priority sets out the context for "empowering energy citizens". The government acknowledges that citizens' input to the energy policy is essential to stimulate potentials for a transition to a sustainable, secure and competitive energy supply. In this context government expects civil society to help finding preferred transition pathways. The second priority "planning and implementing essential energy infrastructure" to sustain and increase direct investments, job creation and economic growth. The Maritime Area and Foreshore (Amendment) Bill (2013) and other planning processes are seen as a critical enabling mechanism to speed up strategic infrastructure approvals, whilst maintaining partnerships and transparency with stakeholders. Policy-makers acknowledge that poor planning of large infrastructure developments in the past has brought the public in opposition to developers and planners. Thus, a "new way is required, one that places citizen at the heart of the planning and

decision-making process, and ensures that public and private actors effectively communicate the risks and benefits associated with energy projects in both a local and national context" (DCENR 2014a). "Putting the energy system on a sustainable pathway" sets the context for the third priority. Even if this chapter highlights renewable energies as a means to develop an indigenous and carbon free energy supply, the government neglects to mention the public as a stakeholder participating and supporting sustainable energy transitions.

A look back into the recent history of political developments reveal political realignments relevant to ME governance in Ireland. In spring 2016, the recent elections resulted in government changes. A minority government, based on a coalition led by one of the two major parties, Fine Gael, with the support of nine independent politicians (with a formal agreement that the other major party Fianna Fáil would abstain on matters of confidence and supply), was formed. Importantly for the ME sector, some ministries were split, including the one responsible for marine affairs, for political reasons, which makes it even more complicated to integrate across various responsibilities. Planning issues in the marine environment were separated from the energy and natural resources department and are with the DHPLG since. This caused policy fragmentation, which made the system more ineffective. The example shows that decisions that had impact on the governance setup towards ME were strongly politicized. This means that they were made based on political deliberations and designed to what is needed to support energy developments. Therefore, decisions followed political calculus rather than a clearly defined strategy towards greater integration.

Another recent politically-led initiative worth noting was the 'Constitutional Convention', as the process was designed to be inclusive and representative in dealing with major societal issues. In the literature it is seen as a major experiment in deliberative democracy (Elking et al., 2015). It was established in 2012 and assembles a random selection from among citizens of the state to engage in the institutional process, related to constitutional change. The focus is to build trust in the political process by means of debates over constitutional reforms to improve representation and democracy. In July 2013 the assembly recommended that the Constitution be amended to introduce marriage equality, which amongst others led to

the passing of the referendum proposal by a large majority of Irish voters to introduce marriage equality in the Constitution (Elking et al., 2015). While constitutional issues fall well outside the remit of this research, this is worth highlighting here as a recent governance innovation.

A minority of interview partners believed that a minority government might pose an opportunity for greater efficiency, because they expect intense negotiation on critical issues to bring about decisions. Workshop participants and interview partners agreed that intense negotiation and integration were called upon to unlock economic potentials in the marine environment and to make governance of ME resources more streamlined. Participants emphasized that particularly the MCG needs to fill an existing gap between policy-making and industry development by connecting the complex array of responsibilities involved in the management of energy transitions. This would apply to decisions needed in support of ME developments, such as financial support of private investment. It was further stated that the MCG needs to connect more effectively with industry concerns in the energy sector to create greater certainty for developers and investors. They emphasized that as long as integration could not be established, e.g. by the MCG and due to its lack of power, an existing and newly established industry association was needed to make sure that interests and needs across sectors, such as energy, renewables, fishing and aquaculture and environmental concerns are represented.

The existence of various applicable policies reveals that the policy implementation process for ME developments does not happen in isolation. Rather it crosses various policy domains that need to be coordinated in an integrated framework. The policy reviews revealed that all policies catered for horizontal integration providing close coordination across responsible departments. Responsibility for the coordination and implementation of related energy policies was envisaged by the creation of the MCG and the ORESG. However, a need for stronger integration remains with other policies relevant to developments in the marine environment that are central to the objectives of ME implementation. For example, the OREDP implementation is influenced by a complex setup of other policies, for example by the National Renewable Energy Action Plan, which aims to deliver EU obligations under the Renewable Energy Directive, the Strategy for Renewable Energy 2012–2020, Our Ocean Wealth,

EirGrid's Grid25 plan, which is a long-term strategy for developing the transmission system, and the National Ports Policy (DTTS, 2013). The situation shows that a complex set of policies that are not tailored to the objectives of each other and to an over-arching policy vision as well as a lack of coordination between these policies are obstacles to implementation.

The previous findings are supported by a point that was repeatedly highlighted by government officials and experts within interviews and the governance workshop. By looking at historical and current governance arrangements, they concluded that the policy framework in Ireland does not allow for successful implementation of large-scale ME projects for two reasons:

Firstly, policy development is fragmented. The policy analysis showed that indeed policies exist. However, neither the necessary integration across the specific goals driving these policies nor coordination to achieve them exist. In addition, the lack of power of central responsible bodies was mentioned as 'stumbling block'. The analyses and findings above emphasize that one of the major governance barriers of Ireland's transition to a sustainable supply of energy is a political issue and government policy fails to deliver greater coordination necessary for successful implementation.

Secondly, implementation in the context of the licensing of projects lacks efficiency. Some workshop participants stated that this was due to delayed licensing for foreshore developments caused by the over-arching foreshore legislation. The General Scheme of a new Maritime Area and Foreshore (Amendment) Bill was published in 2013 but has not yet been enacted (Department of the Taoiseach, 2017). The bill was designed to streamline the development consent process for the foreshore. However, Flynn (2015) has identified common failures in the evolution of the bill.

4.2 Industry Development: Energy challenges and Ireland's marine energy mix

The justification of choosing Ireland as focal case study was highlighted in Chapter 3. Section 3.2.1 highlighted that Ireland's energy system is strongly dependent on fossil fuel imports. At the same time, the country has potential to harness indigenous renewable resources in the future. These conditions make the case for a phased-strategy by exploring indigenous gas and oil resources, while at the same time harnessing MRE resources before phasing out fossil fuel. This is supported by the analysis, that even by following a low-carbon scenario of an 80 % CO_2 reduction by 2050, hydrocarbons will likely be part of the energy mix as the transport sector in Ireland is very dependent on oil, whilst heating systems within residential homes and industry are reliant on gas (Chiodi et al., 2015). In the long-term, this phased approach will pave the way for larger use of renewables to unfold.

Ireland's energy target is to achieve 16 % of total energy demand from RE sources by 2020. The Energy Policy Framework 2007 – 2020 published by the [then] Department of Communications, Marine and Natural Resources (DCMNR) initially set out a national target for a 40 % contribution from renewables for electricity generation by 2020 (DCMNR, 2007). This was to be achieved by harnessing the vast marine resources in terms of both space and ideal physical conditions. In this regard, the government identified the development of MRE, such as offshore wind, wave and tidal energies as an important future opportunity. It also suggested that offshore wind resources may contribute an even bigger proportion of total energy supply than initially targeted and unlock potential to create an export market for energy to EU member states (DCENR, 2014a, 2014b).

A Strategic Environmental Assessment (SEA) has been produced for the OREDP (DCENR, 2014b). As part of this assessment theoretical resources for MRE within specific areas in Irish waters between mean High Water Mark and the 200 m isobath were examined. Figure 4.2 shows these resource areas, the extent of the Republic of Ireland's offshore territory (880,000 km^2) and its exclusive economic zone (EEZ). The offshore territory is more than ten times the size of the land mass. The areas as well as the current authorisations for offshore hydrocarbon explorations and the Corrib

Gas field 83 km off the West Coast are shown. Locations with facilities around MRE research and development (red dots) are shown, as well as the locations of the case study examples. In addition to these large infrastructure developments, Ireland's first offshore wind farm, the Arklow Bank Wind Farm off the East Coast (25-MW) is operating.

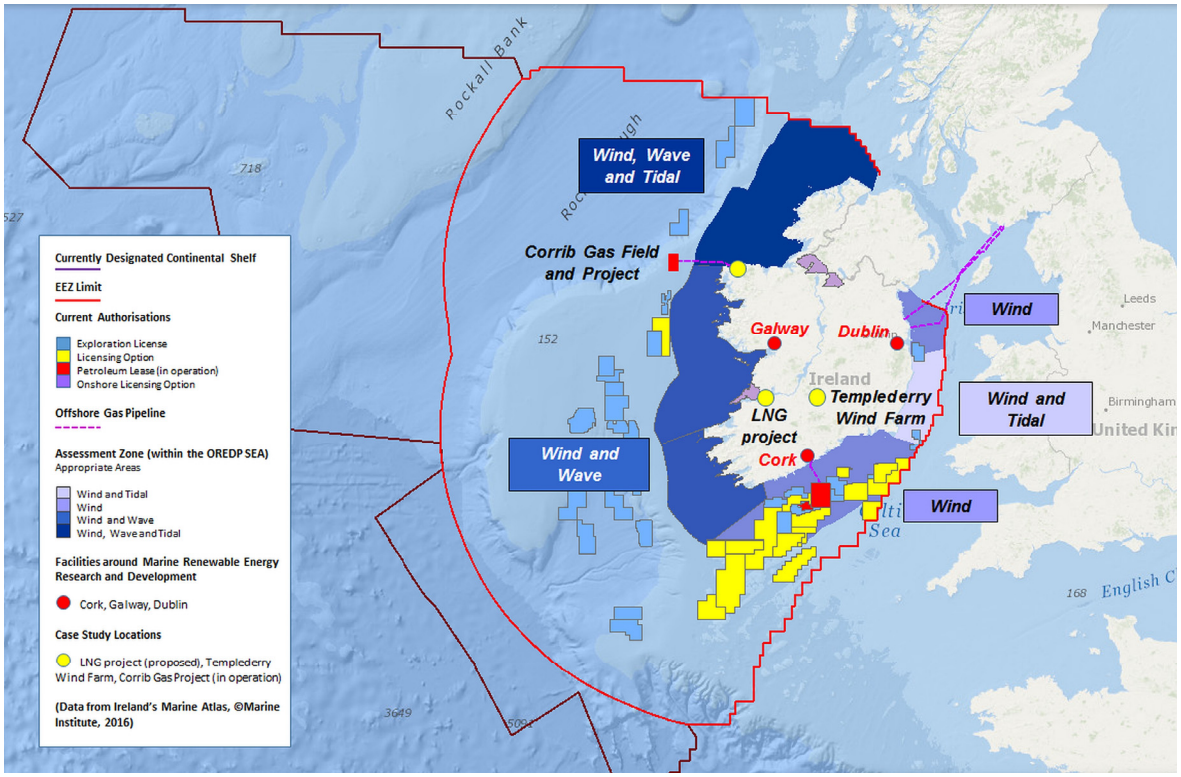

Figure 4.2: Extent of Ireland's offshore territory including areas identified for harnessing MRE resources, current authorisations for offshore hydrocarbon explorations, cases study locations (yellow dots) and research and development facilities (red dots) (Data from the marine renewable and offshore gas and oil theme accessed through Ireland's Marine Atlas at http://atlas.marine.ie/, 11 January 2016) (Abbreviations: EEZ = Exclusive Economic Zone; LNG = Liquefied Natural Gas; OREDP = OREDP; SEA = Strategic Environmental Assessment)

Workshop participants mentioned that the vision to harness indigenous energy resources on the one hand and characteristics of the energy system on the other hand support the vision for the energy transition based on a phased strategy. This could include *first*, an incremental expansion of energy supply that is based on indigenous resources both renewable and non-renewable, e.g. up to 2050, and *second*, on a progressive phase-out of fossil fuels afterwards. However, the government has not clearly spelled out priorities and targets to progress in this way yet, neither in the Green Paper on Energy Policy nor in the OREDP (DCENR, 2014a; DCENR 2014b).

While government ambitions appear strong and research, development and small enterprises are working towards driving progress in the sector, progress towards the implementation of large MRE projects is still lacking. The government supports onshore wind more strongly than offshore wind installations even if developers of onshore wind have already experienced extreme public opposition due to visual intrusion. Whilst other EU countries consider offshore wind technology as mature and large wind farms went operational in countries like Denmark, the UK and Germany, eight projects in various development stages (three at concept/early planning stage only) shown in Table 4.1 are planned in Irish offshore waters. All of the offshore wind farm projects listed in the table have been stalled in the planning process for approximately 10 years on average.

Table 4.1: Large-scale offshore wind farm projects, location, size and status planned in Irish waters (Source: 4C Offshore Ltd, 2018)

Offshore wind farm	**Location** (from North to South)	**Proposed size and capacity**	**Status**
Oriel Wind Farm project	22 km off Dundalk, County Louth, Irish Sea	55 turbines, up to 330-MW	Consent application submitted
Hibernian Wind Power Wind Farm	14 km off Clogher Head, County Louth, 1 km from the proposed Oriel Wind Farm project, Irish Sea	200-500-MW	Under consultation, concept/early planning
North Irish Sea Array	21 km off Dundalk, Leinster, County Louth, Irish Sea	750-MW	Concept/early planning
Dublin Array	Kish and Bray Banks in the Irish Sea 10 km off Dublin and Co. Wicklow coast, Irish Sea	145 turbines, up to 600-MW	Foreshore Leases applied for
Codling Bank Wind Park	14-17 km off Greystones and Wicklow, County Wicklow, Irish Sea	220 turbines, 1.100-MW	Consent authorised
Codling Bank Wind Park Extension	14-17 km off Greystones and Wicklow, County Wicklow, Irish Sea	200 turbines, 1.000-MW	Consent application submitted
Arklow Bank Phase 2	11 km off Arklow, County Wicklow, Irish Sea	193 turbines, 495-MW	Consent authorised
Kilmichael Point	15 km off Kilmichael Point, County Wexford, Irish Sea	500-MW	Concept/early planning

According to a senior government official having the power to make decisions in the energy field, a large joint offshore wind farm planned in the Irish Sea by the Irish and UK government failed in 2016, together with the development of an export agreement between both countries. As stated by the interviewee, the agreement

failed because the UK government did not accept the conditions of the agreement for various political reasons (such as preferences to support the nuclear sector). Interviewees and workshop participants agreed that major reasons for the slow pace of MRE developments in Ireland were mainly due to the lack of government support in terms of start-up funding of concrete projects and at least funding programs, which stimulate sector investments. Amongst others two examples exemplify that market incentives are directed into other sectors than the offshore wind sector: The Renewable Energy Feed-in Tariff (REFIT) scheme (established by the DCCAE) (SEAI, 2014), relevant for the wind sector (REFIT 2), was opened in March 2012. The REFIT is only directed towards support for onshore wind while excluding offshore wind developments. The Initial Market Support Tariff for Ocean Energy was introduced in the OREDP (DCENR, 2014b), which was to be funded from the public service obligation levy and equivalent to €260/MWh operational from 2016 onwards. It was exclusively devoted to support development of maximum 30-MW for ocean energy (wave and tidal) and excluded offshore wind developments. No developer ever availed of the funding.

Workshop participants emphasized the need for tax incentives for MRE developments, particularly for the offshore wind sector, as a central ingredient of the energy transition. In the author's view the conditions above suggest that government ambitions only exist on paper and government has failed as yet to implement wide-ranging support, e.g. by providing tariff incentives for the MRE sector in general and for emerging technologies that are highly commercial in other EU countries. New questions arise at the time of writing, concerning Brexit, however, addressing these emerging issues from a ME perspective, are beyond the scope of the thesis. Technological exist around MRE developments. Wave energy technology is not yet commercially viable and needs additional R&D. Devices are at the demonstration and pilot level. Tidal energy technology is increasingly proven viable, can be considered mature and is more advanced than ocean current technologies. Offshore wind is the most established type of energy generated in the marine (IPCC, 2012; SEAI, 2014). In Ireland, the WestWave project, a 5-MW wave energy project at pilot level, is on hold due to technological issues around the selection and development of different devices. In terms of offshore hydrocarbons, to date only three commercial discoveries

since 1970 are producing natural gas, two almost depleted and one with a lifetime of 15-20 years' maximum. In December 2015, enterprise partners commissioned the Corrib Gas field off the West Coast. At peak production over the next 5-10 years, the project is capable of meeting up to 60 % of the Ireland's gas needs. To date, in terms of strategic importance, the Corrib project represents Ireland's largest ever energy investment. During construction, more than 6,000 people have worked on the project and up to 175 full time job equivalents will continue during operation (Shell E&P Ireland Limited, 2014).

No commercial oil well has entered into operation at date of submission of this thesis. Some expect that Ireland's offshore territory contains more potential reservoirs for hydrocarbons. In recent years, several enterprises have discovered significant reserves offshore, most notably in the Corrib field in the Atlantic margin. However, the scale of Ireland's recoverable gas and oil resources remains unknown. As there are no further reserves at development stage to date, future large-scale developments remain uncertain (Wood Mackenzie, 2014).

Amongst others, gas and oil explorations in Ireland suffer from economic barriers, which are high prices of extractions and are facing competition from cheap shale gas and cheap oil in Russia and Africa. In this regard, technology remains a major uncertainty, particularly when sufficient incentives are needed for resource development. Participants of the governance workshop agreed that future developments would depend on the governments' ability to provide incentives for private investors, R&D and to continue attracting Foreign Direct Investments (FDI). This is critical as Ireland's economy after its downturn and the recession in 2009 is recovering and interest in Ireland as a country for FDIs is continuously high (DJEI, 2014; Helena and Bradley, 2015). Thus, there is potential for future developments in the sector. Interviewees repeatedly mentioned the Irish planning system as a factor for the slow pace of developments. A forward planning system needs a robust method of coping with technology and economic uncertainty. Industry is looking for this certainty in order to invest in the emerging market.

4.3 Public Engagement: Case studies of poor and good practice engagement

Extreme conflict with stakeholders and strong opposition has characterised the Corrib Gas project development resulting in the involvement of international human rights NGOs (OECD, 2012). This section will introduce the major case study that drove the investigations. The following chapter (Chapter 5) will be specifically devoted to the in-depth analysis of the Corrib Gas project as a central component of the thesis. In addition the Corrib example was brought forward by the participants of the governance workshop. Based on the interview process, in the following the focus will be on local public engagement. In order to balance the assessment, comparative examples of good practice engagement will be also highlighted.

In contrast to poor project experience in the Corrib Gas project, other energy developments at smaller scales unfolded intense developer community relations. Examples of good practice presented here draw from land-based project experiences in Ireland since there are currently only limited examples of operational projects in the marine environment. Workshop participants discussed the example of the proposed Liquefied Natural Gas (LNG) project in County Limerick, Ireland, in the context of strong, early engagement in the pre-application stage (see Fig. 4.2). At the time of writing, the project was shelved since planning was granted in 2006 (Woulfe, 2017). Reasons can be seen in the financing barriers for the LNG project developer, who following a new framework was expected to cover the costs of the interconnector pipes. At last energy concerns arising from Brexit was expected to lift the LNG project back on the agenda of the government.

The LNG project can be viewed in light of the government commitment to enable the transition to a low-carbon economy through the exploration of Ireland's indigenous natural gas resources. In this instance, participants highlighted a top-down, industry-led proposal for major infrastructure as a potential model of best practice in how to involve stakeholders particularly in the early stages of the planning process. The project is part of a bigger plan for the development of the Shannon Foynes area, providing additional investments and employment (SFPC, 2013). Participants of the governance workshop highlighted good local relationships as well as sufficient advice

and guidance within the pre-application stage as major achievements of the process. Key statutory bodies and authorities, responsible County Councils and a port company showed commitment and interest. They selected the best site following a meaningful discussion on economic feasibility and consideration of appropriate alternatives. All of the conditions together were identified as necessary for successful delivery of projects. However, stakeholders also agreed that there is no such thing as a panacea for citizen involvement and they pointed out that the LNG project approach was not without its problems. Issues arose with regard to market and tariffs and mixed messages related to the current project state. A time delay of up to ten years also became an issue.

The second example, Templederry community wind farm project in County Tipperary (see Fig. 4.2), was discussed in the context of market and government incentives to provide community energy benefits in practice. Workshop participants highlighted the project as the first successful delivery of a co-ownership project in a rural Irish community. Workshop participants, who brought up the example, emphasized that the project was based on a well-planned process, steered by an economically experienced energy agency that is based and trusted in the area and that is collaborating closely with members of the community. The local context was of particular importance here. Issues of population decline and limited local economic opportunities continues to impact this rural area and led the community to explore how to harness the benefits of renewable energy through a locally owned wind farm. Workshop participants agreed that the support of the Limerick Institute of Technology Tipperary (formerly Tipperary Institute) with its sustainable energy programme served as a central enabler for the process. It was a founding member of the independent Tipperary Energy Agency that provided an important role in assessing feasibility, site selection and building capacity, by empowering local social entrepreneurs with awareness of the sector. The outcome of the process is a shared ownership wind farm with two 2.3-MW turbines feeding electricity into the national grid. It provides energy sufficient to power 3,500 homes (Ryan et al., 2014). Energy experts expect income to be in the order of € 25m over the life of the project. After costs of € 9m (about € 6m has/will be spent outside the County) the local project benefit will be around € 19m. Income will be distributed to local government, local

contractors, a local community fund and the 27 local families behind the project (Kenny, 2014).

