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Stakeholder Engagement and Irish Public Perception of Offshore Wind Farms

Thesis presented by

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School of

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Abstract

Public attitude towards onshore wind farm development in Ireland has been extensively investigated, as the sector is a relatively well-established sector in Ireland today. In contrast, currently there is little or no understanding of the perception of the Irish public to *offshore* wind farms (OSWFs). At this critical juncture in the accelerated development of the offshore wind sector, it is necessary to gauge public opinion regarding offshore wind farms. Of the many challenges associated with the development of the offshore wind industry in Irish waters social acceptance is potentially one of the most significant obstructions. To attain social acceptance of a development, it has become crucial to identify and involve the various stakeholders (at all levels) at the earliest possible stage or expose the project to the possibility of public disputes, opposition and delays. In order to involve stakeholders in any process, the stakeholders must first be identified and then mapped, in order to ascertain their potential influence over the project. These levels of influence of stakeholders, shift and change over the lifetime of the project. There is also a significant difference between the general acceptance of sustainable energy expansion and the acceptance of tangible, proposed renewable energy projects by the general public. Gaining a snapshot of social attitude towards offshore wind development provides a useful tool with which to understanding public opinion regarding offshore wind development. It is also essential information in order to know at what level to pitch a public information campaign regarding offshore wind development. The effect that print media has on attitudes of those who read it has also been shown to be significant. As a result, understanding the framing of the 'offshore wind development' message from the print media sector is also crucial in understanding the perception of the Irish public towards the offshore wind farm industry in Ireland. The aim of the research was to understand the many facets of public perception of offshore wind development in Ireland. This study used a mixed methods approach guided by existing studies of the same subject in other jurisdictions. A stakeholder mapping exercise identified stakeholders according to seven categories; government , supply chain, vested interest groups, general public, print media, political representatives, and Non- Governmental Organisations (NGOs). Issues of concern from the perspective of the offshore wind industry were important to understand. These findings influenced the research design for this thesis, which was undertaken as part of the Science Foundation Ireland EirWind project on a blueprint for offshore wind. A national survey was undertaken to develop the first overall picture of the public

attitude of the Irish population to offshore wind farms, and their attitude to potential future development. The survey was nationally representative, with 1154 completed questionnaires analysed. Results indicate that attitudes to planned OSWFs change significantly with education levels.

Most of those questioned believed that Ireland is too reliant on foreign energy and agreed that Ireland is running out of its limited fossil fuel reserves. The majority of people also believed that the government is not doing enough to reduce carbon emissions and should invest in offshore wind farms. 63% of those surveyed believed that offshore wind farms would increase Ireland's job creation potential. A clear majority of those who took part in the survey were in favour of offshore wind farms both on a local and national level. Just over half of the participants believed that offshore wind farms are the best solution to our energy situation.

Approximately half of respondents had previous experience of offshore wind farms (the majority of whom had experienced offshore wind farms on holiday). To further investigate the perception of those who are regularly exposed to offshore wind farms, a focus group involving members of the public with regular exposure to Ireland's only wind farm The Arklow Bank, was held. The scope of sentiment expressed towards the offshore turbines ranged from benign to extremely positive. Returning to the results of the national survey; in terms of the effect on wildlife, tourism and aesthetics, respondents found offshore wind farms to be relatively unobtrusive and in general a positive addition to the seascape. The respondents' attitudes towards offshore wind farms was shown to change significantly with their primary source of printed news. As a result, a media content analysis was also conducted to identify arguments used in the presentation of offshore wind to the public, while the sector is at a nascent stage of development.

The study revealed Ireland's offshore renewable industry making slow but consistent progress towards expansion of offshore wind generation with coverage intensifying from 2018. Negative sentiment was perceived with regard to coverage of government action or decisions, which revealed the importance of framing; this is shown in the context of media informing public opinion. In short, this research provides valuable insights into public perception of offshore wind in Ireland, at a time when development is likely to increase significantly. While opposition may be anticipated at a local, project level in the future, a window of opportunity exists to facilitate a

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Chapter 1

1 Introduction

International agreements, such as the United Nations Framework Convention on Climate Change, the Paris Climate Agreement, and the Sustainable Development Goals under Agenda 2030, are driving the need to produce electricity from renewable energy sources (Dwyer and Bidwell, 2019). The Government of Ireland Climate Action Plan (CAP) published in January 2019 acknowledges the need to shift towards sustainable development and electricity production from renewables (Government of Ireland, 2019). It sets out plans for an increased reliance on renewable energy from 30% to 70% by the year 2030, with streamlined consent systems, more efficient grid connection and subsidies for new technology development. The CAP set a policy mandate for the development of offshore wind, with *a minimum* of 3.5GW by 2030 (Government of Ireland, 2019). This was increased to 5GW by 2030 in the Programme for Government 2020 (Government of Ireland, 2020). At time of writing, the world's total offshore wind capacity is 29GW (Eirwind, 2019). Future energy scenarios developed by EirGrid (2018) suggest an increase in the Total Energy Requirement (TER) (total energy needed to run the country) between 22% and 53% by 2030. The expected growth in demand will be driven in part by large energy users, such as data centres. Wind energy already plays a key role in meeting national targets for renewable energy with 47% of Ireland's electricity in the first quarter of 2020 supplied by onshore wind energy (IWEA, 2020). Offshore wind could add substantially to this supply as it has in other countries.

Until relatively recently, the public has shown (with a few exceptions) support or at least indifference to the continued development of onshore wind farms throughout Ireland (O'Connor, 2018). However, the atmosphere has changed to one of growing unhappiness, with increasing opposition to further terrestrial wind farm development (Lange et al., 2018).

The Republic of Ireland has an abundance of terrestrial wind farms with circa 4200MW of installed capacity which provided 30% of Irelands total electricity demand in 2018 (SEAI, 2019). Previous studies have investigated public attitudes towards onshore wind farm development (Brennan et al., 2017; Brennan and Van Rensburg, 2016; Ellis et al., 2009; IWEA, 2018; Warren et

al., 2005). Research has shown a range of varying attitudes including: a predisposition towards monetary trade-offs to allow for wind energy (Van Rensburg *et al.,* 2018), growing support in general for wind energy in Ireland (IWEA, 2018; Cronin *et al*, 2020), and challenges facing social acceptance linked to landscape, biodiversity, health, noise and property value (Ellis et al., 2009; Cronin *et al*, 2020).

Despite a significant offshore wind resource; Ireland has a landmass of over ten times that of its terrestrial area, and significant wind resources off its coastline. However, Ireland has, as yet failed to harness its offshore wind potential. The vast majority of Ireland's wind energy comes from terrestrial projects with only 25MW of installed capacity on The Arklow Bank Wind Park. In fact, the 25MW Arklow Bank wind farm is currently the only operational offshore wind farm (OSWF) in Ireland. A window of opportunity has opened up in Ireland to accelerate the development of offshore wind, such that it makes a significant contribution via energy transitions to the decarbonisation of the economy (Lange *et al.,* 2018). A reduction in the Levelised Cost of Energy (LCOE) and the saturation of other eligible sites for development in NW Europe, has resulted in increased attention on Ireland as an emerging market over the last two years.

Approximately 11GW of proposed offshore wind projects are in the pipeline, at different stages of development, from very early to legacy project stages (Cummins and McKeogh 2020). The designation by the Irish Government in May 2020 of seven offshore renewable projects as Relevant Projects has further advanced the offshore wind sector. Coupled with government commitment to enactment of the Marine Planning and Development Management Bill by quarter 1 of 2021, (Government of Ireland, 2020), offshore wind development in Ireland is beginning to accelerate. An application for an initial site investigation licence for floating offshore wind farms off the coast of cork by three developers (DP 2019, SSE, 2019, Simply Blue Energy, 2020) signals the onset of Irelands floating offshore wind energy industry. Floating offshore wind is expected to become a major contributor to global offshore wind capacity in the coming years and to contribute to the restriction of global warming to within 1.5 degrees of pre-industrial levels. Offshore wind also presents the most immediate and tangible opportunity to achieve national targets for Blue Growth (Government of Ireland, 2012), including job creation, development of a supply chain and export potential.

Of the many challenges associated with the realisation of the above prospects (e.g. technology development, site selection and cost optimisation), social acceptance can be underestimated, misunderstood, and badly managed which is why it has often been and can become a significant obstruction to renewable energy development (Wustenhagen et al., 2007). To ensure social acceptance of a project, it has become increasingly important to include stakeholders in the planning stages or risk the possibility of protests, objections and potential failure (Reilly et al., 2016; Haggett, 2011; Jones and Eiser, 2010; Reed, 2008; Ellis et al., 2007; Sorensen et al., 2002). The level of influence that public opinion has on the success or failure of renewable energy projects has been illustrated extensively in the literature (Bell et al., 2005; Devine-Wright and Howes, 2010; Firestone and Kempton, 2007; Reilly et al., 2015). With the advancement of wind technology both on and offshore, one of the challenges is that of public opposition to the siting of wind farms (Petrova, 2013). In order to realise a carbon free economy it is necessary for society to embrace developing technologies, not only theoretically but practically, both on a global and local level (Dwyer and Bidwell, 2019).

Although in the whole, there is widespread support for renewable energy policies and clear championing of the development of renewable energy capacity (Firestone et al., 2012; Jones and Eiser, 2009; Waldo, 2012), there is however a significant difference between the general acceptance of sustainable energy expansion and the acceptance of tangible, proposed renewable energy projects by the general public (Brennan and Van Rensburg, 2016; Jones and Eiser, 2009; Warren et al., 2005).

The term 'Social Licence to Operate' (SLO) implies an obligation or responsibility on the part of the wind farm developer towards society in general. If developers chose to minimise their interaction with the general public regarding projects by taking the '*Decide, Announce, Defend*' approach, the public reaction can be that of social unease and protest, resulting in project disruption and delay as seen at an unprecedented level with the Corrib Gas Project (Lange et al., 2018a) or even failure as in the case of the Cape Wind project (Firestone and Kempton, 2007; Phadke, 2010).

The study of mass media content is an essential component in understanding public perception of the environment (Crawley, 2007, Nerlich et al., 2012). Most of what the general public know

and understand with regard to the environment and climate change/global warming/the greenhouse effect, is sourced from mass media, be it television, newspapers, radio and online social media; such as Facebook and Twitter (Hansen, 2011).

1.1 Research Aims and Objectives

There is a lack of research focused on understanding the factors driving acceptance of and opposition to renewable energy. This lack of understanding seems to be the keystone to unsatisfactory engagement processes. The studies which have been done to date have each tended to concentrate on one single area of research, such as physical aspects of the proposed development i.e. location of the windfarm, number of turbines, proximity to stakeholders. Each of these studies are stand alone and isolated examples of specific cases. There seems to be no cohesion or relation to other pre-existing studies. As a result the literature is fragmented and littered with examples of specific points of interest with no interconnection between study sites, or projects. There is a need for studies pertaining to stakeholder perception to be more cohesive and structured in order to create a system to understand best practice and recommended approaches for future studies.

The overall aim of this study is to investigate and contribute to our understanding of public perception of offshore wind in Ireland, at a time when the sector is emerging as a market opportunity.

The specific objectives are:

- To examine public perception at multiple levels, from the national to the local.
- To examine the effect that experience of offshore wind farms has on those perceptions.
- To study the effect that education levels have on the perception of offshore wind farms and the offshore wind industry
- To consider the role of media in framing the way the public perceive offshore wind and the offshore wind industry in Ireland.

To understand the associations between offshore wind and other issues, e.g visual impact, climate change, energy security.

Chapter 2

2 Literature Review

2.1 Introduction to the Issues

Although the concept of renewable energy is considered to be well received on a global level (Waldo, 2012; Wolsink, 2007; Wustenhagen et al., 2007) there is evidence that offshore renewable developments regularly face difficulties at a local level, particularly in terms of social acceptance and/or governmental and planning issues (Firestone et al., 2012; Reed, 2008; Toke et al., 2008). In Ireland, many offshore wind developers report these difficulties (Lange et al., 2018; Brennan and Van Rensburg, 2016; Reilly et al., 2016), with both development of policy and implementation of licencing laws in Ireland being considered fragmented and disjointed (Lange et al., 2018). This lack of cohesion has frustrated potential renewable energy developments (Ibid) and has, in many cases led to conflicts between local pressure groups and developers (Reilly et al., 2016; Warren et al., 2005).

Environmental resource management problems pertaining to renewable energy can be referred to as 'wicked' problems (Jentoft and Chuenpagdee, 2009). Because each wicked problem can be seen from different rationalities, there can be no universally correct plan of action or comprehensive blueprint to definitively bring about satisfaction for all parties concerned (Hartmann, 2012). Rittel and Webber, (1973) described ten characteristics of a wicked problem which sets it apart from a 'tame' or definitively solvable one (Jentoft and Chuenpagdee, 2009):

1. There is no conclusive definition of a wicked problem.
2. There is no definitive conclusion to a wicked problem.
3. There can only be 'good enough' solution to a wicked problem.
4. It is impossible to assess immediately if the solution works.
5. Solutions cannot be tested and retried, any solution has significant repercussions.
6. It is impossible to definitively confirm that all potential solutions have been considered.
7. Every wicked problem is unique.
8. Every wicked problem can be thought of as a result of another problem.

9. The reason for the need for a solution to a wicked problem has many manifestations. How it is described will affect its resolution.
10. The planner has no right to wrong – the solutions which are settled will affect a large community.

Each of these criteria can be applied to the challenges of environmental development and stakeholder engagement (Dentoni et al., 2018; Hartmann, 2012). The complexity of the renewable energy debate is illustrated by Warren et al., (2005) who show that although renewable energy is considered an environmentally friendly energy source, environmentalists' arguments against renewable energy projects assert that the socio-economic benefits of renewable energy projects are at the cost of the aesthetics of the local surrounds (Waldo, 2012; Devine-Wright and Howes, 2010; Ladenburg, 2010;) or animal welfare (Ladenburg, 2010; Wolsink, 2000). However the same environmentalists are supporters of renewable clean energy, championing the causes for renewable energy development (Warren et al., 2005).

The objective of this literature review is to determine the existing research methodologies available for stakeholder perception of renewable development in order to glean an understanding of stakeholder perceptions of offshore wind development scenarios. Furthermore, this literature review will report on what is considered best practice for stakeholder engagement from both an international and, more specifically, an Irish context.

2.2 Stakeholder identification

Before the process of identifying stakeholders can begin, there must be a clear understanding of exactly what issue is under question (Reed, 2008; Glicken, 2000); only then can the relevant stakeholders begin to be identified. Haggett (2011) highlights the difficulties in defining the physical boundaries of those affected by environmental projects, especially in the case of offshore wind farm developments, asking the question, should everyone who can see the wind farm be included as a stakeholder or just those who use the area in which the development is proposed? This can be addressed by including analysis of social effects in the scope of an environmental impact assessment which can be a good starting point for discourse with stakeholders (Sorensen et al., 2002). Reed et al. (2009) recognise that it is often impractical to

include absolutely all stakeholders and at some point a line must be drawn in order to move on with the actual process of engagement or consultation. The exclusion of some crucial groups may lead to future objections as a result of their lack of inclusion (Glicken, 2000). The key is to find the most representative stakeholders that time and resources will allow (Luyet et al., 2012).

Stakeholder identification is an iterative process

To ensure all relevant and interested parties are included, stakeholders can be identified in a number of ways such as:

- Public meetings (Reilly et al., 2016; Glicken, 2000)
- Self-identification (Reed et al., 2009)
- Snowball sampling (King et al., 1998) - Initial brainstormed stakeholders are interviewed in order to identify new stakeholders
- Radical transactiveness - Snowball sampling to identify fringe stakeholders (Reed et al., 2009)
- Engagement with local government, local organisations and groups (Klain et al., 2017)

Each of these methods can be revisited a number of times or combined with each other in order to include additional stakeholders as they are identified. The iterative process ensures that the risk of omitting certain stakeholders is minimised (Reed, 2008; Bryson, 2004). Stakeholders can also be identified using informal and unstructured methods (Reed et al., 2009) but this may introduce bias at the later stages of the project (Schumacher et al., 2018; Luyet et al., 2012; ibid). Glicken (2000) highlights the importance of using geography, local politics and history to find potential stakeholders. Ritchie and Ellis, (2010) differentiate between public, private, voluntary and academic sectors when considering inclusion of stakeholders. The technique of identification used will depend on the project context, resources and timeframe available (Luyet et al., 2012). Similarly each process used to identify stakeholders will yield different results (Glicken, 2000).

2.3 Stakeholder Analysis and Mapping

Stakeholder analysis and mapping organises stakeholders by relative power, influence and interest in a project. The importance of each stakeholder to the success of the project can then be assessed (Aligica, 2006; Brugha and Varvasovszky, 2000). Stakeholders can also be categorised into those affected by (passive) or who can affect (active) the project (Grimble and Wellard, 1997). Analysis allows the identification of likely alliances within the stakeholder group (Aligica, 2006) and how those alliances could influence the outcome of the project (Brugha and Varvasovszky, 2000). Potential conflicts between stakeholder groups along with trade-offs they are willing to make are also significant factors to be taken into account, which can be studied using stakeholder analysis (Grimble and Wellard, 1997). Reed et al., (2009) reviewed four techniques for stakeholder analysis which can be used individually or together to analyse identified stakeholders.

Interest-Influence matrices: Stakeholders can be viewed in term of interest in and influence over the project.

Actor-linkage matrices: Stakeholders are listed in a matrix with keys words used to define the relationship between them, e.g. Conflict, Complimentary, Cooperation.

Social Network Analysis: Numbers are used in this matrix to represent a relationship between stakeholders and the strength of that relationship.

Knowledge Mapping: When used in conjunction with Social Network Mapping it can capture the knowledge of different stakeholders across time, people and locations, and identify the flow of knowledge.

Other stakeholder mapping and analysis techniques, accounted for in Bryson (2004) include:

The basic stakeholder analysis technique: stakeholders and their interests are identified, views of the entity in question are clarified, key strategic issues, coalitions of support or opposition are categorised.

The power versus interest grid: stakeholders are sorted into a grid similar to that of the interest-influence matrix, depending on their interest and power to affect the project; players have

interest and power, subjects have interest but little power, context setters have power but little interest and crowd has little interest or power.

Stakeholder influence diagrams: this technique adds to the power versus interest grid (or the influence versus interest grid) by showing how the entrants in each of the grid influence each other.

Participation planning matrix: Specifically designed to plan for stakeholder participation. It guides the facilitator to think about the different ways and levels that different stakeholders need to be engaged.

Grimble and Wellard, (1997) use the Macro-Micro Continuum, classifying stakeholders from global, national, regional, local to offsite. Each of the methods above differ slightly in their approach to stakeholder analysis, but each moves towards understanding the subtleties of influence and clarifying the decision making process for those involved (Reed et al., 2009). Each method can produce complimentary results (Lienert et al., 2013) which can be used to get a clearer overall picture of stakeholder involvement. For example, Lienert et al. (2013) used social network analysis to compliment results obtained from stakeholder analysis by exposing patterns in stakeholders interests, they also used network analysis to reveal fragmentations between stakeholder groups to give a more comprehensive view of attitudes.

2.4 What Influences Public Perception

Public perception can be explained as a snapshot of collective attitudes and opinions of a sample of people who are asked what they think about certain matters or issues (Dowler et al., 2006). Individual attitudes can be defined as a person's summary appraisal of an object or fact (Ajzen, 2001). Waldo (2012) refers to attitude as a system of three components – *cognitive* (the individual's belief about an object), *feeling* (the emotions experienced in relation to the object) and *action tendency* (the readiness to act that is associated with the attitude). Each of these components affect the perception of the individual when assessing a certain object or issue (Waldo, 2012). Devine-Wright, (2005) identifies that it is a combination of the different features of wind energy which has an impact on public opinion regarding wind farms i.e. physical, contextual, political, socio-economic, social, local and personal, and attitudes are drawn from those.

Values are also the fundamental building blocks of attitudes and perceptions (Waldo, 2012), they can be broken into four basic types (Johansson and Miegel, 1992)

1. Material values.
   That which constitutes a good standard of living
2. Aesthetic values.
   That which is ugly or beautiful.
3. Ethical values.
   That which is right or wrong, good or bad.
4. Metaphysical values.
   Truth and justice on a religious scale.

