Co-designing opportunities towards the development of Irish offshore wind

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Deliverable 4.7 Public Perception of Offshore Wind Farms Report Part 2.

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Executive Summary:

Public attitude towards onshore wind farm development in Ireland has been extensively investigated. Currently there is little or no understanding of the perception of the Irish public of *offshore* wind farms (OSWFs). At this critical juncture in the development of the sector, it is necessary to gauge public opinion regarding offshore wind farms.

This report details the findings of the first national survey of public perception of offshore wind farms in Irish waters undertaken between May and June 2019. The report details the opinions and attitudes of the Irish public toward the development of renewable energy projects in Irish waters.

Results are nationally representative, with 1154 completed questionnaires analysed. Demographics showed a 49% male, 51% female split. Education levels and age ranges roughly follow the same distribution levels as seen in the 2016 census of Ireland. Results indicate that attitudes to planned OSWFs change significantly with education levels.

The evidence suggests that the link between climate change and offshore wind farms is an important aspect of public perception that supports the development of the sector in Ireland.

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.

Sixty three percent of those surveyed believed that offshore wind farms will 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.

Thirty-seven percent of respondents trust offshore wind farm developers and 34% indicate that they were neutral on the subject. 15% of those who took part in the survey indicated that they mistrust developers.

Approximately half of respondents had previous experience of offshore wind farms (the majority of whom had experienced offshore wind farms on holiday). A minority group had experience of offshore wind farms as a result of their daily commute or had an offshore wind farm in the vicinity of their homes. The data confirmed the hypothesis that experience of offshore wind farms has a significant effect on attitudes towards them. Results show that those with experience of OSWFs are more positive towards offshore wind farm development in Irish waters, than those with no experience of OSWFs. 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 sea scape.

The respondents' attitudes towards offshore wind farms was shown to change significantly with their primary source of printed news. Those reading tabloid newspapers (as opposed to broadsheet) have been shown to have a significantly more negative attitude to offshore wind farms.

This report provides a resource for the offshore wind industry and policy makers alike. The data would suggest that an opportunity exists to create a public awareness campaign as a next step, to build on the favourable national mood and public understanding of the role of offshore wind in decarbonising the economy.

These findings are part of an overall work package dedicated to governance in the Eirwind project.

List of Abbreviations

CDA	Confidential Disclosure Agreement
EU	European Union
FLOWW	Fishing Liaison and Offshore Wet Renewables Group
Km	Kilometres
LCOE	Levelised Cost of Energy
m	Metres
MAFA	Maritime Area and Foreshore Bill (Amendment)
MUSES	Multi Use in European Seas
MW	Megawatt
NW	North West
O&M	Operation and Maintenance
OREDP	Offshore Renewable Energy Development Plan
OSWF	Offshore Wind Farm
OWT	Offshore Wind Turbine
RES	Renewable Energy Source
SEAI	Sustainable Energy Authority of Ireland
TER	Total Energy Requirement
UCC	University College Cork
UK	United Kingdom
WP	Work Package

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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's Climate Action Plan published in January 2019 acknowledges the need to shift towards sustainable development and electricity production from renewables. 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. For the first time, there is a policy mandate for the development of offshore wind, with *a minimum* of 3.5GW by 2030 (Government of Ireland a, 2019).

Despite an offshore landmass of over ten times that of its terrestrial area and significant wind resources off its coastline, Ireland has, as yet failed to harness its offshore wind potential, with only 25MW of installed capacity on The Arklow Bank Wind Park. However, this is set to change. Approximately 11GW of proposed offshore wind projects are in the pipeline, at different stages of development, from very early to legacy project stages. As a result, it is necessary to gauge public opinion at this critical juncture in the development of the sector. Although on a global level, 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 Republic of Ireland has an abundance of terrestrial wind farms with circa 3,700MW of installed capacity and 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), and challenges facing social acceptance linked to landscape, biodiversity, health, noise and property value (Ellis et al., 2009). Currently there is little or no understanding of the perception of the Irish public of *offshore* wind farms (Reilly et al., 2015).

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 of the siting of wind farms (Petrova, 2013).

The term 'Social Licence to Operate' (SLO) implies a quasi- legal 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).

Understanding public perception at a national level is not a panacea for planning and development of offshore wind but is one part of a more complex jigsaw which is currently under consideration through the governance work package within Eirwind. Additional ongoing national level research in parallel with this public perception study involves media content analysis, stakeholder engagement on benefit

sharing options with a focus on fishers, and socio-economic studies. These various elements will be integrated in the final Eirwind report which aims to specify a pathway to the sustainable development of the offshore wind sector in Ireland.