Over the course of the process, developers repeatedly sought input from the local community. The case example highlighted patience and strong commitment of developers and members of the cooperative, particularly concerning the six-year planning process. The workshop participants agreed that developers gained credibility through the way they handled affairs, which finally led to the commissioning of the project. To date developers from the private sector sometimes in tandem with the government still fail to draw experiences from these good practices examples and tend to make the same mistakes from poor experiences again. Projects often fail due to strong opposition. Interview partners from government stated that this was due to a lack of understanding of the local context.

Participants often made the connection to successful examples from other countries such as Denmark, Scotland and Germany that addressed "community ownership" as a central ingredient of the national renewable energy portfolio. Studies from these countries reveal promising ways to increase public acceptance for energy projects (see Haney and Pollitt, 2013; Walker et al., 2010). Studies on wind farm developments in Scotland and the Middelgrunden wind farm off the Danish coast show that strong support can lead to greater public awareness and can positively affect support for renewable energy projects (Sørensen et al., 2002; Warren and McFadyen, 2010). Participants agreed that trust around people living close to projects could be built around a co-ownership approach. In this regard, they mentioned the *Fuinneamh Oileáin Árann Comharchumann Teoranta* (Aran Islands Energy Cooperative) as another promising initiative. Participants also agreed that the projects reviewed in the workshop were of a relatively small scale, which needs to be considered. Planners need to assess, plan and discuss options for larger scale projects, and the scaling up to other types of ME projects carefully.

5 Public engagement: Corrib case study

5.1 Introduction and background

This chapter presents interview material from a cohort of stakeholders (N=44) involved in the governance of ME developments in Ireland. The basic population spreads across all cohorts of the local community in County Mayo affected by the Corrib Gas project, the project developer, and individuals from local industry and officials from local and State governments. The chapter is the result of 27 semi-structured interviews and two group discussions, one with an activists group and another with staff of the developer. The "Marine Energy Governance Workshop" in May 2015 provided insights on key events that led to the explorations of hydrocarbons in Ireland, as one part of the multidimensional project timeline in Section 5.3 (Fig. 5.4). The workshop also provided information on the nature of the complicated statutory approvals of the Corrib Gas project, which will be highlighted in Section 5.2.

Issues around the Corrib Gas project triggered a significant conflict. The resulting breakdown in relationships, reverberated into the region, and reached the national and even an international level (OECD, 2012). Extreme conflict resulted in the involvement of international human rights NGOs. The following sections are set by *firstly* providing background information on the project (Section 5.1) and *second* highlighting the complexity in statutory planning and approval processes (Section 5.2). Section 5.3 provides a multidimensional timeline of key events that led to the issues. Section 5.4 provides an in-depth analysis of the perceptions of those involved in the governance of the Corrib Gas project.

The Corrib Gas project entails the extraction of a small-to-medium-sized natural gas reservoir 83 km off the West Coast of Ireland. At peak production (5-10 years), over a lifetime of 15-20 years, the project is capable of meeting up to 60 % of Ireland's gas needs. The construction of the development included three major elements: A **subsea facility and an offshore pipeline** that connects the well with a landfall in County Mayo; an **onshore pipeline from landfall to a terminal**; a **gas-processing terminal** 9 km inland from the coast at Bellanaboy. Following the landfall the pipeline is routed

through a tunnel for approximately 4.9 km underneath Sruwaddacon Bay, which is the longest utility tunnel in Europe. From the terminal the gas is distributed via a 150 km extension of the Irish gas transmission network to Galway (see Fig. 5.1).

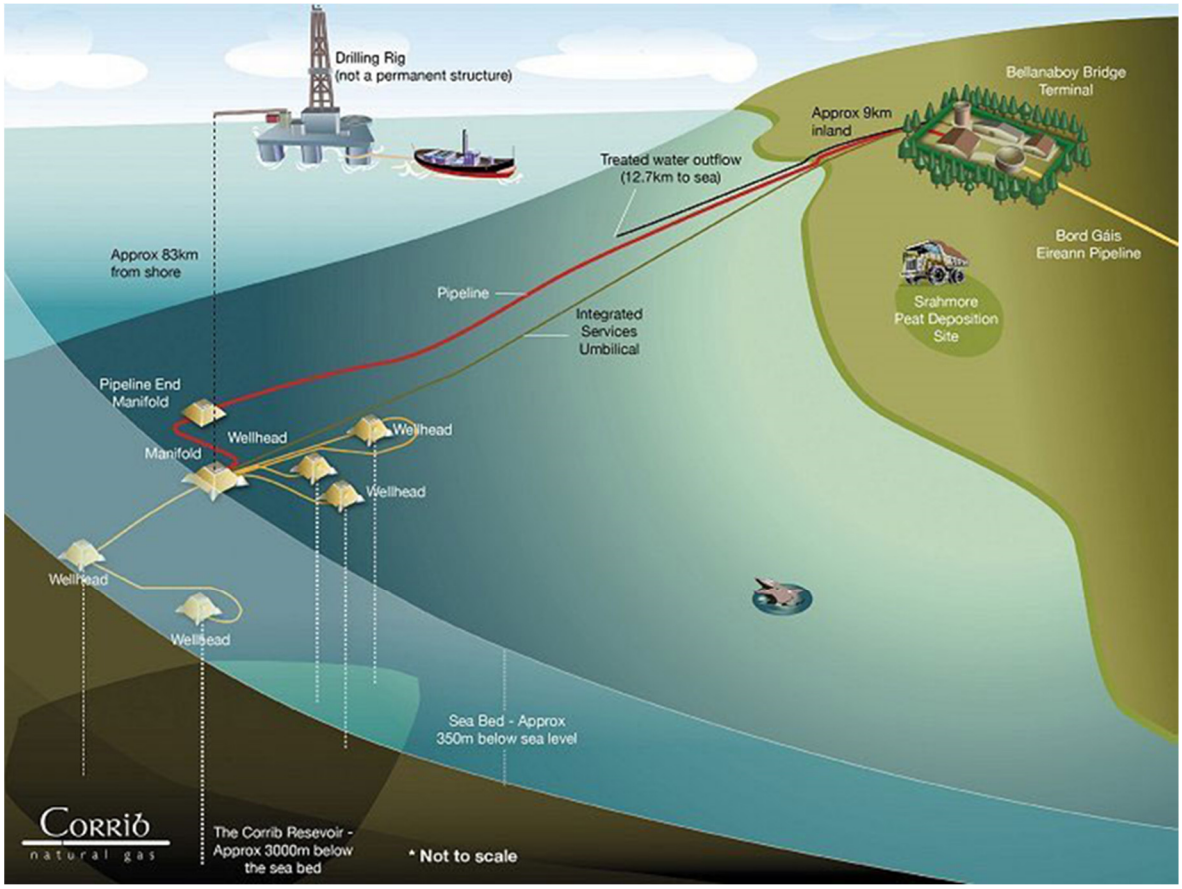

Figure 5.1: Corrib Gas project and status of planned technical components from well to terminal and beyond in 2007 (Source: Shell E&P Ireland Limited, 2007)

The project location in the barony of Erris is rural in nature. Population density is significantly low in comparison to the country average. The population census from 2016 indicated a population density of 23 people per km^2 in County Mayo in comparison to 68 people per km^2 in the Republic of Ireland (CSO, 2016). Migration is a major feature of the demographic of the place.

5.2 Statutory approvals for the project

Approvals for different parts of the development were dealt with by a number of different Government departments, with often overlapping jurisdictions. In order to gather a better understanding of the complexity of the planning and approval process insights again from the intense discussion at the governance workshop were taken into account. In this context, participants of the governance workshop flagged the opportunity to learn from complexity in the Corrib Gas project statutory planning and approval process to manage governance challenges in terms of large-scale developments. They highlighted those issues as major root-cause of the dispute. In addition, experts frequently mentioned that responsible departments were disjointed in nature. Figure 5.2 highlights the complexity and the overlapping responsibilities across Government departments and statutory bodies.

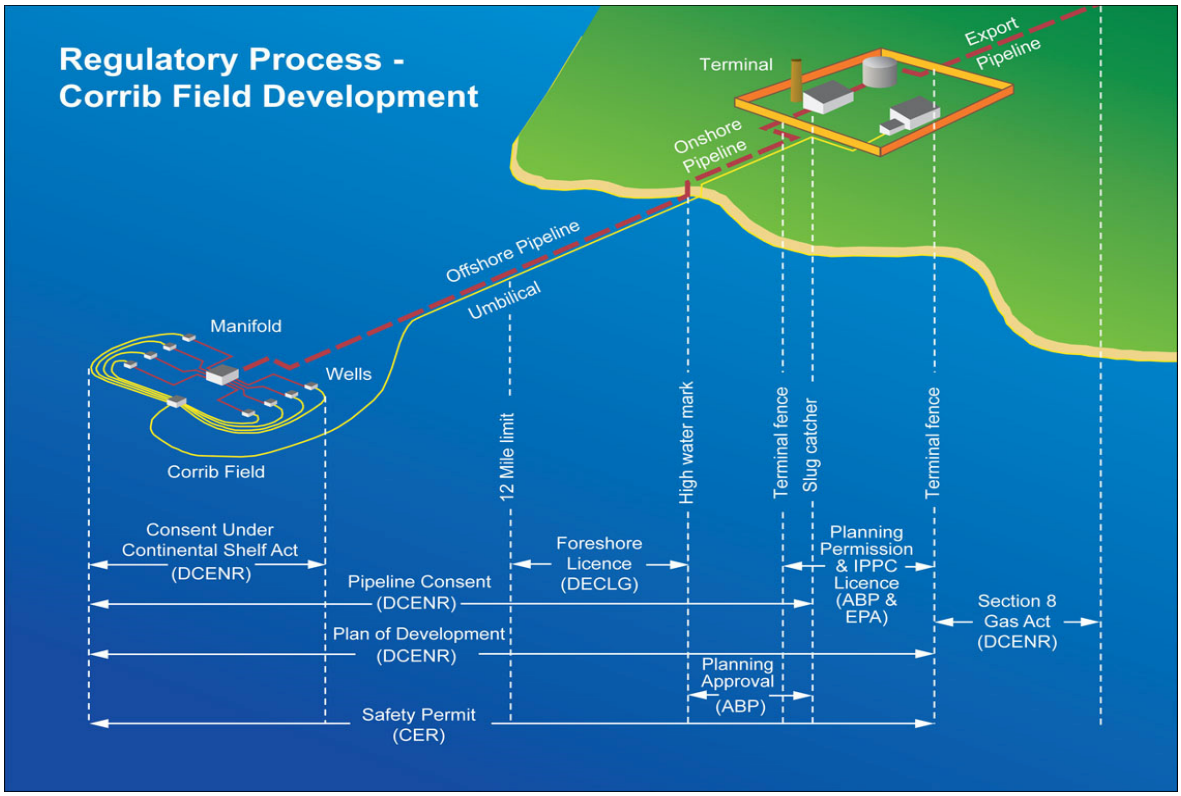

Figure 5.2: Regulatory process of the Corrib Gas project and responsibilities (Shell E&P Ireland Limited, 2014) (Abbreviations: ABP =An Bord Pleanála; CER = Commission for Energy Regulation; DCENR = Department of Communications, Energy and Natural Resources; DECLG = Department of Housing, Planning and Local Government; EPA = Environmental Protection Agency)

Participants and interviewees often drew a connection to the lack of a one-stop-shop for energy developers. This one-stop-shop was seen as a major enabling condition for having more efficient processes that are based on clear and practical criteria that do not require extensive room for interpretation. The gas pipeline alone fell under three different statutory approvals, which exemplified the complex management of the construction. In addition the onshore section was overlapping with approvals relevant to other technical components. Table 5.1 summarises the different statutory regimes, responsibilities for parts of the development and the year of granting application.

Table 5.1: Relevant statutory regimes, responsible authorities for different parts of the development and date of application (Source: DCCAE, 2018; Shell E&P Ireland Limited, 2018; Shell E&P Ireland Limited, 2010) (Abbreviations: ABP =An Bord Pleanála; DEHLG = Department of the Environment, Heritage & Local Government; DCENR = Department of Communications, Energy and Natural Resources; DAFF = Department of Agriculture, Fisheries and Food; DECLG = Department of Housing, Planning and Local Government; DMNR = Marine and Natural Resources; EPA = Environmental Protection Agency; MLVC = Marine Licence Vetting Committee)

Year/month of granting	Part of development	Relevant statutory regime	Responsible authority
Nov-2001	**Basis for the entire project**	Section 13 application for a Petroleum Lease under the Petroleum and Other Minerals Development Act, 1960	DMNR
Apr-2001	**Onshore terminal**	Planning application to local authority	Mayo County Council
Nov-2001	**Corrib Gas field**	Plan for Development; accompanied by EIS	DMNR
2001	**Entire project**	MLVC to examine all environmental aspects	DMNR
Feb-2002	**Export pipeline**	Section 8 application of the Gas Act, 1976 for Mayo-Galway pipeline	DMNR
April 2002	**Offshore well**	Section 5 application of the Continental Shelf Act, 1968	DMNR
Apr-2002	**Pipeline from subsea installation to terminal**	Section 40 application of the Gas Act, 1976 for pipeline construction; accompanied by EIS	DMNR
May-2002	**Part of offshore pipeline, umbilical, discharge pipeline and landfall**	Foreshore Licence under the Foreshore Acts (1933 – 2012)	DMNR
Oct-2004	**Onshore terminal**	Planning Permission for terminal; associated peat deposition site	ABP
May-2005	**Onshore and upstream section**	Independent safety review	DMNR
Nov-2007	**Entire project**	Integrated Pollution Prevention and Control Licence	EPA

Feb-2009	**Onshore section of pipeline, including section between land fall of the pipeline to the tunnel and beyond to the terminal**	EIS for the oral hearing in 2010 under the Planning and Development (Strategic Infrastructure) Act, 2006	ABP, DAFF
Jun-2010	**Tunnel route underneath Sruwaddacon Bay (modified route)**	New Foreshore Licence application under the Foreshore Acts (1933 – 2012), after ABP oral hearing in 2009	Foreshore Unit, DAFF
Jun-2010	**Tunnel route underneath Sruwaddacon Bay (site investigations)**	Foreshore Licence under the Foreshore Acts 1933 – 2012	Foreshore Unit, DEHLG

Figure 5.3 shows the different approvals for the gas pipeline of both onshore and offshore section. Whilst the pipeline infrastructure initially fell under the Gas Act, 1976 (Section 40) single spatial areas were managed under a number of frameworks. The Foreshore Acts (1933 – 2012) cover the area from the mean High Water Mark to the 12 nautical mile territorial sea limit. Therefore, it covered the foreshore and a part of the onshore section that was later to be routed through a tunnel underneath Sruwaddacon Bay. The onshore section between land fall of the pipeline to the tunnel and beyond to the terminal fell under the Planning and Development (Strategic Infrastructure) Act, 2006.

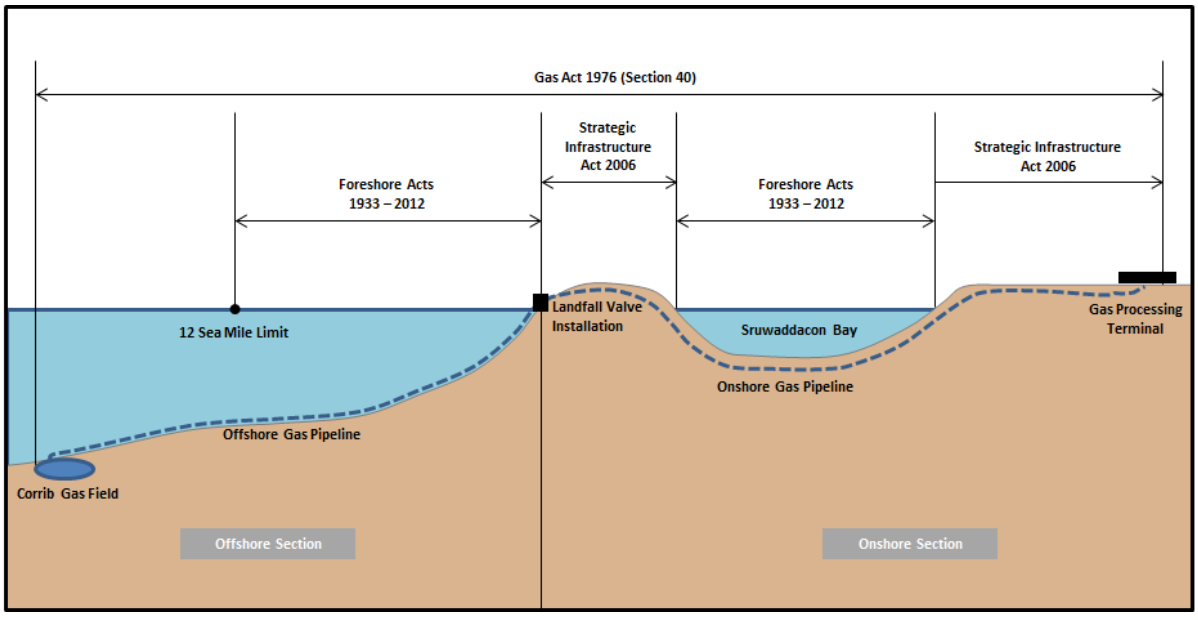

Figure 5.3: Statutory approvals for the on- and offshore section of the gas pipeline from well to terminal in 2010 (edited from RPS Group Plc, 2010)

In 2006, the Planning and Development (Strategic Infrastructure) Act, 2006 was created. Strategic Infrastructure Developments (SID) relate to development that is of strategic economic or social importance to the State or a region such as major energy, transport, environmental and health infrastructure. Applications under the SID regime are made directly to An Bord Pleanála (ABP). It is the independent central planning application and appeals body of Ireland. Applications have specific timeframes so as to make the process more efficient (ABP, 2018). The validity of a decision taken by the Board may only be questioned by making an application for judicial review under Order 84 of The Rules of the Superior Courts (S.I. No 15 of 1986). Within this statutory framework, ABP commits to the 'customer charter', which formulates operational standards referring to quality services to relevant stakeholders within planning application and appeals processes (ABP, 2014).

In terms of the current framework in Ireland there is also the independent Standards in Public Office Commission (SIPO) under the Standards in Public Office Act, 2001. Its mandate is to supervise public sector standards and compliance with legislation, including ethical issues regarding politicians, office holders and civil servants, and greater powers of enforcement. In terms of the governance process it is limited due to political donations, lobbying, and conflicts of interest. However, in general the board takes a reactive approach to dealing with complaints. This it only reacts once a conflict already occurred. It does further not intervene on a project basis.

In 2009, responsibilities in the foreshore changed from the Department of Agriculture, Fisheries and Food (DAFF) to the Department of Environment, Heritage & Local Government (DEHLG) (O'Hagan and Lewis, 2011). Inter-departmental relations and the changes made were perceived as fractured, which counteracted homogeneity in statutory decisions. Respondents confirmed that the regulatory system was in a state of flux, which caused many uncertainties and the government seemed to be reluctant to address the issues.

Participants particularly industry developer mentioned the Gas Act, 1976 as being outdated. This was because it was developed on the basis of the Kinsale Gas field discovery in 1971. The conditions under which the Corrib Gas project was approved were significantly different from the Kinsale field. The project entailed extraction of a

pure type of gas, which required no processing, apart from separation of water, before piping to the natural gas grid. The pipeline hit land in a more industrialised region of Ireland's South Coast in Cork Harbour, a place where population density was significantly higher and where people were more used to large infrastructure than in the West Coast of Ireland. This framework was still used under the special conditions (e.g. context of place) for the Corrib Gas project. Subsequently, major improvements to the regulatory framework have come into place. These were the Planning and Development (Strategic Infrastructure) Act, 2006, the Petroleum (Exploration and Safety) Act, 2010 No. 4, the establishment of the Commission of Energy Regulation (since renamed the Commission for Regulation of Utilities (CRU)) and government ambitions to promote Ireland as an oil and gas exploration country formulated in various policies (DCENR, 2015). At the time of writing gas infrastructure developments fall within the SID regime under the Planning and Development (Strategic Infrastructure) Act, 2006. The following section will highlight feedback from interviewees informing on dispute issues arising from the development process of the different technical components.

5.3 Multidimensional project timeline

As a result of document analysis and feedback from interviewees a multidimensional project timeline was developed (Fig. 5.4). As an integrating element of the governance workshop in May 2015 participants informed on key events that led to the exploration of offshore hydrocarbons in Ireland (top row, Fig 5.2). Subsequent feedback from interviewees and document analysis were used to compile events that led to identification of the issues in dispute across the governance domains established (rows 2-4, Fig. 5.2). Importantly for the emergence and progression of the conflict, three eras can be identified. The *first* was the process of *creeping realisation of project size* (from field discovery (and beforehand) to the planning permission for the terminal, 1970-/1996 – 2001) by the public and non-project-participants, the *second* was the *severe conflict escalation* (from construction at terminal side to jailing of local citizens, 2001 – 2005) and the *third* was the era *from escalation to diffusion of tension* (from independent mediation to project commissioning, 2005 – 2016).

