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The role of community compensation mechanisms in reducing resistance to energy infrastructure development

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Abstract: Across the EU, significant investments are being made in renewable generation and grid technologies, however, policy makers and planners are frequently met with resistance from local communities to proposed infrastructure development. Offering some form of compensation to the affected communities may reduce objections and minimise project delays. While there are numerous methods of compensating and involving local communities, evidence on which methods are most effective at increasing acceptance of infrastructure developments is scant. We therefore carry out a nationally-representative survey of Irish citizens to analyse how different compensation methods affect acceptance. Ireland is a useful case study because of its high RES-E targets. Respondents are presented with four compensation models for the local construction of a wind farm, and two for the local development of the transmission grid. While it is often reported that communities would prefer deeper levels of involvement, we find no evidence of this. Instead, we find a preference for schemes in which people receive financial compensation without sharing in the ownership and associated risks of project development. Our econometric analyses show that certain socio-demographic characteristics, for example, age and income are significant predictors of people's acceptance under different schemes, while a person's education level significantly predicts whether a particular compensation scheme will increase acceptance. Moreover, we find that the satisfaction with local planning procedures and the tradeoff people make between environmental sustainability and economic competitiveness consistently affect people's attitudes. Such evidence can help policy makers better understand and design policies to minimise resistance to energy infrastructure development.

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1 Introduction

In order to meet greenhouse gas emission reduction and renewable expansion targets, significant investments in electricity generation from renewable sources (RES-E) and grid technologies are necessary across the EU. However, while the socio-political acceptance of these investments is generally high on an abstract level (Wüstenhagen et al., 2007; Van der Horst, 2007) policy makers and planners are frequently met with resistance from local communities to proposed energy infrastructure development (Bell et al., 2005; Zoellner et al., 2008; Raven et al., 2009; Devine-Wright, 2011; Musall and Kuik, 2011; Guo et al., 2015).

The challenges related to local acceptance and opposition have been discussed by Wolsink (2000), Burningham (2000), Devine-Wright (2005) and Wüstenhagen et al. (2007), amongst others. Moreover, concerning local acceptance and opposition, existing research has highlighted the importance of trust (Aitken, 2010), regulations (Battaglini et al., 2012) and perceived (in)justice in terms of how the costs and benefits of projects are shared (Huijts et al., 2012; Ciupuliga and Cuppen, 2013).

There is a large and growing literature emphasising the role of transparent communication, community consultation and information sharing in minimising opposition to infrastructure development (Zarnikau, 2003; Beddoe and Chamberlin, 2003; Gross, 2007; Hobman et al., 2012; SLR, 2014). Moreover, offering some form of compensation to the affected communities, e.g. through full or shared ownership, has been found to reduce objections and minimise project delays (Ek and Persson, 2014; Brennan and Van Rensburg, 2016). While Goedkoop and Devine-Wright (2016) emphasise that shared ownership should not be regarded as a silver bullet, they do acknowledge that it may be very helpful if trust between the actors can be ensured.

However, while there are numerous methods of compensating and involving local communities in energy infrastructure development, evidence on which methods are most effective at increasing acceptance is scant. Furthermore, most existing research focuses on showing that community compensation mechanisms can reduce local opposition rather than exploring what drives this change of attitudes. Our paper therefore focusses on the determinants of acceptance and acceptance increase of energy infrastructure developments under different compensation schemes.

Using Ireland as a case study, we conduct a nationally-representative survey to analyse people's acceptance of energy infrastructure development under different compensation mechanisms. Ireland is a useful case study because of its high RES-E targets. However, despite its targets and the high RES-E potential available, research on the acceptance of energy-related infrastructure in Ireland is rare to date. The dominating RES-E technology in Ireland is onshore wind, which, in turn, requires the expansion of the transmission grid. We therefore present respondents with compensation models for the local construction of a wind farm and the local development of the

transmission grid. While SEI (2003) analyse the Irish public's attitude towards the development of wind farms at a time where the nation-wide installed wind power capacity was around 200 MW (which increased to around 3000 MW by 2016), the analysis of community involvement schemes was not very detailed. Later, SLR (2014) review national legislation and international literature in relation to wind power development. Moreover, Van Rensburg et al. (2015) investigate the probability of wind farm planning approval while Brennan and Van Rensburg (2016) conduct a discrete choice experiment to explore the tradeoffs people make to allow for wind power developments in their localities. These studies have in common that they focus on wind without considering the transmission grid.

We analyse the responses to our survey using different econometric models, namely an ordered-logit and a logit model. We distinguish between external and internal factors driving the respondents' acceptance of hypothetical infrastructure development under different compensation schemes. We are also interested in which of these factors are associated with increased acceptance levels when various compensation schemes are proposed.

We find that, contrary to the suggestions from the literature (Warren and McFadyen, 2010; Ek and Persson, 2014), Irish citizens do not have a preference for compensation schemes involving deeper levels of community involvement. We also find that certain socio-demographic characteristics, such as age, income and education, significantly predict people's attitudes towards infrastructure under various compensation schemes. Also of note is that people's satisfaction with the current planning procedures in place, as well as their preferred prioritisation of energy policy objectives, drive their acceptance levels. All of these facts may guide policy-makers in the design and implementation of inclusive energy policy.

This paper is structured as follows. In section 2, we describe the survey design and data collection including a description of the rationale behind the choice of variables. We also present the basic background of the econometric techniques used for our analysis. Subsequently, we present and discuss the survey findings and the results of our econometric analysis in section 3. In section 4, we summarise the main findings and derive conclusions. In addition, Appendix A provides further details concerning the structure and questions of our survey while Appendix B provides additional results.

2 Data and Methods

As described in section 1, we focus on wind turbines and above ground transmission line expansion in our analysis of community engagement schemes. Below, we firstly describe the information collected via an online survey to provide a data base for our analysis (section 2.1). We then

outline the econometric models we use for the analysis (section 2.2).

2.1 Data collection and variables

In order to explore how willing people are to accept the development of energy infrastructure in their local communities, we developed, over a number of iterations, an online survey based on stated preference questions.[1] Two rounds of pre-testing of the initial questionnaire resulted in the dropping of several items along with adding new questions and question wording updates to improve clarity. In the final stage, a nationally representative panel (n=1,414) of the Republic of Ireland was drawn from May to June 2016 using the panel book of Research Now, an international company specialising in online consumer surveys with approximately 54,000 panellists across Ireland. The survey included two screening questions to ensure data quality (Galesic and Bosnjak, 2009) and block randomisation to avoid order effects (Sills and Song, 2002; Podsakoff et al., 2003). Developing the survey over a number of iterations ensured a high-quality final sample, comprised of $n = 1,044$ respondents. The exact sample size may differ for certain questions as the respondents were given the option to choose "No experience or limited knowledge" for some questions.

The survey was divided into a number of question categories most of which use a 5-point Likert scale response option. Details of the question categories and response scales are described in Appendix A. In the following, we briefly describe the rationale behind the choice of variables that we measured in the survey as an input for the econometric models (see section 2.2). There are three question categories overall. *Category 1* is aimed at eliciting the dependent variables (section 2.1.1), while *Category 2 & 3* are aimed at eliciting the explanatory (independent) variables (section 2.1.2).

2.1.1 Dependent variables

There is a large and growing literature on institutional aspects and ownership structures of renewable energy or grid development projects analysing community involvement at very different levels (e.g. Toke, 2005; Gross, 2007; Jobert et al., 2007; Walker and Devine-Wright, 2008; Bauwens et al., 2016; Schreuer, 2016; Goedkoop and Devine-Wright, 2016).

Focussing on wind power, Brennan and Van Rensburg (2016) find that the local acceptance of wind farm development is positively influenced by financial discounts to local residents on their electricity bills. The compensation analysed in their study did not represent a great depth of involvement, however, as only financial compensation was offered to the participants in their choice experiment. They also analysed the impact of (early) community consultation and the presence

[1] For an overview of the discussion on theories and elicitation strategies behind stated versus revealed preferences, see the works by Ben-Akiva et al. (1994), Kim et al. (2006) and Carson and Louviere (2011).

of a community representative who regularly meets and negotiates with the developers and find that expected levels of compensation are reduced when such a person is present. Analysing the impact of a deeper level of involvement, Warren and McFadyen (2010) compare public attitudes towards community-owned vs. developer-owned wind farms in two Scottish communities and find that attitudes towards wind power are more positive in the community that owns the wind farm. What the above two studies have in common is that they study the impact of a single community involvement scheme (a rather shallow involvement in the former and a deeper involvement in the latter case), not allowing for comparisons between different schemes. On the contrary, Ek and Persson (2014) analyse and compare different wind farm ownership models in a discrete choice experiment including projects owned by the state or private developers (not offering involvement or compensation to residents) as well as municipality-owned and shared ownership (between private developers and the municipality/residents) projects. They find that respondents prefer wind farms owned fully or partially by the municipality (i.e. implying deeper levels of involvement).

While there are numerous other studies exploring different nuances of compensation and involvement schemes for wind farms, research on compensation schemes for transmission grid developments is rather rare. The few exceptions are Cohen et al. (2016) and Devine-Wright and Batel (2013) who, among other things, explore the impact of compensation schemes to communities or residents that are affected by grid developments. However, deeper levels of involvement are typically not studied for grid developments as the responsibility to operate and maintain the grid and ensure supply reliability cannot be given to individual communities.

Based on the different community involvement and compensation schemes described above, our survey included items to measure outcome variables in the categories outlined below. Further details are provided in Appendix A.

Survey Question Category 1 (dependent):

We asked respondents how willing they would be to accept the development of energy infrastructure (focussing on wind farms and transmission lines) in their local community in the presence of either no compensation scheme or one of a set of hypothetical community engagement schemes (described in detail to the respondents) on a 5-point scale from "Unwilling" to "Willing" (see Appendix A for details). For this purpose, the following schemes and descriptions were presented to the respondents.

- **Community benefit scheme**: These are voluntary agreements between project developers and local communities. The developers pay a fixed amount to local communities, e.g. for the development of a wind farm or a transmission line for a predetermined amount of time. The communities would have limited involvement in the project and no associated financial risks. The payments could be made directly to households in the locally affected communities, or

paid into a local fund which could be used, for example, to finance local energy efficiency projects. (wind + grid)

- **Equity involvement**: Local residents would have the opportunity to share in the risks as well as the potential profits of wind farm or transmission line development projects. Residents who purchase a stake in the project would share in the financial returns. An example of equity involvement is a scheme currently in place in Denmark in which 20% ownership of the wind farm must be offered to local residents. (wind + grid)

- **Energy cooperatives**: Energy cooperatives, communities or local community organisations, would have full ownership of the wind development projects and take all, or most of, the profits as well as the risks associated with project development. The cooperatives would operate the wind farms and, as owners, would take responsibility for their ongoing development and maintenance. (wind only)

- **Joint ventures**: Local communities would work with commercial operators to develop a wind farm and agree jointly on its (shared) ownership and management structure. These may involve, within a given wind farm, individual wind turbines that are separately owned by the communities. Here the turbines are individually owned but there is joint responsibility between the community and the developers in terms of overall project risks. (wind only)

2.1.2 Independent variables

Researchers have been studying people's behaviour and attitudes in relation to the use of natural resources and the environment, and what influences these, for many years. We follow the conceptual structure of Guagnano et al. (1995), who distinguish between external (demographic, economic, structural) and internal (attitudes, beliefs) variables driving people's attitudes.

In terms of external variables, existing studies found a large variety of socio-demographic characteristics to be significant explanatory variables in different contexts. For instance, Cohen et al. (2016) find the acceptance of transmission line expansion decreases with age, while Vorkinn and Riese (2001) find lower acceptance of hydro power among females and households with higher incomes. Moreover, Bidwell (2013) finds that education has a significant direct effect on people's attitude towards wind power. In addition, length of residency (i.e. how long have people been living in their current residence), and area of residence (i.e. urban vs. rural) were found to have a significant effect on landscape-related and place-related perceptions and preferences as well as energy technology acceptance (Anton and Lawrence, 2014; Devine-Wright, 2012; Devine-Wright and Batel, 2013).

In terms of internal variables, some theoretical as well as empirical findings suggest a link between principle environmental concern and behavioural intentions as well as acceptance of energy-related technologies (Stern et al., 1995; Poortinga et al., 2006; Bidwell, 2013). Political preferences have also been found to be correlated with opinions about energy infrastructure (Populus, 2005; Devine-Wright and Batel, 2013). Moreover, Dietz et al. (1998) find that the tradeoff people make between economic and environmental considerations is a significant explanatory variable. In addition, trust, perceived fairness and satisfaction with local planning procedures were found to have a significant impact on people's acceptance (Furby et al., 1988; Aitken, 2010; Terwel et al., 2011; Huijts et al., 2012; Ciupuliga and Cuppen, 2013). Subjectively perceived impacts of energy technology developments on their surroundings have also been found to significantly drive people's attitudes. Particularly for wind turbines and power lines, the perceived visual impact on the landscape has been identified as one of the most important predictors of opinions (Furby et al., 1988; Wolsink, 2000; SEI, 2003; Cotton and Devine-Wright, 2011; Devine-Wright and Batel, 2013; Bidwell, 2013). Moreover, the perceived impacts on ambient noise (Furby et al., 1988; Wolsink, 2000; SEI, 2003), health and safety (Furby et al., 1988; Poortinga et al., 2006; Soini et al., 2011) and the local economy, local employment and the local environment (SEI, 2003; Bidwell, 2013) have been identified in previous studies on wind power and transmission lines.

Based on the above distinction between external and internal variables that have been identified as drivers of people's acceptance of energy technology developments, the survey measured explanatory/independent variables according to the categories below, in addition to the dependent variables described in section 2.1.1. Further details are provided in Appendix A.

Survey Question Category 2 (independent, external):

We asked respondents to provide information on their socio-demographic characteristics such as their age, gender, employment status, income, area of residence and length of residence in that area.

Survey Question Category 3 (independent, internal):

- As a generalisation of the above-mentioned environmental-economic tradeoff noted by Dietz et al. (1998), we asked people for their preferences of and pairwise tradeoffs between national energy policy objectives (economic competitiveness, environmental sustainability, reliability of supply, and social acceptance/impact).

- We asked respondents to provide priorities and perceived impact assessments of various technology-specific criteria (e.g., visual landscape impact, noise effects).

- Participants were asked about their satisfaction with the existing local planning procedures in terms of how local residents are involved when infrastructure projects are developed.

As mentioned above, the information elicited on the basis of the questions under categories 1-3 is used as an input in our econometric analyses (see section 2.2 below for an overview) aimed at understanding what drives the willingness to accept infrastructure development under different community engagement schemes. For the items under category 3, we use well-established elicitation methods from the field of decision analysis as outlined below.

The national energy policy preferences were elicited by asking respondents to provide pairwise tradeoff statements of the relative importance of energy policy objectives at a national level (Bertsch et al., 2016a,b)). These judgements were provided by pairwise comparisons as in AHP ("analytic hierarchy process", see Saaty (1980)).

