Consumers and citizens: Identity salience in choice settings focusing on local wind turbines

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Abstract

We explore and illustrate the potential consequences of identity salience on stated choice valuation outcomes. The dual role of individuals as citizens and as consumers is brought to the foreground when considering investments in wind energy. To this end, we use two different settings in a stated choice experiment to elicit household preferences: one based on the decision to buy a home with particular characteristics in the neighbourhood of a wind farm and one based on the decision to support a policy to locate a wind farm in the respondent's municipality. By including a shared set of attributes to describe the wind farm in both settings, we are able to analyse the impact of identity salience on stated preferences. In the home setting, identity salience has no significant effect. In the policy setting, the consumer framing mitigates (when positive) or reinforces (when negative) the identity effect of the setting for the preferences regarding the number of wind turbines, the visibility of the wind turbines and the noise levels associated with the wind park. This finding suggests that it may be easier to shift a respondent's focus from public to private than vice versa. Our results illustrate that valuation exercises triggering a different role at the individual level will likely result in different valuation outcomes. By doing so, we issue a warning to researchers and policy makers to reflect about the objectives and set-up of valuation studies when using them for policy evaluation purposes. If the context of such a study is not adequately taken into account, potentially misleading messages and policy conclusions can emerge.

Key words: Role salience; Information; Discrete choice experiment; Stated preference; Non-market valuation; Wind energy

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1. INTRODUCTION

In 2013, the European Commission published a report to assess the progress of EU countries in the use of renewable energy along the trajectory towards the 2020 targets. While most countries experienced significant growth in the use of renewable energy, a failure to comply with national plans was revealed in the wind sector (European Commission, 2013). Several reasons have been put forward to explain why investments in wind projects in some countries are lower than expected. These reasons include, among other things, technical and infrastructure problems, excessive administrative requirements, and the opposition of local communities (e.g. Ek, 2006; Ladenburg & Dubgaard, 2007; Dimitripoulos & Kontoleon, 2009; Swofford & Slattery, 2010; Drechsler et al., 2011; Ek & Persson, 2014; Mariel et al., 2015, Liebe et al., 2017).

In this study, we focus on the perceived public perception concerning investments in wind energy and the close proximity of wind turbines to private property. More specifically, we bring the dual role of individuals to the foreground. In our society, a tension exists between two roles that individuals typically occupy: the role of consumer and that of citizen (Sagoff, 1988, Lang & Gabriel, 1995; Prothero et al., 2011; Champniss et al., 2015). Consumers – as a classical economic concept – are assumed to be driven by self-interest and are thus not required to take social responsibilities or duties into account. Citizens, on the other hand, are assumed to be motivated by altruistic interests and to have a sense of constraint, moderation and interest in the community (McGregor, 1999). We conjecture that a similar tension could also exist when individuals assess the construction of wind turbines in their neighbourhood: a homeowner (or tenant) may see the value of one's home reduced (Dröes & Koster, 2016; Gibbons, 2015), while a citizen may see the benefits of reducing carbon emissions and fighting climate change. A similar tension between private and public perspectives may explain the finding of Garcia et al. (2016) that offering private compensation leads to higher willingness to accept estimates for a wind park in the community than offering public compensation.

The assumption of individuals occupying different roles is consistent with multiple-process theories in behavioural economics according to which people use multiple decision-making programs when making choices (e.g., Camerer & Fehr, 2006; Sanfey et al., 2006; Arlen & Talley, 2008). According to these multiple-process theories, individuals' decisions typically result from the simultaneous use of distinct cognitive programs, some of which affect conscious thought processes while others are intuitive, non-conscious processes. Consequently, specific cognitive processes may become dominant in different context-specific situations, and cross-context comparisons can lead to seemingly inconsistent behaviour. Different actions can be viewed as optimal within a specific context, depending on an individual's role, social identity or activated thought process (Arlen & Talley, 2008). In this paper, we investigate the relevance of role salience – consumer versus citizen – in estimating individuals' preferences regarding small scale wind projects and we want to draw attention towards the potential impact of context on the results of these non-market valuations.

It is interesting to study the relative importance of these roles as well as their complementarity for at least two reasons. First, by activating different roles, one may try to steer actual, private decisions towards what is socially preferable. As stated by Thogersen

(2005), empowering individuals as consumers or as citizens can be a core element in bridging the well-known gap between stated pro-environmental attitudes and observed unsustainable behaviours. Such individual consumer-citizens would then balance their (public) duties towards their community and environment with their (private) duties towards their families and themselves (Prothero et al., 2011). However, increasingly governments, media and even environmental NGO's address individuals as consumers rather than as citizens (Crompton, 2008). By framing pro-environmental behaviours as a private optimization problem rather than a civic duty, feelings of personal obligation and good citizenship may actually decrease and crowding-out may occur (Frey & Oberholzer-Gee, 1997). Therefore, some authors claim that the citizen rather than the consumer should be activated to deal with the challenges of developing a sustainable society (Prothero et al., 2011). Through a range of information activities aimed at increasing environmental awareness and knowledge, the citizen role may be activated to a larger extent. These activities can include environmental education at school, educational programming on television and social media campaigns (Prothero et al., 2011). Moreover, studies have shown that subtle shifts in social context can dramatically change an individual's social identity and thus her behaviour in the marketplace (Marin et al., 2009; Champniss et al., 2015).

Second – and most importantly from the perspective of this paper – increasingly pro-environmental policies are being backed-up by valuation studies, for example to assess market potentials, to set targets, or to provide input for cost-benefit analyses (Pearce et al., 2006). The UK Biodiversity 2020 policy paper, for instance, relied heavily on the results from the UK national ecosystem assessment (DEFRA, 2011). Many of these valuation studies make use of stated preference approaches, such as choice experiments or contingent valuation. Typically, in these studies a market context is being simulated and depending on the social identity that is being activated with the participants, the decisions or outcomes will likely be different. Policy conclusions, policy assessments and policy advices will thus also be affected.

This paper relates to this second reason and investigates whether and how information manipulation through priming and framing makes environmental and public considerations more salient than private considerations in a stated preference context, more specifically in a choice experiment. To the extent that this is indeed the case, valuation exercises and policy assessments are likely to be impacted. This study focuses on individuals' preferences for local, small scale wind farms (henceforth referred to as wind farms) in Flanders (Belgium), although our research question is also relevant and could also be looked at for other (non)market goods and services.