5.3.1 Era of creeping realisation of project size (1970-/1996 – 2001)

In 1970, major technical advancements allowed drilling to commence in the Atlantic for the first Irish exploration well. Eight years later this led to the commissioning of the first gas field in Irish waters, the Kinsale Gas field. Since 1987 the decisions around unsubstantiated favourable corporation tax and licensing terms became a source of debate, when Minister for Energy Ray Burke T.D. introduced new licensing terms. The State abolished royalties and provided for 100 % tax write-offs for exploration and development costs. In 1992, the then Minister for Finance Bertie Ahern T.D. introduced corporation tax cuts on hydrocarbon profits from 50 % to 25 %. Insinuations of bribery and corruption ensued in the media. In 1993 Enterprise Oil was awarded an offshore/deep-water exploration licence for block 18/20, which contained the Corrib gas field. Twenty-five years after Ireland's first discovery, the Corrib natural gas field was discovered in 1996.

5.3.2 Era of severe conflict escalation (2001 – 2005)

A number of consents and approvals for the Corrib Gas terminal and the offshore components were issued between 2001 and 2004. In early 2001, after extended consultation over a modified route and six years of contentious community opposition, the onshore pipeline was ultimately approved.

In late 2000 a planning application was submitted for an onshore terminal to Mayo County Council (MCC). In January 2001, the Council sought more information after concerns of local citizens were raised. In April a new application was submitted. In July 2001, a meeting was hosted by the then Minister for the Marine and Natural Resources informing on the offshore licensing process. In August 2001, MCC approved the application with conditions. Several appeals by local residents were submitted. This could only be done to the independent planning authority. In February 2002 ABP opened appeal hearing for the terminal. Subsequently, planning permission for the terminal was refused following a report of a senior planning inspector of ABP. Again, the Minister for the Marine and Natural Resources intervened by stating that this refusal was just a mistake (Siggins, 2010). In June

2002, ABP sought further information on the terminal from the consortium. After the consortium submitted a new planning application for the terminal in December 2003, MCC approved the new application; ABP finally approved it with forty-two conditions (Siggins, 2010). At this time many interviewees expected that with this decision the entire project was indefinitely carved in stone.

Opposition occurred due to safety and environmental concerns, insufficient flow of information, limited opportunities to intervene into the planning process and a perceived lack of benefit for the local community. In contrast, the connection to the Irish gas grid via a pipeline from Mayo to Galway through sites designated under the Habitats Directive was completed by a State owned company with only little interventions between 2004 and 2007. Interviewees in the area believed that this was due to perceptions that the Ireland based Bord Gáis Networks, which developed this component, was trusted in the region and even the country. The planning process for this part of the infrastructure could be a subject for follow-up analysis and studies on governance dynamics from the perspective of industry developers versus State developers.

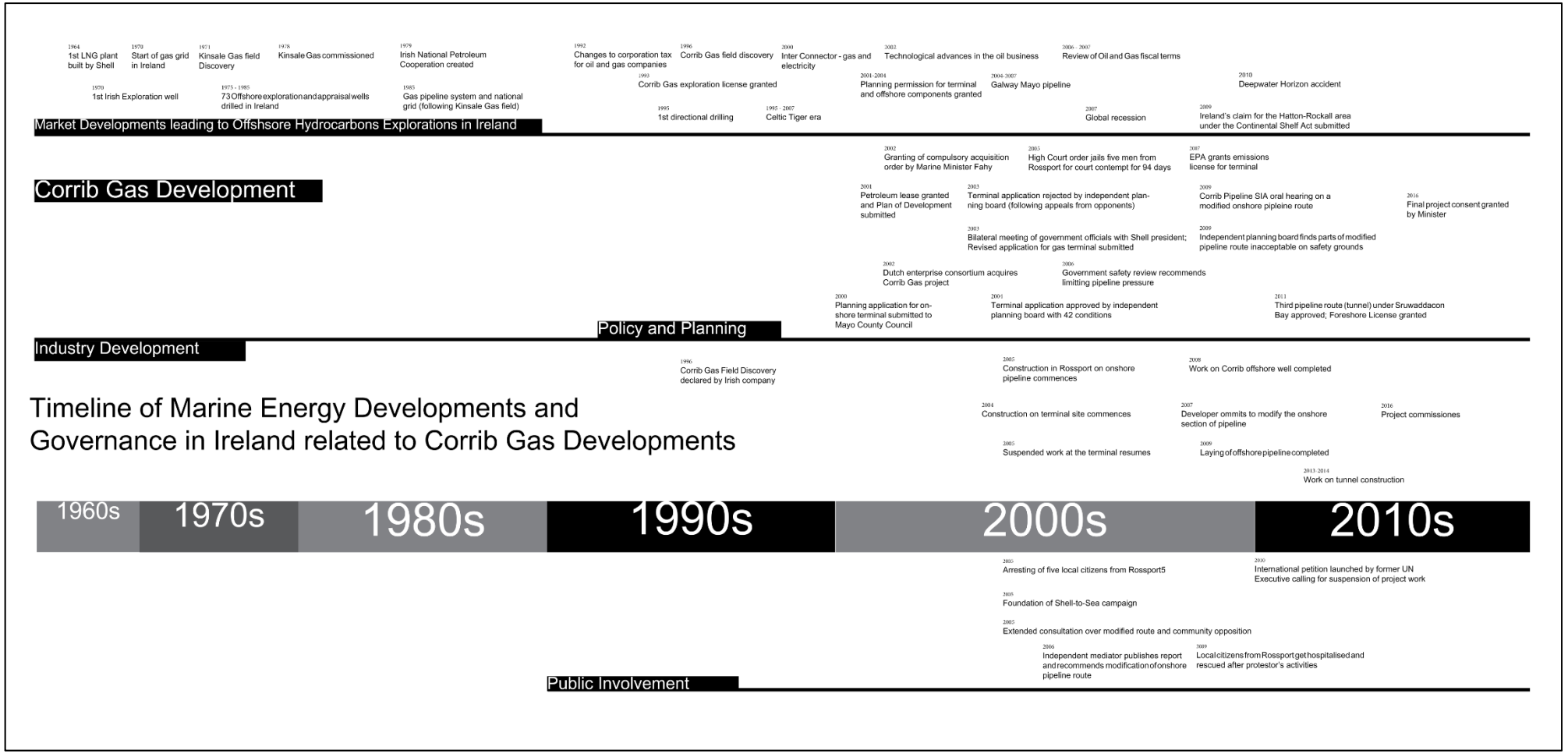

Figure 5.4: Timeline of key events leading to Corrib controversy distinguishing eras and key events across established governance domains and highlight events that are relevant to understand the context for marine governance in Ireland (upper section, first row)

The second row of the timeline (Fig. 5.4) highlights key events in the context of *policy and regulation*. From a local community perspective the granting of a petroleum lease granted under the Petroleum and Other Minerals Development Act, 1960 back in autumn 2001 and the subsequent submission of a Plan of Development for the gas field mark decisive turning points. Both were granted and approved by the then Minister for Marine and Natural Resources Frank Fahey T.D., which came with the granting of a Compulsory Purchase Order (CPO) in 2002. It allowed the consortium to have access, to and use of, local land-banks and private property in order to install the pipeline. In April 2002, a Dutch consortium acquired the project and started to manage construction and operation. In October 2004 planning permission was granted to build the terminal after the previous application had been rejected by the independent planning board in 2003, following appeals from local opponents. By the end of 2004 all three technical elements received full regulatory approval.

From 2004 until summer 2005 the situation escalated, when *industry development* of the onshore pipeline in Rossport and construction on the terminal commenced. Following a court injunction, five protesting farmers (known as the "Rossport 5") from Rossport (Kilcommon), who feared their property was in danger from the construction and operation and related operations, were jailed. They, as well as other local opponents, had genuine safety concerns due to close proximity to the pipeline pumping unprocessed natural gas under high pressure to the terminal. This incident deteriorated the relationship between the consortium and the community sharply.

In general, timeline entries relating to *civil society* (fourth row, Fig. 5.2) only appear after 2005. This was due to the fact that the public had become aware of the project and the planning relatively late. Only in April 2000, did the first notices on the Corrib Gas project appear in Mayo newspapers. This provided an impression that the public was being misguided by an insufficient flow of information and one-sided reports. The role of media gained increasing attention in the course of the controversy. The whole media debate would require detailed analysis. Due to limited time in the course of this study, the role of media was not considered in greater depth, however, it should be explored within follow-up studies. Figure 5.5 highlights some of the

headlines that made the newspapers, websites and pictures of protestor's slogans in relation to the public awareness of the events.

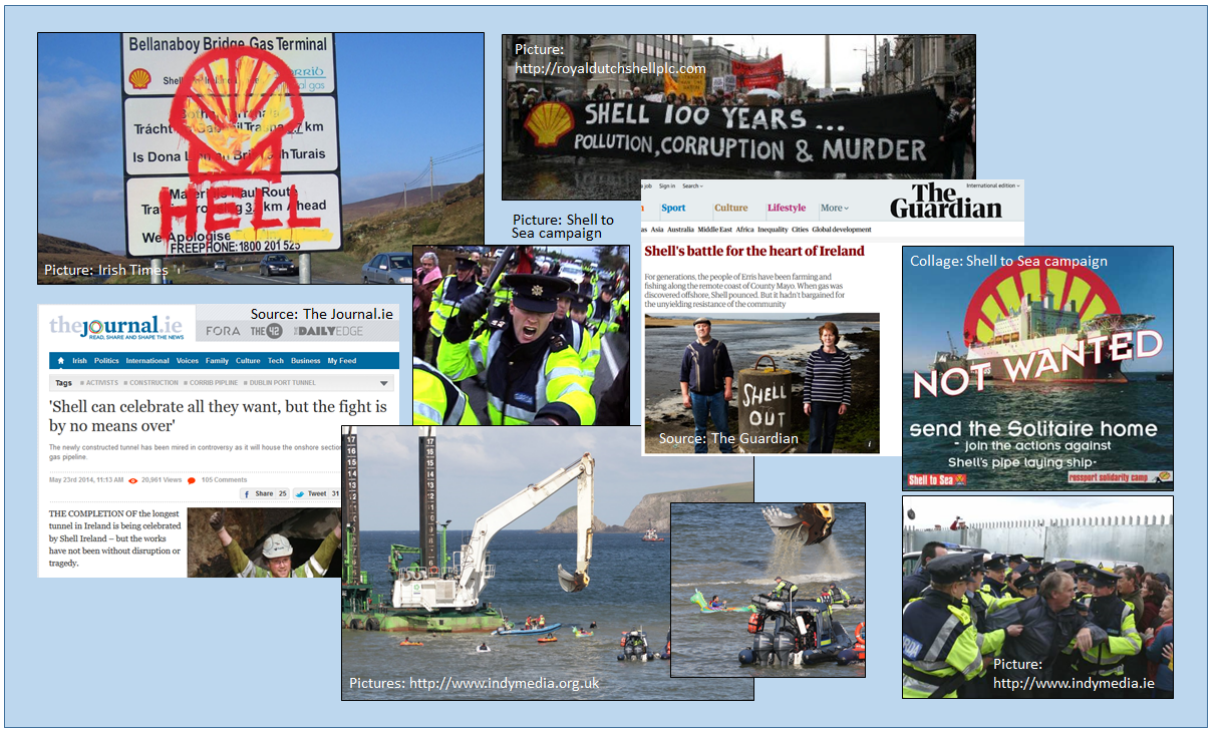

Figure 5.5: Headlines made in newspapers and on websites that were reactions to the Corrib Gas project developments

5.3.3 Era from escalation to diffusion of tension (2005 – 2016)

This era marked the turning point in severe emergence of the conflict. In 2005 the government decided to appoint an independent mediator to mediate developer-community relations and to find a solution for the routing of the pipeline over private land. In summer 2006, Peter Cassels was appointed as mediator by the government and agreed to by both extreme opponents and the developer. He had a background in political administration and was former General Secretary of the Irish Congress of Trade Unions. He worked as independent consultant and mediator in several conflict cases and is now working in academia. As part of the process, he published a report which included a recommendation to find a modified route for the onshore pipeline component (Cassels, 2006). In addition, Cassels recommended that the community be provided with a significant financial benefit. A safety review

made sure that the pressure in the onshore section was reduced from 345 bar to 144 bar. It was further decided to lay the onshore pipeline in a tunnel underneath Sruwaddacon Bay. A community benefit scheme was set up to compensate the community with financial benefit. Still, in 2009 local citizens from Rossport got hospitalised and rescued after protestor's activities. In 2010, an international petition was launched by former UN assistant secretary general Denis Halliday calling for development work to be suspended. By the end of 2016 the project was commissioned with costs topping € 3.6bn, which was more than four times the original estimate of € 800m. Community benefit schemes terminated when the project was commissioned. To date, in terms of strategic importance, the Corrib project represents Ireland's largest ever energy investment (Shell E&P Ireland Limited, 2014).

5.4 Perceptions of dispute issues

The detailed analysis of stakeholder perceptions of dispute issues is highlighted in the following. The governance domains established in Section 2.2 (see Fig. 2.1) are used to elaborate on the different perspectives of those involved in project implementation, namely from *civil society*, *government* and *industry development*. Section 5.4.1 provides additional insights into the interview study, the setup and material used for further analysis (see also Section 3.1). Section 5.4.2 is an issue-led section and highlights results from further analysis. In this regard, empirical processing of the interview material allowed for the identification of key issues raised by stakeholders in relation to their perception of governance. This analysis was based on a limited quantitative approach. This section as well as the subsequent sections will be substantiated by selected quotes from participants. The subsequent section drills into the distribution of issues mentioned across governance domains (Section 5.4.3). The final Section 5.4.4 of the chapter provides detail on stakeholder perceptions by providing evidence of key issues substantiated by responses (anonymous quotes) from individuals.

5.4.1 Interview study

The analysis was based on responses from 44 interviewees. These include local community members in County Mayo (N=24), industry leaders (N=14) and government officials (N=6). Amongst these are senior officials from local government (N=3) and central State government (N=3). In terms of gender, 15 of the interviewees were female and twenty-nine were male. Figure 5.6 lists the numbers of interviewees and the gender balance. For detailed information on interview numbers and group discussions see Section 3.2.1 (Table 3.2).

Governance domain	Profile/community cohort of interviewees and participants of group discussions	Numbers
Civil society	Moderate opposition, general public	5
(local community County Mayo)	Advocacy	4
	Extreme opposition, activists, lawyers	15
	Subtotal	**24**
Industry Development	Industry leaders in the energy sector, developers, CEOs in the offshore gas and oil and marine renewable energy sector, lawyers	14
	Subtotal	**14**
Government	Senior officials from local government, semi-state and connected agencies	3
	Central government officials, departmental staff, civil servants	3
	Subtotal	**6**
Total		**44**

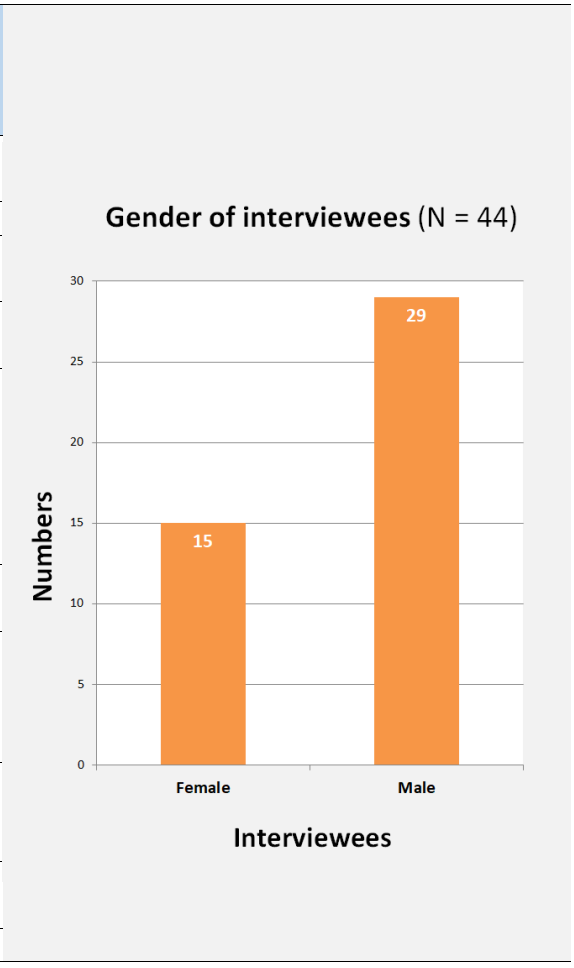

Figure 5.6: Profiles and community cohort of interviewees and participants of group discussions, their role in industry development, government and civil society and gender balance

The analysis was tailored to assess the distribution of issues mentioned by all respondents according to decisions made at various stages of the planning with an

impact on civil society. The assessment was based on the absolute number of respondents who mentioned a particular issue. All mentioned issues were taken into account. Weighting the issues for further analysis was done using only those issues that were mentioned by more than two respondents. Stakeholders in the case study area were asked about the barriers to project implementation, the role of government, industry development and civil society input to the planning of the Corrib Gas project. The analysis was done by coding systematically and grouping qualitative data arising from transcribed responses.

5.4.2 Dispute issues in relation to perception of governance

This section flags the key issues raised by stakeholders in relation to their perception of governance. Figure 5.7 highlights the issues, the total number of indications (see number on top of each bar) and the percentage of stakeholders mentioning the issues. The 'permitting framework' that is perceived to be 'not fit for purpose' and 'expressions of low trust and political dissatisfaction' represent the strongest overall categories (64 % each), followed by a 'fundamental misunderstanding of the local perspective' and 'lack of communication, transparency and information' by the industry developer (43 %). Amongst limited information on the extent of the project this issue also included public's perception of the developer's unwillingness to translate technical language into formats easily understandable by the citizens and to provide support with key challenges arising from project developments.

Concerning the importance of the developer, roughly half of the respondents perceived the enterprise consortium as 'the developer' that handled the management of construction and operation. Others saw the consortium in tandem with government as 'the developer'. Interviewees stating the latter perceived the government as a facilitator of the company's interest and its plans rather than safeguarding the interest of the local public. Other important issues related to the 'management of conflict not meeting local expectations' and project splitting and disjointed decision-making' (39 % each). The first of these two issues referred to disappointment of respondents from the local community at the way the conflict

was dealt with by the developers, both from industry and government. In this context, advocates and opponents believed that the conflict has neither been managed nor the issues been reconciled. Issues mentioned less frequently are 'project deadlines overriding public needs and expectations' (16 %), the lack of a 'thorough non-technical risk assessment' and a 'fair distribution of compensation' (9 % each).

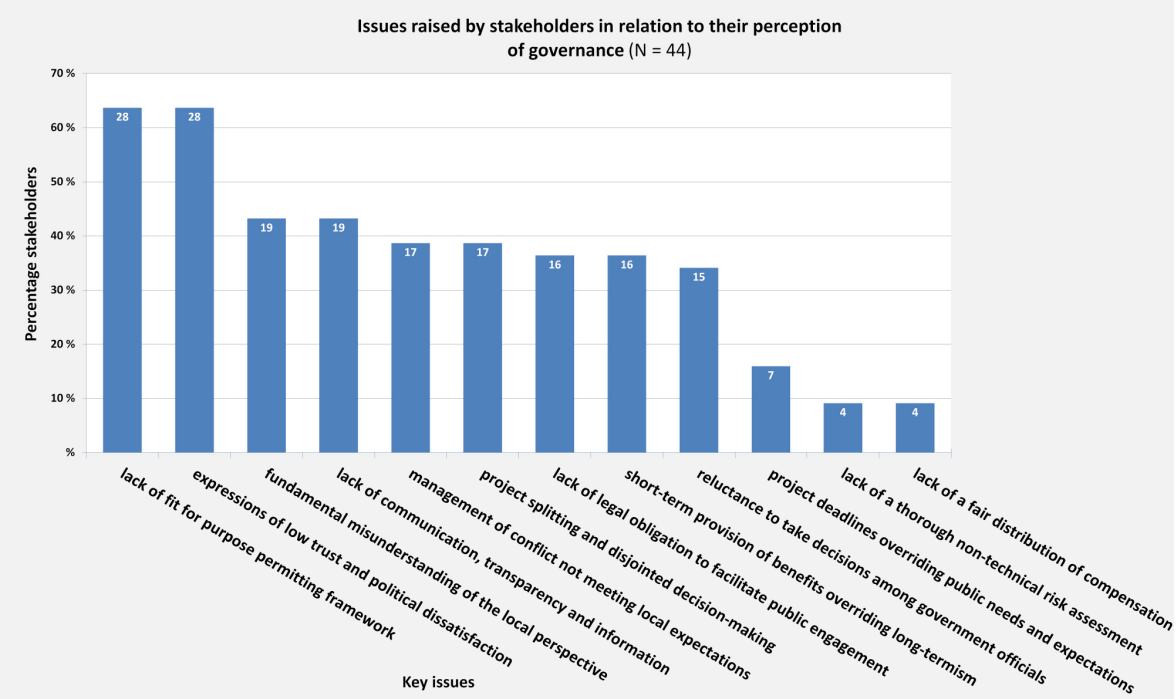

Figure 5.7: Key issues raised by percentage of stakeholders mentioning those issues

In the following section, the distribution of dispute issues mentioned by stakeholders across governance domains, namely from civil society, industry and government will be highlighted.