The assessments related to the technology-specific drivers were elicited following a two-step procedure. In the *first* step, the participants were asked to provide their subjective views of the importance of a number of technology-specific criteria (impact on landscape, noise, etc., see Appendix A) individually on a 5-point scale. On this basis, normalised weights were calculated as in SWING weighting (Edwards and Von Winterfeldt, 1986; Edwards, 1977). In the *second* step, the participants were asked to assess the subjectively perceived impact of different energy infrastructure technologies with respect to these technology-specific criteria on a scale from -2 (negative) to 2 (positive). The SWING weights and corresponding impact assessments are then interacted to calculate the technology-specific drivers' overall impact as follows: Let $n \in \mathbb{N}$ be the number of participants, $k \in \{1, ..., n\}$ be the participant index, $m \in \mathbb{N}$ be the number of technologies, $j \in \{1, ..., m\}$ be the technology index, $l \in \mathbb{N}$ be the number of drivers and $i \in \{1, ..., l\}$ be the driver index. Moreover, let $w_i^k \in [0, 1]$ be the (SWING) weight assigned to driver i by participant k and $v_{ij}^k \in \{-2, -1, 0, +1, +2\}$ be the subjective impact assessment of technology j with respect to driver i as perceived by participant k. The overall impact Ω_{ij}^k of technology j on driver i according to participant k can then be evaluated as $\Omega_{ij}^k = w_i^k \cdot v_{ij}^k$. Hence, the overall impact allows us to explicitly disentangle the relative importance of a particular driver and the subjective impact assessment of a given technology with respect to this driver.[2]

2.2 Econometric methodology

In order to understand how the overall willingness to accept infrastructure development under different community compensation mechanisms, as well as the increased acceptance under such schemes, are explained by different drivers, we apply two econometric models, as outlined below. In these models, we consider external (socio-demographic) and internal (energy policy preferences, technology-specific perceptions, satisfaction with planning procedures) drivers.

[2]For example, the overall impact of wind turbines on the landscape is a combination of the subjective importance given to landscape considerations, and the subjective opinion on the impact of wind turbines on the landscape.

2.2.1 Ordered logit model

As the responses follow an ordered sequence, we use an ordinal regression model to explore what drives the acceptance of wind energy or power grid development under different compensation mechanisms across the external (socio-demographic) and internal (attitudinal) variables described above. The model is characterised by Equation 1, for further details, see Long and Freese (2006).

$$Pr(Y = N|X_1, X_2, \ldots, X_k) = F(\beta_0 + \beta_1 + \beta_2 + ... + \beta_k) \tag{1}$$

N ranges in value from 1 to 5 where 1 is "Unwilling" and 5 is "Willing". The X's represent the external and internal explanatory variables in our model as described above, F is the standard logistic distribution, and the β terms are the coefficients on the explanatory variables.

The ordered logit model requires that the so-called proportional odds assumption (POA) holds (Long and Freese, 2006). Thus, before running the ordered logit, we test the POA, using tests discussed by, e.g., Peterson and Harrell Jr (1990) and Williams et al. (2006). In those cases where the POA does not hold, we apply a generalised order logit model (Williams et al., 2006; Williams, 2006). This model is fundamentally the same as the ordered logit except that it allows the coefficients on the independent variables to differ for different levels of the dependent variable.

After running the model outlined by equation 1, we convert the β coefficients into marginal effects (Chernozhukov et al., 2009). These represent the probability change that someone will report a given opinion when the value of a particular independent variable increases by one unit, holding all other independent variables at their respective mean values.

2.2.2 Logit model

In addition to examining what drives people's willingness to accept energy infrastructure development under different compensation mechanisms, we check whether the different mechanisms lead to an increase in acceptance when compared to the case where no compensation is available. For this purpose, we define an "acceptance increase" dummy variable. This variable takes a value of one for a certain compensation mechanism if a respondent indicates a higher acceptance of the development of a wind (or grid) project relative to the case where no mechanism is in place. Otherwise, the variable takes a value of zero. As the variable only takes a value of zero or one, we use a logit model (Long and Freese, 2006) to analyse what drives an increase in acceptance.

The dependent variable, y_i, represents increased acceptance under a particular compensation mechanism (relative to a situation where there is no scheme in place). The logit model assumes that underlying this observed y_i there is an unobserved latent variable, Y^*, such that:

$$Y^* = X\beta + \epsilon \tag{2}$$

In a logit model we observe:

$$y_i = \begin{cases} 0 & \text{if } y_i^* \leq 0 \\ 1 & \text{if } y_i^* > 1 \end{cases} \tag{3}$$

We are looking at the probability of observing a given value of y_i, where the Xs are the explanatory variables (the socio-demographics, energy policy preferences and technology-specific factors) and the β terms represent the coefficients on these variables. As for the ordered logit model, we convert the coefficients into marginal effects when presenting the results.

3 Results and Discussion

3.1 Survey results

While some of the literature on community compensation schemes indicates that acceptance increases with greater levels of community involvement (see for example, Ek and Persson (2014)), we do not find evidence of this. As Figure 1 shows, when considering the various compensation schemes proposed, the willingness to accept the development of infrastructure locally is highest under community benefit schemes (CBS). As described in section 2.1.1, of the various compensation schemes presented to survey respondents, the CBS has the lowest level of involvement; under the CBS the local communities would not have any responsibility for the management or running of the windfarm/transmission grid. Figure 1 shows that under the CBS over half of the respondents indicated some degree of willingness (either "willing" or "somewhat willing") to accept the local construction of a wind farm, compared to just over a quarter when there was no compensation scheme proposed. Figure 1 shows an overall decline in acceptance levels across the compensation schemes as the level of involvement increases. This may indicate a degree of risk aversion in terms of asset ownership, or an unwillingness to sign-up for a compensation scheme with which they are unfamiliar. It suggests that if policy makers are to adopt one of these compensation mechanisms, time and resources must first be invested in informing local communities about the way in which they will be compensated.

A similar picture emerges when we consider possible compensation schemes for local grid development projects. As described above, due to the technical nature of grid operation only two potential compensation models are presented. Figure 1 shows low levels of acceptance when no compensation scheme is in place, and that compensation via a CBS is more popular relative to equity involvement. Acceptance levels of gird development are slightly lower than acceptance of wind farms. Compensation schemes do appear to lower resistance levels however; while 46% of respondents said that they would be "unwilling" or "somewhat unwilling" to accept the local de-

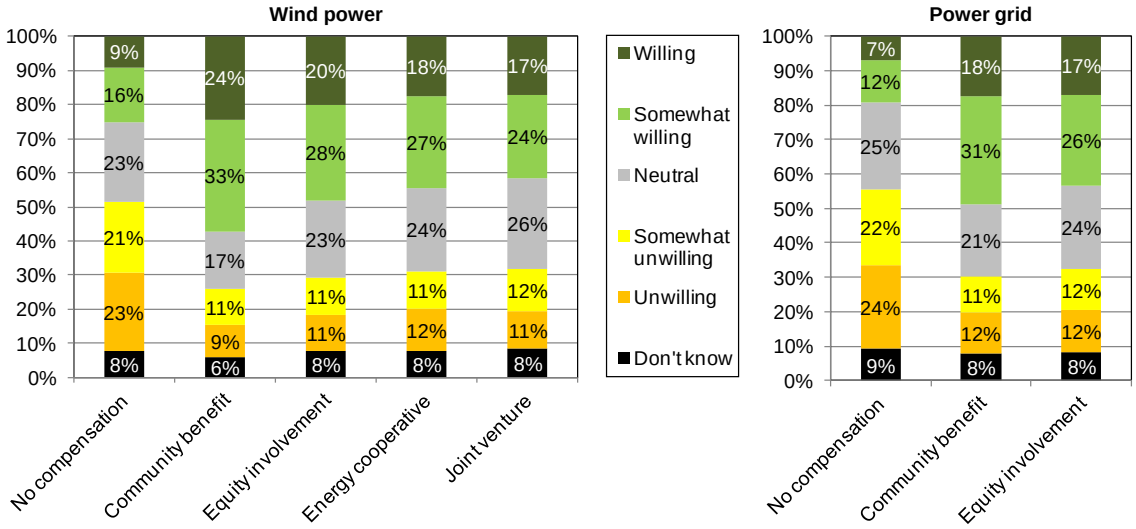

Figure 1: Acceptance rate of local wind farm (left) and transmission grid (right) development under various compensation mechanisms

velopment of transmission grid when they receive no compensation, this drops to 23% and 24% under CBS and equity involvement.

There are different possible explanations for our observations. Beyond the potential risk aversion among respondents mentioned above, previous research found that perceptions of justice/injustice and concerns about the distribution of costs and benefits between developers and communities (e.g. in the case of a joint venture) or within communities (e.g., in the case of an energy cooperative) affect people's acceptance (Gross, 2007; Aitken, 2010; Goedkoop and Devine-Wright, 2016). Concerning such perceptions of justice, Huijts et al. (2012) distinguish between two dimensions of justice: distributional justice (perceived fairness of the distribution of costs, risks and benefits) and procedural justice (perceived fairness of the decision and planning processes). Regarding the role of these two dimensions, there is evidence from the literature that being involved in the planning process (e.g., through a community representative - related to aspects of procedural justice) seems to be at least as important for communities as concerns about distributional justice, see Cowell et al. (2011); Brennan and Van Rensburg (2016) for wind and Devine-Wright and Batel (2013); Cohen et al. (2016) for grid development. This may be driven by aspects of trust, which is closely interrelated with perceptions of justice (Huijts et al., 2012). Thus, if there is a lack of trust (either within a community or between a community and a developer), this may lead to perceived injustice and therefore lower levels of acceptance for infrastructure development under compensation schemes with deeper levels of involvement. Finally, there may be further explanations in relation to the respondents' cultural background. While the study by SEI (2003) did not distinguish between different compensation schemes, they did ask Irish citizens whether they would be

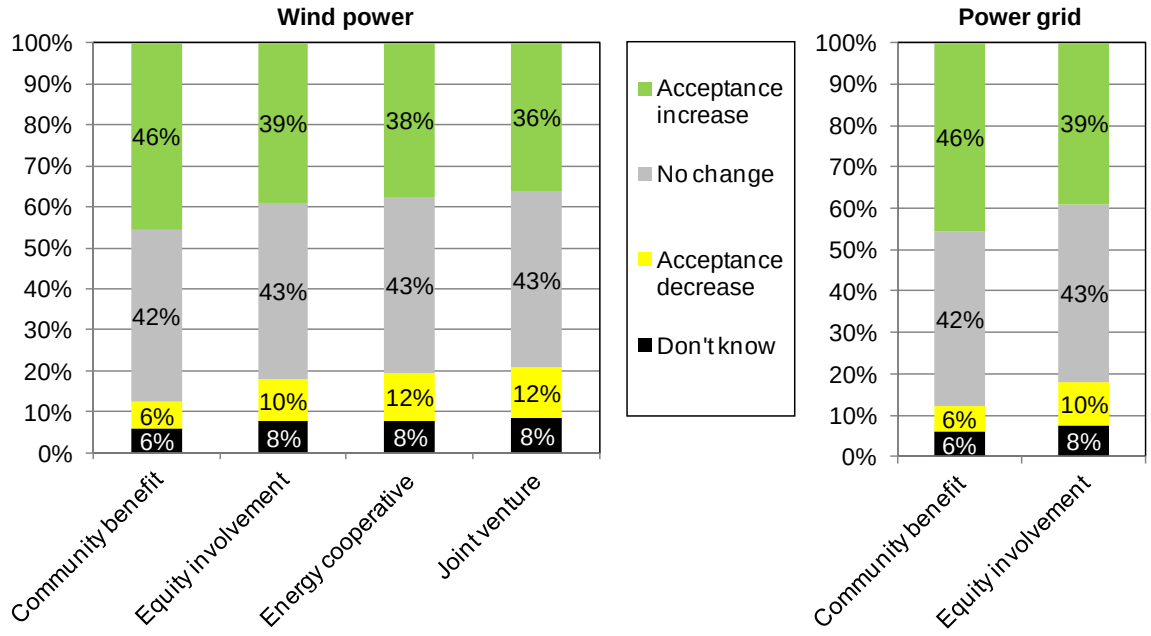

Figure 2: Change of acceptance of local wind farm (left) and transmission grid (right) development for different compensation mechanisms compared to no compensation mechanism being in place

interested in investing in a local wind farm, and only 14% expressed some level of interest. This general low appetite for personal financial involvement is in line with our findings for Ireland.

An alternative way of considering the effectiveness of compensation schemes at reducing resistance is to look at how people's willingness to accept wind farm or grid development changes when a compensation scheme is proposed, relative to a situation where there is no scheme in place. As Figure 2 shows, acceptance rates increase by 46% for both wind farm and grid development when communities are given the hypothetical option of being compensated via a CBS. Also of particular note is that, as highlighted by Figure 2, for a large proportion of the population (42% to 43%), acceptance does not change under the proposed compensation schemes. This suggests that a significant proportion of the population are ideologically either opposed to or in favour of wind farm or grid development, and offering some form of compensation or project ownership does not change this. This highlights a particular policy challenge in terms of changing acceptance levels amongst those who are opposed to these developments. In the next section we consider the characteristics of respondents that are significantly correlated with the opinions summarised in Figures 1 and 2.

3.2 Econometric Analysis

The econometric results highlight which characteristics are significantly related to people being more favourably disposed towards wind and grid development projects when there is no com-

pensation mechanism in place, and under each of the proposed schemes. The full results tables are provided in the appendix; here we focus on the characteristics that are significant predictors of willingness to accept the local construction of a wind farm or a transmission line under each compensation mechanism (including no compensation). Tables 4-13 in Appendix B display the coefficients and standard errors across all categories of acceptance under each scheme, while Tables 1-3 provide a synopsis of the results for a wind farm and power line development respectively.

3.2.1 Willingness to accept wind farm development

When we look at the drivers that significantly predict people's willingness to accept wind farm development, we find some similarities across all compensation schemes. Concerning the external (socio-demographic) variables, age is a driver with the exception of energy cooperatives and joint ventures; relative to those in the youngest age category, older respondents are less likely to accept local wind farm constructions (cf. Table 1). Income also turns out to significantly drive acceptance under different schemes. While households on higher incomes (€50,000 - €75,000) are relatively more willing to accept wind farm development under community benefit schemes and equity involvement, households in the income category €15,000 - €30,000 are relatively less likely to accept wind developments under joint ventures than those in the lowest income category.

Looking at the internal variables that consistently drive acceptance, we find that the satisfaction with local planning procedures is highly significant in determining people's acceptance of wind developments under all schemes. As expected, those who are unsatisfied are significantly more likely to be unwilling to accept a wind farm. From the pairwise tradeoffs that people make between the national energy policy objectives (economic competitiveness, environmental sustainability, reliability of supply and social acceptance/impact), we find that people who rank environmental sustainability higher than economic competitiveness (indicated by "env.>econ." in Table 1) are significantly more likely to accept a wind farm across all compensation schemes, which concurs with what Dietz et al. (1998) report. This is in contrast to those who ascribe a higher importance to social acceptance than to economic concerns, who are found to be less likely to accept the development of a wind farm (with the exception of under community benefit schemes). Among the technology-specific impact perceptions, people who are concerned about sound impacts of wind farms are consistently less likely to accept their construction under all schemes.