Aesthetics seem to be the most prevalent value-set impacting on the development of renewable energy projects, which include factors such as place attachment (Devine-Wright and Howes, 2010), and scenic impacts (Bishop and Miller, 2007). Most of the studies have been undertaken with specific influencing factors in mind (Bishop and Miller, 2007; Firestone and Kempton, 2007; Kermagoret et al., 2016; Ladenburg, 2010; Ladenburg and Dubgaard, 2009; Teisl et al., 2015; Waldo, 2012). Ladenburg and Möller (2011) give a comprehensive review of studies of attitudes related to previous experiences with terrestrial wind farms, and concluded that increased travel time to wind farms has a direct correlation to increased negative attitudes towards wind farms, and those living closest to large offshore wind farms have more positive attitudes towards those wind farms. Ethical values such as place and environmental protection (Waldo, 2012; Warren et al., 2005) as well as material values, e.g. fishing impacts (Reilly et al., 2015), and environmental impacts (Firestone and Kempton, 2007) are also significant Material values such as air quality, economic development and a reduction in electricity rates have also been shown to increase support for offshore energy projects (Firestone et al., 2012) along with ethical values. Those who live close to existing wind farms have shown to have more positive attitudes towards the farms (aesthetic values), and as a result of their experience with wind farms (as opposed to perceived preconceptions of them) will support expansion (to a certain extent (Warren and McFadyen, 2010; Warren et al., 2005)) of wind power in the area (Devine-Wright, 2005).

Because most of the studies in the literature undertaken are 'barrier oriented' i.e. studying the reasons why there are objections to wind farms (Reilly et al., 2016; Brennan and Van Rensburg, 2016; Waldo, 2012; Ladenburg, 2010; Bishop and Miller, 2007; Devine-Wright, 2005;), it is difficult to ascertain the relative significance of each variable or variables which influence the attitudes of the study group (Devine-Wright, 2005). Furthermore, the values that individuals hold cannot accurately be assessed, without taking into account the demographics of the individuals sampled (Ladenburg, 2010). Opposition increases with increased levels of education (Krueger et al., 2000) income (Ladenburg, 2010), age (Teisl et al., 2015; Firestone and Kempton, 2007) and male gender (Teisl et al., 2015; Ladenburg, 2010), but each of these factors cannot be measured in isolation and need to be considered within context (Ladenburg, 2010).

Media

Thompson, (2005) observed that when involved with a controversial issue such as windfarm development, activist groups will strive to attract supporters and advocates, in order to strengthen their position and voice. As such, media coverage of these issues can be a powerful tool with which to recruit new allies and reinforce the beliefs of existing ones (Thompson, 2005). At a time when national policy is evolving to accommodate multiple uses of offshore wind farms through the National Marine Planning Framework, an opportunity exists to better understand the role of media content in influencing offshore wind development.

Framing

"To frame is to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation and/or treatment recommendation for the item described." (Entman, 1993).

While the media plays a key role in influencing how the public educates itself about new and ongoing renewable energy developments (Thompson, 2005) it can also provide an insight into public discourse in relation to current issues (Stephens et al., 2009). How the media frames messages and articles, directly affects the opinions and perspectives of the public who are exposed to them (Schmidt, 2017) and as a result has the ability to reinforce or even alter public opinion (Stephens et al., 2009).

Stephens et al., (2009) adapted Luhmann's Theory of functional systems (Luhmann, 1995) to identify six distinct areas around which messages regarding wind technology can be framed. The drawbacks and advantages of wind technology can be gauged within these areas i.e. technical, economic, environmental, health and safety, political and aesthetic/cultural.

Using these frames, Schmidt (2017) observed that German media coverage was dominated by economic framing whereas messages from German industry stakeholders were, more commonly from a technical perspective. Media messaging frequently used negative messages with regard to aesthetics, environmental and health and safety which reinforces Hansen's (2011) opinion that media framings tend to concentrate on controversial subjects to ensure a more attention-grabbing story (Hansen, 2011).

In a study comparing media articles and stakeholder interviews to analyse stakeholder perception versus media discourse on wind energy development across four states in the US, Fischlein et al. (2014) observed that all newspapers in the study addressed economics in terms of the growing demand for wind energy, job creation and cheaper fossil fuel alternatives. Political and technical frames were also dominant in the media's narrative. Hindmarsh (2014) commented that concentrating more on the opinion of industry and less on the framing of media messages, as well as sourcing information from other areas can reduce bias from media framing.

Hansen (2011) noted that the factor affecting all of the messages and articles in the public domain, and which affects all off the perspectives is that of language and the choice of language is the central factor in the framing of messages for public understanding and interpretation. In a study comparing the type of language used by the US and UK to frame the issue of climate change, Nerlich et al. (2012) concluded that the US continues to focus on the problem, whereas the UK media emphasis the solution to the problem, which may have a detrimental effect on global environmental policy creation. This may be a useful learning tool for jurisdictions attempting to create their own environmental policies.

As a result of her study of media versus industry stakeholder messages Schmidt (2017) recognised the salient arguments used for and against wind energy development. 'Contribution to climate protection', is an important supportive argument for offshore wind energy development but it

was rarely used in media commentary. This argument could be used by decision makers to effectively encourage support for offshore wind energy development. Schmidt also pointed out that arguments which are effective in encouraging opponents of wind energy are seldom considered by industry stakeholder messages. These could be used to great effect if framed correctly by the industry stakeholders and policy makers concerned. To increase credibility of the message, the conclusion is drawn that both negative and positive arguments should be included in all communications (Schmidt, 2017).

2.5 Methods Used to Assess Public Perception

Forward planning and ensuring that assessment method used is compatible with the stakeholder group is key to effectively assessing public perception (Dowler et al., 2006). This is highlighted by Reilly et al., (2016) who consulted with fisheries experts before a survey was carried out. The fisheries experts advised that fishermen would be unlikely to return a postal survey, so a face-to-face type survey which could be done over the phone or in person was designed. Fuzzy Cognitive mapping was used in a study by Kermagoret et al., (2016) because it offered the participants the ability to compare the opinions of different stakeholders in a graphical way which further aided discussion of differing perceptions of an offshore windfarm. Choice Experiments assess the participants preference between alternative hypothetical situations (e.g. should a wind farm be sited on shore or offshore) and show the trade-offs participants were willing to make for each choice (Ek and Persson, 2014; Ladenburg and Dubgaard, 2009).

Dentoni et al., (2018) suggests that wicked problems can be 'harnessed' through the use of multi-stakeholder-partnerships (MSPs). MSPs can be described as a collaboration of stakeholders from across the spectrum who have interests in the project (Roloff, 2008). The partnerships allow the problem to be approached using the different rationalities and hence come to a solution satisfying all participants (Hartmann, 2012). Related to this concept is that of a multi-stakeholder process which gathers all stakeholders pertinent to a specific issue (Hemmati, 2012). The process aims at achieving equity and responsibility, transparency and democracy to strengthen networks among stakeholders. They are apt in situations of two-way deliberative engagement with developers or policy makers (ibid), the aim of which is to come to the *best* solution, as opposed to the only solution (Hartmann, 2012; Jentoft and Chuenpagdee, 2009). Verweij et al. (2006)

suggests the 'clumsy solution' which uses cultural theory to more fully explain and understand wicked problems (Hartmann, 2012) by merging opposing on what the problem is and how it should be resolved (Verweij et al., 2006).

The different approaches used to study the area of public attitude to renewable energy development seem to be as unique as each case study. Warren and McFadyen (2010) ask if community ownership affects attitude to wind energy in Scotland. Within that question lies the difference between the two wind farms which are studied; one is a community owned wind farm on an island and one is a developer-owned wind farm on a peninsula. The differences between the demographic of each community sampled, sampling methods used, participation methods, data analysis and even facilitator and facilitation techniques used will have had an effect on results. Walker et al. (2014) studied how the presentation and framing of information in a postal survey can effect stakeholders' answers and attitudes to acceptance or rejection of community benefits, but again the combined and individual effects of demographics, life experience circumstance and even gender will have a bearing on results which cannot be definitively measured (Devine-Wright, 2005).

Methods evident in the literature are listed below. Whatever method is used, a pilot study should be carried out beforehand, (e.g. O'Mahony et al., 2009, Gross, 2007 and Warren et al., 2005) to ensure the framing of the procedures and the structures and types of questions used are suitable for the audience (Dowler et al., 2006).

Quantitative methods

Opinion Polls/Surveys/Questionnaires

Much of the existing studies concerning environmental management use quantitative research methods such as opinion poll type questionnaires which are posted (Ek and Persson, 2014; Ladenburg, 2010), distributed door to door (Jones and Eiser, 2010; Warren et al., 2005), emailed (Ladenburg, 2010) or conducted online (Bishop and Miller, 2007) to gauge stakeholder perceptions. Surveys are based on fast short answers to a series of straightforward questions (Dowler et al., 2006). They can contain closed questions with fixed alternatives, open ended questions with no boundaries on what can be answered and/or scale questions (e.g. Likert scale),

looking for levels of agreement or disagreement with a statement (Reilly et al., 2015). Surveys can be used on large sample sets and are easily analysed using statistical techniques, measured and reported on (Desai and Potter, 2006). A disadvantage of surveys is that they only document opinions at one point in time and as such do not allow for interaction or discussion (King et al., 1998), however if distributed door-to-door, or carried out face-to-face or over the phone, questions and concerns of the participant can be answered by the distributor (Jones and Eiser, 2010).

Focus groups (detailed below) are commonly used to trial the survey before it is distributed. This is essential in order to evaluate if the surveys work, and allows modification before the actual survey can begin (Firestone and Kempton, 2007).

Qualitative Methods

Qualitative methodologies aim at arriving at a more general comprehension of subjective views and opinions (Desai and Potter, 2006). They generally aim to understand experiences and attitudes (Patton and Cochran, 2002) and include in-depth or semi-structured interviews (Walker et al., 2010b), stakeholder workshops (O'Mahony et al., 2009) focus groups and citizens juries (Waldo, 2012).

Semi-structured interviews

Interviews are conducted using a topic guide (a list of key questions to be covered), made up of loose questions intended to guide the participant but not lead them (Waldo, 2012). They are useful to gain extensive insight into opinions of stakeholders (Reed et al., 2009). Thematic coding analysis, which applies coded themes to transcribed interviews, allows identification of repeated topics (Reilly et al., 2016) and pattern detection which can be further classified to show dominant or less significant views (Veelen, 2018; Devine-Wright and Howes, 2010).

Stakeholder Workshops

Stakeholder workshops bring people together to brainstorm ideas and allow information sharing between stakeholders (Dowler et al., 2006). They give the opportunity for a more holistic view of stakeholders' concerns and input (O'Mahony et al., 2009). Workshop attendees can include industry experts and government representatives (Lange et al., 2018), research institutes,

professional associations (Wever et al., 2015) and any others identified during the stakeholder identification process (Dowler et al., 2006). Background information about the topics to be covered can be disseminated before the workshop to allow preparation of participants (Wever et al., 2015).

Focus Groups

Focus groups usually entail groups of between six and twelve people who have been strategically selected to closely represent the community (Krueger et al., 2000). Facilitators lead the participants through an agenda of research questions and record their answers (Patton and Cochran, 2002). An advantage is that participants can speak freely and as such may uncover previously little known facts or views, however the 'public' dynamic of the group may also inhibit free speech (Dowler et al., 2006). Focus groups are often used to ensure that proposed surveys or questionnaires are appropriate for use (Ek and Persson, 2014; Reed, 2008) for further quantitative research. Member-checking can be used to validate results, where findings are fed back to the focus group to measure to what extent they agree that their views are represented by the findings (Patton and Cochran, 2002).

Citizens Juries

Citizens Juries are useful for attaining agreement when there are definite criteria to debate and when developers are open to implementing the suggestions (Abelson et al., 2003). They are typically made up of 16 people, who closely represent the community. Juries can last for up to five days and include presentations from the developer and interested parties, who hold different views (Reed, 2008). Witnesses may be environmental groups, local authorities, professional experts, and corporates. One or two facilitators help the smooth running of the process and after debate the jury draws conclusions in a report which is presented to the commissioning body (Lenaghan, 1999).

Recently there is a shift towards combining two or more methodologies to obtain more rounded and reliable results (Dowler et al., 2006). Warren and McFadyen, (2010) used questionnaires and semi-structured face-to-face interviews with five key stakeholders in their study of attitudes to community versus developer-owned wind farms. Waldo (2012) used semi-structured interviews together with onsite-observations, and attendance at local meetings to get a more

comprehensive view of local attitudes. The results of these multi-discipline research methods can be triangulated to validate data and ensure more robust results are achieved (Dowler et al., 2006).

Content Analysis

Content analysis is the exercise of examining texts and mass media and noting the presence or absence of certain themes and features. The text is coded according to agreed rules and definitions, and common themes and patterns are identified (Dowler et al., 2006). Content analysis is useful for creating a baseline for study and an historical view on the issue at hand (Reed et al., 2009; ibid)

Q Methodology

Participants are interviewed and key statements are identified from interview transcripts. The statements are then ranked in relation to how much each participant agrees with them. Results are then interpreted using factor analysis (Curry et al., 2013). This methodology is used to examine participants who represent different stances on certain issues. It can be restrictive in that only the statements supplied by the facilitator will be taken into account (Reed et al., 2009). But it is growing in popularity within environmental management areas (Ellis et al., 2007).

Fuzzy Cognitive Mapping

A fuzzy cognitive map is a semi-quantitative diagrammatical portrayal of what a participant or group of participants know about or perceive a system to be (Kermagoret et al., 2016). Fuzzy Cognitive Mapping can be used to explore the links between social norms, attitudes and motivations driving individual preferences (Kontogianni et al., 2012). It provides a structured way to relate differing views of separate groups and aids discussions during interviews (Meliadou et al., 2012).

Multi-Criteria Analysis

Multi-criteria analysis techniques can be used to identify the many criteria of an issue that need to be assessed in a decision-making process, even if they cannot be measured in the same way. Participants are given a number of related situations, or scenarios, or criteria. They are then asked to give each element a weighting of importance (Hattam et al., 2015.).

Four methods were used in the following study detailed herein. Each method was chosen in order to extract the most relevant information given the study period and data required. Semi-structured interviews were used to explore stakeholder issues; survey questions were used to collect as much data on a national basis; a focus group allowed in depth discussion regarding opinions and potentially emotive issues and content analysis was used to extract themes and topics as they were presented over a period of time.

2.6 Ireland

There have been many studies of attitudes and perceptions of renewable energy globally, such as the US (Teisl et al., 2015), Australia (Bishop and Davis, 2002), Denmark (Ladenburg, 2010), Sweden (Ek and Persson, 2014), France (Kermagoret et al., 2016), UK (Devine-Wright, 2005; Jones and Eiser, 2010), and Scotland (Warren and McFadyen, 2010).

Case studies pertaining to stakeholder perceptions of offshore wind in an Irish context are limited (Reilly et al., 2015), consequently Ireland's experience of both onshore and offshore renewable and non-renewable energy development will be drawn on to evaluate Ireland's record in stakeholder engagement and participation.

In a study by Warren et al. (2005) covering existing wind farms, two in Cork (Currabwee and Milena Hill) and two in Kerry (Tuarsillagh and Beenageeha), results showed that residents living closest to the wind farms showed highest support for them, with opposition increasing the further away the respondents lived from the wind farms (but were still within sight of them). This is concurrent with findings from studies which show that those living in closer proximity to wind farms are more supportive of them (Ladenburg and Möller, 2011). In the same study 40% of respondents were unhappy with the consultation process (most of the respondents had heard about the development by word of mouth, with only 5% having heard about the public meetings held by the council and the developer) yet still supported the development (Warren et al., 2005). This may be explained by the phenomenon of increased support for operational wind farms over time (Wolsink, 2000) as opposed to increased opposition to *proposed* wind farms (Warren et al., 2005) and large multi-national developers (Reilly et al., 2015). It may also be explained by the fact that wind farms are becoming more commonplace in Ireland (Brennan and Van Rensburg,

2016) leading to increasing support as a result of stakeholders having more experience of and being more familiar with wind farms (Devine-Wright, 2005).

'Templederry Community Wind farm' in County Tipperary is an example of Ireland's first successful, co-owned renewable energy project (Lange et al., 2018). The major factors contributing to the success of this project echo those covered earlier in this paper pertaining to good stakeholder engagement, i.e. trust in the processes, trust in the facilitators and intermediaries, with open and transparent engagement with the community. But other factors are also significant. The area was experiencing deteriorating local population and employment, a factor which Devine-Wright and Howes (2010) suggested contributed to higher levels of support for an offshore wind farm in Colwyn Bay, Wales and to a greater extent the 'Awel Amen Tawe' project in the Mynydd Uchaf Mountains in South Wales (Devine-Wright, 2005). Other factors contributing to the success of the project are also evident in the literature; the similarities between the Templederry case study and the community owned renewable energy cooperative, Vineyard Power which successfully developed an offshore wind farm 12 miles south of Martha's Vineyard, USA (Klain et al., 2017), show that the community had an integral part in the pre-planning, planning and development stages of both projects. Community benefits were 'custom tailored' (ibid) and well defined leading to a successful, co-owned renewable energy solution.

One of Ireland's most infamous and long running examples of badly managed stakeholder engagement is the Corrib Project (Lange et al., 2018) which concerns the building of a gas pipeline through the townlands of Rossport, on the Erris peninsula in the West of Ireland (Gilmartin, 2009). It began with the granting of planning permission in 2004 (Killian, 2010). The dispute is underpinned by deep place attachment by the local community (Gilmartin, 2009), a factor which is explored by Devine-Wright and Howes (2010), coupled with a mistrust of government and developers resulting in the imprisonment of five local farmers (Murphy, 2013). The socio-economic benefits of this project were completely overshadowed by the general feeling of the community that the government had been acting in partnership with the corporates and did not have the welfare of the community as a priority (Lange et al., 2018). The translation of technical terms and jargon in order to include stakeholders and give them a sense of empowerment was inversely used during the Corrib oil dispute. Killian (2010) suggests that the language of accountancy was used to side-line objectors whose protests were not based on economics. This

obstructed local stakeholders' comprehension of the project and shifted authority and power away from those whose opposition was under pinned by place protective behaviour (Devine-Wright and Howes, 2010). It has been reported that the government worked with the corporate entities to ensure that the project would be realised in spite of local concerns and protests (Cox, 2015; Murphy, 2013; Killian, 2010). The resulting longstanding dispute and unrest can be held as an example of the damage the *decide-announce-defend* approach can do to stakeholder relations (Komendantova and Battaglini, 2016).

In their 2016 study of public preferences for community consultation in Ireland, Brennan and Van Rensburg examined how community consultation effects stakeholders' attitudes to onshore windfarm developments and if increased community involvement would allow for decreased monetary contribution in order to boost support. They found that in general participants would be willing to accept less monetary compensation for greater involvement with the project. These findings support those of Klain et al. (2017), Warren and McFadyen (2010) and Sorensen et al. (2002) which show that development and expansion of community windfarms seem to be less problematic when the community is more involved.

2.7 Conclusion

This review has reported on the current methodologies used to identify, analyse and map stakeholders. It has reported on the findings of current research regarding what influences public perceptions and the tools available to assess it. The reasons behind undertaking stakeholder engagement have been examined using case studies to illustrate successes and failures of processes, giving attention to the reasons behind objections and the ongoing debate regarding onshore and offshore renewable energy installations.

The level of stakeholder engagement is a constantly changing arena, with ever evolving models and theories behind interactions between stakeholder, developers and policy makers. This literature review examined the changing rationales and philosophies behind the varying levels of stakeholder engagement.

The most important aspects of best practice for stakeholder participation were reported on with a comprehensive list of participatory methods being collated from current research. Examples of success and failures of stakeholder participation and engagement were drawn on to examine Ireland's track record renewable energy development and examples were illustrated of effective and non-effective practices.

The ability to achieve a social licence to operate is a complex one, difficult to harness and impossible to conclude. The area of stakeholder engagement must be approached from many different angles, and perspectives in order to get the most comprehensive understanding of which triggers incentivise stakeholders to firstly engage, and secondly accept renewable energy developments.

The indications are that participation reduces the problem of stakeholder engagement and opposition. Local communities who find themselves subject to any large scale development will invariably engage, be it through amicable, constructive processes or protests and obstructive practices. The process and every aspect of the process is paramount to successfully engaging with stakeholders. If the stakeholders perceive that they are involved and are making a difference to the decision making process it has been proved that there can be valuable and active input into any renewable project, which will ultimately lead to successful conclusions. The key is to choose trusted intermediaries and show transparency in process.

In terms of objectors, three interesting observations emerged from studies conducted around the proximity and experience of windfarms:

1. An increased negative response to potential developments from stakeholders, as opposed to a less negative response when the project is realised. The literature attributes this to heightened *perceived* impacts, which when the project is operational, are not as severe as expected (Warren et al., 2005).
2. Objections from those who live further away from proposed sites are more pronounced than those who live closer to the site (Ladenburg and Moller, 2011)

3. In terms of offshore wind farms, seasonal visitors to the coastal areas of proposed farms had a more negative response than those who live in that area year round (Dwyer and Bidwell, 2019).