5.4.3 Distribution of dispute issues amongst stakeholders and governance domains

This section features the distribution of mentioned issues raised by stakeholders across governance domains (see Fig. 5.8). The mentioned issues will be

substantiated by quotes (see italic paragraphs) from interviewees. The previous section highlighted the 'permitting framework' as a key issue that, together with the expressed issue of 'low trust and political dissatisfaction', was frequent than all issues raised (each, 28 in total). It is an issue that refers to the rules by which decisions are made and what terms of conditions are applied at policy and planning level. The underlying process has been highlighted in Section 5.2. Significantly high is the share of those from *civil society* who expressed 'low trust in developers' decisions and political dissatisfaction' (28 in total, civil society 21) and those from *industry development* who stated that the permitting for the project was 'not fit for purpose' (28 in total, industry 13). Industry developers emphasised that the process was convoluted and that there was no such thing as a one-stop-shop for consistent planning. Two interviewees voiced their concerns with regard to that issue:

> *"The way the Corrib project has been brought about would lose a lot of companies potentially investing. We seem to be very restricted by regulation in this country. No straight line, no one-stop-shop."*

The fact that the Corrib Gas infrastructure was 'split into three major components' likewise was often mentioned as an issue mentioned by industry developers (17 in total, industry 11). Concerning the issue of trust, *civil society* interviewees voiced two subordinated issues: The *first* were 'unsubstantiated claims of corruption' within government-industry affairs and the *second* general 'suspicions towards central government'. In this regard, some respondents commented directly on the role of government officials, by stating that "politicians are corrupt" (anonymous quote). One interviewee elaborated on that issue and provided information on the perceived emergence of the issue:

> *"The problem was compounded because […] in my view Ireland culturally has much more of a southern European feel to it than a Northern European feel. That is partly historical, partly religious, partly a history of resentment against what was viewed as 800 years of occupation by a foreign power. […] What that did mean is that central government and politicians and institutions are viewed with a tremendous suspicion and don't have a great deal of authority or unquestioning respect. And especially in some of the communities on the Western side of Ireland, which exemplifies that; And Mayo is probably the community or*

> *the county that exemplifies that to the greatest extend. On the legislative side a particular issue emerged was that […] Ireland has an issue with corruption, colonialism; And particularly in the planning process that was definitely the case."*

Particularly interviewees from *civil society* mentioned second most often the fact that 'communication, by the developer, was lacking and information towards greater transparency was missing' (19 in total, civil society 13), that 'short-term benefits were provided through compensation rather than long-term benefits' (16 in total, civil society 13) and that 'government officials were reluctant to take decisions' (15 in total, civil society 13). Several *civil society* members mentioned the way the 'conflict has been managed did not meet local expectations' (17 in total, civil society 9). Referring to this interviewees opposing the project expressed that they were not *per se* against the exploration of hydrocarbons. However, they explained that the way industry developers and government managed the conflict was not tailored to meet the specifics of the place.

> *"I am in favour [of hydrocarbons] yes but consultation between locals and government and company developers is very very important from the beginning because people need to understand it. Otherwise those projects get stuck. E.g. noise levels, those need to be modelled. Sure there will be people who listen to anything, the 'die hards', but still it's all about consultation and education."*

Commenting on the role of government people stated that it neither reconciled project issues nor did it try to understand the community and to draw valuable lessons learned from short cuts and flaws. In terms of informing the public and the role of the government one interviewee stated:

> *"The biggest issue in the project was the lack of information. Upfront the government is not very good at engaging in the community. Government decisions seem to be slow, government neither likes to change, nor is it very open."*

Particularly g*overnment* officials recognised 'expressions of low trust and political dissatisfaction' (28 in total, government 5) and a 'fundamental misunderstanding of the local perspective' (19 in total, government 5) as key dispute issues. They stated

that early communication and listening to the people of the place were crucial to allow local contextualization, which did not happen. Particularly two local government officials emphasised that the industry developer missed listening to the public and assessing needs and people's expectations. These arguments were substantiated by quotes:

> *"If you bypass the local context you are getting in trouble."*
>
> *"I felt for some reason that that this project seemed to be lacking an Irish dimension."*
>
> *"For me the whole lesson is, don't ever allow yourself to get into this situation. Once the trust is gone like that, it takes you huge efforts to regain it. Once you lose that licence to operate, it takes an enormous effort to turn things around. […] In terms of lessons for the future and governance, how to avoid getting into such situations?"*

Smaller numbers of government officials in particular recognised that there was a 'lack of fit for purpose permitting framework' (28 in total, government 4) and that 'regulation lacked obligations to facilitate public engagement' (16 in total, government 4) and specifically to address people's concerns. The latter issue was also mentioned by an industry developer, who was closer to the local community. The person explained that the planning process did not allow people to disagree with the initial plan and elaborated on the issue in greater detail:

> *"Engagement with people is very important, up front and initiating engagement. But there has to be a clear system and process in place, for people to disagree, for every aspect."*
>
> *"Generally speaking the regulatory environment [in other environments than Ireland, such as Northern Germany, Denmark or The Netherlands] facilitates development and it tries to make it as straight forward as possible, while absolutely addressing legitimate concerns. It is not there to enable developments to take place over the wishes of the community. But there are established protocols to make it happen in a way it makes sense. In Ireland, in my view what you had was on the legislative side […] you have an environment where the legislation is completely fractured. You are dealing with a number of different*

> *departments some of which are better equipped than others to deal with this. However, fundamentally you don't have a legislative framework that is fit for purpose. And you are trying to shoehorn what is a major infrastructure project into, in some cases, planning laws that we do are designed for developments of shopping centres or housing developments and you try to put a major industrial development within that."*

He also emphasised the rural characteristics of the area and criticised that the developer did not assess the impacts of the project and its economic activities on the local community. Whilst talking with people in the community about this issue, individuals revealed that the community never had a problem with gas, but managing it safely and providing the community with sufficient long-term benefits were missing key principles.

> *"I would be in favour of explorations of hydrocarbons, if are done properly with no short cuts and safety in mind etc. of course."*

Whilst Government officials were less concerned that 'compensation was distributed amongst stakeholders in a fair manner', community members raised concerns about compensation procedures:

> *"Compensation is only valuable when it is based on a fair system. If people are directly affected they should be compensated. Compensation is a dangerous situation to get into."*

> *"Compensation was payed on a case-by-case basis and the rules were not transparent or clear. This caused a lot of mistrust."*

In general, the issues mentioned by government officials spread fairly equal amongst all issues (see Fig 5.8).

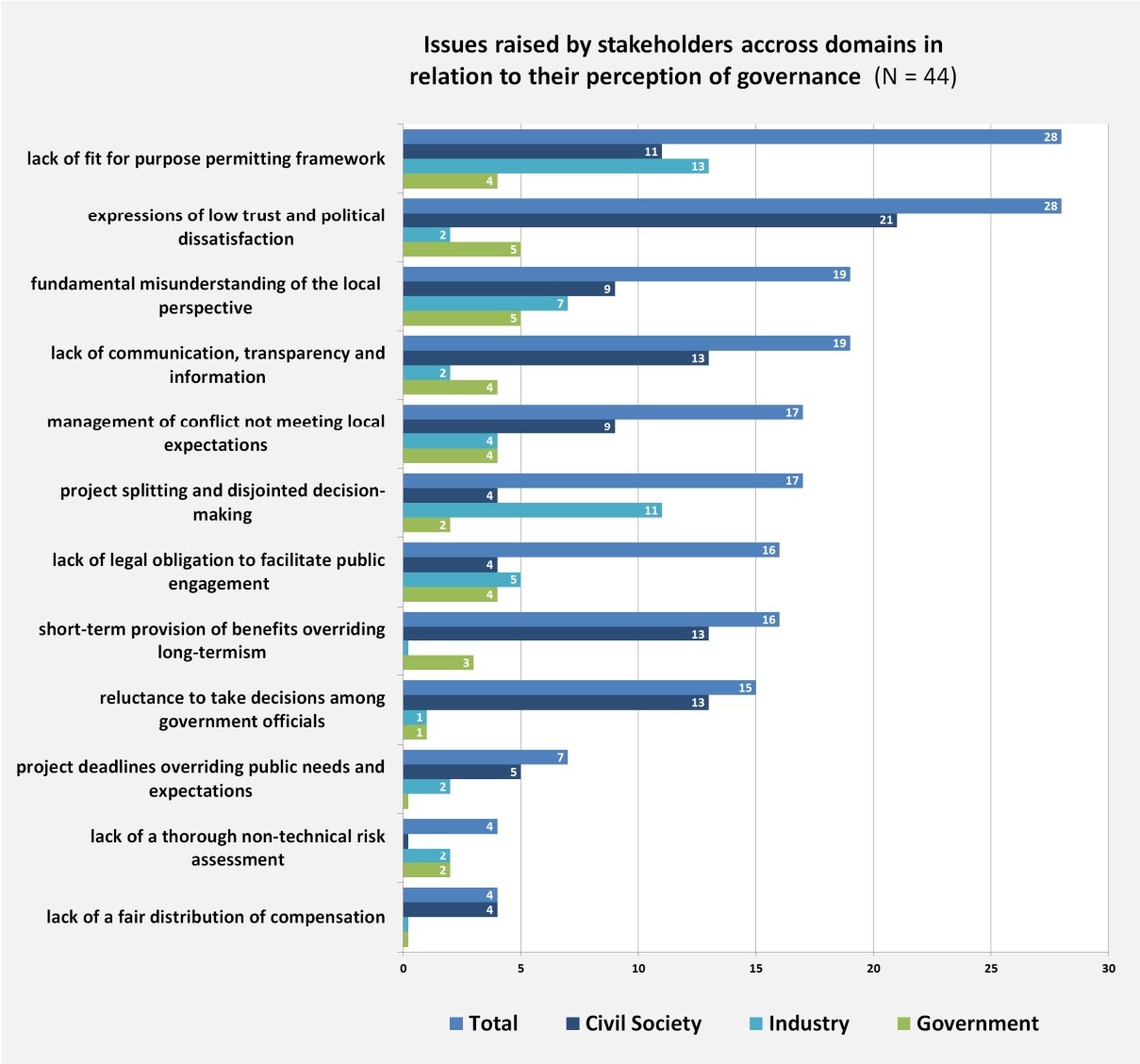

Figure 5.8: Key issues raised by interviewees across governance domains

Unanimously, stakeholders across all domains mentioned the 'fundamental misunderstanding of the local perspective' as a dispute issue (19 in total, civil society 9, industry 7, government 5). By way of an example, stakeholders had observed that only after intense external intervention and facilitation of an independent mediator in 2006 the industry developer constituted measures that stressed the provision of local economic benefits and enacted stronger engagement in the community, such as visibility of senior staff from central management of the enterprise in the area. Interviewees favoured this visibility nevertheless they criticised that until then the developer expressed disinterest and a fundamental misunderstanding of the local perspective.

In the following, detailed perceptions on key issues will be given and substantiated by responses from the local community and the other stakeholders.

5.4.4 Detailed perceptions of dispute issues

The analysis of detailed perceptions of dispute issues showed that lead responsibility for managing key issues spreads more or less equally amongst government and industry. This is reflected by the predominant number of key issues and their distribution amongst responsibility by government and industry developers. Referring to this, the author listed the key issues identified and guessed who had main responsibility in managing them. Table 5.2 shows the results of this assessment. It highlights the dispute issues and domain(s) that had the lead responsibility for managing the issues. The outcomes of this analysis will help to discuss the issues in light of the new governance model established in Chapters 7 and 8. This is needed in order to understand at which level in the governance process the issues evolved.

Table 5.2: Dispute issues and domain(s) that had the lead responsibility for managing related affairs

Dispute issue	**Governance domain(s) with lead responsibility for managing issues**	
	Industry	Government
lack of fit for purpose permitting framework		x
expressions of low trust and political dissatisfaction		x
fundamental misunderstanding of the local perspective	x	
lack of communication, transparency and information	x	x
management of conflict not meeting local expectations	x	x
project splitting and disjointed decision-making		x
missing legal obligation to facilitate public engagement	x	x
short-term provision of benefits overriding long-termism	x	
reluctance to take decisions among government officials		x
project deadlines overriding public needs and expectations	x	
lack of a thorough non-technical risk assessment	x	
lack of a fair distribution of compensation	x	
Total number	**8**	**7**

In this context eight issues were managed by industry whereas government was responsible in managing seven issues. In some cases, such as public engagement, both parties have responsibilities. In the following section, detailed accounts of stakeholder perceptions of dispute issues in the course of planning will be highlighted. *First,* the perspectives from civil society, *second* from industry development and, *third* from government will be emphasised.

5.4.4.1 Issues raised by civil society interviewees

A significant number of *civil society* respondents (21) expressed 'low trust' towards the developer and 'strong political dissatisfaction' as a major dispute issue. In this regard, perceived issues with corruption in central government weigh strongly. A few interviewees referred to non-transparent decisions at the central government level, which in their opinion had historical foundations. Interviewees stated that central government and government institutions as well as most of the politicians are viewed with suspicion and are typically not credited with a great deal of authority and respect. Some respondents did not believe that government officials had sufficient expertise to deal with complex issues in government decisions.

> *"I think in Ireland part of the difficulty is the government is weak, it is distrusted, its processes are out of date and complex and even when it wants to try and provide influence it is constrained from doing so from some of its structures. And that I think was one of the issues particularly when it came to the hearings of the pipeline".*

One respondent stated that by focussing on the role of civil servants:

> *"Understanding the Irish culture means acknowledging that complaining means accountability and civil servants are not accountable."*

Another interviewee pointed out the role of those at central government level that were in power and stated that Ireland consists of many small kingdoms that are steered separately, e.g. county by county. The ones who were in power would decide in favour of their home County. Examples like this were repeatedly mentioned as

reasons for low trust in government and political dissatisfaction, which on the other hand weakened willingness to participate in the political process.

Interviewees believed that by focussing the issue on specific events in planning history, they strongly evolved from developments between 2001 and 2005. At that time approvals for single technical components were granted. Thirteen respondents stated that the process 'lacked communication, transparency and information'. An additional seven interviewees stated that the developer always kept a clear focus on the initial plan and aimed at meeting project goals and deadlines without paying attention to local concerns referring to safety and environmental risks. One interviewee stated and suggested:

> *"Just through engineering arrogance and obsession with timeline and project delivery it can screw things up quite frankly. And I think this is one of those cases it really do screw things up. I think it [the company] had a real opportunity when it took over Enterprise, if it did really assessed Corrib properly and did a proper risk assessment on Corrib it would have realised that this was a real opportunity to actually go into the local community and say 'We know how Enterprise approached the project, we are Shell, we do things differently, we would like to take a fresh look at this, we would like to reengage. […] It could have been a different setup, it could have been a different opportunity."*

The developer did not meet expectations of the local public. One respondent went even further and stated:

> *"The political system at that time was designed to "circumvent issues in order to facilitate the plan of the enterprise consortium."*

In this context, other interviewees from the public stated that government decisions were often made within "old boys' networks" (anonymous quote). They believed that either wittingly or unwittingly a system in responsible government offices was established that was built on networks and family relations rather than promoting those with the best skills. In this context, some respondents allowed insights into Irish governance history and decisions made by the then Minister for Energy to justify the breakdown of relationships. As mentioned previously, in 1987 the Minister changed the fiscal terms for new oil and gas explorations and reduced the

State's shareholding of any offshore oil and gas discovery in Irish waters from 50 % to 0 %. This allowed the government to incentivize companies with a more or less 50 % reduction cut off from 50 to 0 % tax claim on exploited gas. Later in his career the same Minister was convicted and imprisoned on charges arising from political corruption in office. Based on the tax framework, the then Minister of Finance and later Taoiseach (Prime Minister) (from 1998 to 2008), changed the fiscal terms again in 1992 and brought cooperation tax down from 50 % to 25 %. In case of the Corrib Gas project these royalties were supposed to be worth up to € 10bn. Taking into account tax payoffs for exploration costs in relation to the lifetime of the project the State would gain nothing from earnings from the Corrib Gas project. Respondents believed that by establishing this tax framework, natural resources were taken out of the ownership of the Irish citizen. They believed that these examples showed that politicians in general were bribed. Most of the interviewees were fully aware of these circumstances and the decisions made at the particular planning stages. It appeared that some vocal activists, opposition members and the media shared supposed facts on hidden decisions made behind closed doors that immediately scattered within the community.

Within interviews and informal conversations discussion respondents often believed that politicians in Ireland "appear to be very peculiar" (anonymous quote). Related issues should be subject to future study. This is due to the fact that none of the politicians involved in early decision-making of the Corrib Gas project were interviewed in this study. After a few un-answered interview requests sent to senior officials from government responsible at that time it was decided to keep focus on broad dispute issues. Certainly it happened that interviewees knew responsible ministers and officials in person and had worked with them. The interview impressions supported an understanding that issues relating to non-transparency strongly evolved again from the developments of the years 2001 to 2005, when approvals were granted for the single components. Interviewees drew connection to the issue of 'project splitting', which they saw as a major reason for the conflict.

Interviewees stated that project management of the Corrib project was non-transparent and did not follow clear and replicable rules. Rather respondents perceived decisions between central government and the industry consortium as

made behind closed doors. They further believed that a decide-and-announce approach was predominant, which did not leave much space for interventions and changes to the initial plan. This included a clear focus on going along with the initial plans, to achieve project goals and meet deadlines.

Another issue that is closely linked to the issue of trust was repeatedly mentioned by respondents from *civil society*. The notion of suspicion towards government refers to a lack of transparent decisions and the Ministerial Order taken in 2002 by the then Minister for Communications, Energy and Natural Resources. The decision laid the foundation for granting the gas-processing terminal. Whilst the terminal was planned on a site owned by the state forestry company, the initial permission was granted without public engagement. Respondents criticised the political vision in favour of the exploration of indigenous gas resources and the regulating power of the government by means of the Ministerial Order. This led to mistrust in the government from the outset of project planning. In contrast they emphasised the separation of the decision-making power and the regulator. One interviewee stated:

> *"Because there wasn't that necessary separation in the Department, it meant that the original permission and that would have happened elsewhere, was granted as a Ministerial Order, - what they call an offshore licence. Again, you will say in terms of governance, a very risky procedure, because people are always going to believe that it was somewhere always going to be politicised. Right from the beginning this mistrust was there."*

The CPO granted to the project consortium and the leading enterprise in particular was mentioned repeatedly. It led to the jailing of five farmers. Imprisonment was for contempt of court over continued protest and particularly obstructing exploration and construction work on their property. Respondents agreed that the decisions having led to this were taken behind closed doors. Rather than addressing people's concerns and the needs and expectations of the public, policies were in place that steered outcomes towards central government's decisions and the mutual interest of the private investor. Detailed perceptions were voiced by several interviewees who described the political system as one that was designed to circumvent issues in order to get where the company needed to be, rather than addressing publics' interests and people's concerns.

Thirteen interviewees from civil society referred to the 'reluctance of government officials' to take decisions, and emphasised a necessity for the government to take decisions that are made in the interest of the country and its citizens.

> *"The whole government approval process was so complex and convoluted and also that there seemed to be so little willingness on the part of the government to become directly involved as a participant in this strategic important project."*

> *"So how do you balance progress in that sense where we need a sewage treatment in place but where did you place the discharge pipe where you affect other people with the aquaculture? … So everyone's concern has to be taken on board but then someone has to make the decision and stand up and say we understand the concerns but this is what we going to do to create and prevent your concerns."*

> *"Companies have cut back the budgets on that. Our own Government doesn't seem to be really hitting it with full endeavour to put money into it."*

By way of example one interviewee strongly criticized the planning system and the local county council for not supporting action for small scale local developments. In contrast, approvals for private developments at scale on private land were passed quickly. This was because those developments that qualify as 'strategic infrastructure' are administered under the Planning and Development (Strategic Infrastructure) Act, 2006. This was established to expedite decision-making for nationally significant infrastructure.

The role of the local authority in granting planning permission for the terminal in 2004 was mentioned earlier in a different context but can be unravelled here. The terminal decision was backed by the then Minister for the Marine and Natural Resources who had approved the Corrib Gas Field Plan of Development two years previously in 2002. Opponents looking back into the evolution of the decision argued that after having made the decision, the entire project was indefinitely carved in stone. They agreed that alternatives were not considered adequately and proposals by an activists group to process the gas offshore, and to use an alternate location for the terminal, were neglected. Respondents believed that the developer followed its plan to connect the offshore well with the terminal regardless of local

concerns and claims to provide the community with shared benefits. As a result, preparation for construction of the onshore pipeline started in 2005.

Respondents from *civil society* were the second largest group unveiling a 'lack of fit for purpose permitting framework' as a key issue (11) (see Fig. 5.8). They stated that industry developers were restricted by regulation and therefore suffered from uncertainty in pre-planning of projects. As an example, a local business owner stated that there was no clear definition of what economic activity would be allowed in particular areas of the sea. This particularly applies to activities that are not compatible with each other, as for example laying of a pipeline in vulnerable fish spawning grounds.

> *"There doesn't seem to be a cut and right definition of say for instance you are allowed to build a pipe in this section of the water, but is the fisherman also allowed by his licence to fish in that area as well?"*

The same interviewee questioned, who was actually making the decision.