Table 1: Wind farm development: Significant drivers affecting acceptance under different compensation mechanisms (acc. ↗ = higher acceptance; acc. ↘ = lower acceptance

Variable	**No compensation**	**Community benefit**	**Equity involvement**	**Energy coop.**	**Joint venture**
External variables: socio-demographic characteristics					
Age	Acc. ↘ with higher age	Acc. ↘ with higher age	Acc. ↘ with higher age	-	-
Education	-	Acc. ↗ for most-highly educated	-	-	-
Income	-	Income €50,000-€75,000: acc. ↗	Income €50,000-€75,000: acc. ↗	-	Income €15,000-€30,000: acc. ↘
Employment	Acc. ↘ for unemployed/student/home duties	Acc. ↘ for retired	-	-	-
Region	Acc. ↗ in Mid-West, South-East, South-West	-	Acc. ↘ in Mid-West, South-East, South-West	-	-
Tenure	Acc. ↗ for other	-	Acc. ↗ for other	-	-
Length of residence	-	-	Acc. ↘ for 5-20y residency	Acc. ↘ for 5-20y residency	-
Area	-	-	Acc. ↗ in urban areas	-	-
Internal variables: satisfaction with existing local planning procedures					
	Acc. ↘ for unsatisfied	Acc. ↘ for unsatisfied	Acc. ↘ for unsatisfied	Acc. ↘ for unsatisfied	Acc. ↘ for unsatisfied
Internal variables: energy policy preferences and tradeoffs					
	env.>econ.: acc. ↗ soc.>econ.: acc. ↘	env.>econ.: acc. ↗ soc.>env.: acc. ↘	env.>econ.: acc. ↗ soc.>econ.: acc. ↘ rel.>econ.: acc. ↗	env.>econ.: acc. ↗ soc.>econ.: acc. ↘ soc.>rel.: acc. ↗	env.>econ.: acc. ↗ soc.>econ.: acc. ↘ rel.>econ.: acc. ↘ soc.>env.: acc. ↗
Internal variables: technology-specific impact perceptions and preferences					
	Sound concerns: acc. ↘ Landscape concerns: acc. ↘ Local econ. concerns: acc. ↗	Sound concerns: acc. ↘ Landscape concerns: acc. ↘ Local econ. concerns: acc. ↗ Local env. concerns: acc. ↗	Sound concerns: acc. ↘ Local env. concerns: acc. ↗	Sound concerns: acc. ↘ Local econ. concerns: acc. ↗	Sound concerns: acc. ↘ Local env. concerns: acc. ↘ Health concerns: acc. ↗

Concerning additional external variables that significantly drive acceptance in the *absence of any form of compensation*, we find that a person's principal economic status (PES) is generally significantly related to their acceptance of wind farm development; relative to those in full-time employment, people in the unemployed/student/home duties/other category show a lower level of acceptance of wind farm development. Moreover, we find that people living in the Mid-West, South-West or South-East are more likely to accept the development of a wind farm. This region has seen a relatively high level of wind farms in the past and there is evidence that acceptance increases with increased exposure to wind energy (Wolsink, 2007). Also, relative to owner-occupiers, those with "other" categories of tenure show a greater willingness to accept wind farm development (cf. Table 1, for further details cf. Table 4); perhaps indicating that they are less concerned with long-term implications, or declining property values. Looking at other internal variables, we find that from the technology-specific impact perceptions, people who are concerned about the visual impacts of wind farms on the landscape are less likely to accept their construction, while people who consider wind farms to have positive effects on the local economy are more likely to accept them.

When we turn to additional drivers of acceptance of wind farm development (beyond those mentioned above) in the case of compensation via a *community benefit scheme (CBS)*, we find that a different set of external (socio-demographic) variables predicts acceptance levels, whereas the significant internal variables are similar (see Table 1). Under a CBS, education is a significant predictor of acceptance. Those with the highest education level are relatively more willing to accept wind farms. Retired people, however are more likely to express an unwillingness to accept a wind farm than people in employment. Looking at further internal variables, we find that people who place a relatively higher weight on social acceptance than on environmental concerns are less likely to express acceptance. In terms of people's technology-specific perceptions, we find that people who are concerned about landscape impacts of wind farms are less likely to accept their development, while people who perceive positive local environmental and economic effects are more likely to accept.

Considering additional external drivers of acceptance levels of local wind farms under *equity involvement*, we find that people living in the Mid-West, South-West and South-East are less likely to accept local wind farm developments when they would be compensated with an equity stake in the project. Moreover, people in other categories of tenure and people in urban areas are more likely to accept while people who have been living in the residence for relatively longer are less likely to accept a wind farm under equity involvement. Looking at further internal variables, we find that people who put a higher weight on supply reliability than economics are more likely to express willingness to accept. In terms of the technology-specific drivers, perceived positive effects for the local environment increase acceptance.

Regarding the additional external variables that drive people's acceptance when communities are involved in an *energy cooperative* it appears that only length of residence is a significant predictor. When turning to further internal variables, however, we find that the tradeoff between social impact and supply reliability is a predictor of people's acceptance. We also find that the perceived local economic impact drives people's acceptance under this scheme (see Table 1).

Looking at what drives wind acceptance under *joint ventures*, we find no additional external variables (beyond those described above) to be significant. In terms of additional internal variables, we find that the tradeoffs between supply reliability and economics and between social acceptance and environmental concerns are significant predictors. Furthermore, the perceived local environmental impact and health concerns turn out to drive acceptance under joint ventures.

3.2.2 Willingness to accept transmission grid development

Next we turn to the characteristics that are significant predictors of acceptance of local transmission grid development under different compensation schemes. As noted in section 2.1.1 above, the options to compensate the local community are fewer in the case of the grid. Table 2 summarises our results, while all details are provided in Tables 9-11 in Appendix B. As discussed in section 3.1, acceptance levels of transmission grid development are generally lower than for wind, which is particularly true in the case of acceptance without any form of compensation. Table 2 shows that relatively few of the external variables which we consider significantly drive these acceptance levels and that their significance largely depends on the specific context (compensation scheme), which is in line with what Devine-Wright (2012) discusses.

However, we do find the following variables to significantly predict acceptance across all considered compensation schemes. Among the external drivers, age decreases acceptance for all schemes. Looking at the internal drivers, as for the analysis of wind developments, the satisfaction with local planning procedures significantly drives acceptance across all mechanisms; those that are unsatisfied are less likely to express willingness to accept. The same holds true for the environmental-economic tradeoff; those that ascribe a higher importance to environmental sustainability are more likely to accept grid developments. The significance of this tradeoff, again, concurs with findings by Dietz et al. (1998). In our case, this suggests that people are aware that the grid is needed to accommodate an increasing penetration of variable renewable energy sources.

Looking at further variables that drive grid acceptance under individual schemes, we find that, if *no compensation scheme* is offered, people in income categories €15,000 - €30,000 and €50,000 - €75,000 are significantly less likely to accept grid development. The other socio-demographic characteristics, however, do not significantly predict acceptance in the absence of community compensation.

Table 2: Grid development: Significant drivers affecting acceptance under different compensation mechanisms (acc. ↗ = higher acceptance; acc. ↘ = lower acceptance

Variable	**No compensation**	**Community benefit**	**Equity involvement**
External variables: socio-demographic characteristics			
Age	Acc. ↘ with higher age	Acc. ↘ with higher age	Acc. ↘ with higher age
Education	-	Acc. ↗ for higher education	Acc. ↗ for higher education
Income	Acc. ↘ for income €15,000-€30,000 or €50,00-€75,000	-	Acc. ↗ for income €15,000-€30,000
Gender	-	-	Acc. ↗ for males
Region	-	-	Acc. ↗ in the Mid-West, South-East, South-West
Internal variables: satisfaction with existing local planning procedures			
	Acc. ↘ for unsatisfied	Acc. ↘ for unsatisfied	Acc. ↘ for unsatisfied
Internal variables: energy policy preferences and tradeoffs			
	env.>econ.: acc. ↗ rel.>econ.: acc. ↗ soc.>env.: acc. ↘	env.>econ.: acc. ↗ rel.>env.: acc. ↗ soc.>econ.: acc. ↘	env.>econ.: acc. ↗
Internal variables: technology-specific impact perceptions and preferences			
		Local env. concerns: acc. ↗ Local empl. concerns: acc. ↗ Sound concerns: acc. ↘ Health concerns: acc. ↗	Local env. concerns: acc. ↗ Local empl. concerns: acc. ↗ Sound concerns: acc. ↘ Health concerns: acc. ↗

Further internal variables that affect acceptance of grid developments in the absence of compensation mechanisms are tradeoffs between supply reliability and economics as well as between social impact and environmental sustainability. Interestingly, the perceptions of technology-specific impacts are not significant in this case.

Turning to external variables (beyond age) that affect the acceptance of grid developments under a *CBS*, we find that acceptance increases for those that have higher education levels. Other socio-demographic variables do not play a role in driving people's acceptance. Further significant internal variables (beyond satisfaction and the environmental-economic tradeoff) under this scheme include the tradeoffs between supply reliability and the environment as well as between social acceptance and economic considerations. Furthermore, looking at the technology-specific impact perceptions, we find that those who perceive that grid developments have a positive impact on the local environment and employment as well as on health are more likely to accept such developments. The latter suggests that people may be more concerned with any potential indirect health effects related to climate change than with any more direct potential health effects of living close to a transmission line. Those that are concerned about the impact on sound, however, are less likely to accept grid developments.

In terms of further external variables driving grid acceptance under *equity involvement*, we find again that people with higher levels of education are more likely to be willing to accept local grid constructions under this scheme. Moreover, people in the income bracket €15,000 - €30,000, males and people living in the Mid-West, South-West or South-East are more likely to accept grid developments under equity involvement. Further internal variables that play a role include technology-specific impact perceptions. The patterns are exactly the same as under the CBS.

3.2.3 How various compensation schemes can increase acceptance

In addition to examining the drivers of overall acceptance rates, we also look at the factors that drive an increase in acceptance under each of the compensation schemes discussed above when compared to the situation where no compensation scheme is in place. As described in section 2.2.2 above, we use a logit model for this analysis. Once again we look at the significance of external and internal factors in driving increased acceptance. The full results are displayed in Tables 12 and 13 of Appendix B. A summary of findings is presented in Table 3 a) and b).

We first analyse the acceptance increase under different compensation schemes for wind farms. As discussed in section 3.1 and illustrated in Figure 2, overall acceptance and increase in acceptance levels are highest under a community benefit scheme rather than under schemes involving deeper levels of engagement (which was found to increase acceptance, for instance, by Ek and Persson (2014)). This analysis considers the drivers of increased acceptance under each scheme.

Table 3: Significant drivers affecting increased acceptance of infrastructure development under different compensation mechanisms

a) Wind

Variable	**Community benefit**	**Equity involvement**	**Energy coop.**	**Joint venture**
External variables: socio-demographic characteristics				
Age	-	-	Increase for 45-59 year old	Increase for >45 year old
Education	Increase for most-highly educated	Increase for most-highly educated	Increase for most-highly educated	Increase for most-highly educated
Employment	-	-	Increase for unemployed, home duties, students	Increase for unemployed, home duties, students
Tenure	-	No increase for renters	No increase for renters	-
Internal variables: satisfaction with existing local planning procedures				
	-	-	-	-
Internal variables: energy policy preferences and tradeoffs				
	env.>econ.: increase soc.>env.: no increase	env.>econ.: increase	env.>econ.: increase	env.>econ.: increase soc.>env.: no increase
Internal variables: technology-specific impact perceptions and preferences				
	Health concerns: increase Sound concerns: no increase	-	-	Health concerns: increase

b) Grid

Variable	**Community benefit**	**Equity involvement**
External variables: socio-demographic characteristics		
Education	Increase for most-highly educated	Increase for higher educated
Employment	-	Increase for retired
Tenure	-	No increase for renters
Internal variables: satisfaction with existing local planning procedures		
	-	Increase for unsatisfied
Internal variables: energy policy preferences and tradeoffs		
	-	soc.>env.: increase
Internal variables: technology-specific impact perceptions and preferences		
	Local empl. concerns: no increase Health concerns: increase Safety concerns: increase	Local env. concerns: increase Sound concerns: no increase

Looking firstly at the external variables that predict the likelihood that a particular compensation scheme will increase wind-farm acceptance, we find that the socio-demographic variables that increase acceptance levels generally differ from those that drive levels of acceptance (see Table 3 a)). Income is never statistically significant, and age and employment only predict increased acceptance under energy cooperatives or joint ventures. Older people and people in unemployment, home duties or students are more likely to express increased acceptance of wind farm development under these schemes than in the case where no compensation is offered. We also find that among the external variables, level of education predicts increased acceptance across all compensation schemes. Interestingly, however, only those respondents with the highest levels of formal education are more likely to express increased acceptance of wind farms when any compensation scheme is in place. Another interesting finding is that renters are less likely to show an increased acceptance when compensation is offered via equity involvement or energy cooperatives. Renters are often reported to be more likely to accept infrastructure developments since they might not feel the same level of impact and may be less concerned about property values (e.g. Bertsch et al., 2016b). Our finding for the increased acceptance under these compensation schemes, however, seems to indicate that renters might feel that they cannot participate in the benefit sharing in the same way as home owners.

Turning next to the internal variables that increase acceptance for wind farm developments, we find that the satisfaction with local planning procedures is not a significant predictor. As discussed above, this variable was highly significant in driving people's acceptance under different schemes but it is insignificant in increasing acceptance. On the contrary, the environmental-economic tradeoff, which was another significant driver of acceptance across all schemes also turns out to be a significant predictor of increased acceptance under all schemes. Further significant internal variables include the social-environmental tradeoff as well as health concerns for under community benefit schemes and joint ventures. Moreover, sound concerns are found to be significant for a CBS.

Our final set of results concerns the drivers of increased acceptance of grid development under the two proposed compensation schemes (see Table 3 b)). Comparing the results on the "external" drivers to those of increased wind acceptance, we find that almost all the same variables drive increased acceptance of grid development under the proposed schemes - particularly under equity involvement. As for wind, those with the highest levels of formal education are likely to express increased acceptance under either of the considered schemes, relative to a situation of no compensation. Moreover, if offered an equity stake in the project, retired people are more likely, while renters are less likely, to show increased acceptance. An exception to the similarities with wind is that age is never a significant predictor of increased acceptance in the case of grid development.

When looking at the internal drivers, we find that, as opposed to wind, satisfaction with

local planning procedures predicts increased acceptance of grid development under equity involvement. However, turning to the national energy policy preferences, the only variable that shows a weak significance is the social-environmental tradeoff under equity involvement. In terms of the technology-specific impact perceptions, we find that health and safety concerns as well as perceived local employment effects drive increased acceptance under a CBS, while perceived impact on the local environment and sound predict increased acceptance under equity involvement.