Stated choice experiments have already been used to assess individuals' preferences towards wind turbines, both onshore (e.g., Alvarez-Farizo & Hanley, 2002; Meyerhoff et al., 2010; Strazzera et al., 2012; Mariel et al., 2015) and offshore (e.g., Ladenburg & Dubgaard, 2007; Krueger et al., 2011). In these studies, the choice setting was typically framed as a policy scenario. This type of setting may have activated the citizen role in individuals, which may have led to a relatively higher weight of the public good characteristics of wind farms. On the other hand, past valuation studies (e.g., Hoen et al., 2011; Heintzelman & Tuttle, 2012; Jensen et al., 2014) have also used the hedonic pricing method to study individuals' preferences towards wind turbines based on differences in property prices. When buying

or selling property, individuals typically occupy the role of consumer and this may have led to a relatively higher weight of the private good characteristics of wind farms.

A simple comparison of the estimates from stated valuation methods, such as choice experiments, with those from revealed methods, such as hedonics, does not allow us to draw conclusions about the role of identity salience on valuation outcomes. Such a comparison is not straightforward due to a variety of differences between the two approaches. Therefore, we study the impact of identity salience while keeping the valuation method fixed. Specifically, we use two different settings in a stated choice experiment: one based on the decision to buy a home with particular characteristics in the neighbourhood of a wind farm, and one based on the decision to support a policy to locate a wind farm in the respondent's municipality. By including three identical attributes to describe the wind farm in both settings, we are able to analyse the impact of the selected scenario on the willingness to accept estimates. We find that the different settings trigger a different mind-set for the respondents, possibly by the different social identity that is activated. The home setting triggers a response dominated by private considerations, while the policy setting triggers a more public-spirited response.

Finally, the objective of this paper is not to produce valuation estimates that can readily be used for policy evaluation purposes, but to explore and illustrate the potential consequences of identity salience on stated choice valuation outcomes. By doing so, we want to issue a warning to researchers and policy makers and stimulate them to reflect about the objectives and set-up of valuation studies when using them for policy evaluation purposes. If the context of such a study is not adequately taken into account, potentially misleading messages and policy conclusions can emerge.

2. METHOD AND SURVEY DESIGN

As a stated preference technique, a discrete choice experiment (DCE) is especially suited to deal with multidimensional choices such as the location of wind farms. It allows researchers to uncover how individuals value selected attributes of a policy option by asking them to state their choice over different hypothetical alternatives (Hanley et al., 2001).

We estimate a mixed logit model (MXL) since this allows for heterogeneity in respondents' preferences (Hensher & Greene, 2003; Czajkowski et al., 2017). A respondent *n*'s utility U from choosing alternative *i* in the *j*-th choice task is then given by:

$$\begin{aligned} U_{ijn} &= V_{ijn} + \varepsilon_{ijn} \\ &= \beta^{ASC_i} ASC_i + \beta_n{}' X_{ijn} + \varepsilon_{ijn} \end{aligned} \tag{1}$$

With V_{ijn} representing indirect utility, ε_{ijn} the error term which is assumed to be i.i.d. with a Gumbel distribution, β_n representing the individual set of parameters to be estimated, X_{ijn} a matrix of attribute levels and where ASC_i – the alternative specific constant – captures the effect of unobserved factors for each of the alternatives. The β coefficients are random parameters and are assumed to come from some known distribution, such as the normal or lognormal distribution, which depends on some unknown parameters θ to be estimated (usually means and the covariance matrix). Specifically, we estimate a MXL model in WTP-space (Train & Sonnier, 2005; Scarpa et al., 2008). Explicitly distinguishing the non-cost

attributes ($X_{ijn}^{non-cost}$) from the cost attribute (X_{ijn}^{cost}), we can characterize this model as follows:

$$U_{ijn} = -\beta_n^{cost}\left[\alpha_n' X_{ijn}^{non-cost} - X_{ijn}^{cost}\right] + \varepsilon_{ijn} \tag{2}$$

In which α_n is a vector of WTPs for each non-monetary attribute and is defined as

$$\alpha_n \equiv \frac{-\beta_n^{non-cost}}{\beta_n^{cost}} \tag{3}$$

Rather than assuming some distribution for the β_n vector, we now need to assume the distribution of the vector (α_n, β_n^{cost}) and estimate the associated parameters. The likelihood of a respondent's choices is thus dependent on unobserved random parameters. However, it is still possible to derive their conditional expected values using Bayes' theorem (Czajkowski et al., 2017).

2.1. Survey design

To test the impact of the choice settings on the social identity that is salient for the respondents, we use a 2x3 design (see Table 1 and Table 3). Firstly, we used two different settings to elicit household preferences: one based on *the decision to buy a home with particular characteristics in the neighbourhood of a wind farm* (the *home setting*) and one based on *the decision to support a policy to locate a wind farm in the respondent's municipality* (the *policy setting*). Secondly, we used three different descriptive framings within each setting: a *neutral* (control) *framing*, a *citizen framing* in which we phrase the text to stimulate the citizen role in respondents, and a *consumer framing* in which we phrase the text to stimulate the consumer role (see Table 1). Combining two settings with three framings led to six treatments to which the respondents were randomly assigned. The length of the framing texts is kept as tight as possible and essentially differs in one or two (parts of) sentences. The framing texts are shown as part of the short introduction at the start of the choice experiment and repeated above each of the eight choice cards shown to respondents.

In this between-subject design, we expect to activate the consumer (homeowner) role in respondents by the first – home – setting and the citizen role by the second – policy – setting. In the *home setting*, buying a house is considered a typical consumer-oriented activity. Moreover, respondents may anticipate that they will not contribute to the public good (tackling climate change) as the wind farm has already been built. In the *policy setting*, exactly this last facet is activated, as the respondent may feel to be actively contributing to the public good, as the wind farm still has to be built.

In addition, we investigate whether the text description can counteract or reinforce the role activated by the overall setting. This manner of information manipulation has flavours of both priming and framing. As Scheufele (2000) stated, priming is related to the salience of issues, while framing is related to the salience of issue attributes. Thus, when we study the impact of the six treatments on the outcomes of the choice experiments, this relates to a framing effect since we manipulate the way in which a choice situation is presented. Yet, when we study the impact of the two settings on the respondents' attitudes towards wind

energy, this relates to a priming effect since we manipulate the respondents' point of reference through the setting and the descriptive texts.