> *"There is no consistency, e.g. you can ask someone, say a minister, he has worked for a couple of years but then, all of a sudden, he is looking for an exit strategy. So, my problem all along is which I would like to find out: Who actually makes the decision? Is it the civil servants that are based in each Government Department?"*

The statement assumed that civil servants have a strong decision-making power, but concerns were expressed over political interests that are influenced by short-term political priorities. Project splitting was also mentioned as a regulatory issue causing uncertainty for developers.

5.4.4.2 Issues raised by industry interviewees

Section 5.4.3 identified that *industry* representatives were mostly concerned with the 'lack of a fit for purpose permitting process' (see Fig. 5.8). Thirteen individuals provided statements that the permitting process beyond SIDs was based on unclear rules with no fixed deadlines for the regulator to make decisions. Developers

claimed that the legal framework was outdated and did not provide clear guidelines to follow. Decisions were subject to delays, statutory approvals were often complicated and decisions were divided between different decision-making bodies.

> *"I think our regulatory structure is weak… and is probably over influenced by protection rather than by development. […] I think we take it a safety end rather than at the middle end. That costs, and if you put too much costs into regulation your economy dies. Now, in other areas we have no regulation so our system is weak at both ends: where we have regulations we tend to overregulate and where we don't have regulation we have zero regulation. When we have weak regulation, we have weak implementation of the regulation".*

However, another interviewee favoured the establishment of the SID regime:

> *"Ireland set up An Bord Pleanála, which was designed to really provide a black box almost a mechanism for dealing with planning considerations on major projects, which could not be interfered with either through corruption or through government influence or through other sort of input. It was meant to stand alone to be absolutely impartial."*

Respondents linked this argument particularly to the issue of 'project splitting and disjointed decision-making' and identified the issue as major root-cause for the conflict. Eleven industry representatives (17 in total) mentioned this issue. According to one industry interviewee, the Irish process had no equivalent with other Northern European countries, such as the Netherlands, Denmark and Germany, where the planning system is better aligned to facilitate major infrastructure, and where people and communities are used to coping with the consequences. In Ireland things were quite different as the Corrib Gas infrastructure was the largest energy infrastructure of its kind to date.

> *"In Ireland, in my view what you had was on the legislative side […] you have an environment where the legislation is completely fractured. You are dealing with a number of different departments some of which are better equipped than others to deal with this. However, fundamentally you don't have a legislative framework that is fit for purpose. And you are trying to shoehorn what is a major infrastructure project into, in some cases, planning laws that we do are designed*

> *for developments of shopping centres or housing developments and you try to put a major industrial development within that."*

Another interviewee stated that the governance system at that time did not allow people to disagree. Developers and opponents observed that in some cases meetings were set up with groups of extreme opponents and groups of advocates of the project separately. Opponents were seen as those constantly arguing against the project whereas advocates voice a more balanced perception of governance challenges and economic opportunities. Contradictory discussions arose that the developers wanted to avoid conflict situation in which both groups meet and discuss the issues. One interviewee tried to provide some context on that issue:

> *"For me it was a fundamental misalignment in terms of how the project was being driven and the lack of engagement on the ground at that stage […] and the trust element had been severely damaged. The community was deeply fractured and even for people who may have supported the project there was an understandable reluctance to be seen to be publicly identifying with that because in Irish culture that is a very strong element; you do not as you are betraying your neighbour to outsiders."*

Irish legislation at the time did neither address people's concerns nor did it facilitated public engagement as a streamlined element of an integrated process, which was seen as a prerequisite for acceptance and trust by one interviewee.

> *"The level of trust towards local development authorities and the government would be medium. If there is a policy in place of consultation (engagement policy) before anything then I would have more trust."*

A vast amount of licences was issued but none of those addressed facing the social impacts and concerns of the people of the place. Another developer stated that there was a disconnection in Irish planning between issues relating to industry development and civil society issues. The person identified this gap as a major reason for the dispute.

The developer treated community concerns as "above ground risks" (anonymous quote) and focussed project management solely on being compliant with the prevalent regulation. This means that it discounted stakeholder engagement as

routine work. One interviewee explained the issue from his perspective in more detail and made suggestions:

> *"The understanding of the community from day 1 was probably not considered as well as it could have been."*
>
> *"Concerns [of local communities] were known as 'above ground risks'. To me that's an engineer's way of looking at the problem. […] [Engineers] view issues with communities as another technical issue to be solved and actually it is much more complicated than that."*
>
> *"Generally companies are focussing on the technical aspects of these projects and not so much on the non-technical side and the challenges. […] I would start with the challenge, do we put sufficient effort on the non-technical challenges. These challenges are clearly the area around community engagement, licence to operate, what we are now increasing the social licence to operate, building trust in the local community but also then understanding of the sort of regulatory and consents aspects as well. "*
>
> *"The absence of a really thorough social impact assessment at the start of the project [was one consideration]. […] And I would say in hindsight a subtle impact assessment on the local community wasn't studied sufficiently in advance [considering the local characteristics of a rural area, which had little experience with industrial development]."*

The interviewee added that the business model was very much based on a cooperative rather than a group-thinking approach, which made it difficult to see and accept other worldviews, particularly when stakeholders disagreed and opposed fundamentally. This also included a total misunderstanding of people's beliefs, worldviews and mind-sets. The engineers did also not find a good way to communicate technical issues and even uncertainties, e.g. with regard to the likelihood of severe events. As a fundamental game-changer, interviewees mentioned the designation of an independent mediator in 2006. He helped the developer to get feedback and to re-enter into communication with the community, a chance that the developer did not have since. The government proved its willingness to help by facilitating improved industry-community relations. The

recommendation in the Cassels (2006) report to set up a liaison office with local staff, helped to de-escalate the situation.

The same interviewee realized that for the industry developer, coming from an engineering perspective, subjective issues were difficult to handle. However, looking back into the issues that led to the dispute, the respondent recognised that since 2006 CEOs of the enterprise Terry Nolan and Michael Crothers who aimed at being visible in the community succeeded to gain at least some trust. The same anonymous interviewee concluded by stating:

> *"If the company would have accepted the views of [both] local citizens and the own Irish staff in particular they would have learned that this project would become totally wrong".*

Eleven respondents (39 %) highlighted that 'splitting the project and disjointed decisions' were one of the major reasons for controversy. 'Splitting the project' refers to the separation of different permissions for the three technical components (terminal, pipeline and offshore well) referred to in Section 5.2. Interviewees criticised that each of the three technical components were managed separately, which resulted in not managing the project in its entirety. These conditions led to miscommunication and left the community with a feeling that the project had been carved in stone once the first component had received planning permission.

> *"I think another flaw in the way that the project was structured was that from Shell's perspective it was viewed essentially as three different projects – so there was the offshore element and then the pipe to shore, there was the terminal and those were actually the major project elements. This was where the focus was, because those were technically the major technical projects. The onshore pipeline, joining the two really was viewed as easy standard business and that was part of the problem because no one tied the project together in its entirety. […] That wasn't thought about holistically."*

Two interviewees from the local community have made themselves familiar with the legal principles of EU environmental law. They stated that an EIS could have overcome some of the communication flaws arising. An EIA must be lodged by the developer with the application for planning permission. ABP, the competent

authority, must then carry out its assessment. In the case of the Corrib Gas project EISs were conducted to accompany the Plan of Development (November 2001), the Section 40 application of the Gas Act, 1976 for pipeline construction (April 2002) and for the oral hearing under the Planning and Development (Strategic Infrastructure) Act, 2006 (February 2009). The interviewees emphasised the emergence of the conflict, which in their view dated back to the initial consents for the gas-processing terminal which did not require an EIS. Respondents agreed that decisions on this component facilitated subsequent issues and reinforced later conflicts. By means of historic examples, two respondents highlighted that the project was not compliant with the EU Habitats Directive because separate Environmental Impact Statements (EIS) were presented to the Environmental Protection Agency (EPA). In August 2004 the local planning council of the County granted planning permission for the terminal. Only minor changes to the initial plan had been sought after prolonged public consultation and local opposition. Respondents stated that at that time the community felt ill informed on the overall extent of the project and what it in fact entailed.

With regard to the role of the local planning council, one respondent emphasised that major issues were caused by its staff because they presented the project plans as a fait-accompli to the community with little willingness to consider alternatives. The approach facilitated a division into groups who favoured the project on one hand, and who opposed it on the other hand. In looking back respondents believed that the council was not experienced in handling affairs around an energy infrastructure of this scale and maintaining a meaningful flow of information. Respondents highlighted that there was no meaningful and appropriate articulation of the facts. Similar issues applied to operation of the local police using excessive forces that were inappropriate to situations of this extent.

5.4.4.3 Issues raised by government interviewees

In general, government officials raised less concerns towards issues relating to their own domain. However, one government official referred to a long continuing ‘suspicion towards government’ within civil society which was deeply anchored and

resulted from a feeling of being of being ruled for more than 300 years by a foreign power. This added to the sense of unease at a multinational enterprise from outside of the country exploiting the commons of the Irish citizens in order to increase its profits and the government. The public believed that government was not able to safeguard the interest of the public in this situation. This led to mistrust of the developer. Another interviewee likewise emphasized cultural aspects as a root-cause for the dispute by stating, "People hear what they want to hear" (anonymous quote). Historically, Irish society suffered from famine and occupation, which had an impact on how trust in the institutions of the country have evolved over decades.

One local government official focused on the positive regional economic indicators and the resilience of the some of the local business leaders in light of the recession. The developer failed to take any of these nuances into consideration. Respondents voiced observations on the management and the preparedness of local decision-makers and the public and emphasised two characteristics: The *first* was that rural Irish society was not used to change and had a limited modern outlook. Interviewees emphasised the need to manage developments in rural areas to deliver tangible benefits/community gains to obtain support for development. A different interviewee commented on the 'lack of fit for purpose legislation' (4) and the 'splitting of the project into single component' (2). The person stated that the initial licensing of the terminal was lacking an achievable separation of the decision-making power of the responsible department and the regulator (provided by the Ministerial Order, see Section 5.4.4.1).

An interview with the appointed government mediator provided insights into the mediation between the developer and the community. For the interviewee it became obvious that there were three community groups: The *first* were people totally opposing and would never accept the project as proposed, the *second* had genuine safety concerns and the *third* were in favour and advocates. In the end the mediator came up with a report and a series of recommendations to reconcile dispute issues. In this regard these recommendations deal with the following issues:

- Ensuring that safety concerns regarding the operation of the pipeline are considered;
- Examining the route of the pipeline and its proximity to local houses;
- Considering issues referring to the gas terminal, its location and environmental concerns;
- Improving benefits for local people and the region;
- Reviewing of anomalies in financial compensation for landowners on the route of the pipeline;
- Carrying out monitoring of the project and consultations with the local community (Cassels, 2006).

5.5 Interim conclusions

Responses from the polled cohort of local citizens and stakeholders across all governance domains responding on dispute issues in the Corrib Gas project indicated a close interplay between government and industry. This perspective was facilitated by a lack of a fit for purpose permitting framework and lack of communication, transparency and information. In the community this interplay created a feeling that, in particular, the government failed to safeguard their interests. It also missed an opportunity to clearly communicate challenges and the strategic national interest around extracting offshore gas. In particular, opponents stated that developers failed to engage the community in the pre-planning phase of the project and showed only limited willingness to make concessions to local interests. For example, concerns over safety and environmental risks with regard to the location of the gas processing refinery and the route of a raw gas pipeline, were only taken into account after massive opposition and legal proceedings. The local context, such as the rural characteristics were fundamentally misunderstood or neglected. This created a feeling that the developer followed a decide-announce-and-defend approach particularly in terms of siting of the different components of the energy infrastructure. The developer did not fully consider all possible alternatives carefully and did not share information appropriately. This resulted in the gradual erosion of trust, the breakdown of relations and continued project

support particularly locally was challenged. However, even nationally people recognised that the fatal breakdown of relationships locally had an impact on the perception of those citizens nationally which were interacting with developers from industry and government in other places of the country. Proponents from the Erris area, such as business leaders and citizens very much acknowledged the positive regional economic developments the project brought to the area. Some also voiced an opinion that an opportunity to bring benefits to the attention of citizens had been missed, and there were related issues around long-term benefits and fair distribution of compensation. In this regard, general concerns on the role of media and one-sided reporting were also noted.

6 Key issues for marine energy governance in the U.S. at the national and local level

6.1 Policy and regulation: Institutional framework and policy analysis

An analysis of the institutional framework and the policy dynamics drew out three key issues for the slow pace of developments at the federal level. In the following sections the issues are highlighted. In order to allow for comparative analysis between the examples from Ireland and the U.S., the U.S. federal level is understood as the national government level. Issues at U.S state level are understood as local level issues. The material is based on desktop reviews and responses from the interview process.

6.1.1 Dependence on the federal tax policy and investor uncertainties

Key enabling conditions for the stimulation of investments in emerging renewable energy developments relate to federal tax policy and financial incentives. Fig. 6.1 shows the annual and cumulative capacity of land-based wind energy. From 2007 – 2009, 2010 – 2012, and from 2013 – 2015 the sector grew strongly due to the federal wind Production Tax Credit (PTC). Significant growth years are followed by lacklustre years immediately thereafter (2010, 2013) (Wiser and Bolinger, 2016).

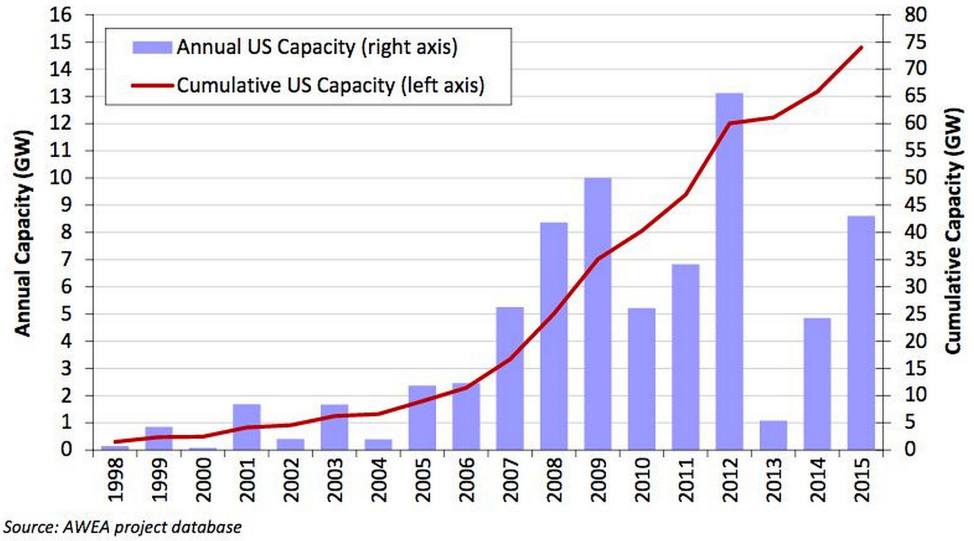

Figure 6.1: Annual and cumulative capacity in U.S. land-based wind power capacity (Wiser & Bolinger, 2016)

Wiser & Bolinger (2016) highlight that this pattern evolved mainly due to the federal tax policy. The scheme includes a termination of the PTC after three years and requires renewal by Congress. As highlighted through discussions, Congress often did not extend the PTC until shortly before the subsequent fiscal year, leaving investors with uncertainty about the renewal period and conditions. This led to large capacity additions during the years in which the PTC was set to expire. Central federal approaches to taxation, steered by congressional decisions, caused favourable terms in the short-term, but at the same time created uncertainty over a longer period. In December 2015, Congress voted to extend the PTC for five years. This is expected to drive substantial additional capacity in the near term.

Continuing uncertainties relate to a lack of formal commitment and insufficient capacity of Congress to provide favourable market conditions. At the same time, annual growth trends were influenced positively by favourable market externalities in land-based wind developments. These are improved costs and performance, corporate demand for wind energy and State driven tax policies, namely the Renewable Energy Portfolio Standard (RPS) and the Mandatory Green Power Option (MGPO). Here tax policies are used to achieve policy objectives towards a State's renewable energy portfolio (EPA, 2015). As opposed to the PTC, interview partners emphasised that particularly the State RPS, which requires utilities to acquire a certain share of their electricity supply from renewable energy sources, became a promising market-based policy instrument to overcome some of the uncertainties arising from PTC termination. This is because the RPS required utilities to acquire a certain share of their electricity supply from renewable energy sources.

6.1.2 Lack of clarity and coherence in the regulation and planning of energy at the federal level

The focus group discussion with senior federal level officials, yielded insights into the current framework for energy consenting with a focus on comparative views of both land-based and offshore oil and gas, and marine renewables, particularly offshore wind. Federal decisions towards the consenting of marine renewables have

been influenced significantly by experiences from the oil and gas consenting regime, which dates back over 50 years (NREL, 2017).

The consenting system for energy development both terrestrial and at sea is based on a complex multi-level (federal, state, local) and multi-agency regime for licensing of energy infrastructure. The Energy Policy Act of 2005 (EPAct) provides the over-arching legal basis for energy policy at the federal level. With regard to developments in the marine environment, the EPAct authorizes the Bureau of Ocean Energy Management (BOEM) to issue leases, assessments and right of way to allow for renewable and non-renewable energy developments (oil and gas leasing) on the Outer Continental Shelf (OCS). The U.S. OCS is the part of the internationally recognised continental shelf (submerged land, subsoil and seabed), which does not fall under the jurisdiction of the individual States. The waters lying landward of this area is referred to as State territory waters. In 2009, new regulations (Final Renewable Energy Framework) provided oversight responsibility of offshore renewable energy activities to BOEM.

In order to highlight the complex conditions for licensing, practical terms of the consenting process and lead responsibilities for large offshore developments arising from the focus group discussion will be highlighted. Developers that seek to explore offshore oil and gas need to contact BOEM under the DOI first. The bureau has a consolidated review for oil and gas developments beyond the three nautical mile jurisdiction. In order to ensure federal consistency, a State agency needs to review the project before granting the final lease. After this is granted, a developer needs authorisation for the exploration plan and the development and production plan from the Bureau of Safety and Environmental Enforcement within the DOI. By contrast, in terms of a marine renewable energy development in federal waters beyond three nautical miles, BOEM has the over-arching authority, does the leasing and has the right of way for the tracks and the transmission lines. The State needs to become involved to review the application of an energy project (State Review). Once a development generates energy that needs to be transmitted to the national grid, the developer needs to get an authorisation by the Federal Energy Regulatory Commission (FERC). If the project is being developed within the three nautical miles with adjacent mainland connection across State waters, a development will exclude

BOEM and fall under State jurisdiction. Table 6.1 provides a comparative analysis for the different responsibilities in energy regulation for offshore oil and gas explorations and marine renewable energy projects. It further lists the responsible authorities for land based energy regulation.

Table 6.1: Comparative analysis of responsibilities in regulation of land-based oil and gas, offshore oil and gas and MRE (Abbreviations: BOEM = Bureau of Ocean Energy Management; DOI = U.S. Department of the Interior; FERC = Federal Energy Regulatory Commission)

Energy source	Lead consenting responsibility
Land-based oil and gas	U.S. Department of the Interior (DOI)
	Bureau of Land Management (under DOI)
	Office of Indian Energy and Economic Development
	Surface Mining Reclamation and Enforcement (under DOI)
	Office of Drinking Water (under the Environmental Protection Agency)
	Surface Transportation Board (under the U.S. Department of Transportation (DOT))
	Federal Energy Regulatory Commission (FERC)
Offshore oil and gas	Bureau of Ocean Energy Management (BOEM) under the DOI
	State Reviews – Lease, exploration plan, development and production plan
	Bureau of Safety and Environmental Enforcement within the DOI
Marine renewable energy	BOEM
	State Reviews
	FERC (for transmission)
	In State Waters FERC (no BOEM authorisation is needed)

The table highlights the wide array of authorities having a central responsibility in energy consenting. Interviewees suggested that lead organisations are often independent of each other, which has created delays, led to economic uncertainty and hindered progress in the sector. Issues appear to be the lack of formal commitment at the federal level and a nested system for energy governance (providing integration between policy implementation, regulation and stakeholder engagement). Other issues are overlapping jurisdiction between States and the federal level both at sea and on land, and shifting lead responsibilities for consenting that address the siting, exploration, development, refinement and sale of energy infrastructure.

6.1.3 Lack of a nested system for energy governance and overlapping jurisdiction between States and the federal level

The previous section highlighted BOEM as an institution, which has oversight responsibility for both renewable and non-renewable energy related decisions in the marine environment. Interviewees unanimously agreed that BOEM has succeeded in speeding up consenting of projects to some extent, however institutional integration across diverse stakeholders in the process of implementing energy projects is still lacking. Interviewees highlighted that public engagement was not envisaged to be carried locally with and within coastal communities. Rather BOEM works with interested and affected federal, state, local and tribal governments through intergovernmental renewable energy task forces. Reasons for the establishment of Intergovernmental Renewable Energy Task Force's Engagement are to promote and improve stakeholder engagement and to build partnerships in the renewable energy sector with a focus on continued offshore wind developments. To ensure their continued success, task forces have been established within 14 States to date and have been established (BOEM, 2018). However, interview partners anonymously agreed that vertical integration particularly down to the local public level and vice versa is still lacking. Detailed focus of the work is to integrate regional perspectives into the state task forces, customize post-leasing task forces by working with states and to increase transparency of decision-making.