3.3 Limitations

Critically reflecting our findings, we wish to acknowledge that our results need to be interpreted with some caution. While our research is useful in shedding light on people's overall acceptance of technology development under various compensation schemes, we do not know the extent to which people would wish to be compensated. Moreover, our models analysing acceptance under different compensation mechanisms for wind and grid development revealed many significant drivers. However, the models for analysing how acceptance increases under different schemes are weaker. This suggests that relevant drivers may not have been captured in our analysis. For instance, a number of further factors have been discussed in the literature in terms of their influence on public acceptance of energy infrastructure. This includes the role of place attachment, which was found to be a significant predictor of acceptance (Vorkinn and Riese, 2001; Devine-Wright, 2012; Bidwell, 2013). However, most research focusses on a single technology. Since our focus was to analyse wind as well as grid developments, both of which play a role in the transition to a low carbon energy system, there was limited scope to analyse a yet larger variety of explanatory variables. However, exploring the role of further (particularly internal) predictors is an important topic for future research.

4 Conclusions

In this paper we have analysed the important topic of willingness to accept local infrastructure development (specifically wind and grid development projects) when no compensation is provided to the local community, and under a range of potential compensation mechanisms. Given that Ireland, along with other EU countries, is subject to time-constrained, binding RES-E targets, this topic is of major importance in the transition towards a more environmentally-friendly electricity generation system. Finding ways of minimising local objections is therefore important to expedite necessary developments and meet binding targets.

In order to gain important insight into the views of Irish citizens vis-à-vis hypothetical expansion of wind farms and the transmission grid, we conducted a nationally-representative survey.

In addition to collecting detailed socio-demographic and attitudinal information, we also asked participants about their willingness to accept local developments under a range of compensation schemes, which varied by their depth of community involvement. While some research on local compensation schemes and infrastructure development to date would suggest that deeper levels of community involvement would create a sense of project ownership and reduce local opposition, we find the opposite to be the case. Our survey findings show that acceptance of infrastructure development is highest when communities would be compensated via a community benefit scheme, involving cash transfers but no share in ownership or associated project risk. In addition to looking at overall acceptance levels under the various compensation schemes, we also looked at how each scheme changed acceptance levels relative to a situation in which no compensation scheme was in place. Of the results that emerged, two are of particular note: firstly, we find that it is compensation schemes with lower levels of involvement that increase acceptance the most - indicating a degree of overall risk aversion amongst citizens, or an unwillingness to accept compensation in a form with which they are unfamiliar. Secondly, we find that for a large proportion of respondents (42-43%), their acceptance of infrastructure developments does not change when they are offered compensation, indicating that they are either ideologically opposed to, or in favour of, such developments.

In addition to presenting descriptive results, we also look at the characteristics that are significantly related to acceptance levels, and to increases in these levels, under each of the compensation schemes. We distinguish between external (demographic, economic, structural) and internal (attitudes, beliefs) drivers of acceptance. Of the socio-demographic variables, we find that age is generally the most consistently significant predictor of acceptance, with older people generally less willing to accept local infrastructure development under most compensation schemes. We find that household income is frequently significantly correlated with acceptance levels, but the direction of the relationship varies depending on the type of compensation offered. In terms of the attitudinal variables, we find that people who are unhappy with current local planning procedures are always less accepting of development projects. We also find that people who place a higher importance on environmental as opposed to economic objectives, in terms of national energy policy, are more willing to accept wind farm and grid development under all proposed compensation schemes. In general, greater importance placed on social acceptance, relative to economic concerns, is associated with lower acceptance levels. In terms of the technology-specific concerns, concerns regarding sound are associated with lower acceptance levels, whereas *local* (different from national) economic concerns increase acceptance levels.

In terms of the econometric analyses of increased acceptance levels, we find that for both wind farms and the transmission grid, education is generally a significant socio-demographic predictor of whether the compensation schemes increase acceptance. For each of the technologies and

compensation schemes considered, acceptance under compensation increases for those with higher levels of education. Looking at the internal variables that drive increased acceptance, we find that the satisfaction with local planning procedures is generally not significant. This is somewhat surprising given that the schemes would imply a change to existing planning procedures in a way that, one would hope, should lead to an increased acceptance. In terms of further internal variables, however, we find that acceptance of wind farm developments increases for those who place a higher importance on environmental relative to economic considerations, similar to the results on overall acceptance levels. In terms of the perceived technology-specific impacts, concerns regarding the health impacts of infrastructure development appear to be the most consistent driver of increased acceptance, with acceptance under certain compensation schemes (namely community benefit schemes and joint ventures) increasing for those who place a high importance on potential health impacts.

Our findings may be of use for policy formation in a number of ways. If policy makers hope to increase local infrastructure acceptance levels via community compensation, our results shed light on which schemes would lead to the greatest increase in acceptance. While the literature on community compensation has generally indicated that deeper levels of community involvement result in greater levels of local support, our results would caution policy-makers against adopting a one-size-fits-all policy, and assuming that the findings from other countries can universally be applied. Furthermore, our results showing that for a large proportion of respondents (more that 40%) acceptance levels do not change when compensation is offered for hypothetical development indicates that policy-makers may need to do more to address the fundamental concerns of citizens rather than merely offering compensation, if acceptance levels are to be increased.

In addition to this, our econometric analysis indicates which socio-demographic characteristics and attitudinal factors significantly predict and increase acceptance levels for both technologies, under each of the compensation schemes considered. The findings on the socio-demographic drivers are of interest as they indicate to policy makers which groups of society may require the most convincing on the necessity of RES-E infrastructure development. The results on attitudinal drivers suggest what aspects and characteristics of the infrastructure should be highlighted when communicating project development plans to the public.

Finally, for those citizens who oppose local infrastructure development even in the presence of compensation schemes, it would be useful to know what, if anything, would increase their acceptance levels. Future work in this area should build upon our current study to advance this research and the associated policy questions.

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A Survey structure and questions

Category 1: Community involvement schemes

Question block no.	1.1
Question text	Involvement in wind farm development: When new wind farms are developed local communities may be affected. We now ask for your opinion regarding the possible processes that could be put in place to compensate and involve the residents of the local communities. There are a number of potential methods that could be used to allow local communities to share the financial benefits, as well as the associated risks and costs, of wind farm developments. Here we consider four potential compensation schemes. How willing would you be to accept a new wind farm in your local community if either none or one of these profit sharing schemes were in place?
Technologies to consider	Wind turbines
Compensation mechanisms for consideration	No profit sharing scheme, Community benefit scheme, Equity involvement, Energy Cooperative, Joint venture (see section 2.1.1)
Scale of possible answers	1: unwilling, 2: somewhat unwilling, 3: neutral, 4: somewhat willing, 5: willing, 6: don't know
Question block no.	1.2
Question text	Involvement in grid development: As is the case for new wind farms, when the electrical transmission grid (the "wires") is expanded local communities may be affected. We now ask for your opinion regarding the possible processes that could be put in place to compensate local communities. As with new wind farms, schemes could be put in place to allow local communities to share in the benefits of expanding the transmission grid. However, due to the technical nature of grid operations, the potential mechanisms of community involvement are likely to be fewer. Here we consider two potential compensation schemes. How willing would you be to accept a new transmission line in your community if none or one of these profit sharing schemes were in place?
Technologies to consider	Above ground electrical transmission line expansion
Compensation mechanisms for consideration	No profit sharing scheme, Community benefit scheme, Equity involvement (see section 2.1.1)
Scale of possible answers	1: unwilling, 2: somewhat unwilling, 3: neutral, 4: somewhat willing, 5: willing, 6: don't know

Category 2: Socio-demographic characteristics

Question block no.	2
Question text	Scale of possible answers
In which region do you live?	1: Border, 2: Midland, 3: West, 4: Dublin, 5: Mid-East, 6: Mid-West, 7: South-East, 8: South-West
Next please indicate the area you live in.	County/City/Dublin area within the above region
How long have you been living in this area?	1: Less than one year, 2: 1-5 years, 3: 6-10 years, 4: 11-20 years, 5: More than 20 years
What is your gender?	1: Female, 2: Male
How old are you?	1: 15-19 years, 2: 20-24 years, 3: 25-34 years, 4: 35-44 years, 5: 45-54 years, 6: 55-59 years, 7: 60-64 years, 8: 65 years or older
Is the dwelling in which you live...?	1: Owneroccupied, 2: Owneroccupied having being purchased through a local authority scheme, 3: Being rented (owner not in residence in this household), 4: Not owned by occupant(s) and being occupied rent free, 5: Not owned by occupant(s) and rent free to some member(s) of the household only, 6: Owner occupied and rented out to some member(s) of the household, 7: Other (please specify)
What is the highest level of education or training you have attained?	1: Primary school, pre-primary or no formal education, 2: Secondary 1 (Junior/Inter Certificate), 3: Secondary 2 (Leaving Certificate), 4: Post-secondary non-tertiary (e.g. Technical or vocational qualification, Advanced certificate or Higher certificate), 5: Third level non-honours degree (e.g. National Diploma (HETAC/NCEA), Bachelor Degree (DIT), Diploma in Police Studies, 3 year Diploma or Ordinary Bachelor Degree at NFQ level 7), 6: Third level honours degree or higher, 7: Other (please specify)
At the moment are you ...?	1: At work, 2: Unemployed, 3: Student, 4: Engaged on home duties, 5: Retired from employment, 6: Other (please specify)
Can you state which of the following categories best represents your household's yearly income before tax?	1: Less than 15,000 Euros, 2: 15,000 to 30,000 Euros, 3: 30,000 to 50,000 Euros, 4: 50,000 to 75,000 Euros, 5: 75,000 or more Euros

Category 3: National energy policy preferences, technology-specific impact perceptions, satisfaction with local planning procedures

Question block no.	3.1
Question text	When planning the future energy system, numerous factors play a crucial role (for example economic and environmental concerns, the reliability of supply, and social acceptance). Please state your opinion on the relative importance of the item pairs listed below.
Item pairs	Compared to economic viability, environmental sustainability is ..., Compared to economic viability, reliability of supply is ..., Compared to economic viability, social acceptance is ..., Compared to environm. sustainability, reliability of supply is ..., Compared to environm. sustainability, social acceptance is ..., Compared to reliability of supply, social acceptance is ...
Scale of possible answers	1: ... absolutely more important, 2: ... more important, 3: ... slightly more important, 4: ... of equal importance, 5: ... slightly less important, 6: ... less important, 7: ... absolutely less important
Question block no.	3.2
Question text	When assessing different electricity generation and grid expansion options, how do you rank the following criteria in terms of their importance?
Criteria to be ranked	The landscape, Sound, Health, Local environment, Local economy, Local employment, Air quality, Water quality, Odour, Techn. safety
Scale of possible answers	1: unimportant, ..., 5: highly important
Question block no.	3.3
Question text	Please review each of these technologies in terms of the listed criteria based on your personal judgement of them, without making comparisons between the technologies.
Technologies to judge	Wind turbines, Above-ground electrical transmission line expansion
Criteria for consideration (technology-dependent)	The landscape, Sound, Health, Local environment, Local economy, Local employment, Air quality, Water quality, Odour, Techn. safety
Scale of possible answers	-2: negative, -1: somewhat negative, 0: neutral, 1: somewhat positive, 2: positive, 3: No experience or limited knowledge
Question block no.	3.4
Question text	Please indicate how happy you are with the way in which local residents are currently involved when energy infrastructure is planned to be placed in their communities.
Scale of possible answers	1: very unsatisfied, 2: unsatisfied, 3: neutral, 4: satisfied, 5: very satisfied, 6: don't know

B Additional results

Table 4: WTA wind-farm development without any compensation

External variables: socio-demographic characteristics	Unwilling	Somewhat unwilling	Neutral	Somewhat willing	Willing
Age (reference cat.: Younger than 25)					
25 - 44	0.0892**	-0.0747**	-5.59e-05	0.00242	-0.0169
	(0.0441)	(0.0321)	(0.0318)	(0.0305)	(0.0174)
45 - 59	0.167***	0.0470***	-0.0690***	-0.0939***	-0.0513***
	(0.0445)	(0.00891)	(0.0204)	(0.0212)	(0.0115)
60 or older	0.212***	0.0528***	-0.0873***	-0.115***	-0.0627***
	(0.0590)	(0.00934)	(0.0260)	(0.0261)	(0.0145)
Highest level of education (reference cat.: Primary school)					
Leaving certificate	0.0261	0.0112	-0.00971	-0.0174	-0.0102
	(0.0401)	(0.0161)	(0.0155)	(0.0259)	(0.0149)
Post-secondary non-tertiary	0.0367	0.0151	-0.0139	-0.0240	-0.0138
	(0.0425)	(0.0158)	(0.0170)	(0.0265)	(0.0149)
Third level non-honours degree	0.0169	0.00730	-0.00623	-0.0113	-0.00661
	(0.0420)	(0.0173)	(0.0160)	(0.0275)	(0.0158)
Third level honours or above	0.0232	0.00989	-0.00866	-0.0155	-0.00899
	(0.0437)	(0.0174)	(0.0170)	(0.0282)	(0.0160)
Income (reference cat.: Less than 15,000)					
15,000 to 30,000	-0.0250	-0.0118	0.00865	0.0176	0.0106
	(0.0328)	(0.0161)	(0.0110)	(0.0235)	(0.0144)
30,000 to 50,000	-0.00634	-0.00292	0.00224	0.00440	0.00262
	(0.0358)	(0.0167)	(0.0125)	(0.0250)	(0.0150)
50,000 to 75,000	-0.0280	0.0433	-0.0606	0.0777*	-0.0324
	(0.0454)	(0.0443)	(0.0379)	(0.0457)	(0.0209)
75,000 or more	0.00367	0.00164	-0.00133	-0.00251	-0.00148
	(0.0479)	(0.0211)	(0.0175)	(0.0325)	(0.0191)
Employment (reference cat.: In employment)					
Unemployed, student, home duties, other	0.0540*	0.0226**	-0.0202*	-0.0357**	-0.0207**
	(0.0279)	(0.0109)	(0.0111)	(0.0178)	(0.0102)
Retired	0.0342	0.0141	-0.0129	-0.0224	-0.0129
	(0.0424)	(0.0159)	(0.0169)	(0.0266)	(0.0149)
Gender (reference cat.: Female)					
Male	-0.00643	-0.0547*	0.0855***	-0.0321	0.00778
	(0.0284)	(0.0298)	(0.0314)	(0.0256)	(0.0162)
Broad region (reference cat.: Boarder, Midlands, West)					
Dublin and Mid-East	-0.0242	-0.0113	0.00846	0.0169	0.0102
	(0.0285)	(0.0137)	(0.00977)	(0.0203)	(0.0123)
Mid-West, South-East and South-West	-0.0521**	-0.0252*	0.0174**	0.0372*	0.0227*
	(0.0265)	(0.0138)	(0.00858)	(0.0197)	(0.0125)
Tenure (reference cat.: Owner-occupied)					
rented accomodation	-0.0357	-0.0173	0.0120	0.0255	0.0155
	(0.0261)	(0.0136)	(0.00835)	(0.0194)	(0.0122)
all other categories of tenure	-0.0824**	-0.0520*	0.0168***	0.0689*	0.0487
	(0.0367)	(0.0306)	(0.00486)	(0.0369)	(0.0315)
Length of residence (reference cat.: Less than 5 years)					
5 - 20 years	0.0153	0.00682	-0.00555	-0.0104	-0.00615
	(0.0323)	(0.0141)	(0.0119)	(0.0218)	(0.0128)
More than 20 years	-0.0158	-0.00720	0.00560	0.0109	0.00647
	(0.0335)	(0.0154)	(0.0119)	(0.0232)	(0.0139)
Area of residence (reference cat.: Rural)					
Urban	-0.0246	-0.0116	0.00853	0.0173	0.0104
	(0.0308)	(0.0150)	(0.0104)	(0.0221)	(0.0135)
Internal variables: satisfaction with local planning procedures					
Satisfaction with local planning procedures (reference cat.: Satisfied)					
Unsatisfied	0.199***	0.0247	-0.180***	-0.0515*	0.00727
	(0.0380)	(0.0352)	(0.0327)	(0.0289)	(0.0211)
Internal variables: national energy policy preferences					
Tradeoff env. vs. econ.	-0.000990	-0.00651	-0.0493***	0.0348***	0.0219***
	(0.0120)	(0.0121)	(0.0113)	(0.0107)	(0.00670)
Tradeoff rel. vs. econ.	0.00438	0.00199	-0.00156	-0.00301	-0.00179
	(0.0118)	(0.00537)	(0.00424)	(0.00814)	(0.00483)
Tradeoff soc. vs. econ.	0.0248**	0.0112**	-0.00886**	-0.0171**	-0.0101**
	(0.0120)	(0.00555)	(0.00444)	(0.00830)	(0.00495)
Tradeoff rel. vs. env.	-0.00231	-0.00105	0.000827	0.00159	0.000944
	(0.0112)	(0.00510)	(0.00402)	(0.00773)	(0.00458)
Tradeoff soc. vs. env.	-0.0109	-0.00493	0.00388	0.00748	0.00443
	(0.0132)	(0.00600)	(0.00475)	(0.00908)	(0.00539)
Tradeoff soc. vs. rel.	-0.00132	-0.000598	0.000471	0.000907	0.000538
	(0.0120)	(0.00543)	(0.00427)	(0.00823)	(0.00488)
Internal variables: technology-specific perceptions and preferences					
Landscape	0.319*	0.145*	-0.114*	-0.220*	-0.130*
	(0.180)	(0.0833)	(0.0663)	(0.125)	(0.0747)
Local environment	-0.267	-0.121	0.0955	0.184	0.109
	(0.203)	(0.0931)	(0.0734)	(0.140)	(0.0835)
Local employment	0.0115	0.00522	-0.00411	-0.00792	-0.00470
	(0.165)	(0.0749)	(0.0590)	(0.114)	(0.0674)
Sound	0.407**	0.185**	-0.145**	-0.280**	-0.166**
	(0.160)	(0.0747)	(0.0607)	(0.111)	(0.0667)
Local economy	-0.329	-0.153	-0.0358	0.0781	0.439***
	(0.210)	(0.204)	(0.179)	(0.179)	(0.110)
Health	0.369*	-0.0219	-0.750***	0.260	0.144
	(0.216)	(0.192)	(0.191)	(0.178)	(0.113)
Observations	956	956	956	956	956