Historically there have been two exclusive types of research method used for data collection and analysis, - qualitative and quantitative. However throughout the literature the use of mixed methods for assessing public perception were common. Quantitative and qualitative methods complement each other and can be used together to more effectively harness more elusive influencing factors, while allowing for concrete data analysis. This allows for a more robust and reliable dataset to be developed and reported on.

Despite the Irish governments theoretical support of marine renewable energy development, Ireland's first and only working offshore wind farm was connected to the grid in 2004 (Lange et al., 2018). As a result of this slow progress, Ireland is now in a position to learn from countries which are the forerunners in offshore renewable energy development. Germany and the U.K. have made the greatest advances in this area and as a result, lessons can be learned from the mistakes they have made and guidance can be taken from their successes. Ireland is now in a position to reduce the deficit of proactive dialogue to engage energy citizens with a long term view of sustainable energy development.

Chapter 3

3 Methods

This thesis was conducted as part of The EirWind project which was carried out between August 2018 and July 2020. The EirWind project was an industry-led collaborative research project aimed at developing a blueprint for offshore wind development in Ireland (Cummins & McKeogh, 2020). It was funded by Science Foundation Ireland and ten industry partners, and administered through the MaREI Centre. EirWind research areas included:

- Work Package 2 (WP2): Geographic Information Systems, data gap analysis and recommendations for data in the study of strategic areas for offshore wind, off Ireland's east, south and west coasts.
- Work Package 3 (WP3): Improvement of cost optimization tools and cost reduction solutions, in order to develop an advanced approach to planning for bottom fixed and floating offshore wind scenarios in Ireland.
- Work Package 4 (WP4): Assessment of the challenges associated with consenting offshore wind projects in order to make recommendations for stakeholder engagement, including fisheries. Assessment of seabird vulnerability and impacts on fisheries and marine mammals.
- Work Package 5 (WP5): Identification of options for route to market for offshore wind in Ireland.
- Work Package 6 (WP6): Research Synthesis.

This thesis was developed as a stand-alone body of research, under Work Package 4.

Following the literature review, the research methodology was designed around a mixed method approach (i.e. semi-structured interviews, surveys, focus groups, desk-based research). First, the approach aimed to gain insights from experience of the ten EirWind offshore wind developers, based on their knowledge of developing onshore wind farms in Ireland, planning for offshore wind farms in Irish waters (e.g. Relevant projects), or developing offshore windfarms in other jurisdictions. This would help to establish their sense of the value of understanding public perception and approaches to stakeholder engagement, among other planning and policy issues.

The methodology was also designed to provide a general overview of who the stakeholders are in the context of offshore wind development, as well as taking an in-depth look at two major groups, that influence (i.e. the media) and are influenced by (i.e. the general public), how offshore wind develops. The overall conceptual framework was built around three key elements:

i) Stakeholder Issues and Mapping adapted a framing method developed by Schmidt (2017), for analysing stakeholder perceptions to offshore wind in Germany, to classify stakeholder types (Cronin & Cummins, 2019a).

ii) Public Perception - National study and focus group - The approach to the research was an adaptation of a combination of previous national surveys undertaken in the UK (Hattam et al., 2015), Denmark (Ladenburg and Möller, 2011), and the US (Firestone and Kempton, 2007) (Cronin *et al*, 2020).

iii) The Media Content Analysis was guided by an adaptation of the method used by Schmidt (2017), (Cronin *et al,* 2020).

3.1 Stakeholder Issues

The review of the literature states that: - *"before the process of identifying stakeholders can begin, there must be a clear understanding of exactly what issue is under question (Reed, 2009; Glicken, 2000;), only then can the relevant stakeholders begin to be identified".*

The EirWind consortium was a key stakeholder in the context of this research. Between August and October 2018, semi-structured interviews were undertaken (either face to face or by phone – as a result of time and availability restrictions) with one or more representative from each industry partner in the EirWind project (Table 1.), to identify the governance issues of concern for incoming wind energy developers approaching the Irish market. Each of the nine interviews[1] lasted approximately one hour. The interviews were designed to ascertain previous experience of stakeholder engagement (in Ireland or abroad), current plans, and future needs, and to enable an open-ended discussion on the research priorities for the EirWind Governance work package. The interviews were carried out confidentially in compliance with the Confidential Disclosure Agreement signed across parties. The results were aggregated and are presented anonymously.

Table 1. Industry Partner Meetings between August and October 2018

Company	Date	Method
Statkraft	20/08/2018	Face to Face
DP Energy	22/08/2018	Face to Face
Enerco	23/08/2018	Face to Face

[1] ENGIE indicated that any responses from EDPR would be in line with their experiences and areas of concern. As a result nine interviews were undertaken.

Brookfield	23/08/2018	Face to Face
Equinor	28/08/2018	Phone call
SSE	04/09/2018	Phone call
EDPR	29/09/2018	Phone call
Simply Blue	06/09/2018	Face to Face
ESB	01/10/2018	Phone call

3.2 Stakeholder Mapping

The review of the literature showed that stakeholder mapping is an iterative process, which evolves through the various stages of project development. The approach to stakeholder mapping adopted here involved a two-step approach: - stakeholder identification and stakeholder classification. Data collection focused on the identification of key points of contact at the national level, critical in the early stage of project development. The framing developed by Schmidt (2017), for analysing stakeholder perceptions to offshore wind in Germany, was adapted to classify stakeholder types.

3.3 Public Perception – National Survey Pilot

The initial questionnaire survey was designed between January and March 2019. It was iterated upon following a pilot and feedback from industry partners. The overall aim of the questionnaire was to investigate respondents' opinions on –

1. Green (renewable) energy as a source of electricity generation.
2. Offshore wind farms being built in the waters around Ireland.
3. Offshore wind farms being located in the seas in their locality.

The survey consisted of eight sections:

- Section I. Climate change, causes and possible solutions.
- Section II. Renewable energy; what it is and if it is a good idea.
- Section III. The Irish Governments role in renewable electricity generation.
- Section IV. Ireland's energy generation and supply situation.

- Section V. How the respondent feels about offshore wind farms in general.
- Section VI. Experience of the respondent with offshore wind farms and their use of the coastline.
- Section VII. How active the respondent is regarding environmental issues
- Section VIII Anonymous demographic information.

Questions were adapted from existing surveys including Firestone and Kempton (2007) and Hattam et al., (2015) which investigate similar subject matters. Prior to the pilot being undertaken, a working group meeting was held with members of the EirWind project team to obtain critical feedback from the researchers on the appropriateness and usefulness of each question (Cronin & Cummins, 2019b). The Survey was piloted using hard copy questionnaires disseminated throughout the MaREI centre, and the National Marine College of Ireland, Ringaskiddy Co Cork. An email was circulated prior to distribution explaining the survey and asking for participants. Hard copies were distributed by hand which allowed questions to be answered and further information to be given to participants if needed.

170 questionnaires were disseminated. 136 useable copies were returned. The aim of the pilot was to ensure the survey was structurally correct, comprehensible and complete. As a result of the pilot some questions were found to be redundant and therefore removed. Certain sections of the questionnaire were observed to be too long and as a result were re-sectioned and re-structured**.**

3.4 Public Perception – National Survey

Following an original application on 11th of February 2019, ethical approval for this survey was granted by the Social Research Ethics Committee of University College Cork on the 29th of April 2019. Issues such as data storage and security, sampling strategy and informed consent raised by the committee were addressed to their satisfaction.

Data was collected between May and June 2019. Analysis was facilitated by the fact that data was be captured digitally, and in a format that was readily integrated in statistical analysis

software. The quantitative approach to data analysis was informed by a collaborative approach with the Department of Statistics in UCC.

The approach to the research was informed by a number of previous national surveys undertaken in the UK (Hattam et al., 2015), Denmark (Ladenburg and Möller, 2011), and the US (Firestone and Kempton, 2007). The methodology described below is an adaptation and combination of approaches which reflects the unique nature of the Irish situation.

The online questionnaire, which was produced as a result of feedback from the pilot survey, was developed to collect the opinions of members of the Irish public about offshore wind farms. The survey was disseminated on Facebook by Interactions Research, the market research company procured, in compliance with University College Cork's public procurement procedure. The survey was open from May to June 2019.

Online dissemination of the questionnaire allowed geographic targeting to ensure that responses were nationally representative (Figure 1.) and demographically typical of the Irish population. 1154 useable responses were returned.

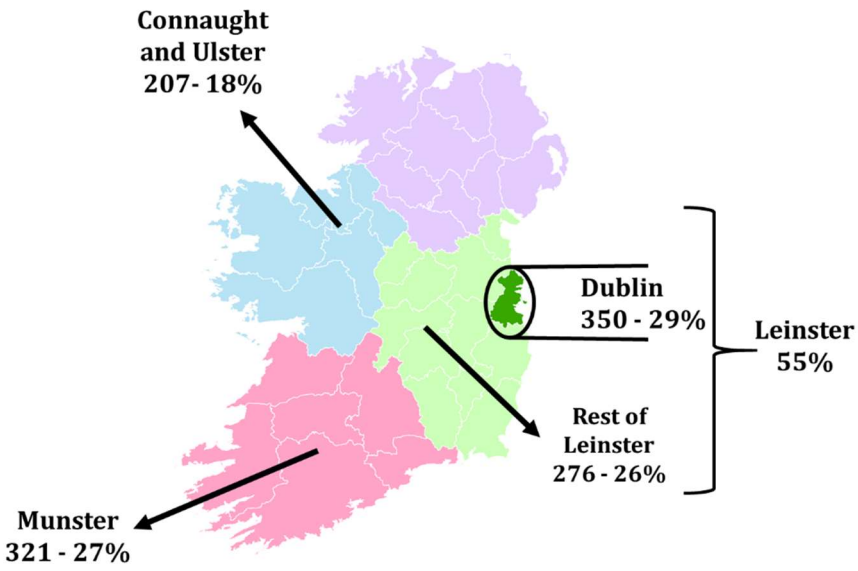


Figure 1. National representative breakdown of useable questionnaires

The survey questions were a combination of multiple choice, Likert scale and yes/no questions. The structure of the online questionnaire meant that unless the questions were answered it was impossible to advance to the next stage of the questionnaire, ensuring that all completed questionnaires would be included. Answers were saved in .CSV file format. Data were analysed using the statistical software package R (R Core Team, 2020).

For comparison of the scores for a particular variable from two respondent groups, a two-sample, two-sided Wilcoxon (i.e. Mann-Whitney) test was used (Hollander & Woulfe, 1973) under the null hypothesis that the distributions of the two groups had the same location parameter, i.e. the same mean Likert response. For comparison of the scores for a particular variable from more than two respondent groups, a Kruskal-Wallis test was used (Hollander & Woulfe, 1973) under the null hypothesis that the distributions of all groups had the same location parameter.

For assessment of association between two variables, Pearson's chi-squared test (Agresti, 2007) was performed on contingency tables under the null hypothesis that the joint distribution of the cell counts in the contingency table was the product of the marginal frequencies for the corresponding row and column, as would be the case for independent variables.

3.5 Public Perception - Focus group

In order to investigate the opinions of the public who regularly see a wind farm in their daily lives, a focus group was held in Arklow in February 2020. A convenience sampling strategy was instigated to select participants from the area, deemed to be capable of providing the best information. Invitations to participate were sent to local clubs, hotels and the Wicklow Municipal District Council. The final composition of the focus group (Table 2.) consisted of individuals with a shared interest in community development including the development of the local harbour area. Participants who engaged in the focus group process included local councillors, representatives from Arklow Sailing Club and a resident of an area from which the wind farm is regularly seen.

Table 2. Composition of focus group held in Arklow in February 2020

Participant	**Capacity**	**Ages**	**Gender**
Participant 1	Arklow Municipal District Councillor	Between 50 and 60	Female

Participant 2	Arklow Municipal District Councillor	Between 30 and 40	Female
Participant 3	Sailing Club Member	Over 65	Male
Participant 4	Sailing Club Member	Between 50 and 60	Male
Participant 5	Member of the public	Between 40 and 50	Female

During the focus group session, an in-depth discussion was guided by open-ended questions. Questions were divided into three areas; the past (the experience of those who were living in the town when the original construction was undertaken), the present (the current attitude of the individuals in the focus group towards the existing wind turbines) and the future (opinions regarding plans for the expansion of the wind farm in the future).

3.6 Media Content Analysis

Based on the literature, it has been found that differences in perception can arise from where people get their information. Readers of broadsheets have been shown to be more positive towards offshore wind than readers of tabloids. As a result, the objective of the media study was to analyse broadsheet content to identify trends and framings related to the narrative around offshore wind in Ireland. This analysis will guide recommendations on salient arguments for engaging the energy citizen which is a critical enabling factor in the overall energy transition (Devine-Wright, 2008, Mullally et al, 2018, Lennon et al, 2020).

Four National newspapers were chosen for media analysis. Two daily newspapers *The Irish Examiner* and *The Irish Times,* and two Sunday newspapers *The Sunday Independent* and *The Sunday Business Post*. Newspaper selection was based on readership (at time of writing *The Sunday Independent* was the most read newspaper in Ireland and *The Irish Times* had the second highest readership). *The Irish Examiner* and *The Sunday Business Post* were chosen as they also have national coverage as broadsheet newspapers. Searches were performed on the LexisNexis© database using the phrase "offshore wind*".* All articles containing the term 'offshore wind' in were identified as the basis for analysis. All articles published between 2015 and 2019 were considered for analysis. 2015 was chosen as an initial milestone that marked the advent of The Paris Agreement. Prior to this, offshore wind development was relatively dormant as a sector in Ireland.

The qualitative data analysis package NVivo was used to examine and code the articles. Using the six themes by Schmidt (2017) (t*echnical, economic, environmental, health and safety, political and aesthetic/cultural)* as a guide, emerging topics in each theme were coded for analysis. This led to a refinement of the original themes and the creation of new sub topics.

Chapter 4

4 Results

4.1 Issues of Importance to Industry Regarding Stakeholder Engagement

The interviews with EirWind industry partners revealed a broad sense of key stakeholders in OSWF development in Ireland, with the principal focus amongst EirWind partners towards: - government – national through to local; supply chain – including port authorities; vested interest groups – e.g. fisheries and NGOs; general public; print media – both traditional print and social media; political representatives – from national TDs to local level councillors; Non- Governmental Organisations (NGOs)

Issues of concern can be summarised as the need to: -

i. *Achieve greater clarity on the planning and consenting process:* The question of how decisions will be made arose frequently, with great concern among industry partners on how the marine area will be consented going forward, and on the detail of the RESS auctions. Some interviewees questioned the level of understanding within government of the scale of the opportunity for Ireland. Others raised concerns about a lack of capacity, (both in numbers and skillsets of personnel), within government departments and agencies to plan for the sector. "*The planning and licencing issue is the greatest hurdle to overcome in developing the marine sector" – (Industry Partner)*

ii. *Minimise issues around visual impact:* How to engage with stakeholders to avoid the NIMBY (Not In My Back Yard) syndrome. *"We need to define who the stakeholders are" – (Industry Partner)*

iii. *Address potential conflicts with fisheries, shipping and other vested interests:* By learning, for example, from the Crown Estate approach to FLOWW – The Fishing Industry Liaison with Offshore Wind and Wet Renewables, as a way of building relationships with key interest groups (Gray *et al*., 2016).

iv. *Develop a coherent message from the sector about job creation, energy security, climate change, avoiding fines and blue growth:* There was consensus that a programme needs to be designed and delivered with consistent, powerful and constant messaging from the sector, to support stakeholder perceptions of the industry. How to develop a programme to trigger changes in public perception and attitudes was a key question that arose, including who should take responsibility for such action (i.e. the roles of government and industry). "*The case study of Wick is valuable in terms of helping people understand how small town can experience transformation" – (Industry Partner).*

v. *Explore options for co-location with different user groups:* For example, co-location with wave energy projects as they come on-stream, or with offshore multi-trophic aquaculture projects. The H2020 MUSES project was referenced as a source of data and information on multi-use concepts in Europe. "*How can the offshore wind projects coexist with aquaculture?*" – (Industry Partner)

vi. *Positively influence public perception, especially among the younger generations:* There were strong opinions on the need to target young people, from primary school through to higher education students, to be able to grow the sector into the future. New opportunities for training, apprenticeships and skill development need to be pursued. In order to achieve this, a baseline understanding of current public perception was raised as a valuable exercise. "*Targeting the youth at they will be leading the future" – (Industry Partner)*

vii. *Encourage investment by government in critical enabling infrastructure including ports and grid:* A fundamental question was raised on a number of occasions about the nature of support from government, and whether investment in critical enabling infrastructure, might be an alternative or complementary model to subsidies.

viii. *Engage with public representatives to ensure a greater number of champions for offshore wind development in coastal communities going forward:* The support of political figures across the spectrum was emphasised as a priority because of the influential and leadership role that they can have. A lack of political will and leadership was identified as a missing link that needs to be addressed. "*Educating the Politicians is really important*" – (*Industry Partner*)

ix. *Deal more proactively with traditional print media, as well as social media* - The role of the media was identified as pivotal for conveying critical messages to the general public. The need for a more informed media debate was flagged as an issue, alongside more compelling use of social media outlets, e.g. Offshore Wind Works, the UK twitter link.

x. *Be aware of NGO perspectives:* Many industry partners highlighted the experiences of dealing with the general public, and with NGOs on the development of terrestrial wind sites. There is a need, and an opportunity, to learn from the way that onshore wind developers become more sensitised to the needs of these communities over time. The question of identifying communities of interest for offshore wind farms arose.

xi. *Ensure research outputs are relevant:* To industry needs and to informing policy. There is a need for a focus on applied research to address a range of governance issues identified at this stage of emerging market development at the national level in Ireland.

The message

It was pointed out by a number of the industry interviewees, that the connection between climate change and offshore wind energy is an important message to convey to the general public. Recent extreme climate and weather patterns provide important context to public deliberations. In terms of socio economic benefits, there is consensus across the board, on the need to account for job opportunities in the installation and operation and maintenance of wind farms, and to account for the quality and duration of the jobs to be created going forward. Timing was also raised by a number of interviewees, who observed that Ireland is well positioned to

leverage the lessons learned by other countries, and that the time is right for Ireland to accelerate the sector now.

The range of suggestions were taken up by the EirWind study. This included an opportunity to hone-in on specific areas of interest. In this case, the importance of understanding public perception and media framing, was validated by the EirWind consortium as an important area of focus for this Masters thesis.

4.2 The Stakeholder Mapping Exercise

A process of stakeholder identification and mapping was undertaken following Schmidt (2017), who used a framing of nine stakeholder categories for stakeholder mapping work on offshore wind in Germany. For the purpose of this work, an additional category, 'marine commercial' was added, to capture activities such as marine tours, which have a business element, differentiating them from non-profit marine leisure interests: -

1. Government
2. Port Companies and Supply Chain
3. Research Institutions
4. Fishing Industry
5. Oil and Gas Interests
6. Industry Supply Chain
7. Marine Leisure
8. Marine Commercial
9. Media
10. Environmental Associations

See Annex A for the complete Stakeholder Directory, presented according to category, scale, and study zone region.

The governance issues identified by industry partners covered a breadth and depth of topics. These can be mapped according to the various stakeholder cohorts as per Figure 2.

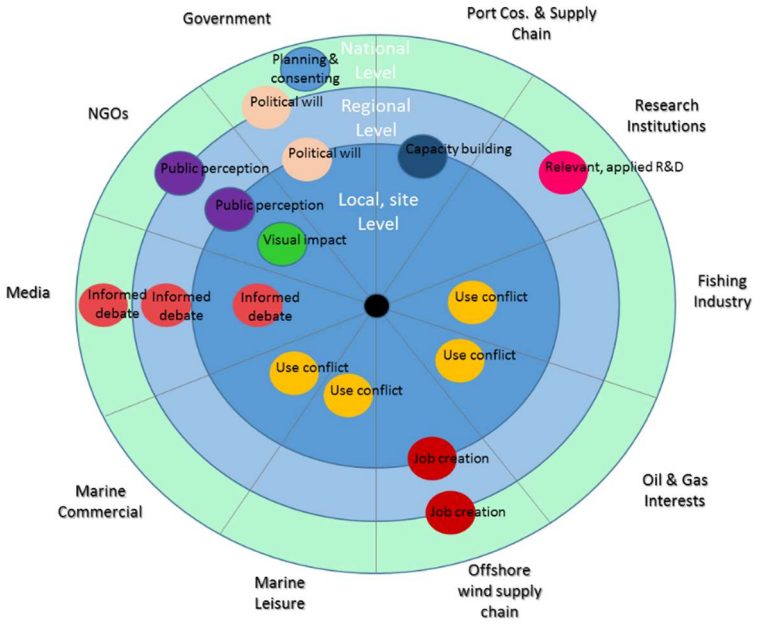


Figure 2. Governance issues of concern identified by EirWind industry partners mapped against the ten stakeholder cohorts, adapted from Schmidt (2017). Three levels are shown: National, regional and local site level. Stakeholders were mapped at the national and regional (study zone) levels. Local level stakeholder mapping needs to be undertaken on a project by project basis, and iterated upon in accordance with shifts in project development to ensure that shifting stakeholder interest and influences are monitored.