The majority of interviewees involved in this study referred to the Cape Wind project (mentioned in Section 3.1.2) as an example, which illustrates the difficulties in U.S. consenting of marine energy developments and in finding solutions to strong objections mostly driven by visual intrusion. In contrast, the example of Rhode Island's Ocean Special Area Management Plan (Ocean SAMP) was offered repeatedly as an example of successful programme implementation because it reconciled issues such as a fragmented approach to decision-making and overlapping jurisdictions. SAMPs are highlighted in the 1972 Federal Coastal Zone Management Act (as amended through Pub. L. No. 109-58, the Energy Policy Act of 2005) (NOAA, 1972), as an over-arching framework at the federal level that seeks to harmonise overlapping interests in water use decisions. The Ocean SAMP is the first of its kind

in the marine environment. It was formally adopted in 2011 by the State government and the responsible Federal government authority. It covers 3,800 km^2 and falls under both federal and State jurisdictions. The main driver for the development of the plan was Governor Donald L. Cacieri. In 2006, he mandated the provision of 15 % of the State's electrical power by offshore wind resources by 2020. The mandate further included the construction of a wind farm off the coast of Rhode Island. The central authority for coastal resources management took up the mandate by proposing the creation of the Ocean SAMP (Blau and Green, 2015; McCann, 2010; Olsen et al., 2014). In 2016, the process fundamentally enabled the successful construction of the Block Island Wind Farm, a first major step towards the energy transition in the U.S.

The examples highlight that *first*, a central State authority set out the goal to implement a SAMP that finally led to the development of an offshore wind farm off the coast of Rhode Island. *Second*, longstanding partners from the State government and academia with sufficient capacity for programme implementation gathered in a multiple stakeholder collaboration. *Third*, State and State academic funds were allocated to create a management plan that allowed the integration of the project into a wider marine spatial plan. *Fourth*, project partners aligned the process of implementation and the review of progress to very precise and timely project deadlines. Senior officials from academia and government agreed that the Ocean SAMP served as a regulatory, planning and adaptive management tool for marine use and agreed that the process proved to be effective in addressing emerging energy use conflicts. Section 6.3.3 discusses the plan from a local level perspective and emphasises the designation of a “Renewable Energy Zone” as a mechanism to prevent conflicting interests in water use decisions.

6.2 Industry development: Marine energy challenges

The U.S. energy portfolio is dominated by the use of largely non-renewable energy resources. The rise of domestic production of oil and shale gas between 2008 and 2014 supported the resurgence of oil and gas production (IEA, 2014). Whilst renewables in U.S. energy consumption accounted for only 10 % of the overall

consumption, non-renewable energy and nuclear electric power accounted for 89 %. Whilst the traditional energy sources hydroelectric power, wood and biofuels accounted for 71 %, wind energy accounted for only 18 % of the entire renewable energy portfolio. Investments in renewable energy developments in the U.S. are second largest globally ($ 38.3bn US in 2014, 7 % increase from the previous year, after China with $ 83.3bn US, 33 % increase from the previous year) (IEA, 2014). However, developments of national importance in the marine environment are lagging (Lange et al., 2018b). Despite the strong annual growth of land-based wind developments and the potential for offshore developments, the wind energy market provided only 5.6 % of total electricity generation in 2015 (U.S. Energy Information Administration, 2017). The U.S. lag behind EU countries such as Denmark which achieves up to 40 %, and Portugal, Ireland and Spain which achieve up to 20–30 % of electricity supply from renewable energy resources (IEA, 2014).

There was a high degree of consensus amongst those interviewed that this was partly because the renewable energy portfolio has not been priority of government administrations. Rather, the country, as the world biggest producer and second biggest exporter of oil and the biggest producer of natural gas (IEA, 2014), still strongly relies on the use of finite energy resources. In terms of the enabling conditions, several of those interviewed mentioned major obstacles towards an energy transition. These obstacles were a lack of formal commitment, and sufficient capacity by Congress to stimulate developments and a lack of clarity and coherence in energy planning. The powerful role of Congress in steering tax policies and the complex regime for energy planning referring to these obstacles were highlighted in Section 6.1.1.

6.3 Public engagement: Prerequisites of successful marine renewable energy State practices

6.3.1 Local Maine based company sets up tidal energy device in the Bay of Fundy and provides local benefits (*completed*)

The Bay of Fundy has the highest mean spring tidal range in the world (~14.5 m) and is thus one of the most promising places worldwide for the generation of tidal power but commercial resources remain untapped. Due to the absence of visual intrusion, this type of technology is perceived to overcome some the issues related to strong objections, e.g. in comparison to offshore wind. However, the context of indigenous and local communities can affect local perceptions differently (Simas et al., 2015). The Ocean Renewable Power Company (ORPC) based in Portland, State of Maine, constructed a pilot turbine for a tidal energy converter in Northeast Gulf of Maine. In 2012, the company successfully deployed a 30 ft demonstration device in the wider Bay of Fundy area. It was the first device of its kind in the Americas feeding power into the national grid. The company is now planning to test new designs and to expand developments to full commercial scale.

The example emphasised a close connection of the developer with the public, which was one necessary condition for the developer to engage with the public. Another condition was the developer's ability to undertake meaningful engagement. An intense dialogue between the company and the community, and access to highly experienced local contractors were central enablers of the successful implementation for the Bay of Fundy project. Two senior executives of the development company informed about the process of implementation from an industry perspective. Separately, scientific peers, following the process as part of a review of stakeholder engagement, informed about the implementation process from an academic perspective. Interviewees agreed that the company engaged with the local public well before deploying the pilot device. Scientific peers further confirmed that the developer built the relationship with the community on trust and communication was transparent. The company set out a roadmap for community engagement and used it as part of a project implementation plan. The process aimed at unlocking win-win situations and maintaining a constant flow of information. First, the developer presented project plans in the community and asked stakeholders to come forward with priorities and ideas. The developer presented ideas on which technical support the company might contribute to achieve those visions. Afterwards the developer evaluated if power generated from the project can be used to benefit the community, e.g. by providing energy to adjacent towns and

townlands creating local employment. The developer envisaged and presented the prospect of providing regional economic benefits. The developer made recourse to local contractors for predevelopment and construction. Well-prepared, trained staff provided the necessary technical support. Interviewees highlighted the employment of local contractors as a major precondition to gain trust in the community and acceptance of the project.

Senior executives summarised their experiences of engaging in the community by highlighting two pre-conditions for the successful implementation of the project, which are, *first*, developer's know-how of community engagement, and *second*, the provision of local benefits. By considering the local characteristics of the place and communicating with the community intensively, the community felt informed and supported the project. In terms of technology, tidal energy devices are not without limitations. Although technology experts see huge potential in harnessing hydrokinetic power due to its force and fare more predictability than most other renewable energy sources, interview partners highlighted the following challenges: Intermittence of the resource, limits to energy yield at low and high tide, and power generating time of 75 % across the devices. However, the intermittence of hydrokinetic powers remains a challenge, the issues are less challenging for tidal than for wind energy (Monahan and Van Kooten, 2010). Thus, the further expansion under similar development conditions in the near future is somewhat uncertain.

6.3.2 State policies and industry stakeholders support the enabling conditions for offshore wind developments in the State of Maryland (*ongoing*)

The potential for vast wind resources off the coast of Maryland has been identified by NOAA and others (NREL, 2017; NREL, 2010). Firestone et al. (2010) estimated that to meet Maryland's RPS (18 % of the State's electricity supply by renewable energy sources by 2022) entirely by offshore wind energy resources would require the installation of 3,900-MW (using 5-MW arrays). Given the available space for wind farms, considering technological requirements, the State has the potential to install almost 60,000-MW capacity of offshore wind farms. The case unveiled one major issue in governance, which was government inertia that created uncertainties.

In 2013, Maryland's State Governor Martin O'Malley signed the Offshore Wind Energy Act (General Assembly of Maryland, 2013).

This framework aimed to unlock the potential in the market, and to enhance the pace of development in the sector. The goal was to provide up to $ 1.7bn US as a development fund for 20 years to encourage the development of up to 500-MW of offshore wind capacity. Central ingredients of the bill were the Offshore Wind Renewable Energy Credit (OREC) and the business development fund. The OREC was a funding scheme, which supported pre-development of a roughly 200-MW offshore wind project off Maryland's coast. In 2016, site investigations for the project were undertaken. In the aftermath of the establishment of the development fund, a business network for the promotion of offshore wind in Maryland was founded. Interviewees highlighted two key interventions by the State government to influence initial market conditions: *First*, in 2013, the signing of the Offshore Wind Energy Act (General Assembly of Maryland, 2013) showed that the State government was committing to offshore renewable developments, which influenced sectoral confidence positively. *Second*, in early 2016 State government support shrank, when Governor Larry Hogan vetoed the Clean Energy Jobs Act (SB 921/HB 1106) (General Assembly of Maryland, 2013), a bill to ensure that Maryland produces 25 % of its electricity from renewable energy sources by 2020. This created mixed messages and inertia as the bill had already passed the General Assembly (2016) legislative session. Interviewees highlighted that the initial government support was essential to provide the preconditions for developments in the sector whilst mixed messages and a lack of consistent commitment in recent years was creating uncertainty for developers.

By considering the history of their own network, interviewees realized the value of a continued knowledge exchange and learning from developed renewable energy markets in Europe. Site visits were run routinely to places in Denmark, Germany and the UK (2015, 2016, 2017). This allied to topics like grid connection, transmission and the consenting process. Interviewees and observers from outside the project saw efforts to share this knowledge amongst network partners by supporting a constant flow and exchange of information as a precondition to gain trust between stakeholders along the supply chain. Interviewees further highlighted Public Private

Partnership (PPP) initiatives and mutual learning experiences with international partners and from other sectors as useful means of fostering knowledge transfer. Interviewees agreed that given uncertainties at the federal level, this type of commitment by network partners is essential in creating the enabling conditions for larger energy developments.

6.3.3 Government policies and allocated funding for a special area management plan led to the first offshore wind farm in U.S. waters (*completed*)

The process of designating a "Renewable Energy Zone" in Rhode Island State waters as a key aspect of the plan-led approach deserves special emphasis. This is because it was used as an effective mechanism to engage with diverse stakeholders, create certainty for developers and prevent conflict in water use decisions. In this case State governmental resource planners and developers of the Block Island Wind Farm used the framework for the implementation of a Special Area Management Plan (SAMP) to create the legal basis for a marine spatial plan that covered an even wider area than the area of the then Block Island Farm itself. This process therefore created a much wider outcome than initially anticipated. As discussed in Section 6.1.3, initially it laid the foundation for the construction of the first offshore wind farm in the U.S. and second the adoption of the Ocean SAMP. The framework aimed at engaging with diverse stakeholders to produce insights on the marine use priorities of these stakeholders. Informal and formal mechanisms such as educational stakeholder group meetings, media outreach, and the establishment of a technical advisory committee were used to identify common grounds across all stakeholders. The open discussion finally led to the designation of a "Renewable Energy Zone" and an appropriate wind energy site off the Block Island coast in State waters (Blau and Green, 2015).

Interviewees from the State government and academia agreed that the process created certainty for developers. In 2014, construction on the site began. However, they confirmed that the process was not without its challenges. At the federal level, conflicts arose due to delays in the impact assessment process as well as planning

for single topics in State waters, which fall under the responsibility of federal authorities like BOEM, such as defence, navigation and interstate commerce. Interviewees emphasised that institutional capacity and leadership to implement towards a special area management plan created the enabling conditions for the successful implementation of the programme. Critical success factors identified by the interviewees in the process were first institutional capacity, expressed by the initial appeal by the State government and the allocation of State and State academic funds for programme implementation, and second meaningful coordination of the implementation, expressed by the leadership commitments by key individuals with responsible oversight. Interviewees highlighted vulnerabilities around over reliance upon a few key individuals. Therefore, a management team shared responsibilities across multiple leaders with different skills and experiences. A management team was formed, represented by government's central authority for coastal resources management and academia. In general, decisions took the local context of places and communities into account.

6.4 Interim conclusions

This section completes the analysis results evolving from an issue-led perspective in selected case studies in Ireland and the U.S. Interim conclusions on the Irish case study are provided in Section 5.5. Both studies drew out that policy and regulation and responsible bodies for policy implementation are disconnected. Disconnection in governance is also indicated between those with the power to influence decisions with an impact on civil society from policy, regulation and industry development and the people locally who are hosting economic developments, such as energy infrastructure projects, in their area. The multiple stakeholder approach helped to gain insights into people's perceptions. It helped to build trust amongst the researcher and the stakeholders. The way the collaboration has been developed and set up emphasise a way forward to improved management and to address missing connection between governance and management.

7 Lessons learned from case studies

The issue-led perspective from multiple stakeholders in selected case studies in Ireland and the U.S. provides a fertile ground to learn for improvements in current governance systems and better decision-making in the future. This chapter discusses the outcomes of the policy analysis, the literature review and the lessons learned in terms of what the results mean in terms of the conceptual model and future governance.

7.1 Lessons learned from a civil society perspective

In terms of energy governance, the Corrib Gas project is an example of industry developers failing to meet the needs and expectations of *civil society.* In this case study, the expectations of stakeholders was related to missing provision of benefits, which would benefit the Irish State in the long-term, and allow for sufficient community gains over the construction period and short-term compensation. The existing tax system was criticised by many interviewees as it only benefited the interests of the industry developer. They perceived that the decisions on the tax system were negotiated behind closed doors and in the absence of a public representative. These issues triggered a debate on how decisions have been made and who actually benefited from them. People believed that gains should have provided benefits to the State at least, if not the people directly affected by project construction. In this context, unsubstantiated claims of corruption within Irish government, which led to 'low trust' and 'strong political dissatisfaction' were voiced by a large number of community interviewees. The developer addressed issues around missing community gains only after intervention of an independent mediator. Compensation for owners of private property in the way of the gas pipeline were only promised if they signed an exclusive way leave contract only on the day of notification of starting construction. The public perceived the negotiation process as unfair.

The study also found that expectations on benefits, perceptions of the process and concerns of the people towards the developments, such as the ones pointed out

above, differ at a very local scale. This is particularly important in the Irish context because due to population size and the size of the state people know and hear about each other, which makes it both challenging and rewarding. Therefore, in a country like Ireland, the necessity to communicate the facts openly and transparently weigh even stronger. Particularly the Corrib case study found that due to the flaw in communication and a complete misunderstanding of local level expectations, the trust of people in the developer was lost. It became obvious that once developers lose trust of the public it is hard to get people back behind a project.

The case study on the Corrib Gas project showed that the rules for the management of the project were set in the absence of the public. Normative and ethical issues were neglected either intendedly or un-intendedly. Therefore, no one in the negotiation process envisaged the issues. By means of an example the local planning council presented the project plans as a fait-accompli with little willingness to consider alternatives, which were requested by the community. In terms of communication, respondents highlighted that there was no meaningful and appropriate articulation of the facts and that the developer seemed to be ignorant towards local public complaints. This perception arose due to a lack of information both in terms of missing information and of using technical language instead of confronting the public with usable facts (e.g. to let local people understand the impacts and likelihood of technical challenges and risks).

On the other hand, the case studies from the U.S. at the local level unravelled promising externalities towards meaningful community engagement. The *first* was the provision of realistic promises of local benefits and the actual benefit provision by the developer of the tidal energy project in the Bay of Fundy. It was also the developers' enabling capacity to undertake meaningful community engagement, which became a central pillar of the company's development strategy. The *second* was the support of a core group of well-informed stakeholder groups in Rhode Island. The collaboration of experienced staff from State government and academia with negotiation skills facilitated an intense exchange on the challenges. Here new coalitions, partnerships and networks evolved in various areas relevant to the energy field, which enabled the management of energy transitions at small scales. It demonstrated that academia can play an important role by facilitating and

undertaking stakeholder engagement, particularly in situations when people are reluctant to engage with developers. As a consequence the partners became managers of intense collaboration rather than managers of a conflict, such as those in the Corrib Gas project. The multiple stakeholder approach run by a government-academia partnership (based on a policy-, academic- and plan-led approach) served as key enabling condition for successful project implementation, despite various issues identified at the federal level. However, the analysis also found that current frameworks at the federal level miss opportunities to learn from innovative approaches at the state level for improvements in governance at the federal level.

7.2 Lessons learned from a policy and regulation perspective

Relating to *policy and regulation* of large energy developments, lessons learned from the case studies evidenced that government failed to support long-term strategic infrastructure planning, to provide fit for purpose regulation for sustainable energy transitions and to integrate between governance domains. It also misses integration by learning from local level best practices for federal level governance. The analysis of Ireland's governance framework pointed out a lack of efficacy in terms of policy integration and enforcement as a key factor, which continues to halt progress in the sector. In this regard, government missed an opportunity to formulate future considerations of a phased-strategy in the energy transition. The study showed that the current decision-making process missed an opportunity to link back to the needs of those responsible for industry developments. By way of an example, Ireland's policies towards offshore energies fall short in supporting a comprehensive strategy, which provides integration of sectoral policies and the three domains of governance established. Neither was there a policy that established clear rules for the management of programs and legal obligations to include consultation into planning, nor was there a clear vision for incentivising industry development to deliver a balanced hydrocarbons portfolio against MRE over time. It appeared that the policy process more or less happened in isolation to other policies relevant to developments in the marine environment that are central to the objectives of ME implementation. Neither the policy process cross-fertilised with other policies

relevant to the marine environment nor did it create momentum of industry developer ambitions. Whilst policies mark significant declarations of intent to support economic development, these actually miss real opportunities for integration and tangible progress measures for successful implementation.

At the same time, the U.S. case study pointed out key factors for the slow pace of marine renewables and sustainable energy transitions at the federal level: The *first* issue is the adherence to short-termism in federal tax policy. On the one hand sufficient initial capacity within responsible government institutions exist to provide financial resources that provide initial impetus for progress in the sector and vigour by investors. On the other hand the regular termination and reluctant continuation created mixed messages at the highest levels. This leads to uncertainty and leaves investors with a feeling that policy support shrinks. The *second* probably most prominent issue, which also applies to the Irish case, is the existence of unclear and incoherent regulation for ME developments. The regulation issue will be discussed in more detail in the next paragraph. The *third* underlying issue is a lack of a nested system for energy governance and overlapping jurisdiction between states and the federal level. Based on stakeholder responses, technological obstacles, such as device development, the security of energy supply and grid connection were identified as fundamental and to be solved but in this study these issues were not explored in detail.

In terms of energy *regulation* both the U.S. and the Irish study found that consenting regimes for energy in the marine environment are convoluted and often follow unclear rules. A major obstacle is a lack of a joined up and robust permitting process. This process again is a gap, which exemplifies the missing connection across domains on the one hand and between the process of negotiation in governance and management of projects on the other. The example shows that an integrated process is required to set the rules for the management to address policy, technology and economic uncertainties. The U.S. study could not ascertain whether one of the governance domains was excluded from the negotiation process. However, experiences from both case studies identified top-down approaches particularly in the U.S., which served to halt progress in the sector.

At the management level a one-stop-shop, such as the one run in Scotland by a competent authority, can overcome some of the barriers that led to uncertainties in both case studies. Experiences from the U.S. show that a one-stop-shop with responsibility for both renewable and non-renewable energy decisions can provide structure. Irish planning history shows that in order to create certainty and to accelerate processes a one-stop-shop could be helpful too. At the same time limitations identified in the permanency of BOEM in the U.S. showed that a one-stop-shop for the licensing of MRE developments may not be a *one-size-fits-all* solution. This is because shortcomings in departmental coordination and government commitment are existent. Both remain major prerequisites for success and will not be resolved by way of regulation. A way forward can be found at the EU level, where legislation and policy drivers seek compliance to deal with issues, such as human use decisions in the marine environment, exclusion and non-participation of stakeholders (Flannery et al., 2018).

7.3 Lessons learned from an industry development perspective

Private developers investing in sustainable energy concepts and technologies suffer from uncertainty due to short-termism arising at the policy and regulation level. In this context, policy provides the course of action used to guide an organisation's current and future decisions. A strategy is how to reach the organisational goals and objectives. The detailed assessment from the perspective of industry developers in Ireland and the U.S. showed that current systems are missing strategy, government commitment and oversight by coherent policies to unlock potentials of yet untapped commercial resources, again to cater for fit for purpose regulation and to support long-term transitions.

Missing incentives in the form of tax policies, provided by highest policy-making levels, weigh strongly in the Irish case, whilst inconsistency in the provision of tax incentives created uncertainty in the U.S. In this context valuable lessons can be learned from the U.S. case study. Findings from the state level emphasise that a plan-led approach, such as the Ocean SAMP in Rhode Island at the national level can bring in views from various users in the marine environment and set unambiguous

priorities for a future energy mix. Enterprises and project leaders in the ME sector can help to overcome issues, such as uncertainty, inertia and missing integration to some extent. At the U.S. state level, ambitious industry developers provided the necessary integration through meaningful stakeholder engagement and knowledge exchange with diverse stakeholders along the supply chain.

Innovative solutions for deliberative decision-making are necessary and progressing, such as shown in various examples from the U.S. They produce frontrunners and leadership across diverse stakeholders, who are creating the enabling conditions towards successful implementation of transition projects. This supports the work of Kooiman and Bavinck (2013) who observed that in situations "where the state is unable to govern effectively, other actors from market and civil society move in prominent governing positions" (Kooiman and Bavinck, 2013, p. 10).