Note: Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5: WTA wind-farm development under a community benefit scheme

External variables: socio-demographic characteristics	Unwilling	Somewhat unwilling	Neutral	Somewhat willing	Willing
Age (reference cat.: Younger than 25)					
25 - 44	0.0311*	0.0311*	0.0272**	-0.0249*	-0.0645**
	(0.0173)	(0.0166)	(0.0137)	(0.0149)	(0.0326)
45 - 59	0.0701***	0.0642***	0.0479***	-0.0623***	-0.120***
	(0.0235)	(0.0190)	(0.0113)	(0.0226)	(0.0301)
60 or older	0.0712**	0.0655***	0.0495***	-0.0625**	-0.124***
	(0.0293)	(0.0238)	(0.0141)	(0.0276)	(0.0388)
Highest level of education (reference cat.: Primary school)					
Leaving certificate	-0.000983	-0.00102	-0.000952	0.000720	0.00223
	(0.0175)	(0.0182)	(0.0170)	(0.0128)	(0.0399)
Post-secondary non-tertiary	0.00177	0.00183	0.00169	-0.00132	-0.00397
	(0.0184)	(0.0190)	(0.0175)	(0.0139)	(0.0410)
Third level non-honours degree	-0.00769	-0.00805	-0.00771	0.00535	0.0181
	(0.0177)	(0.0188)	(0.0184)	(0.0116)	(0.0433)
Third level honours or above	-0.0280*	-0.0302*	-0.0309	0.0156**	0.0735
	(0.0161)	(0.0180)	(0.0200)	(0.00653)	(0.0484)
Income (reference cat.: Less than 15,000)					
15,000 to 30,000	-0.0157	-0.0164	-0.0158	0.0108	0.0371
	(0.0145)	(0.0154)	(0.0152)	(0.00940)	(0.0359)
30,000 to 50,000	-0.00564	-0.00588	-0.00557	0.00403	0.0131
	(0.0160)	(0.0167)	(0.0161)	(0.0110)	(0.0378)
50,000 to 75,000	-0.0263*	-0.0285*	-0.0295	0.0140**	0.0703
	(0.0152)	(0.0173)	(0.0196)	(0.00554)	(0.0476)
75,000 or more	0.000126	0.000130	0.000121	-9.27e-05	-0.000285
	(0.0214)	(0.0221)	(0.0206)	(0.0158)	(0.0484)
Employment (reference cat.: In employment)					
Unemployed, student, home duties, other	0.00528	0.00543	0.00502	-0.00395	-0.0118
	(0.0121)	(0.0124)	(0.0114)	(0.00926)	(0.0267)
Retired	0.0364*	0.0353*	0.0292**	-0.0311	-0.0698**
	(0.0217)	(0.0198)	(0.0144)	(0.0205)	(0.0352)
Gender (reference cat.: Female)					
Male	-0.0118	-0.0122	-0.0114	0.00870	0.0268
	(0.00993)	(0.0103)	(0.00963)	(0.00744)	(0.0224)
Broad region (reference cat.: Boarder, Midlands, West)					
Dublin and Mid-East	-0.00654	-0.00680	-0.00640	0.00473	0.0150
	(0.0130)	(0.0136)	(0.0129)	(0.00927)	(0.0303)
Mid-West, South-East and South-West	-0.00129	-0.00133	-0.00125	0.000944	0.00292
	(0.0129)	(0.0134)	(0.0125)	(0.00940)	(0.0294)
Tenure (reference cat.: Owner-occupied)					
rented accomodation	-0.00820	-0.00856	-0.00815	0.00578	0.0191
	(0.0121)	(0.0127)	(0.0123)	(0.00817)	(0.0290)
all other categories of tenure	-0.0102	-0.0108	-0.0107	0.00659	0.0251
	(0.0205)	(0.0224)	(0.0232)	(0.0112)	(0.0549)
Length of residence (reference cat.: Less than 5 years)					
5 - 20 years	0.00642	0.00660	0.00610	-0.00481	-0.0143
	(0.0148)	(0.0152)	(0.0139)	(0.0113)	(0.0326)
More than 20 years	-0.00585	-0.00606	-0.00567	0.00428	0.0133
	(0.0153)	(0.0159)	(0.0149)	(0.0112)	(0.0350)
Area of residence (reference cat.: Rural)					
Urban	-0.00845	-0.00880	-0.00834	0.00601	0.0196
	(0.0141)	(0.0148)	(0.0143)	(0.00973)	(0.0335)
Internal variables: satisfaction with local planning procedures					
Satisfaction with local planning procedures (reference cat.: Satisfied)					
Unsatisfied	0.0464***	0.0442***	0.0352***	-0.0405***	-0.0852***
	(0.0153)	(0.0136)	(0.00925)	(0.0152)	(0.0224)
Internal variables: national energy policy preferences					
Tradeoff env. vs. econ.	-0.00409	-0.00284	-0.0471***	-0.00143	0.0555***
	(0.00694)	(0.00817)	(0.0103)	(0.0138)	(0.0127)
Tradeoff rel. vs. econ.	-0.00679	-0.00703	-0.00656	0.00500	0.0154
	(0.00548)	(0.00566)	(0.00531)	(0.00410)	(0.0124)
Tradeoff soc. vs. econ.	0.00659	0.00682	0.00636	-0.00485	-0.0149
	(0.00539)	(0.00558)	(0.00521)	(0.00404)	(0.0122)
Tradeoff rel. vs. env.	-0.00645	-0.00667	-0.00623	0.00475	0.0146
	(0.00499)	(0.00517)	(0.00484)	(0.00375)	(0.0113)
Tradeoff soc. vs. env.	0.0108*	0.0112*	0.0105*	-0.00797*	-0.0245*
	(0.00589)	(0.00610)	(0.00573)	(0.00453)	(0.0132)
Tradeoff soc. vs. rel.	-0.00519	-0.00537	-0.00501	0.00382	0.0117
	(0.00540)	(0.00559)	(0.00522)	(0.00403)	(0.0122)
Internal variables: technology-specific perceptions and preferences					
Landscape	0.141*	0.146*	0.136*	-0.104	-0.318*
	(0.0835)	(0.0864)	(0.0808)	(0.0635)	(0.188)
Local environment	0.130	-0.0975	-0.703***	0.211	0.459**
	(0.128)	(0.147)	(0.168)	(0.195)	(0.230)
Local employment	-0.0269	-0.0278	-0.0260	0.0198	0.0609
	(0.0776)	(0.0803)	(0.0750)	(0.0572)	(0.176)
Sound	0.197***	0.204***	0.190***	-0.145**	-0.446***
	(0.0738)	(0.0771)	(0.0722)	(0.0592)	(0.165)
Local economy	-0.174**	-0.180**	-0.168**	0.128**	0.395**
	(0.0818)	(0.0850)	(0.0798)	(0.0637)	(0.183)
Health	-0.127	-0.132	-0.123	0.0937	0.288
	(0.0812)	(0.0840)	(0.0785)	(0.0620)	(0.182)
Observations	977	977	977	977	977

Note: Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6: WTA wind-farm development under equity involvement

External variables: socio-demographic characteristics	Unwilling	Somewhat unwilling	Neutral	Somewhat willing	Willing
Age (reference cat.: Younger than 25)					
25 - 44	0.0440**	0.0411**	0.0353***	-0.0493**	-0.0711**
	(0.0198)	(0.0175)	(0.0134)	(0.0219)	(0.0282)
45 - 59	0.0890***	-0.0124	0.0820**	-0.0560	-0.103***
	(0.0344)	(0.0268)	(0.0341)	(0.0403)	(0.0311)
60 or older	0.0575*	0.0516**	0.0399***	-0.0641**	-0.0849**
	(0.0294)	(0.0239)	(0.0142)	(0.0315)	(0.0350)
Highest level of education (reference cat.: Primary school)					
Leaving certificate	-0.00102	-0.00101	-0.000984	0.00115	0.00187
	(0.0192)	(0)	(0.0186)	(0.0215)	(0.0353)
Post-secondary non-tertiary	0.0135	0.0130	0.0119	-0.0153	-0.0230
	(0.0215)	(0.0202)	(0.0173)	(0.0245)	(0.0345)
Third level non-honours degree	0.0361	0.00645	-0.104***	0.0383	0.0235
	(0.0334)	(0.0329)	(0.0372)	(0.0421)	(0.0446)
Third level honours or above	-0.00758	-0.00754	-0.00761	0.00842	0.0143
	(0.0200)	(0.0201)	(0.0210)	(0.0220)	(0.0392)
Income (reference cat.: Less than 15,000)					
15,000 to 30,000	0.00361	0.00353	0.00341	-0.00406	-0.00650
	(0.0167)	(0.0163)	(0.0156)	(0.0188)	(0.0298)
30,000 to 50,000	-0.00346	-0.00342	-0.00337	0.00387	0.00638
	(0.0175)	(0.0173)	(0.0173)	(0.0195)	(0.0327)
50,000 to 75,000	-0.0308*	-0.0320*	-0.0369	0.0318**	0.0679
	(0.0164)	(0.0178)	(0.0237)	(0.0148)	(0.0431)
75,000 or more	-0.0129	-0.0130	-0.0138	0.0141	0.0257
	(0.0210)	(0.0219)	(0.0251)	(0.0221)	(0.0458)
Employment (reference cat.: In employment)					
Unemployed, student, home duties, other	0.00571	0.00558	0.00536	-0.00642	-0.0102
	(0.0134)	(0.0130)	(0.0123)	(0.0151)	(0.0236)
Retired	0.0202	0.0192	0.0170	-0.0229	-0.0335
	(0.0216)	(0.0198)	(0.0159)	(0.0246)	(0.0326)
Gender (reference cat.: Female)					
Male	-0.00812	-0.0610***	0.0797***	-0.0531*	0.0425
	(0.0183)	(0.0213)	(0.0285)	(0.0315)	(0.0266)
Broad region (reference cat.: Boarder, Midlands, West)					
Dublin and Mid-East	0.0121	0.0118	0.0112	-0.0136	-0.0215
	(0.0149)	(0.0143)	(0.0133)	(0.0168)	(0.0257)
Mid-West, South-East and South-West	0.0334**	0.0317**	0.0285**	-0.0376**	-0.0561**
	(0.0156)	(0.0143)	(0.0119)	(0.0175)	(0.0239)
Tenure (reference cat.: Owner-occupied)					
rented accomodation	-0.0153	-0.0153	-0.0157	0.0169	0.0295
	(0.0128)	(0.0130)	(0.0140)	(0.0138)	(0.0259)
all other categories of tenure	-0.0396**	-0.0431**	-0.0562*	0.0355***	0.103*
	(0.0163)	(0.0194)	(0.0318)	(0.00904)	(0.0596)
Length of residence (reference cat.: Less than 5 years)					
5 - 20 years	0.0291*	0.0278*	0.0253*	-0.0327*	-0.0495*
	(0.0172)	(0.0160)	(0.0137)	(0.0193)	(0.0272)
More than 20 years	0.0253	0.0334	-0.0774***	0.0388	-0.0201
	(0.0227)	(0.0246)	(0.0299)	(0.0356)	(0.0345)
Area of residence (reference cat.: Rural)					
Urban	-0.0316	-0.0487**	0.00795	0.116***	-0.0435
	(0.0206)	(0.0225)	(0.0327)	(0.0360)	(0.0323)
Internal variables: satisfaction with local planning procedures					
Satisfaction with local planning procedures (reference cat.: Satisfied)					
Unsatisfied	0.0897***	0.00755	-0.0387	-0.0446	-0.0139
	(0.0274)	(0.0264)	(0.0338)	(0.0373)	(0.0312)
Internal variables: national energy policy preferences					
Tradeoff env. vs. econ.	-0.0208***	-0.0204***	-0.0199***	0.0233***	0.0378***
	(0.00518)	(0.00517)	(0.00526)	(0.00605)	(0.00917)
Tradeoff rel. vs. econ.	0.0113	0.00840	-0.0488***	-0.00571	0.0349***
	(0.00849)	(0.00960)	(0.0128)	(0.0148)	(0.0135)
Tradeoff soc. vs. econ.	0.0120**	0.0118**	0.0115**	-0.0135**	-0.0219**
	(0.00602)	(0.00592)	(0.00582)	(0.00681)	(0.0108)
Tradeoff rel. vs. env.	-0.00542	-0.00532	-0.00518	0.00608	0.00985
	(0.00547)	(0.00536)	(0.00523)	(0.00614)	(0.00990)
Tradeoff soc. vs. env.	0.00772	0.00758	0.00738	-0.00865	-0.0140
	(0.00642)	(0.00630)	(0.00617)	(0.00722)	(0.0116)
Tradeoff soc. vs. rel.	-0.0152*	-0.00363	0.0116	0.0175	-0.0103
	(0.00838)	(0.00914)	(0.0115)	(0.0125)	(0.0122)
Internal variables: technology-specific perceptions and preferences					
Landscape	0.104	0.102	0.0996	-0.117	-0.189
	(0.0891)	(0.0876)	(0.0854)	(0.100)	(0.161)
Local environment	0.0211	0.260*	-0.853***	0.110	0.463**
	(0.135)	(0.150)	(0.199)	(0.204)	(0.204)
Local employment	-0.0629	-0.0617	-0.0602	0.0705	0.114
	(0.0838)	(0.0822)	(0.0802)	(0.0940)	(0.152)
Sound	0.323***	-0.0234	0.298	-0.599***	0.000287
	(0.125)	(0.145)	(0.185)	(0.207)	(0.177)
Local economy	-0.0725	-0.0712	-0.0694	0.0813	0.132
	(0.0878)	(0.0863)	(0.0842)	(0.0987)	(0.159)
Health	-0.0988	-0.0970	-0.0945	0.111	0.180
	(0.0879)	(0.0863)	(0.0842)	(0.0989)	(0.159)
Observations	959	959	959	959	959