4.2.1 Government

Government stakeholders are presented according to elected officials (political representatives), as well as officials in the permanent government (the civil service). At the national level, government is organised according to functions in departments, with specific tasks as the focal point for agencies or institutes. At the local level, the local authorities along the coast are the focus for decision making at the county level, and where relevant, at the city level. This is one of the most important cohorts of stakeholders, especially at the early stage of market exploration and development.

4.2.2 Port Companies and Supply Chain

Ports in the Republic of Ireland are categorised as per the National Ports Policy (2013) as follows:

- Ports of National Significance Tier 1 (Dublin, Cork, Shannon Foynes);
- Ports of National Significance Tier 2 (Rosslare and Waterford);

- Ports of National Significance Tier 3 (Dún Laoghaire, Galway, New Ross, Drogheda under the control of Louth County Council, and Wicklow now part of Wicklow County Council).

Currently in the Republic of Ireland there are no national ports (tier 1 or otherwise) with the facilities to accommodate the installation of offshore wind farms. As such, Belfast Port has been included as the key port for installation of potential windfarms on the east coast of Ireland. The National Ports Policy (2013) sets out the plans for infrastructure development over the next 30 to 40 years.

In terms of operation and maintenance (O&M), existing ports are profiled (e.g. Wicklow, Arklow in the Irish Sea; Cork on the South coast, and Shannon Foynes on the West coast). These ports may be positioned to sustain the upkeep and repair of future windfarms. As can be seen from the stakeholder directory, there is an existing supply chain to be further developed for this area.

4.2.3 Research Institutions

The work of Ireland's national research institutions and their ability to attract European and global funding to support future technology is key to advancing knowledge and capability within the renewable energy sector. The Offshore Renewable Energy Development Plan (2014) (OREDP), is a document which sets out an agenda for the development of Ireland's offshore renewable energy sector, including critical research infrastructure. Science Foundation Ireland (SFI) is a major driver for national research capability building, in line with the national research prioritisation process. Many of the centres profiled are in strong alignment with SFI direction.

4.2.4 Fishing Industry

The fishing sector is presented according to key fish producer organisations, which represent the industry as important lobby groups, both nationally and at regional levels around the coast. Owners of commercial sea-fishing vessels of all sizes are represented, making these organisations important portals to a range of fishing interests, across a variety of scales (e.g. larger trawlers) and scope (e.g. inshore fisheries such as potting).

4.2.5 Oil and Gas Interests

Ireland has a limited number of oil and gas interests. The Kinsale Head, Ballycotton, Seven Heads, and South-West Kinsale fields, which are located between 40km and 70km off the Co Cork coast, supplied all of Ireland's natural gas between 1978 and 1995. Corrib Gas on the west coast is a strategic national energy resource. The directory provides an overview of the oil and gas companies with a presence in Ireland, as well as a summary of all of the offshore exploration licence holders.

4.2.6 Industry Supply Chain

Dong Energy is currently constructing the world's largest offshore windfarm (the 600MW Walney Extension) out of the port of Belfast, having invested heavily in the infrastructure and expertise. The benefits of this investment are far reaching, delivering significant economic gains. The various cohorts of industry that are unlocked by such a scenario, are profiled in a Republic of Ireland context within the Directory. These include: lobbyists; marine renewable energy companies; environmental consultancies; energy trading; solicitors; financial modelling; heavy lift; turbine manufacturing and supply; maintenance, inspection and access; steel manufacturing; boat building; hydrographic survey companies; and offshore test sites.

4.2.7 Marine Leisure

Non-profit leisure representative groups are covered in this section of the Directory, including sailing associations, outdoor centres, diving and sea angling associations. Most of these groups represent marine users concerned who conduct activities relatively close to shore, with hotspots in bays and harbours, for example, sailing in West Cork.

4.2.8 Marine Commercial

Foremost in this area is the marine tourism business. Details include commercial boat tours, ferry services, sailing schools, and eco-tourism companies.

4.2.9 Media

Despite, or because of the explosion of social media (SM) over the last decade as a source of news, the focus of the stakeholder mapping exercise was on profiling established 'legacy' print

media, at the national level, including national and local newspapers, as these are a more readily identifiable source of data and information than distributed SM outlets. Furthermore, legacy media remain the most trusted news brands and their content attracts audiences (Horgan and Flynn, 2018). Trade publications are also included.

4.2.10 Environmental Associations

Ireland has a strong cohort of environmental groups with an ability to change their focus from one environmental issue to another e.g. from pylon protest groups to onshore wind objections. Early and open engagement and interaction with these groups has been proven to be the most effective way to mitigate against future acceptance issues during later stages of the project. The stakeholder mapping exercise profiled key national level organisations, including statutory consultees, such as An Taisce and Birdwatch Ireland. At the local level, a considerable number of activist community organisations have been identified, which are important for specific project developers.

4.3 Public Perception - National Survey

4.3.1 Profile of Respondents

Of the 1154 respondents of the online survey, 51% were male and 49% were female. Ages ranged from 16 to 55+ years old. A majority of respondents own their own home (64%) with 33% renting their homes (3% of respondents either had other accommodation or left the answer blank). 41% of respondents lived in what they would describe as a rural setting, with 59% describing their surroundings as urban. 91% of respondents had a secondary or higher education with 46% having a third level education. Of these 19% had a postgraduate education. 1% of the total number had an apprenticeship, and 3% had a primary education only. News sources were varied, with the largest proportion of respondents (23%) citing The Irish Independent as their primary printed news source.

4.3.2 Experience of Offshore Wind Farms

Of those who took part in the survey, 49% had seen an offshore wind farm before. Of those who had seen an offshore wind farm before, 4% could see one from their house, 7% could see one on their commute to work and 41% had seen one while on holidays. In terms of coastal visits, 14%

of those questioned had visited the coast in order to look at an offshore wind farm, with 5% avoiding the coast where they knew there was a presence of an offshore wind farm.

4.3.3 Ireland's Electricity Generation and Energy Supply Situation

65% of respondents believed that Ireland is too reliant on foreign energy. 66% believed that Ireland has a limited amount of fossil fuel resources which are running out. 78% of those who took part in the survey believed or believed strongly that generating electricity from offshore wind farms would make a difference to Ireland's carbon emissions, while 60% of respondents agreed or strongly agreed that Ireland has an energy problem and should not continue with existing energy resources (33% agreed, 27% strongly agreed).

4.3.4 The Government and Offshore Wind Farms

The objective of this section was to explore the public's opinion regarding the government and its input to offshore wind farm development and carbon emission reduction efforts. 63% of respondents believed that the government is not doing enough to reduce carbon emissions, with 71% believing that the Irish Government should invest in offshore wind farms. 10% believed that the Irish Government should not invest in renewable energy.

4.3.5 How People Feel About Offshore Wind Farm Power Generation

This section involved 11 questions to explore perceived benefits of offshore wind. 57% of respondents felt that the fishing industry and the offshore wind industry could co-exist. 25% of those who took part agreed that the offshore wind industry could help the fishing industry, in response to this question 36% remained neutral with 30% answering 'don't know'. When asked if offshore wind turbines would be detrimental to the fishing industry 14% agreed that they could be, with 24% disagreeing; again most answers were either neutral or 'don't know'.

With regard to the potential employment which could be created by offshore wind farm developments, 63% of contributors believed that offshore wind farms could create jobs in the surrounding areas, but 21% believed that there would be no benefit for them if an offshore wind farm was built in their locality.

37% of respondents trust offshore wind farm developers and 34% indicated that they were neutral on the subject. 15% of those who took part in the survey indicated that they mistrust developers (5% indicated strong mistrust). 51% of respondents felt that offshore wind farms are the best solution to Ireland's energy situation.

40% of those surveyed indicated that they thought offshore wind power generation is reliable, with 16% indicating that they believed that it is unreliable.

4.3.6 How People Feel About Offshore Wind Farms in General

This section covered areas such as wildlife, tourism and the aesthetics of wind farms. The majority of participants would not avoid a beach where offshore wind turbines were visible (58%) with 15% avoiding beach visits with turbines visible. 60% of those who answered shared the opinion that seeing offshore wind turbines made them feel that they were helping to stall climate change. 8% of those who took part agreed that offshore wind farms make them mad when they see them, but 66% of those who took part do not agree with that statement.

With regard to the effect that wind farms have on wildlife, 18% of those questioned believed that offshore wind farms harm wildlife. 31% of respondents disagreed that offshore wind farms harmed wildlife with a similar amount remaining neutral on the subject. 69% believed that once constructed, electricity generated from offshore wind farms will be renewable and clean, with 4% believing otherwise and 10% not sure. 41% of participants would take a boat trip to see an offshore wind farm and 30% would not, 23% did not know if they would or not. 49% of respondents found offshore wind farms interesting to look at whereas 35% do not really notice them when they look out to sea. However, 17% of respondents believed that offshore wind farms ruin beach visits with 50% believing that they do not ruin beach visits.

4.3.7 What People Think Is Causing Climate Change

Most participants agreed that climate change is a reality (74%), with 65% of those questioned agreeing that it is related to demand for energy and 66% agreeing that it is as a result of both human activity and natural processes.

14% believed that there is nothing we can do to reduce the speed of climate change, but 76% of those who took part in the survey believed that reducing carbon emissions will help to reduce

the speed of climate change, and 74% agreed that if we do not change how we produce electricity we will face more severe climate disasters.

4.3.8 People's Position Regarding Environmental Activism

7% of the total number of people who participated in the survey were a member of an environmental group. A majority of people would attend a meeting about a proposed OSWF in their locality (42%) with 26% not sure if they would attend and 32% stating that they would not attend. 28% of those questioned said they had previously taken part in a public rally and 47% agreed that they would take part in a future public rally (22% did not know if they would take part or not). 88% of participants believed that renewable energy is a good idea and 83% would support a transition to renewable energy. 14% of those questioned said that they would either actively or inactively object to an offshore wind farm planned for their locality with 87% either supporting, actively supporting or remaining neutral given that situation[2]. If an offshore wind farm was planned for another part of Ireland, of those who took part in the survey 93% would either support it actively, support or remain neutral with 7% objecting either actively or inactively.

Additional comments left by respondents on the Facebook feed can be seen in Annex B.

4.3.9 Further Analysis

This section provides further analysis of the data based on the information available regarding the profile of the respondents. In particular, it assesses the relationship between attitudes to and experience of offshore wind farms, the impact of education, the impact of urban versus rural living, the influence of home ownership, and the role of print media on public perception.

Inspection of the Spearman correlation matrix (Table 3.) for the main variables used in the following quantitative analysis on 1,096 respondents (after removal of 62 observations with missing values) revealed the absence of any strong correlation between the independent variables, except—as could be expected—attitudes towards development of OSWFs at local and national levels *(r = 70%)*.

Table 3. Spearman correlation matrix for the main variables used in quantitative analyses of the survey data on 1,096 respondents (after removal of 58 observations with missing values). Variable names are abbreviated as follows: Loc_dev: attitude towards local development of OSWs (loc_dev: 1 to 5 on Likert scale); Nat_dev: attitude towards national development of OSWFs (nat_dev: 1 to 5 on Likert scale); Exp: experience of OSWFs (exp: 'none', 'home/commute', 'holidays'); Edu: education levels; Home: home ownership (home: 'own', 'rent'); Rural: dwelling area (rural: 'rural', 'urban'); News: preferred newspapers type (news: 'Broadsheets', 'Dailies', 'Redtops', 'Sunday').

	loc_dev	**nat_dev**	**exp**	**edu**	**home**	**rural**	**news**
loc_dev	1.00	0.70	-0.05	-0.03	0.01	0.07	-0.09
nat_dev	0.70	1.00	-0.05	0.00	-0.02	0.03	-0.08
exp	-0.05	-0.05	1.00	0.00	0.09	0.05	0.04
edu	-0.03	0.00	0.00	1.00	-0.02	-0.02	-0.01
home	0.01	-0.02	0.09	-0.02	1.00	0.15	0.11
rural	0.07	0.03	0.05	-0.02	0.15	1.00	-0.06
news	-0.09	-0.08	0.04	-0.01	0.11	-0.06	1.00

4.3.9.1 The Relationship between Public Attitudes to and Experience of Offshore Wind Farms

One hypothesis to be tested is that experience of offshore wind farms has a significant effect on attitudes towards them (Ladenburg and Möller, 2011). Of the 1154 respondents, 493 had experience of seeing offshore wind farms and 525 had not. Of those who had experience of offshore wind farms, 44 could see them from their home, 78 could see them on their commute to work and 470 had seen them while on holidays. Those who had experience of both home/commute or holiday were placed in the 'home' group.

A Wilcoxon test highlighted that attitude towards offshore wind farms varied significantly with people's experience of them ($p = 0.0060$). Cross tabulation showed that those with experience of offshore wind farms had a more positive attitude towards the development of wind farms in their local area. People who responded gained their experience of offshore wind farms from home,

on commute or on holidays. Results show that these people were more positive towards offshore wind farm development in Irish waters, than those with no experience of offshore wind farms.

Because of the differences in the nature of their previous experience with OSWFs (at home or on holidays), further analysis was done to investigate if these positive results were influenced by the type of interaction. It can be summarised that the majority of Irish people who have seen OSWFs, have had that experience on holidays.

In order to investigate if the *nature of the experience* has a significant effect on attitude to OSWF those respondents who experienced OSWFs on their commute to work or could see them from their home were merged and compared to those respondents who have experience of OSWFs on holidays. Twenty-three respondents had experience of OSWFs on holidays, on their commute to work and from their home (these were excluded from the analysis).

A Chi-squared test revealed a significant association between the type of experience of OSWF and attitude towards the development of OSWFs in the respondent's locality ($p = 0.0094$). Table 2. shows that a higher proportion of those experiencing OSWFs on a commute to work or from home, had a more negative attitude towards OSWF development at a local level than those experiencing OSWFs on holiday.

Table 4. Breakdown of attitudes towards local development of OSWFs depending on the type of experience of OSWF

	Object Actively	Object not actively	Remain Neutral do nothing	Support not actively	Support actively
On Holiday	5%	6%	23%	45%	21%
Commute or home	21%	13%	24%	26%	15%

4.3.9.2 The Relationship between Education and Attitudes to Offshore Wind Farms

According to Krueger et al., (2011), education has a significant effect on attitude to offshore wind farms. Analysis was undertaken to test this hypothesis. Responses of 'Strongly Object' and 'Object' were merged, as were responses of 'Support' and 'Strongly Support' in order to see with greater clarity how responses correlated with education level. As education level increases from primary through to post-graduate, it is clear that the percentages of 'Supporters' increase as do the percentages of 'Neutral' responses. A Kruskal-Wallis test was applied to investigate if that change in attitude was significantly affected by the level of education. Results indicate that attitudes to planned OSWFs changed significantly with education levels ($p = 0.0005$). Further investigation revealed that support of wind farms increased with increased education levels (Figure 3.)

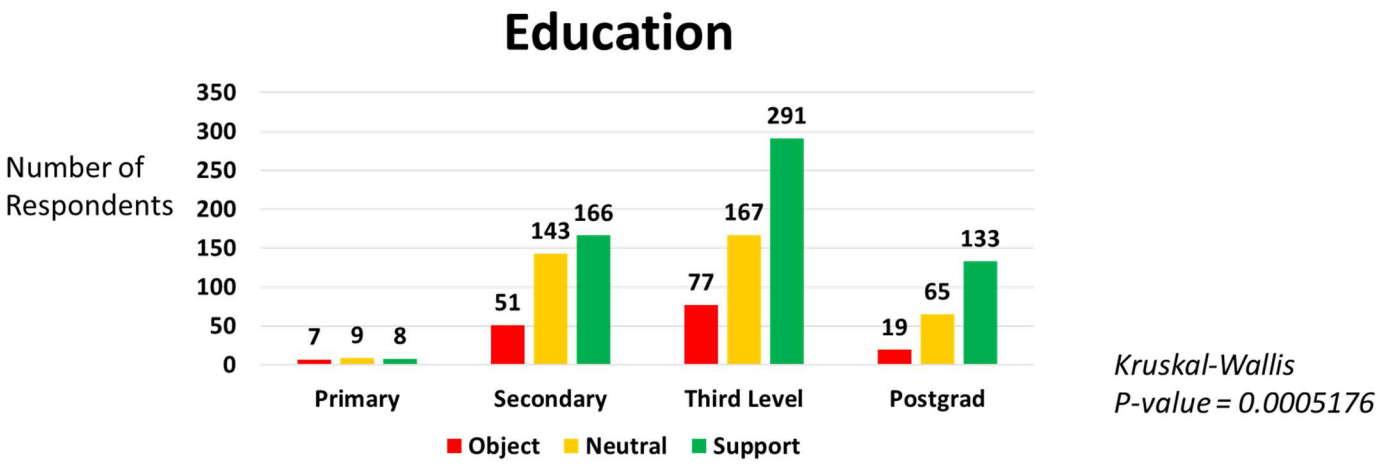


Figure 3. Support for offshore wind farms as a result of education levels

4.3.9.3 The Relationship between Home Ownership and Attitudes to Offshore Wind Farms

To investigate if owning or renting a home had a significant impact on attitudes towards offshore wind farms, a Chi-squared test was applied. Results did not show a significant relationship between home ownership and attitudes to offshore wind farms ($p = 0.7305$). Distribution of attitudes is shown in Table 3.

Table 5. Distribution of attitudes towards OSWF depending on home ownership

	Object actively	Object not actively	Remain Neutral do nothing	Support actively	Support not actively
Own	2%	5%	39%	15%	39%
Rent	3%	4%	41%	15%	36%

(3% of respondents chose 'other' when asked if they rented or owned their home)

4.3.9.4 The Relationship between Urban versus Rural Dwellers and Attitudes to Offshore Wind Farms

To explore if the area (urban or rural) in which a respondent lives has an effect on their attitudes to offshore wind farms, a Chi-squared test was applied to the data. Results did not show a significant relationship between living area and attitude towards OSWFs ($p = 0.7186$). Distribution of attitudes towards OSWFs depending on dwelling area are shown in Table 4.

Table 6. Distribution of attitudes to OSWFs depending on dwelling area

	Object actively	Object not actively	Remain Neutral do nothing	Support actively	Support not actively
Rural	3%	6%	39%	16%	36%
Urban	2%	4%	40%	15%	39%

4.3.9.5 The Relationship between Print Media and Attitudes to Offshore Wind Farms

To compare attitudes to offshore wind farms depending on the primary source of print media, responses were grouped into Broadsheets, Tabloids, Sunday Papers and Daily Papers and then cross-tabulated against attitudes to potential offshore wind farm developments (Table 5). A Chi-squared test revealed that there was a significant association between the primary source of news and attitudes towards wind farms ($p=0.0021$).

Table 7. Attitudes to offshore wind farms depending on the primary source of print media

	Object Actively	Object Not Actively	Remain Neutral do nothing	Support Actively	Support not actively
Broadsheets	3%	3%	38%	18%	38%
Tabloids	1%	9%	49%	8%	33%
Sundays	2%	2%	53%	14%	29%
Daily papers	2%	5%	38%	16%	39%

To investigate the effect of primary news source on attitude in more detail, data were further subdivided into responses from readers of daily papers versus Sunday papers and tabloid papers versus broadsheet papers and a chi-squared test was applied to the data. Results did not show a significant difference in attitude towards wind farms between daily newspaper readers and Sunday newspaper readers ($p = 0.5633$) but between the readers of tabloid newspapers and broadsheet newspapers there was a significant difference in attitude toward wind farm development ($p < 0.0001$). Cross tabulation of the data showed that a higher number of tabloid readers would object to offshore wind farms than broadsheet readers and less tabloid readers would support development of offshore wind farms, with approximately half remaining neutral.