8 Discussion, Conclusions and Recommendations

This chapter builds on the previous chapters by discussing the most salient points in the context of leading towards the conclusions and recommendations of the study. The research in support of this thesis was designed to develop a conceptual model that describes different elements in support of marine energy decision-making with a focus on Ireland. Based on feedback from multiple stakeholders from different governance domains and reviews of wider governance frameworks, the study is based on a robust data analysis. Analyses of selected case studies pointed out deficiencies in governance setups and evidenced that these deficiencies influence a country's capacity to deliver transitions and tackle the grand challenges of today. An assessment of the governance of marine energy transitions based on hindsight analyses provided an in-depth perspective on the interplay of governance domains. The following section recalls governance in theory, brings it together with the findings from case studies and points out how far they correspond in theory and in practice. A new model for governance is subsequently proposed and discussed.

8.1 Governance in theory

Governance in its broadest theoretical sense can serve as an approach that facilitates dialogue between diverse interest groups, as epitomised by the notion of interactive governance. However, in order to tackle the grand challenges of today, governance needs to be characterised by tangible measures for improvements to become fully functional. Central pillars of these measures are, *firstly*, processes and structures to ensure fair balances of power and interests, and *secondly* integrative processes of negotiation. In this context, negotiation by state actors and non-state actors means to interact and make decisions to find solutions for issues of societal concern. Its aim is to find common objectives and agreements to develop and implement projects.

Societal concerns are often characterised by the need to find solutions and strategies towards sustainable development and desirable futures (Kubiszewski et al., 2013; Bai et al., 2016). This is particularly true in the case of energy transitions. The outcomes of the negotiation sets the rules for management. In this context, scholarly

work agrees that management and the actual implementation is distinct from governance (Folke et al., 2005). Project management, e.g. led by developers in consultation with state actors, is concerned with the application of rules and operationalisation of policy visions. Governance on the other hand sets the stage within which this management occurs (Olsen et al., 2011) and actually leads to implementation. The consequences of failing to link project management with governance in the domains of policy and regulation, industry development and engagement within civil society have been highlighted in Chapter 7. Governance scientists and researchers from other disciplines confirm that negotiations, as part of the management process, become even more important, the more complex decisions get.

Referring to the governance understanding above, the study used three conceptual governance domains as an analytical lens to structure the investigations. The decision-making powers of state and non-state actors were assessed at various levels (local up to the national level) in selected case studies nationally and internationally (see Chapters 4, 5, and 6). In order to discuss issues in the domains of governance, and what these issues mean for the governance model, an understanding of the level at which the issues occurred was needed. This revealed insights into who had the lead responsibility for managing affairs relating to disputed issues in the Corrib case study (Table 5.1). This revelation, concerning the lack of an integrated approach to problem solving between government, industry and civil society served as a reference for the conclusions. Thus, the theoretical constructs of governance, - ranging from conceptual framings for participation, transitions, management, negotiation, governance domains, and scales of application, - set the scene for the research conducted across this study.

8.2 Bringing governance in theory together with practice

Due to the common understanding highlighted in the previous section, governance is widely used as a generic model for a fair and just dialogue where diverse interests are represented and met by means of negotiation and deliberation. However, the case studies show that this model often fails to link the process of negotiation with

the actual management of a project. For the success of a project, both elements need to come together. As a prerequisite, the governance system in itself must be fully functional across all three domains. Management has to be aware of the expectations and needs of every single domain. Management is best understood as a single body or a partnership/consortium, which manages affairs, such as a large strategic energy projects. The nature of management differs on a case-by-case basis and depends on the scope of the project. The theoretical understanding of a fully functional governance setup has to be clear and binding to such an extent that project management would immediately realise the non-conformance of the existing governance setup with the theoretical one. If a flaw has been revealed, the stakeholders involved in project management need to have the opportunity to intervene and the power to reset negotiations.

The Corrib case study found that civil society was missing as an important ingredient of the negotiation process. Therefore, the process lacked a local dimension and someone who represented the interest of the local public. Most importantly, on the part of management an ethical code of conduct was missing and normative rules were not considered. This was particularly relevant to management affairs by the developer, responsible for project implementation. In practice, the enabling conditions required to move from the first order outcome, as specified by Olsen et al. (2011), were not fulfilled, primarily as a result of unequal representation of relevant stakeholders (constituencies), across scales. This created major limitations in the Corrib project with respect to progressing towards the second order (i.e. changed behaviour). Rather than adapting together through a process of collaboration, the various constituencies became entrenched in their positions, which delayed progress and led to severe contestation.

The study cannot answer if the missing domain was kept out from the negotiations intentionally or unintentionally. An intentional exclusion of civil society's interest cannot be entirely avoided under a new framework. However, a new framework should at least prevent the accidental exclusion. Examples from the U.S. showed how the integration among governance domains and academia served to facilitate the successful implementation of projects.

By bringing traditional governance and theory together with the practical lessons from this research, the following solutions unfold that are central to a new governance model for marine energy decision-making. What is proposed below provides a tangible approach towards implementing the Energy Policy in Ireland, which, as discussed in Section 4, provides a strategic recommendation to build capacity towards improved stakeholder engagement, but lacks in detail as to how to take this forward.

8.3 Generic solution for better decision-making – a new governance model

The findings from this research underpin that integration between the governance domains established in Chapter 2 (Section 2.2, Fig. 2.1) (i.e. government, industry and civil society) and management is needed. A new governance model is best understood as an operational interplay between the **negotiation process** amongst the governance domains and **management**. Both processes and structures should strive to ensure a fair balance of power and interests when meeting grand societal challenges. The negotiation process needs to allow for broad participation and representation of divergent interests from the outset. Decisions must be based on legitimate criteria and deliberation across governance domains. Therefore, all interests need to be represented, either in person or by a trusted delegate. The outputs of the negotiation process are case specific rules for the management. The management facilitates application of these rules and seeks implementation. As management is distinct from governance both processes need to be integrated in one framework. The identification of these characteristics of good governance is not particularly new or innovative. The innovation lies in the practical application of the model, and in some further elements described below.

In the new framework, the scope of the project is meant to support implementation of significant infrastructure that cause large-scale changes over a long period of time. As previously identified, currently, decisions on large energy developments are made by the independent planning board An Bord Pleanála (ABP). The only way to

interrogate decisions is by judicial review, which arises usually after trust breaks down. A new framework must address this flaw in the decision-making process by allowing for fair, full and early engagement, especially for planning decisions around large infrastructure. It must incorporate clear rules to address major societal and public concerns, which is one important element that is missing in the current regime. Even if elements such as the 'customer charter' and operational standards (see Section 5.2) exist, decisions on large projects are often characterised by non-participation and lack of transparency. Standards in public offices and administration can be one element to meet weak participation in the implementation of large energy projects.

One of the major criticisms of the stakeholders interviewed in this study, was that none of the criteria in the current approval process, adequately addresses people's disagreements and public concerns. The establishment of a body with a mandate to develop and evaluate the application of ethical rules based on principles of good governance may be an option going forward. What is being proposed goes beyond the remit of the Standards in Public Office Commission (SIPO) (see Section 5.2), and addresses the limitations of the planning systems for large strategic infrastructure. In order to address the constraints in the current planning system, made clear from the Corrib case study, it is recommended that an **independent unit or neutral observer** should be established. This makes particular sense in situations trust needs to be built through public engagement. This suggest the need for facilitation to achieve progress in the 'orders of outcomes' (Olsen et al., 2011). In this case, the focus of the recommendation is placed on the role of an honest broker to ensure that projects can comply with the conditions of governance identified in each of the four orders.

A model involving an early intervention, recognizing the potential for emerging conflict, and seeking to prevent rather than react to a situation, is a central tenant to what is being proposed. An ombudsman model might be considered as a useful steward for decisions, especially those of an independent board, such as ABP. However, an ombudsman, in the traditional sense, gets involved once a complaint has been made in relation to a public sector service, which needs mediation. At this stage, very often, damage is done, and trust is already lost. While the 'Constitutional

Convention' approach is worth looking at from a scientific point of view (e.g. considerations of the perceived impact of the processes and structures and the decision-making power of the citizen to shape the agenda for deliberate decisions) (see Section 4.1), in the context of the study, this approach is limited to constitutional reform rather than innovative planning and management interventions.

Under the proposed new model, academics, retired policy-makers, or any other trusted person, could come into play as knowledgeable but **honest brokers**. In order to really influence a fair and transparent process of decision-making, the honest broker must sit outside of policy, regulation and industry. This position of responsibility needs to be brought on board and made aware of the governance process and the actors involved from the outset. The role played by the mediator Peter Cassels in the Corrib case demonstrated that an honest broker with a mandate to ensure fairness and transparency in decision-making can make a valuable contribution. In his case, he was instrumental in resolving the conflict as a mediator. One important issue negotiated by Cassels was the question of compensation, which was recognised as major disputed issue by all parties involved in the mediation process at that time. Clearly this form of intervention has merit. However, the proposal here, is to mitigate against the evolution or escalation of conflict by involving an honest broker as trust builder, rather than a mediator, from the start. The research has shown that problems arise when there is a lack of reliable or accessible information. Stakeholders expressed a strong demand for useable facts in order to determine the likelihood and potential impacts of technical challenges and risks. In the post truth era, laden with 'alterative facts', it is proposed that the honest broker can also play the role of an information and communication broker.

Referring to Section 8.2 and the prerequisites for a fully functional governance framework, the honest broker needs to examine if rules are considered and full representation of interests are met. Since an honest broker is not part of the Government and is not involved in the negotiation process of governance *per se*, the position has to be unbiased, and able to judge independently and fairly. In addition, it needs to have full power, either to get back to, and liaise with the responsible Minister. Such a position would have to have a clear mandate and be empowered by

law to avoid being a toothless tiger. The innovation of this body will be that it comes in early to prevent conflict, is connected to all parties involved and has the mandate to avert potential conflict. This will not be without its problems because boards such as ABP, are already expected to make independent decisions. However, it may argued that members of a board such as ABP, would benefit from the rules of the game that could be emphasised by an honest broker.

By using sound scientific techniques and approaches, such as those applied in this study, an honest broker may be able to provide a co-production of knowledge across domains close to all stakeholders. In-depth analysis of local perceptions is needed in order to anticipate the factors that can cause dispute issues, such as breakdown in relationships. At the same time, engagement with high level decision-makers from government and industry development is needed in order to balance understanding of stakeholder's perceptions and expectations.

In order to be fully functional, the new framework needs to feedback from management into the negotiation process. In this context, management operates in close coordination with the honest broker. In terms of the feedback, experiences at the management level need to flow back to the governance level, in order to balance decisions and detect missing connections and failures. Once imbalance, disconnection and unethical or non-transparent approaches are identified by the honest broker, the honest broker needs to have the right to intervene and if needed to reset negotiations.

Figure 8.1 brings together the elements drawn out as a conclusion to this study. The upper box of the figure highlights the negotiation process as one part of governance. The lower box of the model emphasises a strong connection to the management of human use activities and issues. Implementation and drawing from experiences is coordinated in close collaboration with an honest broker. The red arrows mark the process of possible intervention by the management and the balancing of governance decisions as a result of intervention.

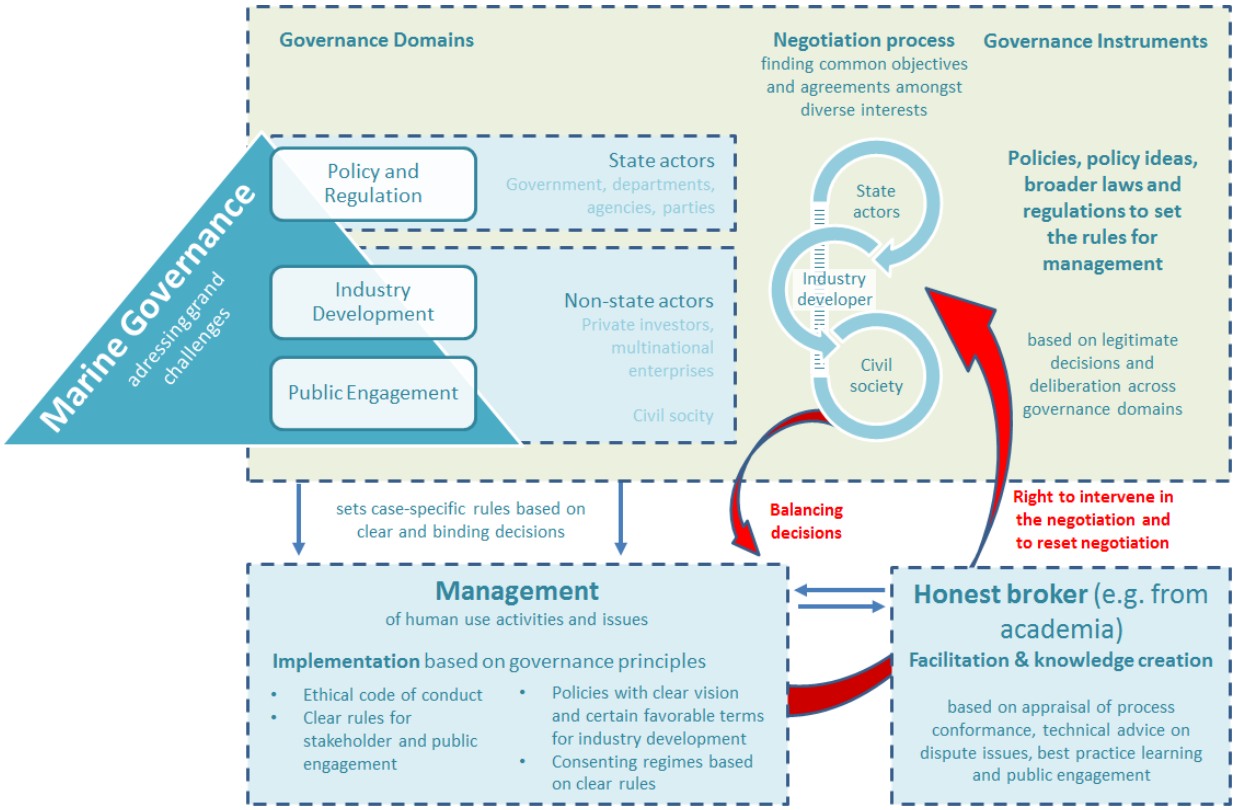

Figure 8.1: Conceptual diagram of a new governance solution for marine energy decision-making

The previous paragraphs highlighted the practical implications for governance in practice. In terms of the theoretical contributions of this study and referring back to the good governance principles, - of "participation", "transparency", "equity and inclusiveness", "adaptability" and "adaptive management" (as identified from Biermann (2007), Chang (2012), Costanza et al. (1998) and Rhodes (2010) (see Section 2.2.1)), these should be central principles for the creation of rules as part of the new framework. However, even as important, are collaboration, integration, and gaining full understanding of the issues at stake. Therefore, the study suggests that additional principles should be added to the original list. By weight of evidence in the underlying study, these principles are: the **facilitation of governance collaboration and integration** and **knowledge creation** as a result of a scientifically robust evidence base. The role of the honest broker as outlined above is recommended to support 'facilitation and knowledge creation'.

The proposed new model is not a panacea and will not serve as a *one-size-fits-all* solution as it will not be without its challenges. For example, unconscious bias is increasingly understood as an issue to be managed. There is also the question of industry being more sensitive to communities. Industry leaders, such as those in the Rhode Island and the State of Maine, must seize the opportunity to create the space needed to provide the enabling conditions towards the successful implementation of transition projects. The ability of intermediaries to address substantive issues of sustainable development through early engagement has been questioned (Devine-Wright, 2012). However, the recommendations of this research have been designed in light of deep insights from the Corrib case, and they emphasise a strong need for early engagement and the involvement of a trusted person as part of a trust building process from the genesis of project development.

Together, industry developers and governments need to lead the charge in supporting and committing to the new framework and providing a neutral, truly independent body with a clear mandate to change systems that in the past failed to meet the expectations of many stakeholders. Initiatives to support transitions to new energy realities, in the context of sustainable development, need to be inserted early in the process. These prerequisites, together with local contextualisation of decisions and the willingness to communicate key issues and challenges that are easily understandable are needed to build trust.

8.4 Limitation of work and implications for future research

Lessons learned from comparative analysis identified prerequisites for sustainable project development. Case study material provided hindsight analysis of stakeholder's perceptions to draw lessons in support of improved management and governance of large energy infrastructure. However, the research is limited as it could not provide an equally representative set of interviewees from the governance domains targeted. However, the data and information gathered for the thesis present broad insights that are necessary to illuminate perspectives of wide and complex governance issues.

The study did not examine how perceptions of stakeholders may change as successful project implementation unfolds and projects expand. It also did not provide evaluation of the balances of power in governance domains and individual stakeholder relations. Follow-up studies could consider both of these research streams. Another point that needs further attention is an evaluation of the effect and the impact of research. The question is, to what extent does research contribute to a meaningful stakeholder engagement and towards improved management?

At the government level, transitions towards sustainable development will depend on the ability and willingness of governments to establish integrated frameworks and to provide clear mandates to independent and honest bodies, such as an honest broker. This is a need to ensure fair balances of power and interests and negotiation processes. One of the major contributions of the study is to support this.

8.5 Practical implication, transferability and recommendations

The discussions above led to the recommendation that the application of the proposed governance model can be useful in any future development and issue, where coordination amongst diverse interests are needed. In cases like these, the model can become a powerful tool to support deliberative and participatory decision-making. As shown in the chapters above, large-scale developments where diverse interests that need to be coordinated under an integrated framework, are prime targets for new governance interventions.

Governance and management under the new framework can help to support engagement with communities and people likely to be affected by a project in a meaningful way. It may help to envisage the interest and needs of industry developers and the effects of policy and regulation. Findings may also help industry developers in tandem with state actors to anticipate local perceptions and the likely impacts of their decisions in order to prevent conflicts. Issue-led analyses of dispute issues proved valuable to gather multifaceted views on societal priorities and perceived outcomes of developments.

Science and academia can play an important role in supporting an understanding of stakeholder relations and expectations. Interdisciplinary research is best equipped to carry out analyses of local perceptions and on learning from case studies based on sound-scientific evidence. As a relatively new exploration field the perceptions of those affected by governance at various levels is recommended for further research as it offers insights into local stakeholder needs and expectations.

Multiple responses and the multifaceted views on governance challenges at various levels, also explored here across the governance domains, based on the standardised case study approach, enables easy connectivity of the lessons learned to other situations and sectors with similar challenges. Findings from case study analysis in this thesis may help inform broader system perspectives and to scale up other systems with similar issues. However, the findings presented from two country examples may not simply be generalised. Each country context is different, and context matters. Any other case study analysis needs to first focus on studying the context of the governance setup.

The study concludes that there is a missing connection between governance and management, particularly in the domains of policy and regulation; industry development; and public engagement. The findings of this research address this gap and provide cornerstones of a model on how this disconnection can be avoided in the future. In order to establish the new governance framework, evaluation of its operability in practice is needed. This requires commitment from different stakeholders to establish and test it in reality. This again requires commitment to accept and self-impose rules and maybe to give up power. Only then has it the potential to enhance governance in response to the need to support sustainable transitions.

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Appendix of Materials and Methods

A – Survey questionnaire Corrib Gas project

MaREI
Marine Renewable Energy Ireland

Qualitative interviews with stakeholders in case study area of Corrib Gas project

Interview guide and questions

Questions

Context 1: Personal background and histories

1) *1.a – Gender*
   Female *Male*

   O *O*

   1.b – Age group

   under 18 *18 – 30* *30 – 45* *45 – 60* *over 60*

   O *O* *O* *0* *O*

   1.c – Professional background *Education*

2) *Do/Did you feel personally affected (directly, indirectly) by the activities around the energy project in your area (Corrib Gas)? If yes in what way?*

Are the major issues that have affected your quality of life – both positively and negatively?

Context 3: Levels of trust and trust building

3) *Please estimate your level of trust towards the following decision takers when it comes to economic development (high, medium, low) in your area. Please provide examples.*

	Local development authorities, Government agencies	***Government*** *Incl. regulatory planning environment + policy*	***Local and national companies***	***Private, local businesses***	***Multinational companies***
Level of trust (high, medium, low)					
Please justify your feedback and provide examples					

4) *What is needed to build trust in moving economic development in an area like Belmullet forward?*

What role does individual leadership play/ed when it comes to build trust?

5) *Have there been any examples of significant disputes you can address and how were they reconciled?*

What role does individual leadership play when it comes to reconciliation?

Context 4: Benefits and offshore renewable energy developments

6) *Please indicate which area of economic development in marine or coastal areas you wish to be driven forward close to your area:*

Tourism	*Exploration of hydrocarbons*	*Marine Renewable Energy*	*Fishery/Aquaculture*	*Others*
O	*O*	*O*	*O*	

Please rank (strong, medium, low) and justify your decision.