Table 1: Text framing the choice setting (bold text indicates the differences).

Home setting		
Control framing	***Consumer framing***	***Citizen framing***
On the following nine screens, we ask you to indicate your preferred home in a list of three homes. Two homes differ in a number of respects from what you consider an ideal home, the third home meets what you consider an ideal home.	On the following nine screens, we ask you to **choose from three homes.** Two homes differ **from your ideal home** in a number of respects; **the third home is your ideal home**. **When making this choice, you must assume that you are really confronted with this choice.**	On the following nine screens, we ask you to indicate your preferred home in a list of three homes. Two homes differ in a number of respects from what you consider an ideal home **in the sense that a wind farm was built nearby by the government within the framework of the realization of a viable and sustainable society**. The third home meets what you consider an ideal home.
No wind farm is visible or audible from the home with your ideal characteristics.	No wind farm is visible or audible from **your ideal home**.	No wind farm is visible or audible from the home with your ideal characteristics.
Policy setting		
Control framing	***Consumer framing***	***Citizen framing***
Your municipality is considering to build a wind farm, in compliance with the applicable regulations.	**The municipality where you live** is considering to build a wind farm in compliance with the applicable regulations, **which means, among other things, that a wind farm must be built at least 500 meters from your home.**	Your municipality is **very concerned about the environment and is** considering to build a wind farm **because it can make an active contribution to a viable and sustainable society. This will be done** in compliance with the applicable regulations.

Each of the two settings ('home' and 'policy') is described in terms of their relevant characteristics, i.e. their attributes (Table 2). Based on previous literature (Dimitripoulos & Kontoleon, 2009; Meyerhoff et al., 2010), the wind farm is presented by three attributes: the number of turbines, the visibility of the turbines, and the perceptibility of the noise levels caused by the wind farm. These three wind farm attributes and their levels are the same in both settings. However, other attributes are specific to the setting. In the home setting three attributes are added, inspired by the hedonics pricing literature (see for example Dekkers et al., 2009; Heintzelman et al., 2012; Jensen et al., 2014; Walls et al., 2017): the condition of the home, the presence of a garage, and the number of bedrooms. In the policy setting two other attributes are included: the location of the wind farm and the degree of public participation in the decision process. Finally, each of the settings includes a cost attribute: for the home setting we opted for a reduction in the purchase price (in euro) compared to

the budget a respondent was willing to spend for his/her ideal home[1], and for the policy setting we present a possible reduction in the annual municipal tax payment to the respondent.

Table 2: Attributes and attribute levels.

DCE in the home setting		***DCE in the policy setting***	
Attribute	**Attribute levels**	**Attribute**	**Attribute levels**
Number of turbines	- 1 turbine - 3 turbines - 5 turbines	Number of turbines	- 1 turbine - 3 turbines - 5 turbines
Visibility of turbines	- Turbines are not visible for respondent (far away or small) - Turbines are visible - Turbines are very visible (nearby or high)	Visibility of turbines	- Turbines are not visible for respondent (far away or small) - Turbines are visible - Turbines are very visible (nearby or high)
Perceptibility of noise levels of wind turbines	- 30-40 dB (e.g. library) - 40-50 dB (e.g. quiet residential area) - 50-60 dB (e.g. sporadic car traffic at 30m distance)	Perceptibility of noise levels of wind turbines	- 30-40 dB (e.g. library) - 40-50 dB (e.g. quiet residential area) - 50-60 dB (e.g. sporadic car traffic at 30m distance)
		Location of wind farm	- Industrial area - Agricultural area - Nature area
		Degree of public participation	- No public participation - Public participation in a passive way at the end of the policy procedure - Public participation in an active way from the start of the policy procedure
Condition of the home	- Perfect condition - Minor renovations needed - Major renovations needed		
Garage	- No garage - Garage for one car - Garage for two cars		
Number of bedrooms	- Three bedrooms - Four bedrooms - Five bedrooms		
Price decrease compared to the respondent's maximum budget	- 0 euro - 10000 euro - 20000 euro - 30000 euro - 40000 euro - 50000 euro	Decrease in annual municipal tax payment	- 0 euro per year - 25 euro per year - 50 euro per year - 75 euro per year - 150 euro per year - 250 euro per year

For both settings, we conducted a pre-test to identify problematic questions and to check the relevance of the selected attribute levels. The pre-test took place in two phases. A first version of our questionnaire was used by six students as part of their master's thesis

[1] In 2017, median Flemish house prices for a semi-detached and detached home were €219.000 and €306000, respectively (https://www.statistiekvlaanderen.be/nl/woningprijs). Based on these data, we conjecture the median unconditional house price to be close to €250.000. The range of discounts was then chosen sufficiently wide (with a maximum discount of 20% on the median Flemish house price) in order for the respondent to consider deviating from the ideal home, while not being too narrow to avoid giving the impression of irrelevance (Kløjgaard et al, 2012).

research. Each student performed a pre-test with 5 to 10 respondents as part of his or her own master's thesis. Based on the collectively collected feedback, the questionnaire was adjusted before the students started with their own data collection (phase 1). After analysis of the data collected by the students, the questionnaire was further adjusted and pre-tested by the authors in function of the specific research question discussed in this paper (phase 2).

With six (policy) or seven (home) attributes and at least three levels per attribute, using a full factorial design is not possible. Yet, as main effects already explain between 70% and 90% of respondent behaviour (Louviere, 1988), we limit the number of alternatives included in our questionnaires to an orthogonal main effects plan[2]. This allows the uncorrelated estimation of all main effects under the assumption that all interactions between attributes are negligible (Street et al., 2005)[3]. Using SPSS, we selected 18 different alternatives for each of the two settings. These 18 alternatives were randomly paired to construct nine choice sets consisting of two alternatives and an opt-out option. Note that the opt-out is different in both settings. For the home setting, the respondents first describe their ideal home in terms of type of residence (apartment, house, villa), presence of a garage, number of bedrooms, state of the residence and their available budget. Their ideal home is then used as the opt-out option in a pivotal design. Respondents were told that attributes that were not explicitly mentioned in the choice experiment could be assumed to have the same, most preferred level for all the alternatives shown in the experiment. For the municipal policy setting, the status-quo (the current situation) was the opt-out option.

The questionnaire has three parts. The first part deals with socio-demographic questions such as nationality, age, gender, and current employment status. The second part shows the DCE which consists of a series of choice sets, each containing two alternatives and the status quo. The third part involves questions relating to the respondents' attitudes towards renewable energy and the environment.