4.4 Arklow Bank Offshore Wind Farm Focus Group

4.4.1 The Past

None of the participants were formally involved in the consultation process during the construction of the existing wind farm but they remember a lot of 'hype' about it around the town. People in the town were aware that *"something was going on" – (Participant 1)*. Some participants anticipated more traffic and activity around the port and recalled the noise and vibrations of the piling during construction. The group felt that the lack of social media at the time prohibited the flow of information to the general public about the original development. There was concern regarding the potential environmental impact of the wind farm and a lot of uncertainty as to what the impact would be on the town and surrounding area.

4.4.2 The Present

There was consensus in the group that there has been no perceptible impact on the town since the initial installation of the wind farm. Periodically barges are seen traveling to or from the turbines for operations and maintenance. Overall, there is a perception that there is not as much direct employment from the wind farm as the participants originally expected. The participants agreed that the wind farm was a positive addition to the town:-, *"It is absolutely lovely to see the windmills and the yachts on a summer's day" – (Participant 1*). The wind farm enhances the racing experience for sailors in the local yacht club:-, *"Here in Arklow, we don't have an island to race around, so we love to race to the windmills and back" (Participant 2)*. The wind farm was also considered to be an aid to marine navigation, highlighting where the sand bank is located. A resident of the area pointed out that the wind farm was a regular talking point for her children who have grown up looking at it. She summarised the general feeling in her area as:-, *"the wind farm is 'just there'" – (Participant 3)*, and it evokes neither good nor bad feelings in her or for her family:-, *"It is just a given in our daily lives, you get up every day, you breath every day, the wind mills are there every day" – (Participant 3)*. As a result of the presence of the wind farm, her children have grown up with a heightened awareness of renewable energy.

The focus group agreed that there is no interference with their everyday lives as a result of the wind farm and concurred that they would find it difficult to even agree on how many turbines are in the farm:-, *"If you ask the people on the street they couldn't tell you how many* [wind turbines] *there are" – (Participant 3).*

4.4.3 The Future

There was general consensus that increased numbers of wind turbines would not cause concern:-, *"as long as there aren't wind mills all the way down the coast" – (Participant 4)*.

There was agreement that honesty and transparency in explaining all aspects of the next phase of development, including the impact on fishing, would be key to successful progression of the future plans for the wind farm. Technical plans and drawings of the expansion should be explained in non-technical language:-, *"Take the jargon out of it" – (Participant 5)*.

Three cross cutting themes emerged from the focus group: - economics, public engagement, community benefit and aesthetics/social impacts.

4.4.4 Economic

Although there is some economic benefit to the pubs and hotels in the town from the operation and maintenance crews, in general the participants expected more long-term employment, arising from the original development. The tourism potential of the proposed wind farm expansion was discussed by the participants who believe that an observation deck could enhance opportunities for education and tourism. There was consensus that Arklow should secure its position as a hub for the development of offshore wind in Ireland, and become a 'go to' destination for stakeholders interested in visual impact and other consequences of offshore wind in their local areas.

4.4.5 Engagement

There was concern that submissions arising from a public consultation process, may not be acted upon by the Council, given the experience of some of the participants in previous infrastructure plans for the town (including wastewater infrastructure and sea wall defences). This indicates a need to improve trust in the local planning system. There was agreement that the wind farm has great potential for tourism and education that currently was not being tapped into, and this was an area that the group agreed should be focused on for future development.

Suggestions for the enhancement of the public engagement process included having a dedicated contact person available:-, *"a face, not just an email address" – (Participant 3),* the use of social media to spread the word about meetings; a dedicated website including aerial views of the proposed wind farm and full pictures of the plans from different perspectives; and quarterly updates to be held in the local library with possible live streaming of the meetings for those who are unable to attend.

4.4.6 Community Benefit

The local sailing club regularly hold a 'race around the windmills' which has gained sponsorship from the developer and the met mast owners. Advertisements for grant applications for community benefits are published in the local newspapers, but there was an overall feeling that more could be done to improve the public amenities within sight of the wind farms including public walkways and sea viewing areas.

4.4.7 Aesthetics/Social Issues

The offshore wind farm is seen as a positive feature for the sailing club, being used for races and as a navigation feature. The general consensus was that the windmills are better at sea than on land:-, *"they are huge and have a lovely leisurely spin on them, clear white with no noise, perhaps that's because of the noise of the sea" – (Participant 4).* The piling activity was the most audible effect during construction, but operation and maintenance noise can also be heard periodically in the town.

There was agreement that the wind turbines were pleasant to look at. Children are aware of them and as a result are more aware of climate change and electricity generation.

It was observed that people in Arklow do not notice the wind turbines and may even have difficulty in stating how many turbines there are.

There was agreement that the current wind farm is widely accepted in the greater community. Support for additional development is likely to be linked to the extent of the footprint of new wind farm proposals, suggesting a need to optimise the design and layout of array formations. The overall sentiment was that the wind farms had become part of the town. They were seen as:-, *"a bit of comfort when you come over the hill and you see the lights at night, you know you're home" – (Participant 1)*. The wind farm has become part of the branding of Arklow, it is was commented that *"often when you see a picture of Arklow it usually includes the wind mills" – (Participant 4)*.

4.5 Media Content Analysis

The Paris Agreement was signed in 2016 as a pledge from all carbon-emitting countries to cut greenhouse gasses. This landmark environmental pact was a replacement for the Kyoto protocol and was adopted by almost all nations in 2015 to address climate change. It was also a key date for the Media Content Analysis undertaken as part of this study, which spanned 2015-2020. As a result, the Paris Agreement was taken as a milestone for media coverage pertaining to renewable energy and carbon emission targets. The Irish print media covered the topic of alternative sources of energy, including offshore wind development, as a solution to Ireland's Paris Agreement commitments. In total 177 articles were shown to be relevant to the media content analysis study (Table 6).

Table 8. Number of articles returned which included the search term "Offshore Wind" in the LexisNexis database from The Examiner, The Irish Times, The Sunday Business Post and The Sunday Independent between 2015 and 2019

	2015	2016	2017	2018	2019
Examiner	7	5	4	1	5
Irish Times	13	13	11	21	42
SBP	5	6	8	3	0
Sunday Independent	2	2	5	7	17
Total	27	26	28	32	64

Results of the Media Content Analysis are presented on a year-by-year basis below. Values shown are percentage coverage of articles for that year, e.g. 12% of all articles published in that year containing the phrase 'offshore wind'. Themes and topics are presented as percentages of all articles containing 'offshore wind' for that year (Table 7).

Table 9. Themes and Topics related to articles on offshore wind from a review of The Sunday Independent, The Examiner, The Sunday Business Post and The Irish Times between 2015 and 2019

Government	**Economy**
• Brexit	• Construction
• Policy	• Datacentres
• Stalling	• Employment
• Targets	• Energy Security
• UK Policy	• Finance
Social	• Hydrogen
• Aesthetics	• Intermittence
• Community engagement	• International
• Conflict	• Technology
• Consumer effects	
Research	**Environment**
	• Birds
	• Climate change
	• Decarbonisation
	• Transition to offshore

Throughout the period of analysis (2015-2019) the central theme of the majority of articles published in the four newspapers pertained to government or economic issues. Subjects covered include overseas investment, government policy questions, and calls for wind farms to be moved offshore. Environmental and social themes in the early articles (2015-2017) were less regularly reported on, - their frequency increased throughout 2018 and 2019; while research was given less attention through the study time period. Table 8 shows a sample of headlines from the four papers analysed over the period.

Table 10. A sample of 'Offshore Wind' headlines which include text about offshore wind in the body of the report from The Examiner, The Irish Times, The Sunday Business Post and The Sunday Independent between 2015 to 2019

	Examiner	Irish Times	Sunday Business Post	Sunday Independent
2015	*"Ireland set to become 8bn renewable energy hub"*	*"State likely to miss 2020 renewable energy targets; Significant fines and possible export ban to result, says wind energy group"*	*"Boost for Ronan-linked offshore wind farm"*	*"Midlands wind-farm bubble is foolishly ignored by officialdom"*
	"Arguments for wind turbines blowing hot and cold as rural dwellers complain"	*"Oriel and Gaelectric to invest EUR 80m"*	*"Energy lobby wants to connect Ireland, Scotland and France"*	*"From artificial intelligence to the growth of biometrics, business is going to change dramatically over the next 20 years."*
	"Climate change pledges 'significant'"	*"Macquarie and 3i Infrastructure win Irish Sea windfarm license"*	*"Cork firm to build EUR 415m Australian renewables plant"*	
2016	*"Mainstream Renewable Power still 'committed' to £2bn project"*	*"Lobby group says Ireland needs more offshore wind capability"*	*"Government may reverse position on 'costly' offshore wind projects"*	*"NOT a lot is going on"*
	"UK delays green projects"	*"New agreement to bolster offshore wind projects"*	*"Billionaire Naughton invests in €80m wind farm"*	*"The impact on energy is draining; Continued cooperation with Britain is vital, writes John Mullins"*

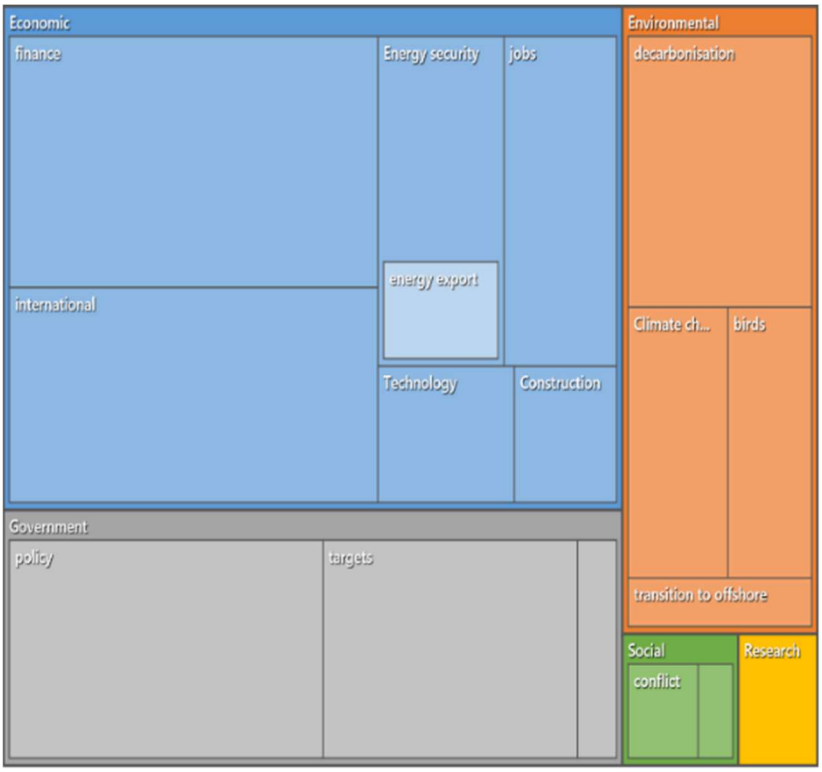
	"Solar farming raises some unusual tax questions"	*"Danish utility valued at up to EUR 14bn for flotation"*	*"Ronan and Barrett's Irish Sea wind farm shelved"*	
2017	*"Leading developer joins key Irish wind farm project"*	*"Ireland now exporter of electricity; Report shows record wind farm production as spending on fossil fuels falls EUR 1.2bn"*	*"Extension of state subsidies to offshore wind farms seen as sign of policy change"*	*"ESB in multi-billion euro offshore wind farm expansion plan; State-owned body plans to start acquiring and developing projects in 2018"*
	"UK suffers drop in subsidies for offshore windfarms"	*"Nordic countries offer to help with energy effort"*	*"Denis Naughten to launch renewable energy support scheme"*	*"Ireland's race against time to avoid (EURO)360m EU renewables fine"*
	"Simon Coveney eyes offshore windfarms"	*"Mainstream Power puts flotation on hold until 2020; Postponement down to legal wrangle over Scottish wind farm development"*	*"Irish green energy firm to sell off €29m of British solar farms"*	*"Policy change is in the wind with ESB's offshore energy drive"*
2018	*"'Ireland's most competitive and vibrant city': Cork chamber outlines vision for the future"*	*"'Pivotal time' for Ireland to tap offshore wind energy; Statoil recommends Ireland establish the framework to deploy offshore wind"*	*"Green energy lobby warns future is 'jeopardised'"*	*"FDI jobs keep flooding in as Apple keeps it low-key with Leo"*
		"Cabinet backs scheme to diversify Republic's green energy"	*"Getting smart about power"*	*"Wind energy could be IFSC of the West', claims Teahon"*
		"ESB chief backs electric cars to cut carbon"	*"It's not easy being green – and blue"*	*"Irish wind farms set to change hands with Element Power on the block; ENERGY"*
2019	*"Proposals for offshore wind farms; A new sense of urgency is essential"*	*"Offshore wind energy key to cutting carbon emissions, forum told"*		*"SSE scouts Wicklow and Arklow for offshore wind hub; RENEWABLE ENERGY"*
	"David Connolly: Wind is in the sails of energy industry"	*"Oil groups likely to target Mainstream*		*"Energia buys Meath solar farm*

		Renewables as it seeks equity partner"	*projects in green push; ENERGY"*
	"ESB and Greencoat in windfarm boost"	*"European energy giants reposition for Ireland's offshore windfarm bonanza"*	*"Irish energy group in (EURO)1.8bn offshore Cork wind farm plan"*

4.5.1 2015 Economics - Finance and International Finance

The theme given most coverage in 2015 was economics of offshore wind farms taking 50% of the narrative across the four papers analysed (Figure 4). Within that theme, the topics of finance and international financing of windfarms was the most dominant with 31% of the overall 'offshore wind' coverage being on these two topics for 2015. This includes the buying and selling of offshore wind farm interests both nationally and internationally and articles on financing potential offshore wind farms in Ireland. Windfarms referenced in these articles included the Oriel wind farm off the north east coast and Codling wind farms off the Wicklow coast. The theme of government featured in 26% of 'offshore windfarm' reporting. Government policy (11%) and targets (6%) were the two most dominant topics within this theme. Content regarding the topic of policy included the Integrated Marine Plan, Harnessing Our Ocean Wealth, the all Island Energy Market and the unveiling of the White paper on Energy towards the latter end of 2015. With regard to the topic of targets, the key narrative concerned the possibility that Ireland would miss its 2020 renewable targets. Environmental framings, making up 21% of the thematic coverage, included the need for increased decarbonisation (9%) and climate change (5%). The Royal Society for the Protection of Birds (RSPB) brought an action against the decision by the Scottish government to licence a 450 megawatt windfarm (*Neart na Gaoithe* (Strength of the Wind)) along with 3 other projects on the east Scottish coast, siting detrimental effects on the bird population (4% coverage). The transition to offshore and its respective advantages constituted 2% of coverage. Social issues included the coverage of the picketing of TD Alex White's (the then Minister for Communications and Natural Resources) office by Wind Aware Ireland, a protest group which was moving its focus from onshore to offshore wind. Research was covered in 2% of articles, including the Irish Maritime and Energy Resource Centre (IMERC)

which was a collaboration of University College Cork, Cork Institute of Technology and The Irish Naval Service.



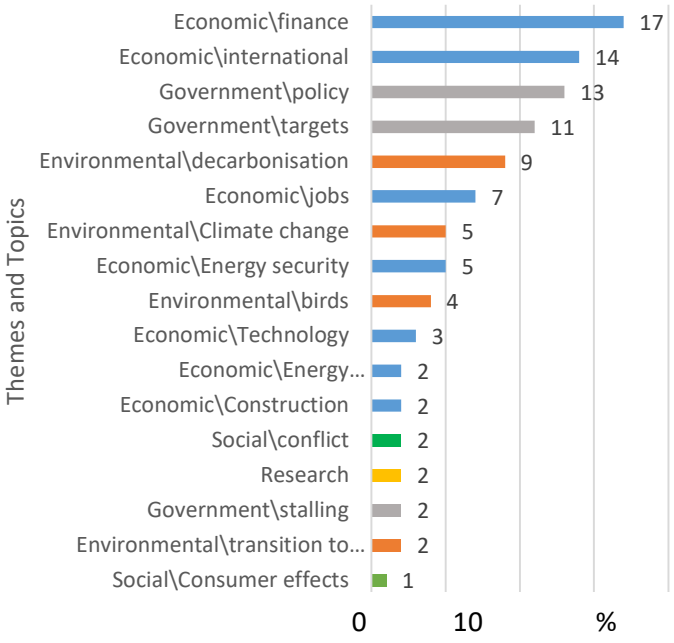


Figure 4. Hierarchy chart of themes and topics as a percentage of total 'offshore wind' coverage in the four titles studied in 2015

4.5.2 2016 Government and Economics - Finance and Policy

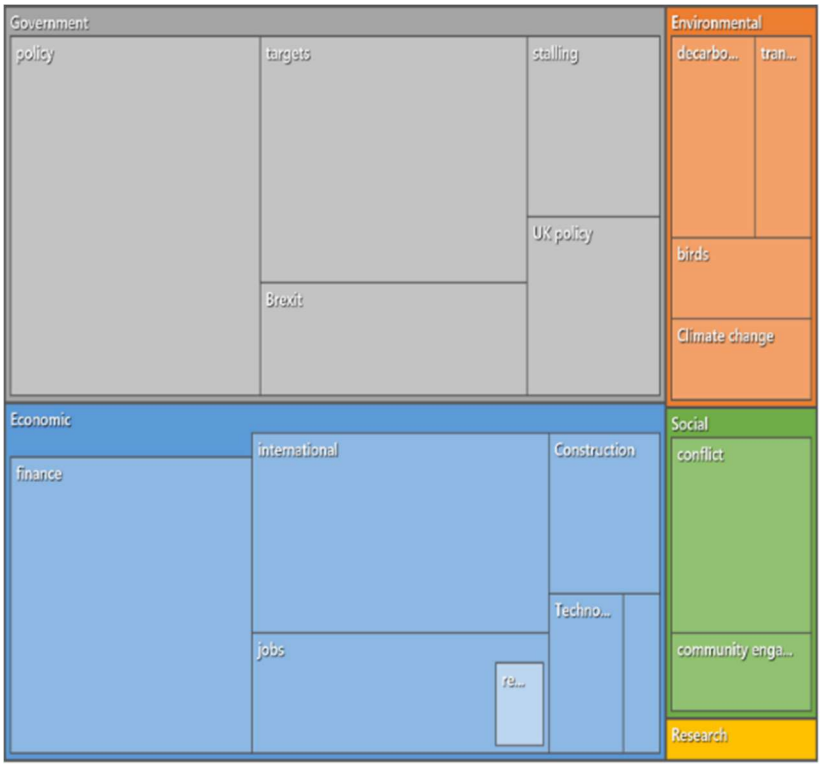
The themes of government and economics dominated in 2016 with government making up 41% of overall coverage (Figure 5) for 2016. As a signatory to the Paris agreement in 2016, the media speculated on government policy and how it could enable Ireland to move forward with its renewable energy obligations, including the inevitable transition to offshore and what added social conflicts that might bring. Within the theme of government, policy issues (16%) and targets (12%) remained important. Given the advances in scale and technology it was widely reported in 2016, that the cost of offshore wind development was falling, but concern was raised regarding the governments agreement to host European datacentres, and the narrative questioned Ireland's ability to meet the targets it committed to in the Paris agreement with the added energy requirements of datacentres. Other topics included Brexit (5%) with concerns about the possible divergence of energy policies between Europe and Britain and the effect that could have on 'energy union' initiatives. Alternative commentaries discussed how Brexit could make Ireland a more attractive investment prospect. Government stalling constituted 4% of coverage; with a focus coming from the shelving of the Codling Wind Park[3]. Reasons for the shelving were given as the failure of the Irish and British government to agree an export agreement. The fact that the Irish government did not offer a price support to offshore wind in 2012 was also cited as a reason for the failure of the multi-billion euro wind farm planned for the Irish Sea. UK Policy was also under scrutiny with 4% coverage, including reportage regarding the newly formed Department for Business, Energy and Industrial Strategy and its delaying of the publication of the fifth carbon budget detailing plans for emission reduction.

Topics within the Economic theme constituted 37% of the overall coverage. Offshore wind finance coverage (13%) included that of Glen Dimplex founder Martin Naughton investing in an €80million cash call for Oriel Wind Farm, while international financing coverage (11%) included Mainstream's interests in emerging markets in Africa, South America and Asia. The theme of employment represented 5% of analysis, with NOW (National Offshore Wind Association) Ireland estimating that Ireland's offshore wind energy industry has the potential to create up to 20,000 jobs, but questions were asked in the media regarding the prospects of those who work in Ireland's peat fired power stations and European coal mining and oil and gas industries. Other

[3] Codling park has since been 're-booted' under the governments fast-track incentive

topics within the Economic theme included construction (3%), technology (2%) and the issue of datacentres covering 1% of the narrative, with media conveying the message that with the added energy demand, the 2020 targets were now unattainable.