Justification:

7) *Do you expect and see any benefits from economic developments in your area or for you personally, currently or in the future? If yes please explain. Please mention direct and/or indirect effects.*

8) *Do you think offshore renewable energies can make a significant contribution to the welfare of the citizens and economic development in your area? What do you perceive the benefits to be? (Note: Offshore oil and gas developments' in the title of the question as well).*

9) *How can the benefits be optimized to give a return to you or your community? Please explain.*

Please note: The following benefits should come out of the discussion

	Employment	***Monetary reward/tax income***	***Compensation***	***Co-ownership***	***Contribution to national and international climate change obligations***	***Others***
Level of benefit (high, medium, low)						
Please justify your feedback						

Interview Focus

Profile of expert interviews

Open semi-structured to unstructured interviews with narratives passages based on principles of qualitative, empirical research (Lamnek, 2005; Bogner et al, 2009; Hay, 2005).

Principles

- Openness *while* interviewing (between those interviewing and those interviewed, investigative steps to be made transparent and explained);
- Research *while* communicating and interacting.
- Adaptability and flexibility (towards observations, approach and definitions) *while* interviewing. Structuring and steering will be just limited to a first set of questions. However most of the discussion will come out of the conversation.

Target groups

Technical experts in the study fields covered; experts, defined as citizens in key positions in government/ administration (e.g. local governments, Government departments and others); representatives of key stakeholder groups in the case study areas, local citizens close to the area of focus that are/ were not active in the particular case study projects; "people/ communities", not linked to the case study areas (some distance away, area need to be defined, to act as "benchmark" for views expressed by the other groups .

Object of investigation

- Awareness, perceptions and histories of local coastal citizens and
- their attitudes towards energy projects in their area, and
- their level of trust towards decision takers from industry and government.

General objectives of the interviews

Seeking detailed descriptions of individual views and opinions of polled representatives towards the object of investigation.

B – Survey questions and guiding questions group discussions Corrib Gas project

Focus Group discussion – "Shell Liaison Office" (Industry Developer)

1) Identify principles of effective community engagement in this example?
2) Which measures were most effective in terms of rebuilding trust?

   Note: Maybe it is worth thinking of a distinction between tangible (e.g. compensation and investments, funds etc.) and not tangible measures (e.g. transparency).

3) Several interviews indicated that mistrust towards (local and national) government exists within the local community. How do you see the role of local and national government in this regard, recently and in the past?
4) Are you aware of any government principles/actions towards at rebuilding trust within the community?

2nd Corrib visit – Extreme opposition and community informants

Extreme Opposition

Context 1: Flow of information and Early Engagement

1) What really happened? And maybe we can focus on the event when you first got aware of the plans. When did you get aware of the overall extend? Which were the most life-changing events for you personally?
2) When did anyone get in contact to you and asked/requested something from you? Who was it?
3) What did you wish to happen differently? What would have caused a different reaction from you? Would you have accepted any use of your property? For what purpose?
4) Do you thing all considerable options have been explored previously?

Context 2: Levels of opposition

5) What came to you mind when you actually were informed to assign your land? What was the prize? Did you get frightened?
6) Which conclusions did you draw for you from this event? Did you immediately decided to protest? Or, did you more wisely planned it in a long-term?

7) Why did you actually decided to oppose against the plan? What was the main reason:

   Technical, safety concerns,

   The terminal,

   Lack of benefit, to Mayo, flow of information,

   Financial compensation,

   Monitoring of the project, overall coordination, leadership,

   Relations with Shell.

   Or the way decisions were made? Because you were presented with a fait accompli?

8) What did others prevailed to assign their property?
9) Would you do it again? Or differently? In the same situation, would you react differently today?

Context 3: Trust

10) How got trust lost? Has there been any trust before at all? In Government? Industry? Developments in the area at all?
11) If there is anyone from outside the area, who kept you posted on the project?
12) Who did you actually trust? Which people, groups at that time and today?
13) In the final instance, what caused the most significant loss of trust?
14) Has trust being rebuilt over the last 10 years? Government? Industry? In the project? What are the reasons?
15) What is needed to maintain economic welfare, initially generated through compensations?

Community Informants

Context 1: Trust

1) When did you first get aware of the plans? When did you get aware of the overall extend?
2) How did the development around the "Corrib" influence your daily working? When did it become most critical? Examples?

3) Did you have to mediate any dispute? Did anyone approached you to mediate any conflict?
4) You have a broad perspective on perceptions and opinions in the community. You may be talked to parents regularly. Just an estimate, how much would you guess were against or in support of the project in the past? Which were major concerns?
5) How many people are in favour or against it today?
6) Has trust being rebuilt over the last 10 years? Government? Industry? In the project? What are the reasons?
7) That is needed to maintain economic welfare, initially generated through compensations?

C – Survey questions and guiding questions group discussions U.S. case studies

1. To which degree are/were the enabling conditions present in the selected case study:
    a. A core group of well informed and supportive stakeholder groups support the program,
    b. Sufficient initial capacity is present within responsible institutions to implement policies and action plans,
    c. Governmental commitment is in place to provide necessary authorities and financial resources required to implement a program,
    d. Adoption of unambiguous goals are in place against which program efforts can be measured.
2. Did you put any measures in place to build trust between resource users, managers and investors/funders?
3. Do you observe any examples of significant disputes in the process and how/by whom have they been reconciled?

Optional:

4. Did you have any experiences with BOEM? To what extent did the framework fulfil its purpose to act as a single institution to harmonize lease procedures of marine energy projects?
    a. What are strength and weaknesses of BOEM?
    b. Do you attribute BOEM ability to unlock potential to harness energies from the ocean?

Note: Questions in accordance with Olsen et al. (2009).

D – Interview consent form

Information Sheet and Consent Form for Research Participants

Information Sheet

University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

Purpose of the Study. The study results will be used to become awarded a Post Graduate Degree from UCC (PhD dissertation). The purpose of the research is to study the importance of governance in order to enable the marine energy sector to unlock resource use potentials sustainably and to develop new models of governance (including improved processes for policy, planning and new ways of engaging within local communities). The study incorporates case study learning.

What will the study involve? The study involves desktop reviews (including scientific and grey literature reviews), case study analysis (including interviews), site visits, workshops and informal collaboration. Interviews will roughly take around 45 – 60 minute.

Why have you been asked to take part? You have been asked because can provide a broad perspective of the issues in your area and field of expertise. In addition, you dispose of very specific expertise and wide experiences on the process of energy project implementation.

Do you have to take part? Your participation is voluntary. Therefore, we inform you about the voluntary nature of the interview by phone. We ask you to sign the consent form. We will share with you a signed copy right after meeting by email. After a final check you can withdraw from the statements made. This withdrawal must be made before the study commences. This right will be provided, even if you initially agreed to participate.

Will your participation in the study be kept confidential? The information you provided will be kept anonymously. Names or private information will NOT be included into the thesis. All data generated from the interview will be stored securely on a computer of the university and backed-up on a hard drive for a period of at least 10 years for data retrospectivity.

What will happen to the information which you give? Data will be kept confidentially for at least 10 years before being destroyed.

What will happen to the results? The results will be presented in the thesis. Results will be evaluated by the supervisors of the study and the external examiner. Certain aspects will be published in peer-reviewed scientific journals following data policy regulation of the research journals.

What are the possible disadvantages of taking part? There are no disadvantages of taking part but also of not taking part. I do not envisage any negative consequences at all.

What if there is a problem? At the end of the procedure, I will ask you to provide some feedback in order to improve the methodology. I would also like express my interest in keeping in touch to share final results of the study.

Who has reviewed this study? The study has been reviewed by supervisors at UCC, heads of the Geography Department, the appropriate college, the funders, MaREI Centre PI's and a PhD study Technical Advisory Group.

Any further queries? If you need any further information, you can contact me:

Marcus Lange, + 8777 92116, marcus.lange@uccie

If you agree to take part in the study, please sign the consent form overleaf on the following page.

Consent Form

This consent form is designed with qualitative research in mind. Where quantitative methods are used, issues such as quotations and audio-recording do not arise.

I……agree to participate in [*name*]'s research study.

The purpose and nature of the study has been explained to me in writing.

I am participating voluntarily.

I give permission for my interview with [*name*] to be audio-recorded.

I understand that I can withdraw from the study, without repercussions, at any time, whether before it starts or while I am participating.

I understand that I can withdraw permission to use the data within two weeks of the interview, in which case the material will be deleted.

I understand that anonymity will be ensured in the write-up by disguising my identity.

I understand that disguised extracts from my interview may be quoted in the thesis and any subsequent publications if I give permission below:

(Please tick one box:)

I agree to quotation/publication of extracts from my interview □

I do not agree to quotation/publication of extracts from my interview □

Signed: ……. Date: ……..

PRINT NAME: ……..

E – Workshop Report 'Marine Energy Governance Workshop'

Marine Energy Governance Workshop:
Getting it Right for Marine Energy
May 12th -14th 2015

Workshop Report

Facilitated by

Kindly supported by

Roinn Cumarsáide, Fuinnimh agus Acmhainní Nádúrtha
Department of Communications, Energy and Natural Resources

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Introduction

Transformative actions are required to advance Ireland's position as a market leader in target areas for 'blue' economic growth as captured by *Harnessing Our Ocean Wealth*, the Integrated Marine Plan for Ireland, and the wider EU Atlantic Strategy. Transformation is also required in our systems of governance (the interaction between government, industry and civil society) in order to deliver these changes in a fair and transparent manner.

Governance, as we defined it, addresses the policies, laws and institutions by which a set of issues are addressed. Governance questions the fundamental goals, the institutional processes and the structures that are the basis for planning and decision-making. Governance sets the stage within which management occurs. Consequently, management is the process by which human and material resources are harnessed to achieve a known goal within a known institutional structure.

Understanding the governance dimensions within a given context is important because the power to influence decision-making in government, industry and civil society is what has shaped the outcomes of management. This became abundantly clear in several outcomes to date in case studies that we explored such as the Corrib gas-field development.

The MaREI Marine Energy Governance Workshop held in Newbridge, Ireland, 12th-14th May 2015, presented a unique and strategic opportunity to improve our capacity to learn about our own past governance dynamics. It began with an exercise of looking back over 100 years to focus on critical constraints to effective decision making, and to consider innovative approaches to future governance arrangements. In this context 'marine energy' includes offshore oil and gas along with marine renewables (offshore wind, wave and tidal).

The workshop brought together twenty experienced leaders from across industry and government in both the offshore oil and gas, and the marine renewable energy arenas with governance experts who also served as process facilitators. The objective of the meeting was stated as:

Building consensus on what the issues are, and the transformational change required in frameworks for decision taking at the national level, in the context of marine energy initiatives for Ireland.

The workshop was facilitated by team members of SustainaMetrix, the Future Earth Coasts, formerly known as Land-Ocean Interactions in the Coastal Zone (LOICZ) programme and the Marine Energy Ireland (MaREI) Centre. It was supported and funded by MaREI, Shell E&P Ireland and the Department of Communications, Energy and Natural Resources.

Process

The workshop was structured to reflect on multiple spheres of influence, how we have got to where we are today, the strengths and weaknesses of the current governance system, and in considering the most

pressing issues ahead to 2050, what the governance response should be.

A Timeline of Marine Energy Governance was produced as a comprehensive output by the group (see Appendix). This timeline can be used as a valuable tool for demonstrating the linkages across the marine energy governance system in Ireland, the unpredictable nature of local, regional and global events, and the paramount importance of flexible and adaptive governance structures and responses.

The critique on strengths and weaknesses in the current system of governance highlighted the fact that Ireland is at an important turning point in how we plan and manage our marine energy resources. The last five years in particular have seen a number of important positive changes including the building blocks for coordination put in place by mechanisms such as the Marine Coordination Group, and the Offshore Renewable Energy Development Plan Steering Group. These offer potential vehicles for the uptake of recommendations from the workshop, as well as policy windows provided by the forthcoming White Paper on Energy and the consultation on the fifth Irish Offshore Strategic Environmental Assessment (IOSEA5).

Recommendations

Three key recommendations emerged:

1. Engaging with the Energy Citizen on the need for a mature national debate on Ireland's energy mix

Case studies discussed during the workshop such as Corrib, Shannon LNG and Templederry Wind Farm, among many other examples from at home and abroad, highlighted the need to engage a wide range of stakeholders and particularly the public and local citizens in marine energy projects at the pre-application stage. They also emphasised the need for individuals to derive added value, financial or other, from energy projects.

Beyond energy infrastructure projects, there is a need and desire for ongoing engagement and awareness building on Ireland's energy system and future energy mix. The challenge for society as a whole is to double the supply of energy whilst halving carbon emissions by 2050. The recommendation is to engage in a meaningful way in a dialogue that facilitates negotiation and trade-offs on our long-term approach to fossil fuel consumption, carbon capture and sequestration, renewable energy, the development of the grid system and even geo-engineering solutions for future climate change.

2. Addressing Resource Challenges

In this era of volatile transitions, characterised by issues of energy, water and food security, vulnerable economic systems, rapid technological advances, climate change and diminished ecosystem goods and services, business as usual needs to be replaced by new and impactful pathways to transformation. Government has an important role to play in leading this charge. Existing levels of human resources needed to support policy-making across strategic areas within the marine energy spectrum are simply inadequate and not fit



for the governance challenge. At the same time opportunities exist for innovative ways of enhancing capacity, such as secondments between DCENR, its agencies and industry.

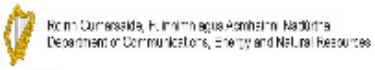
It is recommended that a modest amount of additional human resources are considered to return the investment via a multiplier effect through better linkages across the three pillars of governance (government, industry and civil society), and to strengthen the opportunity for knowledge transfer between the marine renewable and offshore sectors in Ireland. It is further recommended that resources are made available to realise the full opportunity around the drafting of the new foreshore legislation, which is critical to the sustainable development of all aspects of Ireland's marine economy.

3. Development of the Marine Energy Futures Network

The workshop recognised the significant opportunity presented by continuing this novel approach, enhancing co-operation between the offshore oil and gas and marine renewable energy sectors, towards making our green and blue Island a global leader in energy security. The workshop provided a distinctive opportunity to bring together representatives from the offshore sector, the marine renewables sector and marine governance expertise. It demonstrated the value of facilitating a process where thought leaders 'can think outside the box' as well as take a long-term view of the challenges and opportunities to be managed. The consensus from the workshop was a recognition of the value of a potential *Marine Energy Futures Network*. Further work needs to be done to define how this can be best nested in the existing governance architecture, as well as broadening the participants to include civil society, other government and industry representatives. The momentum that was built was strong and can be further developed.

These concepts will be discussed with relevant actors and the group is committed to meeting again to focus on these three recommendations, with a view to bringing forward actionable ideas whereby progress on the marine energy agenda can be reviewed in an iterative, inclusive and open way.





Appendix

Participants

Brian Carroll, DCENR
John Conroy, Shell EP Ireland
Peter Coyle, MRIA
Valerie Cummins, IMERC
Ronan Deasy, Shell EP Ireland
Robert Devoy, MaREI, UCC
John Egan, Shell EP Ireland
Jeremy Gault, MaREI, UCC
Peter Hynes, Mayo County Manager
Martin LeTissier, LOICZ, Future Earth - Coasts
Terry Mc Mahon, Marine Institute
Declan Meally, SEAI
Mark Mellett, Rear Admiral Defence Forces
Brian Motherway, SEAI
Lorraine O Donoghue, DECL
Anne Marie O'Hagan, MaREI, UCC
Jane O'Keeffe, CIT, UCC
Nick O Neil, SLR
Gareth Parry, Woodside
Pat Shannon, Irish Offshore Operators Association
Eoin Sweeney

International Facilitators
Paul Anderson, SustainaMetrix, Maine Sea Grant
Glenn Page, SustainaMetrix, President
Stephen Olsen, SustainaMetrix, University of Rhode Island

Support
Anne Clark, IMERC & Marcus Lange, MaREI, UCC
Guest of honour – dinner: Simon Coveney TD, Minister for Defence and Marine

Action Points arising from Breakout Sessions

Energy and industry related

- Take the workshop findings to key players, e.g. DCENR and its agencies and the Marine Coordination Group (MCG).
- Explore the opportunity for a MARINE ENERGY FUTURES network. This report should be a first step to encourage continuity in this dialogue.
- Consider the opportunity to strengthen links with other actors, e.g. County & City Management Association (CCMA).
- Make a submission to IOSEA5, recommending the value of an 'entire' Marine Energy SEA, encompassing marine renewables and oil & gas, in future.
- Develop a Marine Energy System Baseline Process, e.g. horizon scan, 60 year time frame, outreach, media, review, monitoring and evaluation, Marine Energy Licensing Coordination Group (incl. all government actors), and possibility of industry secondments.
- Brainstorm on what a whole of government approach to marine energy would look like.
- Engage in extension activity to bring in community participation.
- Begin a process to discuss across government how to incorporate MSP into the planning process – needs inclusion of local authorities as they are expected to have an enhanced responsibility in the foreshore once new legislation is enacted.
- Create a network of industry interest (energy, renewables, fisheries, aquaculture and environmental entities) that have regular interaction with relevant policy makers.

Fishery and Food Security related

- Secure and incentivise the opportunity for fishermen and their families to contribute to and benefit from energy projects (e.g. monitoring and maintenance).
- Ensure that fisheries impacts are sufficiently assessed and addressed in the EIA process and associated reports.
- Utilise the marine energy test sites for conducting research on the possible impacts on fish and habitat and make data readily accessible.
- Consenting process should address long-term monitoring of fisheries and habitat impacts in order to assess both positive and negative effects and the influence of a changing ecosystem.
- Adjust the consenting process so that proposals for multiple uses (e.g. aquaculture) receive priority with expedited review.

Workshop Agenda

Tuesday March 12

19:00-21:00
Informal session on Timeline Review with facilitators and study group.

Group 1
- Timeline of Technological Breakthroughs
- Timeline of Market/Economic Development

Group 2
- Timeline of System of Control and Regulation
- Timeline of Organizational Structures

Group 3
- Timeline of Key Enabling Infrastructure Development
- Timeline of Pro-Active and Re-Active Public Involvement
- Timeline of Awareness of the Marine Ecosystem

Wednesday March 13th

Part 1: Strengths and weaknesses of existing Irish System

09:00 Welcome, Purpose and Target Outcomes
- Jeremy Gault; Dr. Valerie Cummins; International facilitators (Glenn Page, Prof Stephen Olsen, Paul Anderson)

10:00: Looking Back BREAKOUT:

Group 1
- Timeline of Technological Breakthroughs
- Timeline of Market/Economic Development

Group 2
- Timeline of System of Control and Regulation
- Timeline of Organizational Structures

Group 3
- Timeline of Key Enabling Infrastructure Development
- Timeline of Pro-Active and Re-Active Public Involvement
- Timeline of Awareness of the Marine Ecosystem

11:00: Groups, feedback on what has been learned about key governance shifts and what may be some of the key strengths and weaknesses of the existing Irish governance system



12:00 noon Lunch

Part 2: Key Issues of TRUST (top-down and bottom-up), Learning from Irish Case Examples and How Other Countries Have Faced Two Critical Issues

13.00: Introduction

- Stephen Olsen and Paul Anderson - International experiences – top down and bottom up stakeholder engagement and regulatory systems
- Charge to the group (John Egan, Shell) Introduction to the importance of building trust for an effective regulatory framework

13:45: Breakout groups with a focus on lessons learned from other countries

- Breakout A –: What can we learn from Irish case examples and experiences elsewhere on what others are doing to develop meaningful and effective ways to **involve stakeholders and build trust**
- Breakout B -: What can we learn from experiences in Ireland and elsewhere on more ways to build trust for an **effective regulatory framework and how to align institutions that deal with these broader issues**.

2:30: Reconvene for Groups Feedback

3:00: Break

Part 3: Summing up of Strengths and weaknesses of existing Irish Governance System

15:30 – 17:00 Summing up of the Strengths and Weaknesses

19.30: Dinner hosted by Rear Admiral Mark Mellett. Guest of honour Minister Simon Coveney, Minister for Defence and Marine.

Thursday March 14th

Part 4: How the World May Change Over the Next 30-50 years – 2050-2080

09:00: Introduction by Stephen Olsen on Orders of Outcome, Setting the Scene Prof Robert Devoy - climate science scenarios

09:30: Anticipating the Impacts of Global Change breakout; Introduction to the breakout and charge to the group: Val Cummins, – macro global context

Breakout Groups:

Group 1: Food Security: Fisheries & Aquaculture

- Based on the issues of global change – Consider impacts to industry, government, civil society

Group 2: Energy Security

- Based on the issues of global change – Consider impacts to industry, government, civil society

Group 3: Economic Issues – Shipping, Tourism, Trade, Investment

- Based on the issues of global change – Consider impacts to industry, government, civil society

10:30: Groups' Feedback and discussion on what have we learned about the Irish governance system

12:00 noon

Part 5: What's needed for governance response? What is possible given the Irish context?

13:00 Discuss ideas and make recommendations on 3 major groups of Governance

14:00

Three Breakout Groups:

Group 1: Recommendations for change associated with Government
Group 2: Recommendations for change associated with Civil Society
Group 3: Recommendations for change associated with Market Forces

Part 6: Summing up: What's Possible Given the Irish Context and Windows of Opportunity

3:00 Report back from Breakout Groups and discussion on actionable steps for changed behaviour.

4:15 Formal End

Marine Energy Governance Timeline