This report presents the findings of the first national survey of public perception of offshore wind farms in Irish waters and details the opinions and attitudes of the Irish public toward the development of these renewable energy projects. The study assesses the level of knowledge and understanding of the Irish public of climate change; their perception of electricity generation, its sources and generation choices; attitudes towards the Government and its role in renewable energy development and general perceptions of offshore wind power.

This report can be used to inform policy makers and industry of the public mood regarding OSWF development in Ireland. This together with knowledge of best practice of stakeholder engagement (Eirwind Deliverable D4.2 *Recommended Innovation and Best Practice Stakeholder Engagement*), can facilitate improved dialogue with all aspects of civil society concerned with these developments.

2 Aims of the Study

Eirwind deliverable D4.2 *Recommended Innovation and Best Practice Stakeholder Engagement*, investigated the importance of early stakeholder engagement when developing renewable energy projects (Eirwind, 2018). Stakeholders with a strong vested interest in offshore wind development in Ireland include fishers, ports, and tourism operators. Detailed analysis of particular stakeholder cohorts is underway as a parallel research initiative within the Eirwind project. However, the general public may also influence, and be influenced by, offshore wind developments. **This gave rise to the following overarching research question: What is the current mind-set of the Irish *general public* with regard to offshore wind farm development?** This led to the following research questions:

- What experience has the Irish public had with offshore wind farms to date?
- How do people feel about energy security?
- Do people relate wind energy to the challenge of climate change?
- Do people think the government should support the development of offshore wind, and how?
- How do people feel about specific issues of concern such as job creation, effects on wildlife and visual impact?
- Would people be inclined to object to the development of offshore wind farms in their area and why?

Each of these questions were used as a starting point from which the national survey questionnaire was formed (Annex 1.)

Offshore wind research suggests that one of the greatest negative effects perceived by the public is visual impact (Haggett, 2011; Ladenburg, 2009). However, findings are not uniform across the scientific literature regarding the factors that contribute to different attitudes to visual impact or other objections.

3 Method

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.

Ethical approval for this survey was granted by the Social Research Ethics Committee of University College Cork on the 29th of April 2019.

The survey was piloted using hard copy questionnaires disseminated throughout the MaREI centre, University College Cork and the National Marine College of Ireland, Ringaskiddy Co. Cork. A more detailed description of the pilot study can be found in deliverable D4.4 *Stakeholder Perceptions Report Part 1*.

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 by Eirwind, 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.

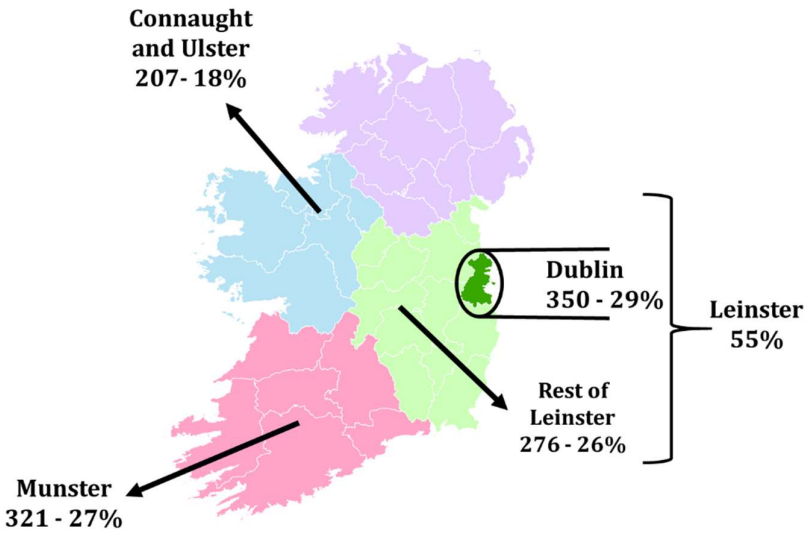

Figure 1. National representative breakdown of useable questionnaires

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.

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 independence 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.

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. Invitations were sent to local clubs, hotels and the Wicklow Municipal District Council. 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.

A deep 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).