3. DESCRIPTION OF THE DATASET

The survey was available online from June 11th until July 25th 2018. We randomly selected 60 municipalities out of 308 municipalities in Flanders. For each of these municipalities we posted a call and several reminders on a general, municipality oriented Facebook page, requesting respondents older than 25 to participate in the survey. The call, briefly and in general terms, described the purpose of the research: i.e. we wanted to perform a survey regarding wind energy. Respondents were rewarded for their participation if they finished the survey: 35 randomly selected respondents received five lottery tickets. While the sampling procedure was based on self-selection and the sample was not representative for the complete Flemish population, respondents were randomly assigned to a treatment.

An advantage of this sampling approach is that it enables researchers to collect a relatively high amount of data at low cost in a short period (Sagebiel et al., 2014; Gundlach et al., 2018).

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[2] Dominant alternatives were ruled out.

[3] Including two-way interactions would allow for an additional 5-15% explanation. In this study, attributes can clearly be interdependent. Take for example noise and visibility: both are related to distance. However, we decided to only consider main effects in our study as we expect the impact of identity salience, if present, to already show up in the main effects of our model.

The likely bias towards highly educated, environmentally aware people increases the likelihood that respondents are able to understand the DCE and that the attributes are more relevant than it would be with the overall population. However, as the treatments are randomly assigned, respondents who were assigned the home setting are not necessarily actively looking for a home to buy. This could create or reinforce the hypothetical bias, as the choice context is not relevant for their situation. We therefore limit our sample to respondents older than 25, as we consider it unlikely that younger people are actively looking to buy a home. Furthermore, since we randomly assign respondents to a setting (House setting, Policy setting) and a framing (Control, Citizen, Consumer), we can assume that respondents subject to hypothetical bias will be distributed uniformly over all framings. As we mainly compare respondents within a setting (Citizen framing versus Consumer framing), any differences in estimated preferences can then still be attributed to identity salience. Finally, our questionnaire allows us to partly capture this type of effect as we have information on a respondent's plans to buy a home within the next year. Using this information to estimate (homogenous) preferences for both groups separately results in very similar preference structures, suggesting that the hypothetical bias – if present – is not very different in both cases.

Taking all these elements into consideration, our sampling approach allows us to test whether and how identity salience can affect choices in a DCE context, and possibly the outcome of policy evaluations based on such results. Yet, given the non-random character of the sample, estimation results cannot be extrapolated to the Flemish population. We received 730 fully completed responses for the survey, of which 349 were assigned to the home setting and 381 to the policy setting (Table 3). Furthermore, each treatment group consists of at least 100 randomly assigned respondents.

Table 3: Number of respondents per treatment group.

	Policy setting	**Home setting**	**Total**
Control framing	131	125	**256**
Citizen framing	128	119	**247**
Consumer framing	122	105	**227**
Total	**381**	**349**	**730**

Table 4: Description of datasets (in percentage, %)

	Policy setting			*Home setting*			*Total*	Flanders 2018[4]
	Control framing	Consumer framing	Citizen framing	Control framing	Consumer framing	Citizen framing		
Gender								
Male	46.6	47.5	43.0	42.4	44.8	42.9	44.5	49.5
Female	53.4	52.5	57.0	57.6	55.2	57.1	55.5	50.5
Age								
25-34	22.9	19.7	20.3	21.6	16.2	24.4	21.0	10.0
35-65	68.7	67.2	71.1	67.2	80.0	71.4	70.7	60.2
>65	8.4	13.1	8.6	11.2	3.8	4.2	8.4	29.8
Education								
No degree	2.3	0.8	2.3	0.8	2.9	0.8	1.6	
Primary school	3.1	2.5	10.2	4.0	3.8	5.9	4.9	23.2
Secondary school	29.8	32.8	21.1	29.6	27.6	29.4	28.4	40.1
Non-university higher degree (1-3 years)	36.6	39.3	35.9	33.6	38.1	37.8	36.8	
Non-university higher degree (4 years)	3.1	5.7	7.0	9.6	10.5	7.6	7.1	
University degree	25.2	18.9	23.4	22.4	17.1	18.5	21.1	36.8
Wind turbines in municipality?								
No	50.4	56.5	53.1	60.0	49.5	60.5	55.1	67.2
Yes	35.9	32.0	33.6	24.8	30.5	29.4	31.1	32.8
Don't know	13.7	11.5	13.3	15.2	20.0	10.1	13.8	
New energy supplier in past two years?								
No	51.2	47.5	50.0	52.0	54.3	47.1	50.3	
Yes	47.3	51.7	49.2	45.6	45.7	52.1	48.6	
Don't know	1.5	0.8	0.8	2.4	0.0	0.8	1.1	

While the presence of a selection bias cannot be excluded, the characteristics of both samples were very similar (Table 4). Goodness-of-fit tests confirm that none of the null-hypotheses of independence can be rejected. About 56% of respondents were female. Most respondents were between 35 and 65 years old (71%). A large fraction of respondents had a higher non-university (44%) or a university (21%) degree. About 31% of the respondents lives in a municipality that has wind turbines on its territory and almost half of the respondents has chosen a new energy supplier in the past two years. While the sample is not intended to be representative for the Flemish population, it still allows us to compare the outcomes in terms of marginal substitution rates and marginal willingness to accept values as the six subsamples have similar characteristics.

4. RESULTS AND DISCUSSION

First, we investigate in section 4.1 the interaction between role salience and respondents' attitudes concerning wind energy. Section 4.2 then discusses the results derived from the

[4] The data refer to 1 January 2018. The data for gender and age are collected from https://statbel.fgov.be/nl/themas/bevolking/structuur-van-de- bevolking. The data for gender are percentages of the total population in Flanders in 2018 (i.e. 6,552,967 inhabitants), while the percentages of age are calculated for the inhabitants older than 25 (i.e. 4,400,232). The education data come from https://statbel.fgov.be/nl/themas/werk-opleiding/opleidingen-en-onderwijs/onderwijsniveau#figures and are represent the percentage of the inhabitants *between the ages of 15 and 64* (i.e. 4,161 160) with no secondary school degree, with a secondary school degree, and with a higher education degree (university or non-university). The wind turbine data were obtained from https://www.vlaanderen.be/windenergie and compare the number of municipalities with and without wind turbines in Flanders in 2018.