The theme of Environmental constituted 9% of overall coverage for 2016. Related topics were decarbonisation (3%), the challenge by the RSPB over the environmental impacts of (among three other projects) Mainstream's 450-Megawatt *Neart na Gaoithe*(Strength of the Wind) project along the east coast of Scotland (2%), climate change and how offshore wind could help stall it (2%) and the transition of onshore wind farms to that of offshore (2%). Topics included in the social theme included conflict (5%), and community engagement (2%). The cost of renewable energy to consumers constituted 1% of coverage of topics in this theme. The theme of research formed 1% of the overall coverage in 2016.



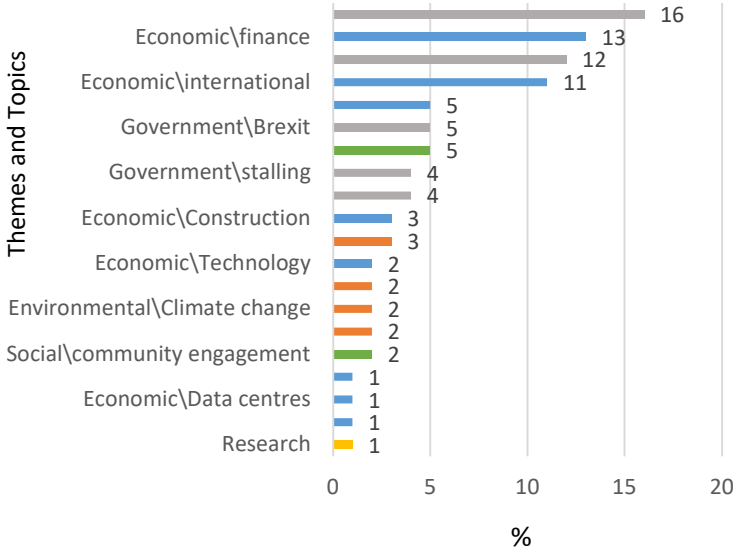


Figure 5. Hierarchy chart of themes and topics as a percentage of total 'offshore wind' coverage in the four titles studied in 2016

4.5.3 2017 Government and Economics – Policy and Finance

Government and Economic themes remained equally dominant in 2017 comprising 42% and 41% respectively of overall coverage for the year (Figure 6). The themes continued from 2016 but this year the topics began a shift in focus towards policy and indigenous development of the sector. Of the Government's share of coverage, the topic of government policy was the most scrutinized receiving 23% of overall coverage for the year. The Government was beginning to show a shift in policy away from relying on onshore windfarms which were becoming politically controversial, towards offshore wind by providing state subsidies for offshore wind and wave farms. European targets were the second most analysed topic (10%) within the theme of government. Focus was on the fact that Ireland was looking likely to miss its 2020 European energy targets, thus accruing fines. The topic of government stalling with regard to offshore wind energy development continued this year (5%). The EPA (Environmental Protection Agency) released figures confirming that European targets would not be met by 2020, the government was quoted as declaring that the targets were 'inappropriate'. At the same time the government announced that offshore wind was being considered for inclusion in the price support scheme for renewable energy. The topic of Brexit got 3% of coverage; coverage focused on the risk it posed to the single electricity market which had been set up less than a decade before between Dublin and Belfast to bolster the island of Ireland's energy security. The falling cost of offshore wind energy received 2% coverage, with reports citing that the cost of producing electricity from offshore wind in the UK had fallen 32% in the preceding 4 years. RESS (Renewable Energy Support Scheme) got 1% focus this year with Minister Naughton announcing 3 new policy initiatives for renewable energy in Ireland.

Finance was the second most covered topic (16%) with the focus being on the ability of Ireland to finance its own offshore wind industry. 2017 saw the announcement by Park Wind of major investment in the Irish offshore wind industry, in the form of Oriel Wind Farm off the Louth coast. This was to be the biggest step forward in the offshore wind industry in 10 years, and would restart interest in international investment in Ireland offshore wind. The sentiment of the papers' coverage of offshore wind farms was very positive, acknowledging Ireland's potential in the offshore wind industry. Construction was a newcomer into the top five most covered topics within the economic theme gaining 10% of the annual narrative. Articles scrutinised the cost of construction and maintenance of offshore wind farms, declaring that although high, construction

costs had been and continued to fall, and as such an impeding offshore wind farm construction boom was expected. International financing of offshore wind interests received 5% coverage which included floating wind farm interest off Scotland by Statoil (Equinor) and the completion of the first phase of the Walney project off the coast of Cumbria in the Irish sea by Danish wind farm giant Dong (on completion to be the biggest wind farm in the world at the time). Mainstreams overseas interests in windfarms in Chile, Vietnam, Scotland and Senegal was also covered. Ireland's energy security got 5% exposure and included coverage of the Celtic interconnector project between Eirgrid and the French electricity provider Réseau de Transport d'Électricité which would have the capacity to carry up to 700MW between both countries. The topic of datacentres and the energy required to run them gained 3% of reporting. Reports questioned the wisdom of the IDAs efforts to attract datacentres to Ireland, and asked how this would affect Ireland's ability to meet European energy targets. Within the environmental theme, transition to offshore was covered in 5% of articles. Papers reported that the volume of onshore turbines throughout Ireland was beginning to attract increasing objections, and the question of moving offshore began to feature. The ongoing battle between Mainstream and the RSPB in Scotland was reported on with Scotland's top civil court ruling in favour of the offshore windfarm developer allowing the continuation of construction of the *Neart na Gaoithe* (Strength of the Wind) wind farm, got 1% of coverage.

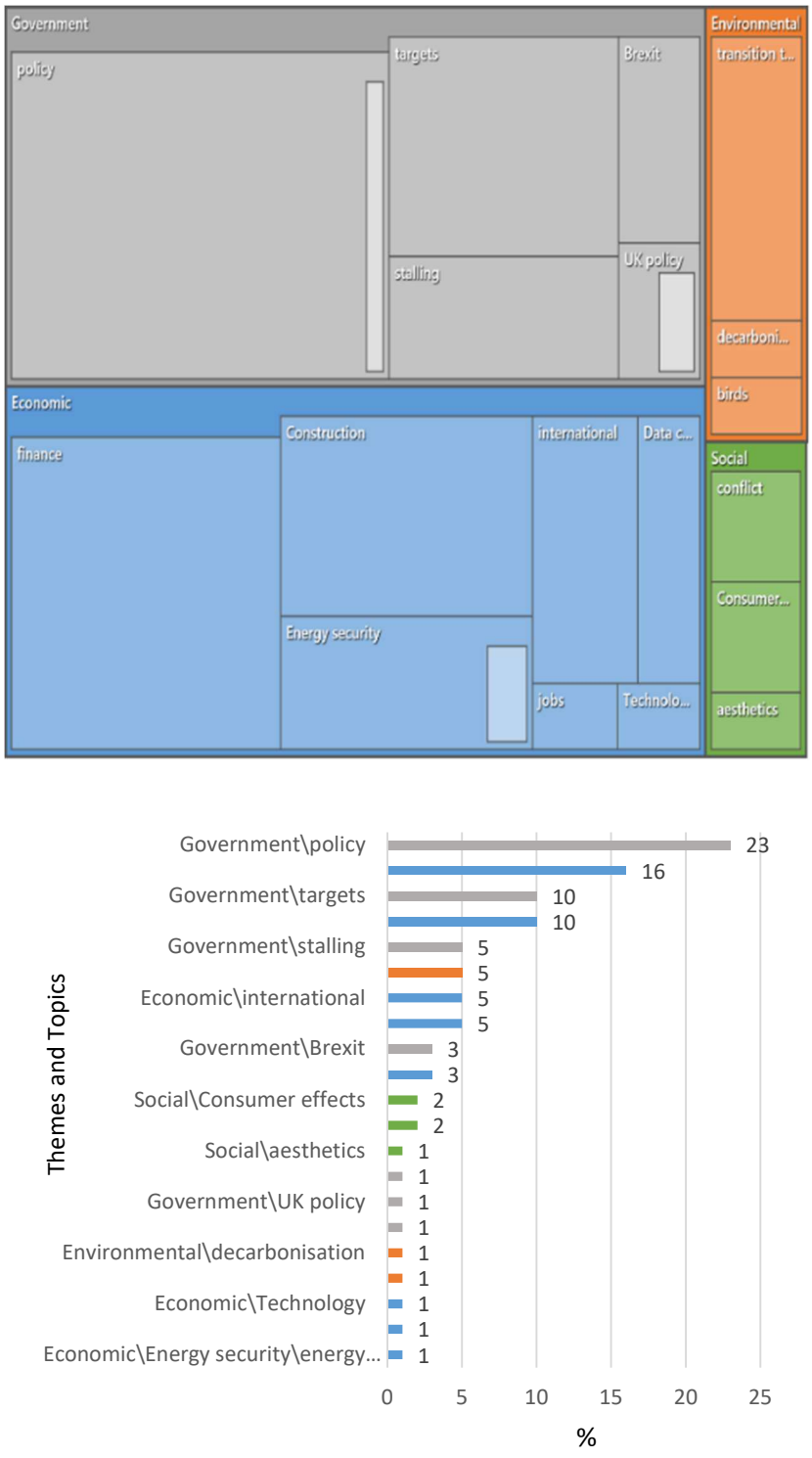


Figure 6. Hierarchy chart of themes and topics as a percentage of total 'offshore wind' coverage in the four titles studied in 2017

4.5.4 2018 Government and Economics – Policy and Finance

The government (36%) and economic (34%) themes continued to dominate in 2018 albeit with a reduction of overall percentage coverage (Figure 7) with a slight shift in focus as environmental topics come more to the fore. The two dominant topics within the theme of government remained as targets (11%) and policy (9%). The failure of the government to implement a carbon tax in the 2018 budget provoked strong criticism from many groups. Newspaper coverage reported on 'indifference' and 'failure to act', with the era being described as 'a really shameful episode in Irish Politics'. Negative sentiment against the government's failure to implement practical measures against climate change was beginning to grow, although the communications between the Irish government and the interest shown by Statoil (Equinor) towards green energy in Ireland was reported on as being a positive signal that the government were investigating ways to develop offshore wind in Ireland. The topic of RESS (Renewable Energy Support Scheme; a government scheme to provide financial support to renewable electricity projects in the republic of Ireland (Eirgrid, 2007) also gained more attention in 2018 (6%). Commentators saw it as a shift in government attitude toward offshore wind and renewable energy. RESS was seen as a critical element in the expansion of green energy development in Ireland. The governments unveiling of the Climate Action Plan received 4% of reporting, with concerns being raised over the discrepancy between what the government committed to in terms of carbon emission reductions and the action it had failed to take in order to achieve those reductions. UK policy and Brexit gained 3% and 2% coverage respectively, with observations about how Brexit would detrimentally effect Ireland decarbonisation with the potential derailment of the all-Ireland integrated single electricity market and the North South electricity interconnector. Government stalling made up the remaining 1% of coverage.

Environmental topics gained more attention this year, constituting 22% of thematic coverage. Of that, 9% constituted coverage of decarbonisation. The Irish Wind Energy Association (IWEA) made inroads into national coverage, with related articles emphasising the importance of cleaner electricity generation with growing demand. The ESB declaring that they were working towards achieving the EU aim of reducing carbon emissions by 80% by 2050. This year Climate Case Ireland won a legal action against the Irish government's 'National Mitigation Plan' which was

found to be 'wholly inadequate' and as such, in breach of the European Convention of Human Rights.

The topic of International finances within the Economic theme was covered by the four papers (12%) with Mainstream's overseas interests being the most covered topic in this context. Coverage of domestic finance fell to 8% with Ireland being described as perfectly positioned to become a hub for green, renewable energy. Deloitte launched a new report which stated that to meet Ireland's decarbonisation targets least 50bn investment would be required, which would include the government's €21.8bn investment programme in the National Development Plan. The topic of employment was given 4% of analysis with offshore wind development being cited as an opportunity to positively affect employment numbers outside Dublin, by creating jobs in coastal communities in offshore windfarm construction, operation and maintenance. The advancement of technology (3% coverage), was reported as driving the cost of construction down. The topic of supply chain, with reports about increased offshore wind trade going through Belfast port as a direct result of offshore wind development and news that Providence (the offshore exploration company) was considering offering financial resources to larger offshore wind companies. This year datacentres received 2% of attention. Articles favoured the link between data centres and offshore wind.

Intermittence was a new topic covered in 2018, gaining 1% coverage. Articles featured the intermittent nature of marine renewable energy output and to the need for electricity storage and smart meters. Construction and energy security remained low on the print media agenda with 1% coverage given to those topics respectively.

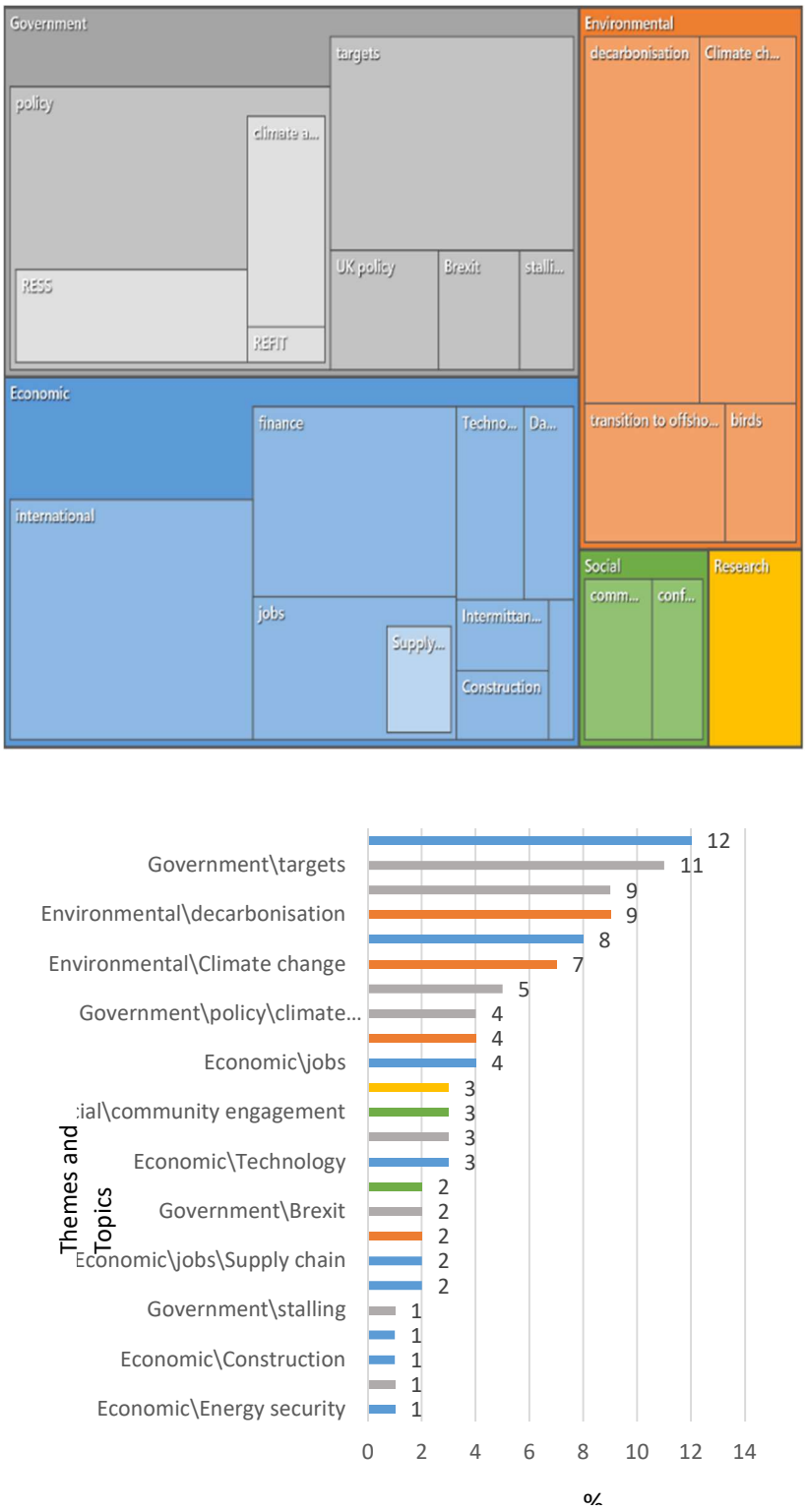


Figure 7. Hierarchy chart of themes and topics as a percentage of total 'offshore wind' coverage in the four titles studied in 2018

4.5.5 2019 Economics and Government – International Finance and Targets

The theme of economics gained more coverage in 2019, increasing to 43% (Figure 8) from 2018. Domestic finance regarding offshore wind farms was given 13% of the overall coverage. Reports covered the ESB adding to its 2018 €250m investment into renewables, and its strategic partnering with Equinor with a view to bringing a number of offshore wind projects to Ireland by 2030. Other reports included news of large renewable companies committing to invest up to €6 billion into the Irish Sea, including Innogy, Statkraft and RWE. International finance reports constituted 6% of reporting. Construction constituted 5% with coverage of the Saorgas/Innogy partnership and their plan to deploy turbines with a total capacity to generate 600 megawatts (MW) of electricity off the coast of Dublin. Technology received 4% of the analysis, with narrative covering the development of floating wind turbines and the increasing size and greater output, resulting in fewer, larger turbines being used. This year datacentres began to get more coverage, (4%) with analysis predicting that energy demand in Dublin was likely to double between 2019 and 2028 as a result of growing population but also due to the growing number of datacentres. Amazon (a user of some of these datacentres was in talks to fund a windfarm in Donegal in order to produce energy to run one of their datacentres). Intermittence was covered in 3% of articles, with articles citing the blackouts in the UK and South Australia being attributed to renewable energy intermittence. Employment received 2% of the reporting with articles asking the question of where the displaced workers from fossil fuel dependent industries like Money Point, would be relocated, with possible reskilling (1% coverage) being an option The topic of Energy security received 2% of the media coverage with the SEAIs reporting that in 2019 Ireland still imports 66% of its energy needs. Hydrogen was a new topic to emerge in 2019 with reports of Engie, Statkraft and Equinor investigating Hydrogen as a viable fuel product of offshore wind receiving 1% of overall reporting.

The theme of Government also featured strongly in 2019, getting 32% of the total coverage that year. Government policy was the prevailing topic, taking 12% of attention. The Maritime Area and Foreshore (Amendment) Bill came under fire for its inadequacies and The Maritime Planning and Development Management Bill was introduced as the new process to streamline foreshore licence applications. The Climate Action Plan was published this year and as such received 8%

of coverage. It recognised the long-term potential for Ireland to generate power from offshore wind. RESS was recognised as only the initial step by the government to back offshore wind generation, with auctions predicted to start by the end of 2019. Reports regarding the stalling of the government still maintained 2% of coverage with comparisons made between Ireland and other EU countries, and a fear that history could repeat itself with investors losing interest when the government did not extend a guaranteed price scheme to the offshore wind industry.

Environmental topics constituted 16% of thematic reporting in 2019. Decarbonisation coverage was the same as 2018 (9%), including a narrative around the Oriel Wind Park, (once operational it was reported to have capacity to reduce carbon emissions by 600,000 tonnes per annum). Climate change coverage reduced to 5% this year (from 7% in 2018) with articles predicting what weather patterns we should expect in 2050, Including increasing sea level and global wildfires, with Ireland being cited as having one of the worst records among developed countries in reducing emissions and adopting renewable energy target levels. The topic of transition to offshore received 2% of attention this year with calls for onshore wind farms to be moved offshore, to increase the scale of energy generation. The ESBs owning of a 12.5% stake in the Galloper wind farm in the UK was reported as a step forward in terms of gaining valuable experience in offshore wind power generation.