4 Results

4.1 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 with the largest proportion of respondents being between 25 and 54. 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. Ninety-one percent of respondents had a secondary or higher education with 46% having a third level education. Of these 19% had a postgraduate education. One percent 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.

4.2 Experience of Offshore Wind Farms

Of those who took part in the survey, 49% had seen an offshore wind farm before. Of those, 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 Ireland's Electricity Generation and Energy Supply Situation

Sixty-five percent of respondents believed that Ireland is too reliant on foreign energy. Sixty-six percent believed that Ireland has a limited amount of fossil fuel resources which are running out. Seventy-eight percent 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).

4.4 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. Sixty three percent 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.

4.5 How People Feel About Offshore Wind Farm Power Generation

This section involved 11 questions to explore perceived benefits of offshore wind. Fifty seven percent 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'[1].

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.

Thirty-seven percent 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). Fifty-one percent of respondents felt that offshore wind farms are the best solution to Ireland's energy situation.

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

4.6 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

[1] These results will be considered by the dedicated work on fishers as key stakeholders in parallel work within WP4

offshore wind turbines made them feel that they were helping to stall climate change. Eight percent 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. Thirty-one percent of respondents disagreed that offshore wind farms harmed wildlife with a similar amount remaining neutral on the subject. Sixty nine percent believed that once constructed, electricity generated from offshore wind farms will be renewable and clean, with 4% believing otherwise and 10% not sure. Forty-one percent 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. Forty-nine percent 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.

4.7 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 don't change how we produce electricity we will face more severe climate disasters.

4.8 People's Position Regarding Environmental Activism

% 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. Twenty-eight percent 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). Eighty-eight percent 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 2.

5 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

[2] In this context *active objection* is taken to mean making a point of opinion known through actions/correspondence/protesting etc; *inactive objection* is taken as opinion without action.

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.

5.1 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, 571 had experience of seeing offshore wind farms and 525 had not. Fifty-eight of those questioned answered 'don't know'. 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.

A Wilcoxon test highlighted that attitude towards offshore wind farms varied significantly with people's experience of them (p-value = 0.006019). 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-value = 0.009419). Table 1 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 1. 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	8%	6%	23%	44%	20%
Commute or home	13%	25%	35%	17%	13%

5.2 Arklow Bank Offshore Wind Farm Focus Group

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.

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).*

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 layman's terms:-, *"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.

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.

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 in to, 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.

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.

Aesthetics/Social

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 don't 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)*.

5.3 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. Figure 2 shows the distribution of respondents' education levels. The distribution of education levels follows roughly the same distribution of that of the results of the National Census 2016 (Central Statistics Office, 2016). 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-value=0.0005176). Further investigation reveal that support of wind farms increased with increased education levels (Figure 2.)

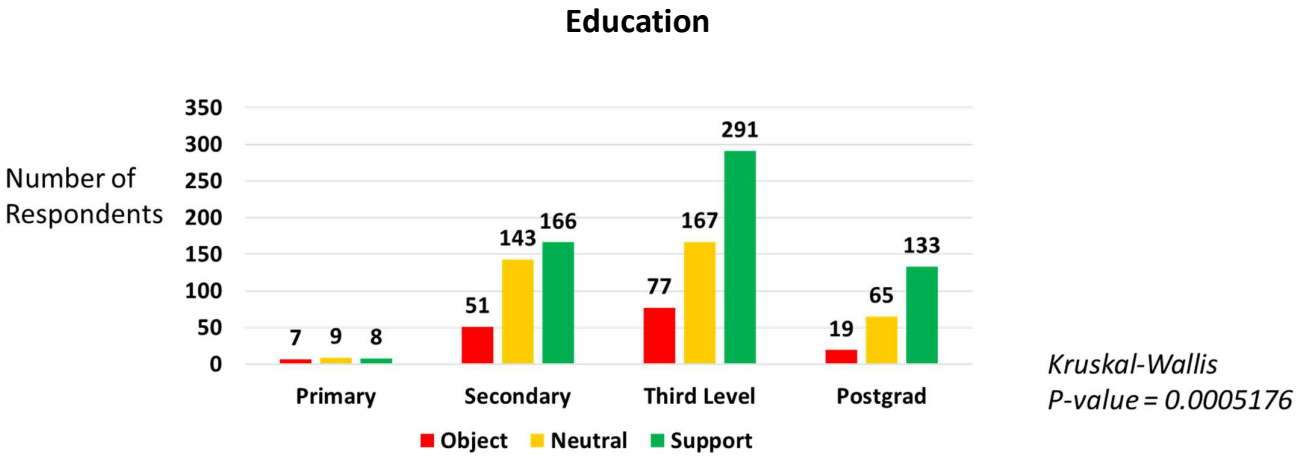

Figure 2. Support for offshore wind farms as a result of education levels

5.4 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-value = 0.7305). Distribution of attitudes is shown in Table 2.