DCEs. We present respondents' preferences for the different choice attributes and focus specifically on the impact of the information setting on role salience.

4.1. Impact of role salience on attitudes

Besides the impact of role salience on the stated preference estimates (see section 4.2), we also investigate whether the choice setting had an impact on respondents' stated attitudes towards wind energy. To this end, we asked respondents – after they completed the choice experiment – what positive and negative aspects they associated with wind energy.

In line with existing literature (e.g., Ek, 2006; Dimitripoulos & Kontoleon, 2009; Strazzera et al., 2012), respondents list noise hindrance, shadow flicker and visual pollution as the three main negative aspects of investing in wind energy (Figure 1). However, when comparing the two settings, respondents that were confronted with the *home setting* are more sensitive to private values such as 'reduction in the value of your land', 'noise' (although not significant, $p = 0.102$) and 'other negative effects', while respondents that were confronted with the policy setting are more sensitive to public values such as 'impact on ecosystem' and 'landscape pollution'.

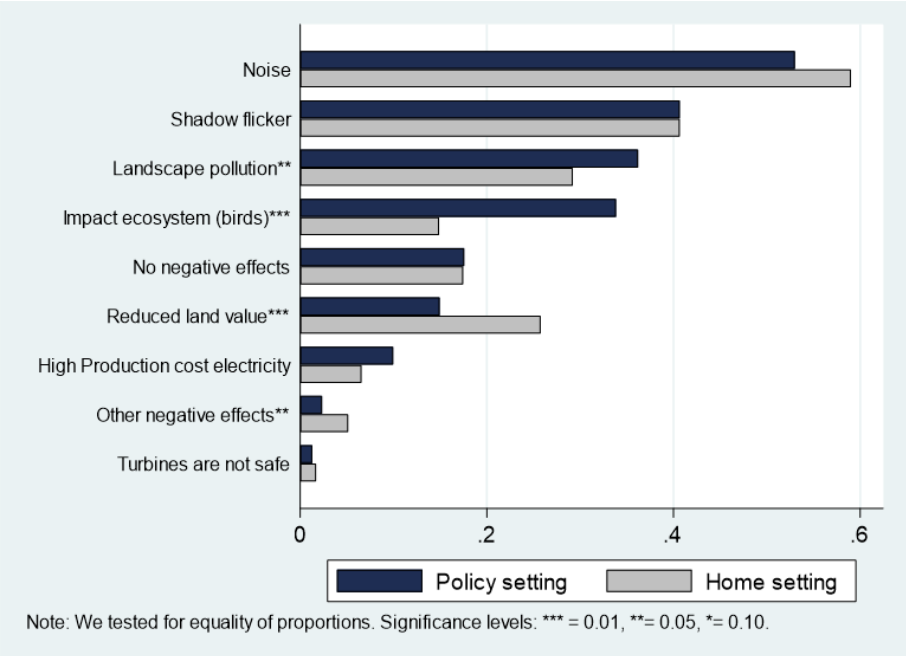

Figure 1: Proportion of respondents associating a negative effect with wind en7ergy (more than one option could be selected)

When we look at the positive aspects associated with wind energy (Figure 2), the three aspects related to environmental advantages dominate: 'wind energy is a green energy source, 'wind energy is a renewable energy source' and it 'reduces the emissions of pollutants'. When it comes to advantages, we do not find significant differences between the *home setting* and the *policy setting*. Surprisingly, almost 40% of the respondents think that wind energy is cheaper than traditional energy and that their energy bill will decrease if more investments in wind energy are made.

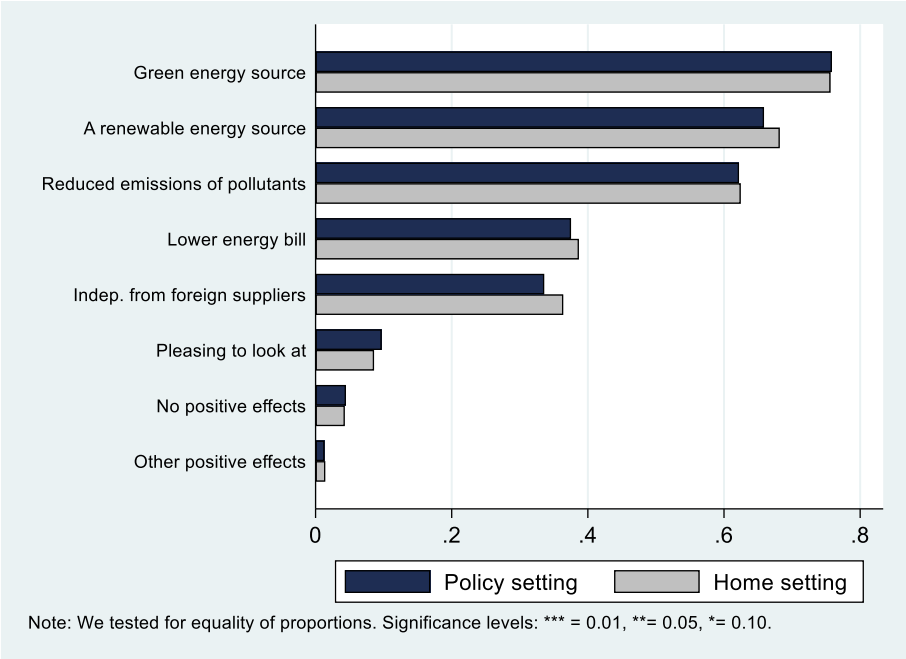

Figure 2: Proportion of respondents associating a positive aspect with wind energy (more than one option could be selected)

Overall, these descriptive results are in line with our hypothesis that the different choice settings activate either the citizen role or the consumer role and thus may influence the survey responses. Looking at the impact of additional consumer or citizen *framing* within each of the two settings, we find that in the *policy setting* respondents were more likely to indicated 'noise' as a disadvantage after the consumer framing, while respondents were less likely to indicate 'reduction in value of your land' after the citizen framing. In the *home setting*, respondents in the control group were less likely to indicate that 'Wind turbines are pleasing to look at' compared to the other respondents.