Note: Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7: WTA wind-farm development under an energy cooperative

External variables: socio-demographic characteristics	Unwilling	Somewhat unwilling	Neutral	Somewhat willing	Willing
Age (reference cat.: Younger than 25)					
25 - 44	0.0175	0.0137	0.0113	-0.0192	-0.0233
	(0.0208)	(0.0160)	(0.0126)	(0.0227)	(0.0265)
45 - 59	0.0283	0.0215	0.0165	-0.0308	-0.0355
	(0.0239)	(0.0175)	(0.0116)	(0.0256)	(0.0271)
60 or older	0.0246	0.0189	0.0148	-0.0269	-0.0314
	(0.0293)	(0.0217)	(0.0153)	(0.0315)	(0.0345)
Highest level of education (reference cat.: Primary school)					
Leaving certificate	0.00944	0.00741	0.00621	-0.0104	-0.0127
	(0.0232)	(0.0180)	(0.0145)	(0.0255)	(0.0302)
Post-secondary non-tertiary	0.00680	0.00535	0.00451	-0.00748	-0.00917
	(0.0240)	(0.0187)	(0.0152)	(0.0264)	(0.0315)
Third level non-honours degree	0.0228	0.0519	-0.115***	0.0274	0.0132
	(0.0333)	(0.0338)	(0.0337)	(0.0427)	(0.0402)
Third level honours or above	-0.0267	-0.0221	-0.0221	0.0292	0.0417
	(0.0215)	(0.0185)	(0.0208)	(0.0231)	(0.0377)
Income (reference cat.: Less than 15,000)					
15,000 to 30,000	0.00865	0.00682	0.00581	-0.00952	-0.0118
	(0.0201)	(0.0157)	(0.0130)	(0.0221)	(0.0267)
30,000 to 50,000	0.00564	0.00445	0.00380	-0.00621	-0.00768
	(0.0214)	(0.0168)	(0.0140)	(0.0236)	(0.0287)
50,000 to 75,000	-0.0172	-0.0141	-0.0136	0.0189	0.0261
	(0.0216)	(0.0183)	(0.0194)	(0.0235)	(0.0356)
75,000 or more	-0.00531	-0.00427	-0.00387	0.00586	0.00760
	(0.0262)	(0.0214)	(0.0201)	(0.0289)	(0.0387)
Employment (reference cat.: In employment)					
Unemployed, student, home duties, other	-0.00110	-0.000876	-0.000767	0.00121	0.00153
	(0.0154)	(0.0122)	(0.0108)	(0.0170)	(0.0214)
Retired	0.0211	0.0162	0.0127	-0.0231	-0.0270
	(0.0248)	(0.0184)	(0.0129)	(0.0268)	(0.0292)
Gender (reference cat.: Female)					
Male	-0.0177	-0.0141	-0.0123	0.0195	0.0245
	(0.0128)	(0.0102)	(0.00895)	(0.0141)	(0.0177)
Broad region (reference cat.: Boarder, Midlands, West)					
Dublin and Mid-East	0.0120	0.00942	0.00802	-0.0132	-0.0162
	(0.0173)	(0.0135)	(0.0113)	(0.0190)	(0.0231)
Mid-West, South-East and South-West	0.00307	0.00243	0.00211	-0.00338	-0.00423
	(0.0165)	(0.0131)	(0.0112)	(0.0182)	(0.0226)
Tenure (reference cat.: Owner-occupied)					
rented accomodation	0.00309	0.00244	0.00211	-0.00340	-0.00424
	(0.0161)	(0.0127)	(0.0108)	(0.0178)	(0.0219)
all other categories of tenure	-0.0248	-0.0209	-0.0222	0.0269	0.0410
	(0.0240)	(0.0216)	(0.0269)	(0.0252)	(0.0473)
Length of residence (reference cat.: Less than 5 years)					
5 - 20 years	0.0350*	0.0270*	0.0216*	-0.0381*	-0.0454*
	(0.0202)	(0.0151)	(0.0113)	(0.0217)	(0.0245)
More than 20 years	0.0333	0.0465*	-0.0574**	0.00158	-0.0240
	(0.0260)	(0.0249)	(0.0289)	(0.0356)	(0.0316)
Area of residence (reference cat.: Rural)					
Urban	-0.0145	-0.0117	-0.0106	0.0160	0.0208
	(0.0177)	(0.0144)	(0.0136)	(0.0195)	(0.0262)
Internal variables: satisfaction with local planning procedures					
Satisfaction with local planning procedures (reference cat.: Satisfied)					
Unsatisfied	0.0991***	0.0154	-0.0389	-0.0827**	0.00716
	(0.0293)	(0.0269)	(0.0326)	(0.0356)	(0.0301)
Internal variables: national energy policy preferences					
Tradeoff env. vs. econ.	-0.0208**	-0.0224**	-0.0342***	0.0109	0.0665***
	(0.00820)	(0.00902)	(0.0126)	(0.0140)	(0.0112)
Tradeoff rel. vs. econ.	0.00201	0.00160	0.00139	-0.00221	-0.00279
	(0.00707)	(0.00562)	(0.00491)	(0.00780)	(0.00980)
Tradeoff soc. vs. econ.	0.0374***	0.0266**	-0.0377***	-0.0104	-0.0159
	(0.0105)	(0.0117)	(0.0117)	(0.0161)	(0.0124)
Tradeoff rel. vs. env.	-0.000291	-0.000231	-0.000202	0.000320	0.000403
	(0.00632)	(0.00502)	(0.00438)	(0.00696)	(0.00876)
Tradeoff soc. vs. env.	-0.00839	0.000291	0.0367***	-0.00697	-0.0216*
	(0.0102)	(0.0105)	(0.0118)	(0.0151)	(0.0126)
Tradeoff soc. vs. rel.	-0.0160**	-0.0127**	-0.0111**	0.0176**	0.0222**
	(0.00701)	(0.00561)	(0.00502)	(0.00781)	(0.00963)
Internal variables: technology-specific perceptions and preferences					
Landscape	0.0783	0.0622	0.0543	-0.0863	-0.109
	(0.103)	(0.0822)	(0.0717)	(0.114)	(0.143)
Local environment	0.276*	0.240*	-1.044***	0.331*	0.196
	(0.150)	(0.146)	(0.196)	(0.201)	(0.185)
Local employment	0.00370	0.00294	0.00256	-0.00408	-0.00513
	(0.0948)	(0.0753)	(0.0657)	(0.104)	(0.131)
Sound	0.192**	0.152**	0.133**	-0.211**	-0.266**
	(0.0936)	(0.0750)	(0.0664)	(0.104)	(0.129)
Local economy	-0.185*	-0.147*	-0.128*	0.204*	0.257*
	(0.102)	(0.0814)	(0.0726)	(0.113)	(0.141)
Health	-0.0729	-0.0580	-0.0506	0.0804	0.101
	(0.101)	(0.0803)	(0.0701)	(0.111)	(0.140)
Observations	956	956	956	956	956

Note: Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 8: WTA wind-farm development under a joint venture

External variables: socio-demographic characteristics	Unwilling	Somewhat unwilling	Neutral	Somewhat willing	Willing
Age (reference cat.: Younger than 25)					
25 - 44	-0.0293	0.00949	0.0776**	-0.00819	-0.0496*
	(0.0231)	(0.0282)	(0.0334)	(0.0370)	(0.0300)
45 - 59	0.0215	0.0218	0.0139	-0.0264	-0.0309
	(0.0206)	(0.0201)	(0.0112)	(0.0247)	(0.0270)
60 or older	0.0259	0.0262	0.0165	-0.0317	-0.0369
	(0.0263)	(0.0254)	(0.0136)	(0.0312)	(0.0338)
Highest level of education (reference cat.: Primary school)					
Leaving certificate	-0.00748	-0.00794	-0.00605	0.00938	0.0121
	(0.0194)	(0.0208)	(0.0165)	(0.0244)	(0.0323)
Post-secondary non-tertiary	0.00268	0.00281	0.00202	-0.00335	-0.00416
	(0.0209)	(0.0218)	(0.0154)	(0.0261)	(0.0320)
Third level non-honours degree	0.000653	0.000686	0.000499	-0.000816	-0.00102
	(0.0213)	(0.0224)	(0.0162)	(0.0267)	(0.0333)
Third level honours or above	-0.0237	-0.0260	-0.0222	0.0298	0.0421
	(0.0190)	(0.0215)	(0.0212)	(0.0237)	(0.0378)
Income (reference cat.: Less than 15,000)					
15,000 to 30,000	0.0485*	0.0424	-0.0979***	-0.00545	0.0125
	(0.0285)	(0.0311)	(0.0355)	(0.0380)	(0.0348)
30,000 to 50,000	0.00839	0.00871	0.00608	-0.0104	-0.0127
	(0.0193)	(0.0198)	(0.0132)	(0.0238)	(0.0284)
50,000 to 75,000	0.0102	0.0610	-0.166***	0.0464	0.0488
	(0.0345)	(0.0433)	(0.0436)	(0.0491)	(0.0469)
75,000 or more	-0.00104	0.0727	-0.133**	-0.00551	0.0669
	(0.0378)	(0.0516)	(0.0526)	(0.0584)	(0.0580)
Employment (reference cat.: In employment)					
Unemployed, student, home duties, other	-0.00268	-0.00282	-0.00208	0.00335	0.00423
	(0.0135)	(0.0143)	(0.0106)	(0.0169)	(0.0215)
Retired	0.0220	0.0223	0.0140	-0.0270	-0.0313
	(0.0223)	(0.0217)	(0.0116)	(0.0267)	(0.0287)
Gender (reference cat.: Female)					
Male	-0.0147	-0.0155	-0.0113	0.0184	0.0231
	(0.0113)	(0.0119)	(0.00877)	(0.0141)	(0.0176)
Broad region (reference cat.: Boarder, Midlands, West)					
Dublin and Mid-East	-0.00336	-0.00354	-0.00261	0.00420	0.00530
	(0.0149)	(0.0157)	(0.0117)	(0.0186)	(0.0237)
Mid-West, South-East and South-West	0.00803	0.00838	0.00596	-0.0100	-0.0124
	(0.0149)	(0.0154)	(0.0107)	(0.0185)	(0.0224)
Tenure (reference cat.: Owner-occupied)					
rented accomodation	-0.0142	-0.0152	-0.0119	0.0178	0.0234
	(0.0133)	(0.0145)	(0.0122)	(0.0168)	(0.0231)
all other categories of tenure	-0.0499	-0.0721*	0.172**	0.0405	-0.0906**
	(0.0312)	(0.0375)	(0.0806)	(0.0773)	(0.0416)
Length of residence (reference cat.: Less than 5 years)					
5 - 20 years	0.00200	-0.0335	0.0824**	-0.0126	-0.0383
	(0.0228)	(0.0253)	(0.0322)	(0.0350)	(0.0295)
More than 20 years	-0.00527	-0.00554	-0.00408	0.00659	0.00830
	(0.0170)	(0.0179)	(0.0132)	(0.0213)	(0.0269)
Area of residence (reference cat.: Rural)					
Urban	0.00343	0.00359	0.00260	-0.00429	-0.00534
	(0.0163)	(0.0170)	(0.0121)	(0.0204)	(0.0252)
Internal variables: satisfaction with local planning procedures					
Satisfaction with local planning procedures (reference cat.: Satisfied)					
Unsatisfied	0.0538***	0.0510***	0.0251***	-0.0629***	-0.0671***
	(0.0174)	(0.0150)	(0.00613)	(0.0187)	(0.0171)
Internal variables: national energy policy preferences					
Tradeoff env. vs. econ.	-0.0285***	-0.0299***	-0.0219***	0.0356***	0.0447***
	(0.00550)	(0.00589)	(0.00501)	(0.00707)	(0.00825)
Tradeoff rel. vs. econ.	0.00867	0.0349***	-0.00958	-0.0394**	0.00539
	(0.00949)	(0.0114)	(0.0132)	(0.0156)	(0.0128)
Tradeoff soc. vs. econ.	0.0276***	-0.00892	-0.0156	0.00528	-0.00836
	(0.0106)	(0.0132)	(0.0154)	(0.0159)	(0.0123)
Tradeoff rel. vs. env.	-0.00538	-0.00565	-0.00413	0.00672	0.00844
	(0.00545)	(0.00573)	(0.00422)	(0.00682)	(0.00853)
Tradeoff soc. vs. env.	-0.0145	0.0234*	0.0370***	-0.0184	-0.0276**
	(0.00976)	(0.0122)	(0.0142)	(0.0154)	(0.0125)
Tradeoff soc. vs. rel.	-0.00598	-0.00629	-0.00460	0.00748	0.00939
	(0.00600)	(0.00629)	(0.00463)	(0.00750)	(0.00938)
Internal variables: technology-specific perceptions and preferences					
Landscape	-0.00173	-0.00182	-0.00133	0.00216	0.00271
	(0.0924)	(0.0971)	(0.0710)	(0.115)	(0.145)
Local environment	0.271*	0.583***	-1.164***	0.243	0.0670
	(0.152)	(0.180)	(0.211)	(0.216)	(0.192)
Local employment	-0.239*	0.211	0.189	-0.320	0.160
	(0.133)	(0.161)	(0.208)	(0.213)	(0.172)
Sound	0.569***	-0.224	0.249	-0.325	-0.269
	(0.134)	(0.166)	(0.203)	(0.213)	(0.170)
Local economy	-0.0954	-0.100	-0.0733	0.119	0.150
	(0.0903)	(0.0947)	(0.0699)	(0.113)	(0.141)
Health	-0.214**	-0.225**	-0.164**	0.267**	0.335**
	(0.0905)	(0.0954)	(0.0723)	(0.114)	(0.140)
Observations	950	950	950	950	950