Social topics remained in the lower percentage of reporting, including topics of community engagement (4%), with repeated calls in articles on the need of more meaningful engagement and community involvement in the development of offshore (and onshore) wind farms. Reports on social conflict constituted 2% of coverage with Ireland's 'objection culture' being called out as a significant obstacle to offshore development. Eirgrid was reported to foresee planning delays as a result of protests against wind farms and high voltage transmission lines this year.
2019 was the first year that the topic of how the consumer would be affected with the potential introduction of more expensive electricity from offshore wind generation, this received 3% of coverage. The theme of research received 1% of overall coverage in 2019 with Eirgrid predicting how Ireland might achieve its 70% renewable by 2030 and coverage of the multidiscipline research project 'EirWind' which is investigating pathways to developing offshore wind industry in Ireland

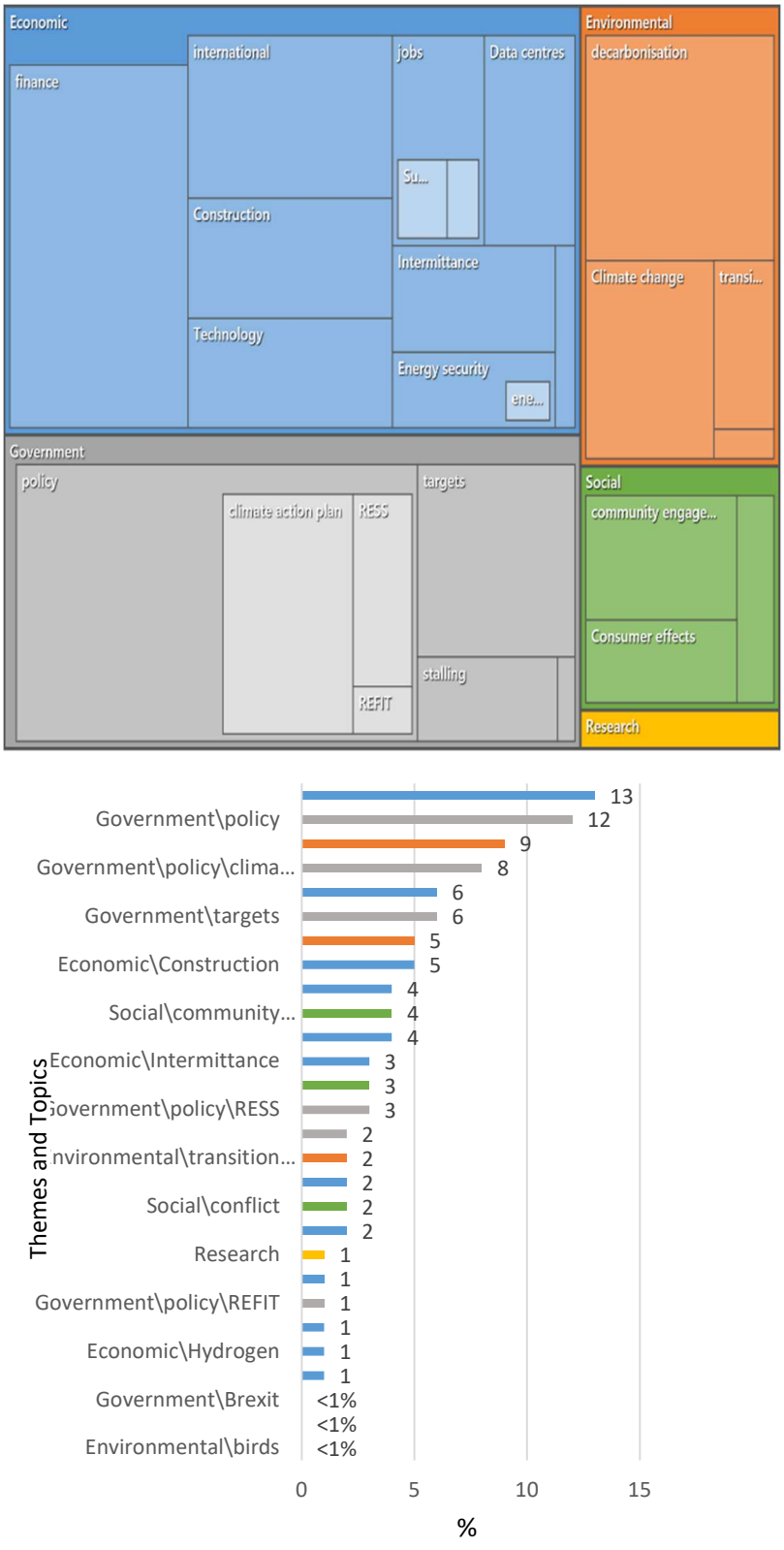


Figure 8. Hierarchy chart of themes and topics as a percentage of total 'offshore wind' coverage in the four titles studied in 2019

Chapter 5

5 Discussion

5.1 Stakeholder Issues and Mapping

The stakeholder mapping exercise profiled a breadth and depth of stakeholders relevant to the development of OSWFs in Ireland. The classification, based on feedback from industry interviews, and adapted from Schmidt (2017), proved to be an appropriate framing for providing a comprehensive overview of the diversity of stakeholder types relevant to this sector.

Feedback on relative stakeholder interest and influence between the categories, and at the different national and regional zone scales, revealed a concentration of effort by EirWind industry partners on *government* at the *national* level. This makes sense as most of the industry partners are at an early stage of exploration and development of projects. As more projects come on-stream, project specific plans for stakeholder engagement will be needed, utilising the stakeholder directory compiled for this research as a starting point. The development of the directory through the stakeholder mapping exercise was a valuable exercise from the point of view of this master's research, as it helped to achieve an understanding of the multiple actors that have a stake in offshore wind. The directory was initially envisioned as a contacts database for the national survey, however it was not utilised in this way when the decision was made to use a random sampling strategy utilising an online marketing survey company.

Stakeholder mapping and engagement is an iterative process that evolves as the various stages of a development are progressed. The relative importance of any one stakeholder cohort changes over time. For example, as site specific plans and details evolve, community activists and vested interests need to be prioritised and attended to. At the level of the EirWind project, it was not feasible to drill down into this beyond the current level of analysis. However, it was recommended that industry partners use the data in the report as a tool for further stakeholder mapping and analysis work

Social acceptance is largely viewed in terms of individual projects, giving rise to isolated fixes such as community benefits or more consultation. However, social acceptance needs to be viewed in a wider set of relationships at multiple scales. There is a need to take a far more integrated and strategic approach to considering the social dimension of offshore wind energy deployment, involving a wide range of stakeholders and framed by the needs of the energy transition. This perspective emerged from the industry interviews, and was a philosophy that very much shaped the approach to the research undertaken for this Masters thesis. Understanding of public perception is required in order to develop more innovative processes for democratic deliberation to build trust with decision makers, stakeholders and communities of interest.

5.2 Public Perception - National Survey

Results of the study show that the general attitude of the public towards offshore wind farm development in Ireland is generally supportive. A considerable majority of people (87%), would facilitate the development of an offshore wind farm in their locality, either through active support or by not objecting. The figures are even higher in relation to how people would react to plans for wind farms off other parts of the coast (93%). However, we are at such an early point of departure with the development of the entire sector that the only real experience that Irish people have had with offshore wind farms has been on holidays, or for a very small percentage of the community direct exposure through proximity of existing projects. Of those who have regular and sustained exposure to Ireland's only wind farm, the sentiment is supportive.

It would appear to be an imperative that Government, industry and other influencers protect the positive predisposition amongst the public. A strong conclusion is that overall the results of this survey present a generally positive and supportive or neutral outlook in relation to public perception of offshore wind.

The level of public support may be attributed to the positive view of job creation potential (63% believe that offshore wind farms could create jobs). The job creation potential of the sector has been documented by a number of studies (Allan et al., 2019; Dalton and Lewis, 2011). The challenge of meeting expectations in relation to job creation may need to be addressed going

forward to ensure the current strong levels of public support emerging from this research. This needs to be attended to in particular, because the supply chain is at a very early stage, and Ireland lacks the offshore capability of countries such as the UK and Norway. Strategic partnerships and stimulation of local content will be key components of delivering on job creation targets and to maintaining good public perception.

There is strong consensus among the general public that Ireland is too dependent on foreign sources of energy. While Ireland's energy import dependency decreased from 88% in 2015 to 66% in 2017 (Howley, 2018), the public recognition of this as an issue, given geopolitical instability, including concerns such as Brexit, is justified by Higgins and Costello (2016). The majority of respondents believe that electricity generation from offshore wind would have a positive impact of carbon emissions (78%), that if we do not change how we produce electricity we will face more severe climate disasters (74%) and that the sight of an offshore wind farm would solicit a feel good factor in relation to addressing climate change (66%).

The survey was conducted between May and June 2019, at a time when climate change was becoming inculcated in the public consciousness more than ever before. The whole of government approach to the publication of the Climate Action Plan in June 2019 generated awareness of, and attention to the need for climate change adaptation. Perhaps even more significant in influencing public consciousness, has been the emergence of grass roots movements such as the Climate Extinction rallies throughout 2019, as well as the media spotlight on Greta Thunberg and school climate strikes. Irrespective of which drivers have been most influential in generating awareness, the evidence suggests that the link between climate change and offshore wind is an important aspect of public perception that supports the development of the sector in Ireland. It should be noted that the survey was undertaken at a time when 3.95 GW of offshore wind development was in the pipeline. Since then, applications for a further 4.25GWs of site investigation licences have been announced including the acceleration of seven existing offshore wind projects. Although many of these projects these have yet to proceed to planning, it could be argued that the perception of 'Ocean Grabbing,' well documented as an issue in the literature (Bennett, 2019; Bennett et al., 2015; Foley and Mather, 2019), may be gathering significance as an issue in the relatively short period of time since the survey was undertaken.

New groups have mobilised to contest recent proposals such as the Waterford Wind Awareness Group, which is particularly concerned with impacts on fishing grounds in the South East. While the majority of public perception is that the fishing industry and offshore wind can co-exist (57%), this is a relatively slim margin, that could easily be tipped in the opposite direction by recent and increasing coverage of disputes in the media (Irish Examiner, 2019). The issue of contestation between offshore wind and fishing may be linked to a lack of stakeholder engagement.

The review of the literature shows that early and meaningful stakeholder engagement is a fundamental pre-requisite to stakeholder buy-in and to ensuring public support for developments. This is supported by the findings of the focus group, the participants of which stressed the importance of timely, honest and transparent information from the developer in order to create and maintain support and good will of the local public. Despite the fact that this is well known and documented (Bush and Hoagland, 2016; Dwyer and Bidwell, 2019; Jones and Eiser, 2009; Klain et al., 2017), it appears that some industry developers are risking the prospect of disputes with fisheries and communities by not engaging early enough, including at the pre-planning stage.

Results show that 37% of respondents indicated that they would trust offshore wind farm developers, which on first reading is quite a low percentage, however 34% of respondents were neutral on the subject. Given that there has been little track record upon which to judge thus far, with the Arklow Bank wind farm as the only developed site, developers have an opportunity to build trust with those of a 'neutral' stance - all the more reason to consider best practice in engaging with stakeholders.

In this survey, the majority of respondents with experience of wind farms have gained their experience whilst on holidays which would suggest that they have only seen wind farms once or twice during a holiday taken once or twice a year. The lesser number of respondents; those who see wind farms on a regular and prolonged basis from home and on their commute to work, have a different experience of wind farms i.e. seeing them more frequently throughout the year, during different weather conditions and from varying perspectives. Results show that the type of experience an individual has of local OSWFs has a significant influence on their attitude, and that the effect of seeing OSWFs from home or on their commute creates a more negative attitude

to OSWFs. As shown above in Table 3., there is a lack of any noteworthy correlation between the independent variables.

However the findings of the focus group show that there is definite acceptance and a moderate sense of pride of those regularly exposed to the Arklow Bank wind farm, and that residents enjoy both looking at it and using it for recreational reasons. The Arklow Bank has a relatively small number of turbines and it has been stressed that the positive view of the wind farm may be directly related to the small number of turbines.

It can be anticipated that there will be natural fluxes in public perception as per the U shaped Wolsink Curve (Wolsink, 2007) which demonstrates the evolution of community acceptance of renewable energy projects over time; high acceptance during the early stages of the project with a decline in support during development phase, and a final upturn of support to relatively high acceptance at the conclusion of project development. We can assume that given the limited development of wind farms in Irish waters that we are currently in the 'early stages' of the Wolsink curve. However, Devine-Wright (2005) concludes that there is no empirical evidence that public perception of wind energy improves over time. As a result, an opportunity exists now to protect the general positivity which is presented by the evidence here.

As indicated above in the context of fisheries, the media have a role to play in influencing public perceptions. The most accessible source of information for the general public about wind farms and green energy is the mass media i.e. newspapers, television, radio and social media (Hansen, 2011). Other research has also shown that how the media frames messages and articles, directly affects the opinions and perspectives of the public who are exposed to them (Schmidt, 2017). Results of this survey show that there is a significant association between the primary source of news and attitudes towards wind farms. This provided a basis for further investigation into Media Content Analysis, discussed in more detail below.

Only a small proportion of those questioned would not support wind farm development, by objecting actively either at a national (2%) or local level (7%). The fact that there is opposition to offshore wind farms is to be expected. What remains to be seen is whether the positive results of this survey will be weakened by the spectre of the 'Individual gap' (Bell et al., 2005, Bell et al.,

2013). This is where general and widespread support of renewable energy as a concept changes to opposition when an actual development is proposed locally (Bell et al., 2005).

The low percentage of objectors in this study follows the trend shown in previous studies whereby resistance to offshore wind farms is usually in the minority (Sokoloski et al., 2018). Nevertheless, however small, this is the cohort with which offshore developers must engage before, during and after project development to mitigate against potential project disruption. When developers do engage, often it is these contentious public meetings that are reported on in the media to ensure a more attention-grabbing story (Hansen, 2011).

71% of respondents believed that the government should be investing more in the offshore wind sector with 63% agreeing that the Irish government is not doing enough to reduce our carbon emissions. The government is beginning to react to this sentiment, with the launch of the Climate Action plan in 2019, followed by the call for public consultation on the Draft National Marine Planning framework (Government of Ireland, 2019a). The extent to which this will influence the co-location of activities, remains to be seen. The government's intention to develop Strategic Marine Areas may facilitate joined up thinking, but in the absence of a final plan and related legislation for foreshore consenting (Marine Planning and Development Management Bill), the risk of a negative perception of 'ocean grabbing' may need careful consideration by industry stakeholders.

It has been evidenced that countries who are further down the path of offshore wind farm development have experienced differing levels of OSWF project support; initial opposition to the development has been followed by acceptance of the offshore projects but more recently, as a result of increasing density of offshore wind farms, there is growing back lash against the development of further offshore wind farms (Boffey, 2018; Brennan and Van Rensburg, 2016).
To inform a public information campaign, Ireland can look to Europe and further afield to learn from mistakes made by more mature offshore wind industries. The example of the Cape Wind project in the US also shows how well planned, well financed, staunch opposition changed to increasing and eventually a majority of support over 10 years of social discourse (Bush and Hoagland, 2016; Lange et al., 2018b).

5.3 Media Content Analysis

With the development of offshore wind farms off the Irish coast, the Irish media is playing an increasingly important role in informing the public about projects, policies and events surrounding the offshore wind industry. Media's output inevitably influences public discourse regarding the advantages and disadvantages of the technology. (Thompson, 2005).

Dominant themes in the reporting of offshore wind in the Irish print media have remained relatively stable over the five-year study period, with government and economic themes being the leading areas reported on. Throughout the analysis news reports covering government and economic themes constituted at least 70% of articles. Coverage of environmental, societal and research themes remained relatively low. This is in keeping with Schmidt's 2017 study which showed that coverage in the German print media focused on economic issues (Schmidt, 2017) and Fischlein's 2014 study of wind power discourse four state of the US which also showed economic themes as being dominant (Fischlein, 2014). As Schmidt has shown, economic arguments are not necessarily the best arguments to use in order to gather support of offshore wind. Her research showed that the topic of climate change is the most effective influence in that regards. The low percentage coverage of climate change directly linked to the search term 'offshore wind' shows consistency with Schmidt's findings that 'climate change' is not used widely as an argument in print media to support 'offshore wind' (Schmidt, 2017).

Coverage of offshore wind in mainstream newspapers has increased over the 5-year study period, with a marked increase between 2018 and 2019 (from 32 articles to 64 articles containing the phrase 'offshore wind'). The increase in article numbers over the study period mirrors the growing public awareness regarding climate change (Bain and Bongiorno, 2020) and the need to find other sources of energy generation (Pareek et al., 2020). It also reflects the trends in the development of the offshore wind industry. The global market for offshore wind has expanded by 30% per year between 2010 and 2018. The increasingly competitive nature of constructing wind farms offshore will lead to continued market expansion over the next two decades, with modelled scenarios estimating growth rates of 13% per year (IEA, 2019).

The increase of articles also mirrors the increase in national awareness of climate change issues in Irish society as a whole. This is evidenced in the study by the preponderance of articles concerned with related topics of decarbonisation and meeting of renewable energy topics.

As seen in Table 6, the highest number of articles about wind power was in the Irish Times (100 articles). This relatively high coverage could be explained by the fact that during the period of analysis, the readership of The Irish Times were highest in the Dublin area (Irish Times, 2015). The east coast population of Ireland is currently more invested in the offshore wind farm debate for a number of reasons; the east coast is currently the location of Ireland's only existing offshore wind farms (with plans for expansion) and the vast majority of wind farm licence applications are for sites along the east coast. Dublin is also the economic, and population centre of Ireland, which concentrates debate.

Schmidt et al., (2013) showed that media attention fluctuates around certain issues events. This was also evident in this study. Coverage of environmental themes peaked in 2015 with the unveiling of the White paper on Energy. In the same context, environmental coverage reduced for the subsequent 2 years (2016, 2017), only to rise again in 2018 to 22%. Towards the latter end of the study period, as planning applications were becoming more common, environmental issues and social topics began to gain more coverage (albeit relatively low column inches), with reporting on community benefits, investment opportunities and a clawback mechanism for consumers to benefit from price fluctuations on wholesale markets.

Journalistic framing of particular issues including developments within the Irish offshore wind industry and the Irish governments management of its development are influenced by many factors including social norms, organizational affiliations and constraints, pressure from specific stakeholders, and political orientation of the particular paper (or publication group) (Scheufele, 1999). In tandem with these is also the requirement of print media to ensure adequate readership numbers and revenue streams. Newspapers portray themselves as unbiased story tellers of what is going on in the world, whose job it is to recount day to day happenings in an unbiased and impartial way (Wagner and Payne, 2017), so whilst the extent to which print media's ability to influence opinions on *specific issues* is debatable, the ability of newspapers to influence behaviour, perceptions and public discourse is proven and widely reported on

(Macnamara, 2005.; Schmidt et al., 2013, 2013; Stephens et al., 2009). In that vein, this study shows not only the extent to which newspaper reporting fluctuates with national and global events but also illustrates how economic and governmental action (and inaction) can affect the wider societal discourse. The relative novelty of the offshore wind industry when compared with that of the onshore wind sector means that the public salience is not quite developed. What is capture here is a kind of baseline where the governance/economic themes dominate and the social themes are latent rather than manifest.

Chapter 6

6 Limitations

6.1 Public Perception – National Survey

In compliance with University College Cork's public procurement procedure, *Interactions Research* was chosen to facilitate the distribution of the survey. To ensure nationally representative results, respondents were geographically targeted through social media, however this limited the respondents to only those using social media.

The use of the Likert scale questionnaire in this study allowed for varying degrees of opinion to be measured, however some of the questions would have been more conclusive if the option of 'Don't know' had been omitted, and just the option of 'Neutral' had remained.

Free text areas were not provided at the end of any of the questions for further comments, this should be considered in any further questionnaires.

In this survey we did not investigate opinions regarding the 'look' and 'feel' of turbines. In order for this to be achieved, more visual questions could be developed in a fit for purpose methodology. Visual questions have been shown in past surveys to be essential in gauging the importance of distance and aesthetics on social acceptance (Gaede and Rowlands, 2018; Krueger et al., 2011; Phadke, 2010). Participatory GIS would be a useful tool for this more detailed analysis.

Focus groups allow an understanding of the diverse opinions regarding complex and wicked problems (Brennan et al., 2017). A limitation of a focus group is that is it only snapshot of the opinions of a minority group, so is not fully representative of a population. However, because of the small numbers involved, it allows detailed commentary from everyone present and open and guided discussion between participants – a result of which can be two-way deliberative learning among those involved.

In further research it would be recommended to hold multiple focus groups over a longer period of time in order to include more community groups and to build up a broader snapshot of opinion.

6.2 Media Content Analysis

This study looked only at print media which is diminishing in its ability to inform and influence the populace, with the majority of Irish people now accessing newspapers and other news sources on line (Culloty et al., 2019). The ability to access international news every day suggests that society now has the means to attain a more informed view of global events with regard to the offshore wind industry and project development. Today's society has immediate access to a wider view of international issues arising from territories that are much further along the path of offshore wind development than Ireland. Countries which have a mature offshore wind industry are reporting on issues which, as yet, are not relevant to Irelands inexperienced offshore wind energy sector. Public discourse is not only being informed by domestic reporting but now enjoys intelligence from international sources which are arising and being reported on in the mainstream news feeds which reduces the 'fishbowl' view of the wind industry issues which may be affecting Irish society and the societal issues which are affecting Ireland's offshore wind industry.