Finally, our questionnaire also contained a set of 11 attitude questions related to energy consumption and the environment, each scored on a 5-point Likert scale (1 = Completely disagree, 5 = Completely agree). A factor analysis identified two factors: environmental attitudes (E), and private cost considerations (P). Factor scores were calculated for all individuals. Next, we tested whether expected factor scores are equal in both settings. We find no evidence against the null hypothesis regarding the private cost consideration factor, i.e. respondents in both groups have the same attitudes regarding private cost considerations. However, respondents in the *policy setting* score significantly higher on the factor related to environmental attitudes (1% significance level). These results are also in line with our hypothesis that the *policy setting* triggers more citizen-minded responses since respondents attach relatively more importance to public considerations compared to private considerations.

Figure 3 shows further details on the average factor scores within both settings. In the *policy setting*, respondents score above average on the environmental attitude scale, irrespective of their framing. In the *home setting*, respondents score below average on the environmental attitude scale. The picture is less clear for the factor capturing private cost considerations. This factor correlates negatively with the environmental factor in the control and the citizen framing, while it correlates positively in both consumer framings. However, the figure also

suggests that negative private cost considerations (i.e. private costs are considered less important) in a policy setting can, through consumer role salience be neutralized or even reversed. It appears easier to make respondents switch from a citizen identity to a consumer identity, than the reverse. This is in line with our findings in section 4.2.3.

Table 5: Attitude questions (mean of scores on a 5-point Likert scale).

Statement	Average score	Factor
1. The attention paid to the environment and durability is exaggerated.	2.04	E
2. It is important to know how my electricity is produced.	3.87	E
3. I particularly want cheap electricity.	3.83	P
4. I attach great importance to the environment.	4.27	E
5. I expect that in the future, the focus on sustainability will decline.	2.16	-
6. I am in favour of using renewable energy sources for the production of electricity.	4.46	E
7. Electricity is expensive.	4.38	P
8. When other people do not make environmental efforts, I do not either.	1.75	E
9. Environmental organizations can contribute to a better environment.	3.75	E
10. Green electricity may be sold at a higher price	2.49	P
11. Initiatives to protect the environment improve, should be taken by politicians	3.48	-

E: Environmental attitude; *P*: private cost considerations.
Overall KMO: 0.779 (individual KMO measures ranging between 0.641 and 0.850). Statement 5 and 11 were left out of the scales, as their rotated factor loadings were small.

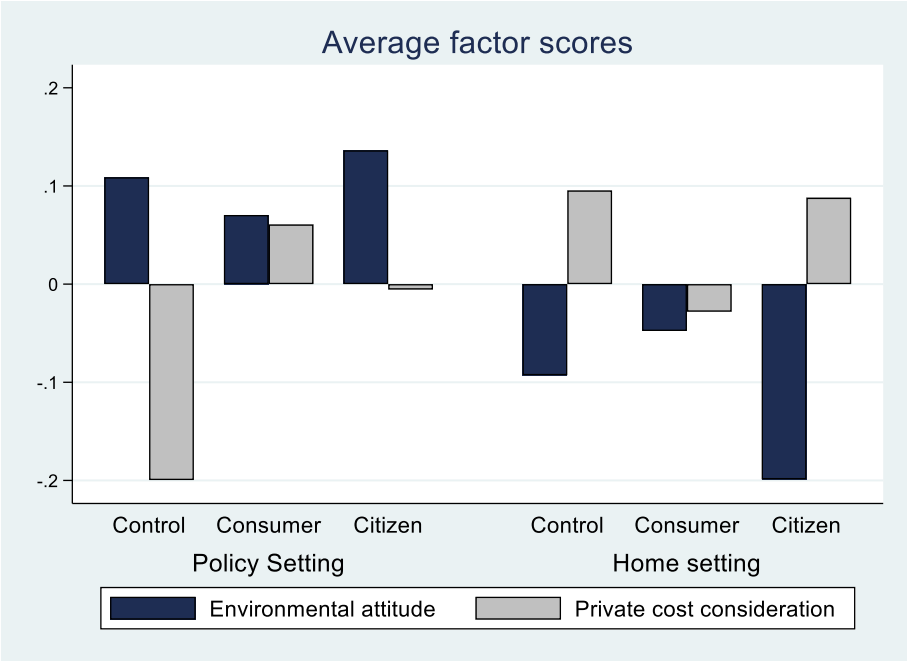

Figure 3: Factor scores by setting and framing.

4.2. Choice experiments

After defining the variables used in the estimations, we briefly present the preferences of respondents regarding the non-wind farm attributes. These attributes are different for the two choice settings. Our focus is to investigate the impact of the choice setting and the information framing on the wind farm attributes (Table 7). By comparing the estimates for

the six treatment groups, we can look at the impact of role salience on estimates of respondents' preferences.

For both choice settings, we checked for protest responses by counting the number of respondents that systematically opted for the same alternative. This was the case for 9 respondents in the Policy setting and 27 respondents in the Home setting (about 2.5% and 7.7% of the responses, respectively). In the latter setting, one should be careful to classify these respondents as protesters, as the opt-out was defined as their ideal home. It can thus very well be the case that these respondents always preferred their ideal home to the offered alternatives. As the potential number of protest voters is very small in the Policy setting, we decided to continue with our sample of 381 respondents in the Policy setting and 349 respondents in the Home setting.

4.2.1. Variable definitions

In the DCE model using the *home setting*, the attributes 'Number of Bedrooms' and 'Garage' are dummy coded, expressing the difference between the ideal situation and the offered home. For example, *'three bedrooms less than ideal'* equals one when the ideal home described by the respondent has three bedrooms more than the home described in the choice set. Consequentially, we expect all parameters to be negative (or non-positive) as they all represent a deviation from the ideal home. The variables representing the condition of the home express the difference between the ideal (i.e. looked for) condition of the home and the extent of renovations needed in the described home. The reference case is the situation where the choice alternative represents a home that does not need renovation, while the respondent considered such a home ideal. All other attributes in the *home* and the *policy setting* are dummy coded. For each attribute, a label referring to the reference level was added in Table 6 and Table 7. Finally, we created interaction variables for the three framings (*control*, *consumer* and *citizen*) for all common attributes related to the wind farms. We estimate one model for each setting, but – for reasons of clarity – the estimation results are split over Table 6 and Table 7.

4.2.2. Preferences for non-wind farm attributes

A mixed logit model in WTP-space (Hole, 2016) is estimated in Stata using 1000 Halton draws for each setting. All parameters were assumed to be normally distributed, except for the costs variables, which were assumed to have a lognormal distribution. The results are presented in Table 6 (setting-specific attributes) and Table 7 (shared windfarm attributes). We allowed for correlation between the random parameters.