Note: Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 9: WTA transmission-grid expansion under no compensation scheme

External variables: socio-demographic characteristics	Unwilling	Somewhat unwilling	Neutral	Somewhat willing	Willing
Age (reference cat.: Younger than 25)					
25 - 44	0.0729*	0.0216**	-0.0374*	-0.0349**	-0.0222**
	(0.0390)	(0.0102)	(0.0204)	(0.0178)	(0.0112)
45 - 59	0.205***	0.0328***	-0.106***	-0.0819***	-0.0498***
	(0.0474)	(0.00751)	(0.0248)	(0.0163)	(0.0101)
60 or older	0.173***	0.0337***	-0.0896***	-0.0726***	-0.0446***
	(0.0593)	(0.00747)	(0.0307)	(0.0212)	(0.0130)
Highest level of education (reference cat.: Primary school)					
Leaving certificate	-0.00656	-0.00228	0.00329	0.00336	0.00219
	(0.0410)	(0.0145)	(0.0205)	(0.0212)	(0.0138)
Post-secondary non-tertiary	-0.00242	-0.000833	0.00122	0.00124	0.000801
	(0.0431)	(0.0150)	(0.0216)	(0.0221)	(0.0144)
Third level non-honours degree	-0.0340	-0.0129	0.0166	0.0182	0.0121
	(0.0416)	(0.0175)	(0.0196)	(0.0235)	(0.0160)
Third level honours or above	-0.00803	-0.00282	0.00402	0.00414	0.00269
	(0.0444)	(0.0160)	(0.0221)	(0.0232)	(0.0152)
Income (reference cat.: Less than 15,000)					
15,000 to 30,000	0.0612	0.0186*	-0.0313	-0.0296*	-0.0188*
	(0.0383)	(0.0105)	(0.0200)	(0.0177)	(0.0112)
30,000 to 50,000	0.0568	0.0168	-0.0293	-0.0272	-0.0172
	(0.0413)	(0.0105)	(0.0217)	(0.0186)	(0.0116)
50,000 to 75,000	0.0796	0.0194**	-0.0417	-0.0355*	-0.0219*
	(0.0505)	(0.00834)	(0.0272)	(0.0198)	(0.0118)
75,000 or more	0.0579	0.0150	-0.0303	-0.0263	-0.0163
	(0.0576)	(0.0107)	(0.0310)	(0.0234)	(0.0140)
Employment (reference cat.: In employment)					
Unemployed, student, home duties, other	0.0462	0.0145*	-0.0235	-0.0227	-0.0145
	(0.0299)	(0.00882)	(0.0155)	(0.0143)	(0.00905)
Retired	0.0296	0.00920	-0.0152	-0.0144	-0.00920
	(0.0458)	(0.0129)	(0.0239)	(0.0215)	(0.0134)
Gender (reference cat.: Female)					
Male	-0.0119	-0.00406	0.00598	0.00604	0.00391
	(0.0237)	(0.00813)	(0.0120)	(0.0121)	(0.00783)
Broad region (reference cat.: Boarder, Midlands, West)					
Dublin and Mid-East	-0.0336	-0.0120	0.0167	0.0174	0.0114
	(0.0308)	(0.0115)	(0.0152)	(0.0163)	(0.0108)
Mid-West, South-East and South-West	-0.0319	-0.0115	0.0158	0.0167	0.0109
	(0.0303)	(0.0115)	(0.0148)	(0.0162)	(0.0108)
Tenure (reference cat.: Owner-occupied)					
rented accomodation	-0.0379	-0.0141	0.0186	0.0201	0.0133
	(0.0283)	(0.0115)	(0.0136)	(0.0157)	(0.0107)
all other categories of tenure	-0.0467	-0.0200	0.0217	0.0266	0.0183
	(0.0486)	(0.0252)	(0.0203)	(0.0311)	(0.0226)
Length of residence (reference cat.: Less than 5 years)					
5 - 20 years	-0.000905	-0.000310	0.000455	0.000461	0.000299
	(0.0347)	(0.0119)	(0.0175)	(0.0177)	(0.0115)
More than 20 years	-0.0111	-0.00382	0.00559	0.00567	0.00368
	(0.0365)	(0.0126)	(0.0183)	(0.0186)	(0.0121)
Area of residence (reference cat.: Rural)					
Urban	0.0286	0.00926	-0.0145	-0.0142	-0.00911
	(0.0353)	(0.0109)	(0.0181)	(0.0171)	(0.0109)
Internal variables: satisfaction with local planning procedures					
Satisfaction with local planning procedures (reference cat.: Satisfied)					
Unsatisfied	0.157***	0.0317***	-0.0814***	-0.0663***	-0.0407***
	(0.0315)	(0.00649)	(0.0175)	(0.0120)	(0.00766)
Internal variables: national energy policy preferences					
Tradeoff env. vs. econ.	-0.0239**	-0.00816**	0.0120**	0.0122**	0.00787**
	(0.0108)	(0.00385)	(0.00556)	(0.00557)	(0.00363)
Tradeoff rel. vs. econ.	0.00208	0.000712	-0.00105	-0.00106	-0.000687
	(0.0133)	(0.00454)	(0.00669)	(0.00676)	(0.00438)
Tradeoff soc. vs. econ.	0.0223*	0.00762*	-0.0112*	-0.0113*	-0.00735*
	(0.0128)	(0.00447)	(0.00651)	(0.00655)	(0.00426)
Tradeoff rel. vs. env.	-0.0215*	-0.00736*	0.0108*	0.0109*	0.00709*
	(0.0121)	(0.00426)	(0.00619)	(0.00621)	(0.00404)
Tradeoff soc. vs. env.	0.0114	0.00390	-0.00574	-0.00580	-0.00376
	(0.0139)	(0.00479)	(0.00703)	(0.00709)	(0.00459)
Tradeoff soc. vs. rel.	-0.0153	-0.00524	0.00771	0.00779	0.00505
	(0.0129)	(0.00446)	(0.00653)	(0.00658)	(0.00426)
Internal variables: technology-specific perceptions and preferences					
Landscape	0.275	0.0942	-0.139	-0.140	-0.0908
	(0.197)	(0.0682)	(0.0998)	(0.101)	(0.0653)
Local environment	0.0594	0.0203	-0.0299	-0.0302	-0.0196
	(0.219)	(0.0747)	(0.110)	(0.111)	(0.0720)
Local employment	-0.181	-0.0618	0.0909	0.0919	0.0595
	(0.177)	(0.0609)	(0.0893)	(0.0902)	(0.0585)
Sound	0.192	0.0657	-0.0967	-0.0978	-0.0633
	(0.174)	(0.0600)	(0.0881)	(0.0888)	(0.0576)
Local economy	0.00514	0.00176	-0.00259	-0.00261	-0.00169
	(0.187)	(0.0639)	(0.0940)	(0.0951)	(0.0616)
Health	-0.156	-0.0534	0.0786	0.0794	0.0514
	(0.196)	(0.0672)	(0.0987)	(0.0997)	(0.0646)
Safety	0.209	0.0713	-0.105	-0.106	-0.0688
	(0.164)	(0.0570)	(0.0834)	(0.0840)	(0.0545)
Observations	940	940	940	940	940

Note: Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 10: WTA transmission-grid expansion under a community benefit scheme

External variables: socio-demographic characteristics	Unwilling	Somewhat unwilling	Neutral	Somewhat willing	Willing
Age (reference cat.: Younger than 25)					
25 - 44	0.0484**	0.0350**	0.0342***	-0.0554**	-0.0622**
	(0.0219)	(0.0151)	(0.0133)	(0.0248)	(0.0249)
45 - 59	0.105***	0.0675***	0.0501***	-0.115***	-0.108***
	(0.0299)	(0.0165)	(0.00922)	(0.0298)	(0.0221)
60 or older	0.107***	0.0690***	0.0522***	-0.117***	-0.111***
	(0.0375)	(0.0204)	(0.0106)	(0.0370)	(0.0284)
Highest level of education (reference cat.: Primary school)					
Leaving certificate	-0.0265	-0.0207	-0.0245	0.0297	0.0420
	(0.0195)	(0.0158)	(0.0200)	(0.0212)	(0.0340)
Post-secondary non-tertiary	-0.0129	-0.0100	-0.0115	0.0147	0.0197
	(0.0212)	(0.0167)	(0.0200)	(0.0238)	(0.0341)
Third level non-honours degree	-0.0345*	-0.0275*	-0.0343	0.0377*	0.0587
	(0.0193)	(0.0162)	(0.0225)	(0.0196)	(0.0384)
Third level honours or above	-0.0415**	-0.0333**	-0.0424*	0.0444**	0.0728*
	(0.0191)	(0.0162)	(0.0235)	(0.0184)	(0.0404)
Income (reference cat.: Less than 15,000)					
15,000 to 30,000	0.00315	0.00238	0.00259	-0.00362	-0.00449
	(0.0190)	(0.0144)	(0.0155)	(0.0219)	(0.0269)
30,000 to 50,000	0.0207	0.0153	0.0157	-0.0239	-0.0278
	(0.0217)	(0.0157)	(0.0151)	(0.0252)	(0.0272)
50,000 to 75,000	-0.00679	-0.00522	-0.00589	0.00777	0.0101
	(0.0223)	(0.0173)	(0.0202)	(0.0253)	(0.0345)
75,000 or more	0.0193	0.0421	-0.103**	-0.00743	0.0488
	(0.0425)	(0.0433)	(0.0412)	(0.0587)	(0.0543)
Employment (reference cat.: In employment)					
Unemployed, student, home duties, other	0.0127	0.00956	0.0102	-0.0147	-0.0178
	(0.0155)	(0.0115)	(0.0119)	(0.0179)	(0.0209)
Retired	-0.00361	-0.00275	-0.00305	0.00414	0.00527
	(0.0219)	(0.0168)	(0.0189)	(0.0251)	(0.0325)
Gender (reference cat.: Female)					
Male	0.00574	0.00436	0.00476	-0.00660	-0.00825
	(0.0124)	(0.00942)	(0.0103)	(0.0143)	(0.0178)
Broad region (reference cat.: Boarder, Midlands, West)					
Dublin and Mid-East	0.00522	0.00395	0.00428	-0.00601	-0.00743
	(0.0165)	(0.0124)	(0.0133)	(0.0190)	(0.0232)
Mid-West, South-East and South-West	0.0210	0.0156	0.0164	-0.0242	-0.0288
	(0.0170)	(0.0125)	(0.0126)	(0.0197)	(0.0223)
Tenure (reference cat.: Owner-occupied)					
rented accomodation	-0.0230	-0.0179	-0.0208	0.0259	0.0357
	(0.0143)	(0.0114)	(0.0141)	(0.0158)	(0.0239)
all other categories of tenure	0.0110	0.00810	0.00829	-0.0127	-0.0146
	(0.0301)	(0.0217)	(0.0207)	(0.0351)	(0.0374)
Length of residence (reference cat.: Less than 5 years)					
5 - 20 years	-0.000461	-0.000350	-0.000384	0.000531	0.000664
	(0.0179)	(0.0136)	(0.0149)	(0.0206)	(0.0259)
More than 20 years	-0.00600	-0.00456	-0.00500	0.00690	0.00866
	(0.0189)	(0.0144)	(0.0158)	(0.0217)	(0.0273)
Area of residence (reference cat.: Rural)					
Urban	-0.00908	-0.00694	-0.00774	0.0104	0.0134
	(0.0176)	(0.0136)	(0.0154)	(0.0201)	(0.0265)
Internal variables: satisfaction with local planning procedures					
Satisfaction with local planning procedures (reference cat.: Satisfied)					
Unsatisfied	0.122***	0.0788***	-0.0737**	-0.107***	-0.0202
	(0.0283)	(0.0269)	(0.0290)	(0.0361)	(0.0278)
Internal variables: national energy policy preferences					
Tradeoff env. vs. econ.	-0.0107*	-0.00811*	-0.00887*	0.0123*	0.0154*
	(0.00569)	(0.00436)	(0.00479)	(0.00661)	(0.00816)
Tradeoff rel. vs. econ.	0.00294	-0.00175	-0.0449***	0.0154	0.0284**
	(0.00941)	(0.00927)	(0.0122)	(0.0154)	(0.0122)
Tradeoff soc. vs. econ.	0.00417	0.00316	0.00346	-0.00480	-0.00599
	(0.00647)	(0.00492)	(0.00538)	(0.00745)	(0.00930)
Tradeoff rel. vs. env.	-0.00853	-0.00647	-0.00708	0.00982	0.0123
	(0.00618)	(0.00471)	(0.00518)	(0.00714)	(0.00888)
Tradeoff soc. vs. env.	0.0131*	0.00997*	0.0109*	-0.0151*	-0.0189*
	(0.00724)	(0.00554)	(0.00611)	(0.00842)	(0.0104)
Tradeoff soc. vs. rel.	-0.000694	-0.000527	-0.000576	0.000799	0.000998
	(0.00676)	(0.00513)	(0.00561)	(0.00779)	(0.00973)
Internal variables: technology-specific perceptions and preferences					
Landscape	0.160	0.122	0.133	-0.184	-0.230
	(0.103)	(0.0787)	(0.0865)	(0.119)	(0.148)
Local environment	-0.238**	-0.181**	-0.198**	0.274**	0.343**
	(0.116)	(0.0885)	(0.0979)	(0.135)	(0.166)
Local employment	0.101	0.240*	0.198	-0.989***	0.450***
	(0.130)	(0.133)	(0.181)	(0.226)	(0.174)
Sound	0.147*	0.112	0.122	-0.169	-0.211*
	(0.0892)	(0.0682)	(0.0749)	(0.103)	(0.128)
Local economy	0.0178	0.0135	0.0148	-0.0205	-0.0256
	(0.0983)	(0.0746)	(0.0816)	(0.113)	(0.141)
Health	-0.0536	-0.113	-0.942***	1.004***	0.105
	(0.142)	(0.138)	(0.193)	(0.219)	(0.189)
Safety	-0.105	-0.0795	-0.0869	0.121	0.151
	(0.0874)	(0.0665)	(0.0730)	(0.101)	(0.126)
Observations	957	957	957	957	957

Note: Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 11: WTA transmission-grid expansion under equity involvement