The databased used in this study was LexisNexis. The resources here were somewhat limited to broadsheet newspapers with no Irish tabloid newspaper coverage. To attain a more complete study of Irish print media coverage, including tabloid media coverage Google News would be a more complete search tool.

This study only used one search term "offshore wind" which restricted results to only those directly related to and including offshore wind energy, subjects such as climate change or global warming which do not include 'offshore wind' and other environmental subjects were therefore not included., Given the time of the constraints of the study it was impossible to include all such searches. A more comprehensive study would include more search terms.

Chapter 7

7 Conclusions

Support for Offshore Wind by the Irish Public is generally high. 87% of respondents would facilitate development of an offshore wind farm in their locality, either through active support or not objecting. 93% of respondents would facilitate development of an offshore wind farm outside of their locality, either through active support or not objecting. Irish people have limited experiences of offshore wind development. The current high levels of support for offshore wind in Ireland are influenced by previous exposure to offshore wind farms. The vast majority of respondents that have seen an offshore wind farm have in fact, limited exposure to sighting of an offshore wind farm on a regular basis. Positive responses in the survey may be biased by the high numbers of people whose only experience of seeing an offshore wind farm was on holidays (49%). However results of the focus group show a positive attitude from those who see an offshore wind farm on a daily basis.

The perceived link between offshore wind and climate change is strong. The data would suggest that there is merit in a national campaign to strengthen the perceived *direct* link between offshore wind and climate change, as

- 78% of those who took part in the survey believed or believed strongly that generating electricity from offshore wind farms would make a difference to Ireland's carbon emissions.
- 74% agreed that if we do not change how we produce electricity we will face more severe climate disasters.
- 60% shared the opinion that seeing offshore wind turbines made them feel that they were helping to stall climate change.

and the perceived *indirect* link between offshore wind with energy security and climate change, as

- 65% of respondents believed that Ireland is too reliant on foreign energy.
- 66% of people believed that Ireland has a limited amount of fossil fuel resources which are running out.

- 69% believed that once constructed, electricity generated from offshore wind farms will be renewable and clean.

If the general public see information framed in a positive way then they will be influenced by the framing of that information – e.g. if information is published that the majority of people in Ireland would not object to local wind energy development (as shown by this survey) then they may and probably will be influenced by that information and so the current positive/neutral position of the Irish public can be built on to further influence positive perceptions of offshore wind farms in Irish waters.

Further research is needed on perception of particular issues such as visual impact and cumulative impact. 49% of respondents in the study found offshore wind farms interesting to look at whereas 35% did not really notice them when they look out to sea. This could be as a result of Ireland's lack of offshore wind farms and the fact that the vast majority of respondents are on holiday when they see them. 82% of people who took part in the survey believed that offshore wind farms do not harm wildlife and 63% felt that offshore wind development could lead to job creation. These factors need to be considered in communication with local stakeholder groups in a transparent way, on a project by project basis, by individual developers. These factors should also be considered at a national level, through integrated studies on cumulative impact, as part of the national dialogue on the energy transition.

The media has been effective in holding government to account on renewable energy issues and in reporting on offshore wind developments. This study gives a snapshot of the main issues reported on in Irish print media over the last five years. An area for further research is how the Irish print media can help inform Irish citizens about more sustainable energy production.

It has been shown that the Irish print media in this study, have given broad coverage of the issues relevant to offshore wind. Framings around government and economics have dominated. The tendency has been towards negative reporting of government decisions or actions. However, holding government to account is an important role of the media.

In general, the review of the print media in the Irish broadsheets reflects the issues of the day. When presented year by year, they reveal the story of steady progress in the development of offshore wind in Ireland, with a notable increase in coverage of a number of new and strategic developments throughout 2018-2019.

Chapter 8

8 Recommendations

8.1 Government and Industry should Act Now

At a time when there is shown to be a generally positive disposition towards offshore wind there is currently an opportunity to ensure public perception is positive going forward. Data and information should be made available on the strategic aspects of offshore wind, as a national interest issue for the country.

8.2 Public Awareness Campaign should be Undertaken

There is value in a public awareness campaign at a national level, supported by government and industry. Knowledge gained through further research into public perception should be linked back into the design of national and local campaigns in an iterative way.

The media have a role to play here. Although the traditional print media was a focus for this research, such engagement needs to consider all forms of media messaging, including the influence of social media, as an effective platform for engaging the public.

The perceived link between offshore wind and climate change is strong, this link should be built on and included as the central theme of a national campaign

8.3 Best Practice Stakeholder Engagement is Key

Given that the relatively high levels of support (i.e. not objecting to potential offshore wind farms) for offshore wind could be attributed to the experience which most people have of wind farms (on holidays), as people gain more experience of development in their locality, public perception may change at a localised level. Therefore, best practice in stakeholder engagement by industry is recommended, including early, transparent and ongoing engagement with relevant stakeholders.

8.4 Irish Print Media Should be used to help Inform the energy citizen

The Irish print media should be used to help inform the energy citizen regarding all renewable energy sources including offshore wind and should continue to hold government to account on all climate change and renewable energy issues

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Please note that Annex A (pp. 105-110) is unavailable due to a restriction requested by the author.

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Annex B Comments from Facebook Survey

- “Great idea Windmills are the best”

- “We would need to cover the land and coast with wind turbines to even nearly replace fossil fuel produced electricity.”

- “I don’t think anyone has mentioned the elephant on the room....nuclear....which may turn out to be the least worst option.”

- “The only problem is, the very type of people who shout about saving the planet will be the ones who will object to these developments. You only have to read the comment section. People saying they're great but don’t put them where I have to look at them or what about the birds. Things have been sticking out of the ocean for centuries and wind turbines for decades and I have never seen photos of piles of dead birds at the bottom of them.”

- “Great to see. We badly need more renewable energy, both onshore and off shore.”

- “Anything has got to be better than peat burning power stations. With our large tidal ranges and strong tidal streams around the country I am amazed that we do not have anyone trying out other methods of power generation. They also wouldn't have the major objects wind farms will have around visibility or effect on wildlife.”

- “Great to hear. This is the real future of energy sustainability and security for Ireland.”

- “It should be funded by Irish semi states like the ESB, and the benefits should accrue to Ireland, similar to Statoil accruing to Norway. Foreign companies "investing" and exploiting Irish offshore territory are a modern equivalent of colonialism.”

- “I have no problem with wind turbines off shore provided they are placed so as not to have any land hills or mountain's at the other side of them. As this would be a MAJOR EYE SORE. Clear water to the horizon at the other side of the turbines is ok.”

- “My only fear about off shore is birds getting killed and what happens to the great big stump in the sea in 25+ years. Will it be a danger to shipping?”

- “Absolutely vital, but keep major tourist sites and beauty spots free. Put clusters amongst the parts we don't go to as a rule.”

- “Great idea, but we'd be much better off going nuclear.”

- “Wind farms would be great they would also become marine reserves, time to get rid of hydro power all they do is destroy rivers and wipe out migratory fish.”

- “There needs to be better explanation to the general public of how this intermittent power supply will be made more reliable. Will excess wind power be stored in battery farms or in the form of hydrogen?” “As it stands, don't we still need gas/peat/oil/coal etc. to smooth out the energy, as the wind doesn't always blow strong enough to generate enough power?”

- “Surely wind farms, would provide an ideal resting spot to migrating birds?”

- “Do not like those windmills terrible to look at.”

- “The more the better 👉”

- “Save your money. Wind and solar are only part of the solution. Nuclear energy is the missing link. Without it we’ll be reliant on fossil fuel for a very long time to come.”

- “Better than looking at the fecking things on our scenic mountain they have the place ruined next they will have them in Killarney nation park hydro is the way to go we are surrounded by water.”

- “Definitely the more the merrier .... Plus they provide sanctuary areas for aquatic animals against large-scale trawling.”

- “Good idea”

- “We don't need to go offshore. We have ample onshore wind resources.”

- “Some people are ridiculous. They don't like wind farms, don't like power lines, but they want electricity in the home. What the hell they want? Nuclear station beside? Don't like this, don't like that! Cry me a river! 😡”

- “In its lifetime, one Industrial Wind Turbine will never wipe out the carbon footprint it takes to make it. So how is this a 'renewable energy' the only thing it renews is the yearly subsidies it costs tax payers to have this stupidity surrounding us!”

- “I live here in Arklow on the S/E/Coast and when I see the wind farms on our beautiful mountains they look bad and take the beauty from our great lands and mountains and all I say to you is erect them out at sea where the existing ones are at present off of Arklow and they look good as well.”

- “What proof is there that this is safe for aquatic life? We are already causing enough destruction at sea and everywhere else we touch!”

- “Well that won't be a concern of anyone in this govt. They're already putting them up next to humans, ignoring WHO guidelines that say turbines are detrimental to human health. So what is our Governments answer? To continue the deliberate delay of updating Irish guidelines so they can put farms all over Ireland with NO concern for those living near. I can't see how there will be any concern for life out at sea.”

- “We have lots of land that’s good for nothing else. The farmers could do with the extra money and the sea could do without all the interference.”

- “Survey interesting - the only thing is that while I agree with offshore, close to land in a beauty spot is different to further out at sea in areas not considered beauty spots - the places would have to be picked carefully. However, we absolutely have to tackle climate by any means necessary at this stage. Offshore wave energy should be a big part of this.”

- “I agree and fully support wind energy. We are in an absolute crisis with little time to turn this thing around. I'm just thinking that perhaps in the few places of exceptional coastal beauty, they should be further out or somewhere else!”

- “I lived in Essex, UK for years and there are turbines off the coast. They look good. There are areas around Ireland that these can be placed that won't block out views etc. We need renewable energy!”

- “Oil and coal are doing much more damage and killed and displaced, made sick a lot of people around the world so we could stay using them and nothing will change, only our environment, or try embrace any Technology that might have less impact on our World Environment”

- “I would personally be in favour of it. It has been highlighted by the scientific community that it order to limit the effect of the global warming which is already under way we need to make a swift and massive move towards renewal energy.”

- “Just look across the Irish sea UK has numerous large wind farms producing green renewable energy, its time the Irish Government woke up and provided an incentive for companies to invest, attitudes will change when were are fined for our carbon emissions in 2020.”

- “If electricity was cheaper in those areas where the masts are it might get more support alas it's getting dearer.”

- “Offshore turbines kill a lot of marine birds and I would venture to suggest that the infrasound from wind turbines would interfere with the sonar used by whales, dolphins etc. Wind turbines are an obsolete technology. There are surely better ways of generating electricity.”

- “There is no climate change catastrophe. The planet has warmed by 1 deg C since pre-industrial times. So what??”

- “Climate change, pesticides, loss of habitat, polluting intensive agriculture are what are killing off our birdlife and wildlife. Thousands of puffins in a mass die-off recently due to climate change is just the latest example. Wind turbines should be placed where they are not on migration paths and environmental impact studies carried out first. Our main priority is to save the snuffing out of most life on planet earth from climate change.”

- “Go for it, people probably complained about old fashioned windmills when they were first built and look, now they are tourist sights! The faster we can drop fossil fuels the better, retract the offshore drilling license immediately!”

- “Fine as long as the power is for Ireland. Not fine if the power goes elsewhere.”

- “Better than on the land.”

- “MaREI should know better! Offshore turbines are just as damaging as onshore turbines with their attendant high voltage power lines onshore and constant noise offshore. Tell them to do some research on the effects of offshore turbine acoustics on marine life! Public opinion is irrelevant. The damage is not sustainable.”

- “Double benefit - offshore wind farms are out of bounds for trawlers so the sea around turbines becomes a haven and nursery for fish.”

Annex C Survey Findings by Question

Section1. Your Experience of Offshore Wind Farms

How many times a year do you visit the coast?	Everyday	Once/twice a week	Once/twice a month	Once/twice every six months	Ten times a year	Never
	117	149	293	414	116	63
	10%	13%	25%	36%	10%	5%

Have you ever seen an offshore wind farm?	Yes	No	Don't know
	571	525	58
	49%	45%	5%

Have you ever visited the coast to see an offshore wind farm?	Yes	No	Don't know
	161	962	31
	14%	83%	3%

Have you ever avoided visiting the coast because of the presence of an offshore wind farm?	Yes	No	Don't know
	62	1059	33
	5%	92%	3%

Can you see an offshore wind farm from your house?	Yes	No	Don't know
	44	1103	7
	4%	96%	1%

Can you see an offshore wind farm on your commute to work?	Yes	No	Don't know
	78	1060	16
	7%	92%	1%

Have you ever seen and offshore wind farm on your holidays?	Yes	No	Don't know
	470	656	28
	41%	57%	2%

If you can see an OSWF from your house how does it make you feel?	Good	Irritated	No Effect
	11	10	30
	3%	1%	1%

IF you can see an OSWF wind farm on your holidays how does it make you feel?	Good	Irritated	No Effect
	233	38	227
	20%	3%	20%

IF you can see an OSWF wind farm on your commute how does it make you feel?	Good	Irritated	No Effect
	40	15	39
	3%	1%	3%

Section 2. Irelands Electricity Generation and Supply Situation

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Don't know
Ireland is too reliant on foreign energy	351	404	245	43	18	93
	30%	35%	21%	4%	2%	9%
Ireland does NOT have an energy problem and should continue with existing energy resources	39	108	259	377	310	61
	3%	9%	22%	33%	27%	5%
Ireland has a limited amount of fossil fuel resources which are running out	343	412	230	47	27	95
	30%	36%	20%	4%	2%	8%
Generating energy from offshore wind farms would make a difference to Ireland's carbon emissions	484	410	170	23	15	52
	42%	36%	15%	2%	1%	5%
Generating energy from offshore wind farms would make a difference to Ireland's energy security	458	409	183	20	12	72
	40%	35%	16%	2%	1%	6%

Section 3. The Government and Offshore Wind Farms

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Don't know
The Irish Government is doing all it can to reduce carbon emissions/greenhouse gasses	51	145	314	327	278	39
	4%	13%	27%	28%	24%	3%
The Irish Government is not doing enough to reduce our carbon emissions	378	342	281	75	44	34
	33%	30%	24%	7%	4%	3%
The Irish Government should invest in offshore wind farms	458	363	240	31	22	40
	40%	31%	21%	3%	2%	3%
The Irish Government should NOT invest in renewable energy	35	81	192	253	567	26
	3%	7%	17%	22%	49%	2%

Section 4. How Do You Feel About Offshore Wind Farm Power Generation

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Don't know
Offshore wind power is too expensive to generate electricity economically	50	147	318	258	107	273
	4%	13%	28%	22%	9%	24%
Offshore wind turbines are detrimental to the fishing industry	40	124	362	183	91	353
	3%	11%	31%	16%	8%	31%
Offshore wind farms could create jobs in the surrounding area	246	489	243	34	14	127
	21%	42%	21%	3%	1%	11%
Offshore wind farms could help the fishing industry	88	197	413	89	24	342
	8%	17%	36%	8%	2%	30%
If we had more offshore wind farms we would reduce our reliance on foreign energy	371	485	180	19	8	90
	32%	42%	16%	2%	1%	8%
Offshore wind farms could help us meet our carbon reduction targets	350	493	200	23	7	80
	30%	43%	17%	2%	1%	7%
Electricity generated using offshore wind power is unreliable	45	136	295	328	138	211
	4%	12%	26%	28%	12%	18%
The fishing industry and the offshore wind industry could co-exist	232	430	241	26	16	208
	20%	37%	21%	2%	1%	18%
There will be no benefit for me if an offshore wind farm is built in my locality	75	163	338	291	132	154
	7%	14%	29%	25%	11%	13%
Offshore wind farms are the best solution to our energy situation	193	397	344	58	22	139
	17%	34%	30%	5%	2%	12%
I don't trust offshore wind farm developers	61	119	396	292	144	141
	5%	10%	34%	25%	12%	12%

Section 5. How Do You Feel About Offshore Wind Farms in General

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Don't know
Offshore wind turbines harm wildlife	54	146	337	242	111	263
	5%	13%	29%	21%	10%	23%
Offshore wind turbines ruin beach visits	57	137	296	365	207	91
	5%	12%	26%	32%	18%	8%
Electricity generation using offshore wind power is renewable and clean once they are constructed	296	495	203	32	15	112
	26%	43%	18%	3%	1%	10%
Offshore wind turbines are interesting to look at	136	423	341	126	55	72
	12%	37%	30%	11%	5%	6%
I don't really notice offshore wind turbines if they are there when I look out to sea	104	306	394	190	53	106
	9%	26%	34%	16%	4%	9%
I would take a boat trip to see an offshore wind farm	118	355	270	214	124	72
	10%	31%	23%	19%	11%	6%
I would avoid a beach where offshore wind turbines are visible	55	115	252	390	274	67
	5%	10%	22%	34%	24%	6%
Offshore wind turbines make me mad	39	60	240	370	387	57
	3%	5%	21%	32%	34%	5%
Offshore wind turbines make me think that we are helping stall climate change	217	469	278	67	33	89
	19%	41%	24%	6%	3%	8%
As long as I don't see them, I don't mind where offshore wind farms are built	78	218	438	245	112	62
	7%	19%	38%	21%	10%	5%
I don't want offshore wind farms built anywhere off the Irish coast	36	84	269	334	367	63
	3%	7%	23%	29%	32%	5%

Section 6. What Do You think Is Causing Climate Change

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Don't know
Climate Change is related to demand for energy	228	514	225	80	31	75
	20%	45%	20%	7%	3%	7%
Climate change is as a result of ONLY human activity	165	263	242	312	115	56
	14%	23%	21%	27%	10%	5%
Climate change is as a result of ONLY natural processes	44	115	198	402	337	57
	4%	10%	17%	35%	29%	5%
Climate change is as a result of BOTH human activity AND natural processes	286	474	200	113	42	38
	25%	41%	17%	10%	4%	3%
There is nothing we can do to reduce the speed of climate change	50	112	163	361	417	50
	4%	10%	14%	31	36	4
There is no such thing as climate change	43	70	162	228	621	29
	3%	6%	14%	20%	54%	3%
Reducing our carbon emissions will help to reduce the speed of climate change	412	460	169	42	25	45
	36%	40%	15%	4%	2%	4%
If we don't change how we produce electricity we will face more severe climate disasters	412	428	192	40	24	57
	36%	37%	17%	3%	2%	5%

Section 7 What Is Your Position Regarding Environmental Issues

Are you a member of an environmental group?	Yes	No
	70	1056
	7%	92%

If an information meeting was called in your locality about a proposed OSWF would you attend?	Yes	No	Don't know
	483	374	296
	42%	32%	26%

Have you ever taken part in a public rally?	Yes	No
	344	784
	28%	68%

Would you ever take part in a public rally?	Yes	No	Don't know
	545	359	249
	47%	31%	22%

Do you think renewable energy is a good idea?	Yes	No	Don't know
	1021	75	57
	88%	7%	5%

Do you support a transition to renewable energy?	Yes	No	Don't know
	959	98	96
	83%	8%	8%

If an offshore wind farm was planned for your locality would you…	Support it actively	Support it but not actively	remain neutral	Object to it but not actively	Object to it actively
	191	419	387	83	74
	17%	36%	34%	7%	7%

If an offshore wind farm was planned for another part of Ireland would you…	Support it actively	Support it but not actively	remain neutral	Object to it but not actively	Object to it actively
	178	434	461	53	28
	15%	38%	40%	5%	2%

Section 8 About You

Gender	Male	Female
	589	564
	51%	49%

Age	16-24	25-34	35-44	45-54	55+
	120	199	250	189	396
	10%	17%	22%	16%	34%

Do you rent or own your home?	Rent	Own
	379	733
	33%	64%

Would you describe where you live as rural or urban?	Rural	Urban
	475	41
	41%	59%

What level of Education do you have?	Primary	Second Level	Third Level	Post Graduate	Apprenticeship
	24	360	535	217	11
	3%	31%	46%	19%	1%

What is your primary news source?

Irish Daily Mail	Irish Daily Mirror	Irish Daily Star	Irish Examiner	Irish Farmers Journal
192	66	51	124	3
17%	6%	4%	11%	0.2%
Irish Independent	**Irish Mail on Sunday**	**Irish Sun**	**Irish Sunday Mirror**	**Sunday Business Post**
261	11	39	2	9
23%	1%	3%	0.1%	0.8%
Sunday Independent	**Sunday times**	**Sunday World**	**The Guardian**	**Irish Times**
16	8	5	12	127
1.3%	0.7%	0.4%	1%	11%
Times Ireland Edition	**Other**	**No answer**		
5	221	2		
0.4%	19%	0.1%		