Although both models are estimated in WTP space, most of the discussion focuses on the signs of estimated effects, rather than on the WTP values. Nevertheless, it is worthwhile to note that negative values indicate the need for a compensation in order to accept the change from the reference level to the considered level, while positive values indicate a willingness-to-pay. For the consumer and citizen framings, *additional* WTP values are presented.

Overall, most attribute parameters have the expected sign. In the *home setting* model, respondents value the fact of having more or less bedrooms than required in their ideal home negatively. The required compensation increases with the difference between the ideal and the offered number of bedrooms, but is larger in case of too few bedrooms. A

similar result is found when the number of garages deviates from the ideal, although the results are only statistically significant for negative deviations. In addition, the results for the required level of renovations are in line with our expectations. When more renovations than what is considered ideal are needed, effects are found to be negative and increasing in the amount of renovation that is required. Surprisingly, respondents are found to be indifferent when a prospective home is in better condition than required.

Table 6: MXL Model in WTP space with correlated random effects and including interactions for information framings – Setting-specific attributes

VARIABLES	*Home setting*		*Policy setting*	
	WTP (€1000)	**S.E.**	**WTP (€ per year)**	**S.E.**
Number of bedrooms				
3 bedrooms less than ideal	-115.86 ***	19.846		
2 bedrooms less than ideal	-83.68 ***	13.303		
1 bedroom less than ideal	-42.56 ***	7.228		
Perfect match (ref)				
1 bedroom more than ideal	-5.85	4.051		
2 bedrooms more than ideal	-23.63 ***	5.941		
3 bedrooms more than ideal	-56.76 ***	14.160		
Number of garages				
2 garages less than ideal	-79.69 ***	11.907		
1 garage less than ideal	-40.59 ***	5.991		
Perfect match (ref)				
1 garage more than ideal	-5.50	4.264		
2 garages more than ideal	-10.23	8.858		
Condition of home°				
Perfect-versus-Perfect (ref)				
Perfect-versus-Minor	-33.04 ***	6.326		
Perfect-versus-Major	-110.45 ***	16.910		
Minor-versus-Perfect	-19.71	11.974		
Minor-versus-Minor	-22.27	12.007		
Minor-versus-Major	-100.49 ***	18.200		
Major-versus-Perfect	-18.43	19.505		
Major-versus-Minor	-1.15	19.201		
Major-versus-Major	-31.69	19.653		
Reduction in purchase price (€1000)	-3.55 ***	0.148		
Location				
Industrial area (ref)				
Agricultural area			-130.48 ***	13.751
Nature area			-396.88 ***	22.647
Public participation				
No Participation (ref)				
Passive Participation			50.80 ***	15.231
Active Participation			61.66 ***	13.380
Tax reduction (€ per year)			-4.96 ***	0.129
Observations		9222		10188
Number of respondents		349		381
Log likelihood		-2278.2		-2541.0

°: Renovations needed in the ideal home versus in the offered alternative home
Significance levels: *** = 0.001, ** = 0.01, * = 0.05

In the *policy setting* model, we find that a wind farm located in an agricultural or nature area is valued negatively compared to one located in an industrial area. The compensation required for a wind farm in a nature area is larger than that for a wind farm in an agricultural

area. Therefore, respondents dislike the positioning of wind turbines in nature areas. This result is in line with the result that people dislike the presence of wind turbines in Natura 2000 protected areas obtained by Dimitropoulos and Konteleon (2009). As expected, respondents value the possibility of being involved in the municipal project. This is in line with previous studies (e.g., Wolsink, 2000; Dimitropoulos & Konteleon, 2009; Ek & Persson, 2014; Liebe et al., 2017) that suggest that public involvement is valued positively in the context of investments in wind farms. However, according to our results, the level of public participation (passive or active) does not matter to the respondents.

4.2.3. Impact of identity salience on wind farm attributes

Focusing on the attributes that are common to both models (Table 7), we find preference heterogeneity for all attributes. Next, we analyse the impact of identity salience on the relative preferences for wind farms and their attributes.

Firstly, we focus on the impact of citizen and consumer framing on the overall attractiveness of wind farms, as captured by the alternative specific constant (ASC). This constant captures the impact of the reference levels of the dummy variables and of other effects not represented in the model. For the control group, the constant is significantly negative in both the *home setting* and the *policy setting*, implying that respondents give lower utility to the opt-out scenarios.

In the *home setting*, we find no statistically significant interaction effects for the two framing cases. This suggests that neither the citizen framing, emphasizing the public good consequences of wind farms, nor the consumer framing, which is emphasizing more the private good consequences of wind farms, triggers a larger positive or negative response towards wind farms. Preferences for wind farms captured in the ASC thus remain similar, independent of the emphasis that was put on private or public consequences.

In the *policy setting*, results are markedly different as both interaction effects are found to be statistically significant. In general, adding information that is more detailed (be it about private or public effects) stimulates respondents to accept one of the presented policy scenarios over the status quo. While this is in line with studies that find that concrete information is easier to visualize and has a stronger association with contextual knowledge than abstract information and may thus increase comprehension and behavioural intentions (Borgida & Nisbett, 1977; Schwanenflugel & Shoben 1983), it is unclear why this effect would mainly play a role in the policy setting.

Secondly, we look at the preferences for the wind farm attributes. For the intermediate level of the visibility attribute and for both settings, we find no significant effect in case of a neutral framing (control group). Respondents however want compensation when the visual impact is large. In both settings, the estimated effect is statistically significant. Role salience appears to have a statistically significant effect under consumer framing, but only in the *policy setting*.

The noise attribute has no statistically significant effect for a medium noise level in the home setting. In all other control groups, noise impact is statistically significant and negative. Further, in the policy setting, the consumer framing has an additional negative impact on top of the largest noise impact. Again, the extra focus on private effects activates the consumer role and results in an additional negative value associated with the noise

attribute. The fact that noise, and particularly, visual effects are important drivers of opposition towards wind farms is well known and has already been observed in several studies (e.g., Ek, 2006; Meyerhoff et al., 2010; Strazzera et al. 2012; Mariel et al., 2015).