Table 2. 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)

5.5 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-value=0.7186). Distribution of attitudes towards OSWFs depending on dwelling area are shown in Table 3.

Table 3. 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%

5.6 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 tabbed against attitudes to potential offshore wind farm developments (Table 4). A Chi-squared test revealed that there was a significant association between the primary source of news and attitudes towards wind farms (p=0.002).

Table 4. 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-value=0.5633) but between the readers of tabloid newspapers and broadsheet newspapers there was a significant difference in attitude toward wind farm development (p=4.531e-05). Data were cross tabbed and results show 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.

6 Discussion

Results of the study show that the general attitude of the public towards offshore wind farm development in Ireland is 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, despite an 'objection culture' becoming increasingly synonymous with large scale infrastructure development in Ireland (Lange et al., 2018a), (as evidenced by failed projects such as the Apple data centre in Athenry). A strong conclusion is that overall the results of this survey present a generally positive and supportive 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 don't 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. 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. This is further investigated in D4.9: *Investigating Fishers' and Offshore Wind Developers' Perceptions in Trust Building Mechanisms, Community Benefit and Co-ownership Arrangements* (Eirwind, 2019).

The review of the literature in D4.2 *Recommended Innovation and Best Practice Stakeholder Engagement* (Eirwind, 2019) 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. 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 the primary choice of printed news source has a significant effect on attitudes towards offshore wind farms. Those reading tabloid newspapers (as opposed to broadsheet) have been shown to have a significantly more negative attitude to offshore wind farms. With the increasing interest in expansion of the renewable energy sector off the Irish coast, the Irish media is likely to play an increasingly significant role in reporting on offshore developments. The areas around which public attitudes can be measured, i.e. technical, economic, environmental, health and safety, political and aesthetic/cultural are currently used by the primary news sources in order to frame their messages regarding offshore wind farm development.

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).

False Consensus, when one overestimates the number of others who have the same beliefs in a group (this is most common with those holding minority views) may also be another phenomena which could have influenced the results of this survey. Unfortunately, the level of influence of any of these phenomenon is inherently hard to establish or verify.

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). Thus the silent majority of supporters are more often than not unnoticed by the media and consequently the wider public. It is this framing of news content that can give rise to the false consensus of objectors.

Seventy one percent 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, 2019). 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).

6.1 Limitations

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 Future Research trajectory

To complement the findings of this study it is proposed that a media content analysis be undertaken. The media content analysis would explore the framing of the 'offshore wind development' message, as presented in the mainstream media of Ireland. It is proposed that a study be undertaken following a similar format to Schmidt et al., (2013).

Additional exploration is needed regarding the attributes of the wind farms in question. What is the optimum size for a wind farm? – i.e. smaller turbines and more of them versus larger turbines and less of them? In their study of public attitudes in New Jersey, Mills & Rosen (2006) observed that visual images of what the proposed development would look like from shore presented to respondents resulted in a more supportive attitude towards the development, and those who had more knowledge about offshore wind technology were also more supportive of the development (Mills & Rosen, 2006).

What must also be taken into account (not covered in this report) is the influence of social media and the role it plays in shaping and reporting on public opinion. Lange *et al*., (2018) have shown this to be an important factor in mitigating against poor public perception, the breakdown of trust, and the proliferation of dispute.

7 Conclusion and Recommendations

7.1 General Support for Offshore Wind by the Irish Public

Eighty seven percent of respondents would facilitate development of an offshore wind farm in their locality, either through active support or not objecting.

Ninety three percent of respondents would facilitate development of an offshore wind farm outside of their locality, either through active support or not objecting.

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.

7.2 Targeting Messaging - Content

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% percent 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 don't 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% percent of respondents believed that Ireland is too reliant on foreign energy.
- 66% percent 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 support 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 position of the Irish public can be built on to further influence positive perceptions of offshore wind farms in Irish waters.

7.3 In relation to specific issues of concern.

Forty-nine percent of respondents in this 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. Eighty-two percent 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.

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

Annex 2 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.”