External variables: socio-demographic characteristics	Unwilling	Somewhat unwilling	Neutral	Somewhat willing	Willing
Age (reference cat.: Younger than 25)					
25 - 44	0.0780	0.0449	-0.161***	0.00976	0.0282
	(0.0484)	(0.0577)	(0.0547)	(0.0461)	(0.0396)
45 - 59	0.169***	0.0278	-0.186***	-0.0518	0.0413
	(0.0645)	(0.0669)	(0.0579)	(0.0457)	(0.0433)
60 or older	0.216***	0.0294	-0.237***	-0.0284	0.0204
	(0.0737)	(0.0693)	(0.0568)	(0.0482)	(0.0440)
Highest level of education (reference cat.: Primary school)					
Leaving certificate	-0.0240	-0.0371	0.00423	0.0286	0.0283
	(0.0197)	(0.0319)	(0.00283)	(0.0244)	(0.0255)
Post-secondary non-tertiary	-0.00168	-0.00247	0.000424	0.00192	0.00181
	(0.0223)	(0.0330)	(0.00550)	(0.0256)	(0.0242)
Third level non-honours degree	-0.0332*	-0.0534	0.00341	0.0409	0.0423
	(0.0194)	(0.0337)	(0.00362)	(0.0255)	(0.0291)
Third level honours or above	-0.0407**	-0.0665*	0.00264	0.0508**	0.0538*
	(0.0190)	(0.0339)	(0.00517)	(0.0255)	(0.0307)
Income (reference cat.: Less than 15,000)					
15,000 to 30,000	-0.0347**	-0.0533*	0.00615*	0.0411*	0.0408*
	(0.0175)	(0.0279)	(0.00357)	(0.0214)	(0.0225)
30,000 to 50,000	-0.0203	-0.0311	0.00393	0.0240	0.0235
	(0.0186)	(0.0297)	(0.00294)	(0.0229)	(0.0233)
50,000 to 75,000	-0.0252	-0.0401	0.00313	0.0308	0.0313
	(0.0196)	(0.0338)	(0.00255)	(0.0257)	(0.0284)
75,000 or more	-0.00502	-0.00751	0.00116	0.00582	0.00555
	(0.0250)	(0.0381)	(0.00511)	(0.0294)	(0.0285)
Employment (reference cat.: In employment)					
Unemployed, student, home duties, other	0.0110	0.0159	-0.00309	-0.0124	-0.0115
	(0.0152)	(0.0215)	(0.00468)	(0.0168)	(0.0154)
Retired	-0.0157	-0.0241	0.00309	0.0186	0.0181
	(0.0203)	(0.0323)	(0.00296)	(0.0248)	(0.0252)
Gender (reference cat.: Female)					
Male	-0.0130	0.0479	-0.0585*	0.0492*	-0.0256
	(0.0193)	(0.0295)	(0.0312)	(0.0257)	(0.0207)
Broad region (reference cat.: Boarder, Midlands, West)					
Dublin and Mid-East	-0.0176	-0.0262	0.00403	0.0203	0.0194
	(0.0158)	(0.0240)	(0.00352)	(0.0186)	(0.0181)
Mid-West, South-East and South-West	0.0220	0.0212	-0.0578*	-0.0383	0.0529**
	(0.0225)	(0.0333)	(0.0330)	(0.0284)	(0.0268)
Tenure (reference cat.: Owner-occupied)					
rented accomodation	-0.0191	0.0211	-0.0122	0.0716**	-0.0614***
	(0.0229)	(0.0364)	(0.0352)	(0.0323)	(0.0223)
all other categories of tenure	0.00860	0.0121	-0.00263	-0.00946	-0.00865
	(0.0307)	(0.0417)	(0.0107)	(0.0326)	(0.0290)
Length of residence (reference cat.: Less than 5 years)					
5 - 20 years	0.0124	0.0178	-0.00346	-0.0139	-0.0129
	(0.0184)	(0.0260)	(0.00561)	(0.0203)	(0.0186)
More than 20 years	-0.0192	-0.0284	0.00476	0.0220	0.0208
	(0.0186)	(0.0276)	(0.00470)	(0.0214)	(0.0204)
Area of residence (reference cat.: Rural)					
Urban	0.00924	0.0133	-0.00256	-0.0104	-0.00965
	(0.0182)	(0.0258)	(0.00540)	(0.0201)	(0.0185)
Internal variables: satisfaction with local planning procedures					
Satisfaction with local planning procedures (reference cat.: Satisfied)					
Unsatisfied	0.0823***	-0.102***	0.0157	-0.0341	0.0378
	(0.0268)	(0.0314)	(0.0335)	(0.0285)	(0.0258)
Internal variables: national energy policy preferences					
Tradeoff env. vs. econ.	-0.0147*	-0.0246*	0.0198	0.0269***	-0.00740
	(0.00810)	(0.0128)	(0.0128)	(0.0101)	(0.00834)
Tradeoff rel. vs. econ.	-0.000989	-0.00145	0.000256	0.00113	0.00106
	(0.00675)	(0.00990)	(0.00175)	(0.00768)	(0.00722)
Tradeoff soc. vs. econ.	0.00711	0.0104	-0.00184	-0.00810	-0.00761
	(0.00645)	(0.00945)	(0.00180)	(0.00734)	(0.00688)
Tradeoff rel. vs. env.	-0.00322	-0.00472	0.000833	0.00366	0.00344
	(0.00609)	(0.00894)	(0.00160)	(0.00694)	(0.00652)
Tradeoff soc. vs. env.	-0.0105	-0.0154	0.00272	0.0120	0.0113
	(0.00703)	(0.0103)	(0.00204)	(0.00801)	(0.00750)
Tradeoff soc. vs. rel.	0.00732	0.0107	-0.00189	-0.00833	-0.00783
	(0.00651)	(0.00955)	(0.00180)	(0.00742)	(0.00696)
Internal variables: technology-specific perceptions and preferences					
Landscape	0.0909	0.133	-0.0235	-0.103	-0.0972
	(0.0979)	(0.144)	(0.0266)	(0.111)	(0.105)
Local environment	-0.254**	-0.373**	0.0658*	0.289**	0.272**
	(0.113)	(0.166)	(0.0369)	(0.129)	(0.121)
Local employment	0.107	0.297	-0.915***	0.433***	0.0790
	(0.133)	(0.203)	(0.196)	(0.167)	(0.134)
Sound	0.177**	0.260**	-0.0458*	-0.202**	-0.190**
	(0.0879)	(0.129)	(0.0278)	(0.100)	(0.0937)
Local economy	-0.0895	-0.131	0.0231	0.102	0.0957
	(0.0958)	(0.141)	(0.0261)	(0.109)	(0.102)
Health	-0.0677	-0.553***	0.571***	0.358**	-0.308**
	(0.140)	(0.211)	(0.192)	(0.158)	(0.138)
Safety	-0.0301	-0.0441	0.00778	0.0342	0.0322
	(0.0847)	(0.124)	(0.0221)	(0.0964)	(0.0906)
Observations	950	950	950	950	950

Note: Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 12: Increased acceptance of wind-farm development under various compensation schemes

External variables: socio-demographic characteristics	Community Benefit	Equity Involvement	Cooperative	Joint Venture
Age (reference cat.: Younger than 25)				
25 - 44	-0.0614	-0.0605	-0.0207	0.0394
	(0.0551)	(0.0546)	(0.0556)	(0.0569)
45 - 59	0.0645	0.0379	0.105*	0.138**
	(0.0589)	(0.0593)	(0.0603)	(0.0608)
60 or older	0.115	0.00605	0.0963	0.155**
	(0.0744)	(0.0748)	(0.0762)	(0.0761)
Highest level of education (reference cat.: Primary school)				
Leaving certificate	0.0795	0.0868	0.0522	0.0986
	(0.0644)	(0.0659)	(0.0651)	(0.0665)
Post-secondary non-tertiary	0.0778	0.0474	0.0409	0.0464
	(0.0663)	(0.0681)	(0.0671)	(0.0684)
Third level non-honours degree	0.122*	0.100	0.0301	0.0702
	(0.0666)	(0.0694)	(0.0685)	(0.0705)
Third level honours or above	0.178***	0.149**	0.165**	0.173**
	(0.0661)	(0.0702)	(0.0698)	(0.0713)
Income (reference cat.: Less than 15,000)				
15,000 to 30,000	0.0174	-0.0383	-0.0233	-0.0285
	(0.0559)	(0.0550)	(0.0556)	(0.0551)
30,000 to 50,000	-0.0316	-0.0207	0.0215	0.0130
	(0.0595)	(0.0584)	(0.0596)	(0.0592)
50,000 to 75,000	0.0490	0.0686	0.0688	0.0604
	(0.0668)	(0.0670)	(0.0679)	(0.0675)
75,000 or more	-0.0792	-0.0258	-0.0105	-0.0362
	(0.0754)	(0.0754)	(0.0758)	(0.0738)
Employment (reference cat.: In employment)				
Unemployed, student, home duties, other	0.0248	0.0374	0.122***	0.107**
	(0.0432)	(0.0433)	(0.0436)	(0.0437)
Retired	-0.0625	0.0501	0.0353	0.00278
	(0.0643)	(0.0645)	(0.0638)	(0.0627)
Gender (reference cat.: Female)				
Male	0.00621	0.0451	0.0488	0.0350
	(0.0363)	(0.0358)	(0.0360)	(0.0358)
Tenure (reference cat.: Owner-occupied)				
rented accomodation	-0.0598	-0.0737*	-0.0866*	-0.0248
	(0.0452)	(0.0443)	(0.0443)	(0.0450)
all other categories of tenure	-0.103	-0.0677	-0.0831	-0.124
	(0.0831)	(0.0822)	(0.0801)	(0.0779)
Length of residence (reference cat.: Less than 5 years)				
5 - 20 years	0.0209	-0.0180	-0.0452	0.0580
	(0.0530)	(0.0527)	(0.0526)	(0.0540)
More than 20 years	0.00884	-0.0358	-0.0588	0.0407
	(0.0557)	(0.0551)	(0.0555)	(0.0560)
Area of residence (reference cat.: Rural)				
Urban	-0.0391	-0.0224	-0.0226	-0.0362
	(0.0501)	(0.0495)	(0.0495)	(0.0489)
Internal variables: satisfaction with local planning procedures				
Satisfaction with local planning procedures (reference cat.: Satisfied)				
Unsatisfied	-0.0474	0.0383	0.0478	0.0498
	(0.0414)	(0.0413)	(0.0416)	(0.0417)
Internal variables: national energy policy preferences				
Tradeoff env. vs. econ.	0.0312*	0.0315**	0.0546***	0.0345**
	(0.0161)	(0.0160)	(0.0162)	(0.0160)
Tradeoff rel. vs. econ.	-0.00875	0.00564	-0.00571	-0.00472
	(0.0196)	(0.0196)	(0.0197)	(0.0194)
Tradeoff soc. vs. econ.	-0.00830	-0.0165	-0.0225	0.00222
	(0.0193)	(0.0191)	(0.0193)	(0.0193)
Tradeoff rel. vs. env.	0.0187	0.00960	0.0134	0.0305*
	(0.0178)	(0.0178)	(0.0178)	(0.0175)
Tradeoff soc. vs. env.	-0.0387*	-0.0267	-0.0317	-0.0505**
	(0.0211)	(0.0210)	(0.0212)	(0.0208)
Tradeoff soc. vs. rel.	0.0229	0.0166	0.0282	0.0234
	(0.0196)	(0.0194)	(0.0196)	(0.0192)
Internal variables: technology-specific perceptions and preferences				
Landscape	-0.138	0.154	0.0759	0.185
	(0.293)	(0.287)	(0.289)	(0.291)
Local environment	0.232	0.218	-0.236	-0.452
	(0.330)	(0.324)	(0.327)	(0.327)
Local employment	-0.00876	0.225	0.190	0.345
	(0.271)	(0.267)	(0.270)	(0.271)
Sound	-0.516**	-0.346	-0.336	-0.328
	(0.256)	(0.253)	(0.254)	(0.253)
Local economy	-0.264	-0.392	-0.247	-0.368
	(0.284)	(0.283)	(0.284)	(0.284)
Health	0.721**	0.190	0.291	0.492*
	(0.286)	(0.284)	(0.284)	(0.283)
Observations	951	933	930	926

Note: Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 13: Increased acceptance of transmission-grid expansion under various compensation schemes

External variables: socio-demographic characteristics	Community Benefit	Equity Involvement
Age (reference cat.: Younger than 25)		
25 - 44	-0.0692	-0.0604
	(0.0559)	(0.0577)
45 - 59	-0.0215	0.0113
	(0.0600)	(0.0614)
60 or older	-0.0453	-0.119
	(0.0764)	(0.0796)
Highest level of education (reference cat.: Primary school)		
Leaving certificate	0.0766	0.116*
	(0.0659)	(0.0624)
Post-secondary non-tertiary	0.0521	0.0488
	(0.0681)	(0.0656)
Third level non-honours degree	0.105	0.130**
	(0.0694)	(0.0646)
Third level honours or above	0.154**	0.179***
	(0.0703)	(0.0638)
Income (reference cat.: Less than 15,000)		
15,000 to 30,000	-0.00440	0.113**
	(0.0563)	(0.0558)
30,000 to 50,000	-0.0464	0.0692
	(0.0592)	(0.0597)
50,000 to 75,000	-0.0125	0.0992
	(0.0677)	(0.0663)
75,000 or more	-0.0416	0.0364
	(0.0758)	(0.0777)
Employment (reference cat.: In employment)		
Unemployed, student, home duties, other	-0.0229	0.0326
	(0.0434)	(0.0440)
Retired	0.0740	0.146**
	(0.0676)	(0.0660)
Gender (reference cat.: Female)		
Male	-0.0520	0.000746
	(0.0366)	(0.0371)
Tenure (reference cat.: Owner-occupied)		
rented accomodation	-0.0554	-0.0814*
	(0.0454)	(0.0461)
all other categories of tenure	-0.0774	-0.0896
	(0.0846)	(0.0882)
Length of residence (reference cat.: Less than 5 years)		
5 - 20 years	0.0447	-0.0219
	(0.0544)	(0.0541)
More than 20 years	0.0205	0.0392
	(0.0570)	(0.0569)
Area of residence (reference cat.: Rural)		
Urban	0.0169	0.0225
	(0.0508)	(0.0511)
Internal variables: satisfaction with local planning procedures		
Satisfaction with local planning procedures (reference cat.: Satisfied)		
Unsatisfied	-0.0162	0.0712*
	(0.0399)	(0.0401)
Internal variables: national energy policy preferences		
Tradeoff env. vs. econ.	0.00818	0.0184
	(0.0162)	(0.0168)
Tradeoff rel. vs. econ.	0.0203	0.0120
	(0.0203)	(0.0207)
Tradeoff soc. vs. econ.	-0.00658	-0.0208
	(0.0190)	(0.0195)
Tradeoff rel. vs. env.	-0.0106	-0.0243
	(0.0181)	(0.0187)
Tradeoff soc. vs. env.	-0.00878	0.0395*
	(0.0212)	(0.0216)
Tradeoff soc. vs. rel.	-0.00619	-0.0307
	(0.0194)	(0.0198)
Internal variables: technology-specific perceptions and preferences		
Landscape	-0.246	-0.258
	(0.296)	(0.303)
Local environment	0.530	0.903***
	(0.336)	(0.342)
Local employment	-0.495*	-0.226
	(0.276)	(0.274)
Sound	-0.425	-0.594**
	(0.262)	(0.266)
Local economy	-0.197	-0.0621
	(0.291)	(0.291)
Health	0.666**	0.429
	(0.311)	(0.310)
Safety	0.652**	0.186
	(0.256)	(0.262)
Observations	932	925

Note: Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

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