Table 7: MXL Model in WTP space with correlated random effects and including interactions for information framings – Shared attributes

Variables	*Home setting*		*Policy setting*	
	WTP (€1000)	**S.E.**	**WTP (€ per year)**	**SE**
Mean				
Number of turbines	-0.05	1.824	36.73 ***	6.791
Consumer framing	-1.55	2.309	-17.74 **	6.795
Citizen framing	-0.65	2.125	-11.36	6.618
Not visible (ref)				
Barely visible	11.29	9.329	36.53	42.797
Consumer framing	3.83	11.313	-42.24	44.904
Citizen framing	14.05	11.413	-57.52	45.222
Very visible	-24.30 *	9.517	-115.03 **	40.345
Consumer framing	-4.88	12.581	-97.46 *	43.405
Citizen framing	12.44	12.436	-67.90	43.069
Noise level 30 to 40 dB (ref)				
Noise level 40 to 50 dB	18.55	10.234	-131.20 ***	39.208
Consumer framing	-17.03	13.643	-52.74	44.111
Citizen framing	1.91	13.057	40.12	38.579
Noise level +50 dB	-22.01 *	9.649	-181.28 ***	35.476
Consumer framing	-3.97	11.550	-101.67 *	44.887
Citizen framing	5.15	11.007	-17.74	41.756
ASC Opt-out	-45.47 **	17.502	-643.90 ***	79.837
Consumer framing	-18.27	16.748	-155.30 **	57.605
Citizen framing	-15.98	16.054	-206.78 ***	52.581
Standard deviation				
Number of turbines	4.13 **	1,605	32,84 ***	4,734
Barely visible	24.46 ***	8,397	150,23 ***	23,093
Very visible	32.91 ***	8,420	138,61 ***	19,799
Noise level 40 to 50 dB	47.62 ***	9,375	157,21 ***	24,099
Noise level +50 dB	43.62 ***	8,983	200,69 ***	22,247
Reduction in house price	0.50 ***	0,093		
Tax reduction			1,28 ***	0,151
ASC Opt-out	86.05 ***	14,182	570,58 ***	63,190
Observations	9222		10188	
Number of respondents	349		381	
Log likelihood	-2278.2		-2541.0	

°: Renovations needed in the ideal home versus in the offered alternative home
Significance levels: *** p =0.001; ** $p = 0.01$, * $p = 0.05$

For the attribute that represents the size of the wind farm, measured as the number of turbines in the wind farm, we also find an indication of the impact of role salience when we compare both settings. In the *home setting*, the size of the wind farm does not matter. However, in the *policy setting* with a neutral framing, an additional wind turbine is valued positively. Once again, we observe that framing matters. The consumer framing leads to a statistically significant negative interaction effect with the number of turbines. For the consumer framing, the total effect implies that we cannot reject the hypothesis that the average respondent in the policy setting is indifferent regarding the size of the wind park. Other studies that included the size of the wind farm found heterogeneous results. Dimitropoulos and Konteleon (2009) found a negative willingness to accept larger wind

farms in a policy setting in Greece. Ek (2006) found that a move from separately located turbines to large farms affects utility negatively in Sweden, while Navrud and Braten (2007) observed that respondents preferred few large wind farms instead of many small wind farms in Norway. Further, Mariel et al. (2015) observe three different latent classes in their sample with significantly different preferences regarding the size of the wind farm: one class preferred large farms, one class preferred small farms and the last group was indifferent with respect to the size of the wind farm.

Overall, these results strongly suggest that emphasizing the average respondent's consumer role leads to significantly lower WTP values for wind farm attributes in the *policy setting*, while in the *home setting* no significant framing effects are being found. On the other hand, the separate and joint hypotheses of equal *additional* WTP values for the consumer and citizen framings (per setting) cannot be rejected.

5. CONCLUSION

In this paper, we study the tension that exists between two roles that individuals typically occupy: the role of consumer and that of citizen. Depending on which role is salient, private or public considerations come more to the fore and this may lead to markedly different choice behaviour. Further, subtle shifts in social context can significantly change an individual's social identity and thus an individual's behaviour in the marketplace. We use two different settings in a stated choice experiment to measure households' willingness to accept the construction of wind turbines. A first setting is based on the decision to buy a home with particular characteristics near a wind farm, while a second setting is based on the decision to support a policy to locate a wind farm in the respondent's municipality. By including three identical attributes to describe the wind farm in both scenarios, we are able to analyse the impact of the selected setting on the willingness to accept.

Further, we include three different framing texts (each providing more specific information) to test whether the effect of the main setting can be reinforced or counteracted. In the home setting, these framings had no significant effect. However, in the policy setting, the consumer framing was able to counteract the positive identity effect of the setting for the preferences regarding the number of wind turbines, the visibility of the wind turbines and the noise levels associated with the wind park. This finding suggests that it may be easier to shift a respondent's focus from public to private than vice versa. Moreover, we find that respondents can be stimulated to accept one of the presented policy scenarios over the status quo by adding information that is more detailed (be it about private or public effects of the alternatives offered).

Overall, the setting and role framing has a larger impact on the public-good characteristics of wind farms (wind farm size) than on the private costs and benefits of the turbines (visibility and noise). For the visibility and noise attributes, the difference in role salience between the home and policy setting is not visible in the estimated results. However, stated preferences regarding the size of the wind farm differ between home and policy settings. Respondents in the home setting appear indifferent with respect to the number of wind turbines, while in the policy setting an additional wind turbine is valued positively although providing additional information on public or private effects reduces the positive effect.

Thus, it is important to take the specific context and setting into account when using the quantitative results of valuation studies for policy assessments.

Further, we observed that the different choice settings also influence respondents' attitudes towards wind energy. Respondents that were confronted with the home setting were more sensitive to private values such as 'reduction in the value of your land' and 'noise', while the respondents that were confronted with the policy setting were more sensitive to public values such as 'impact on ecosystem' or 'landscape pollution'.

From a policy perspective, these findings are important for several reasons. First, our results illustrate that valuation exercises triggering a different role at the individual level will likely result in different valuation outcomes. Using valuation studies based on consumer-based estimates (e.g. hedonic price estimates) as well as citizen-based estimates (e.g. policy-oriented discrete choice experiments) provide a range of credible net impacts associated with a public good project. Secondly, a particular role may be more likely for a particular group of people. For example, people living close to the potential location of the wind farm may be more likely to take a consumer perspective. Using citizen-based estimates for such people would lead to an underestimation of the monetary compensations needed to implement the project and can thus result in too high estimates of net social benefits associated with wind farm projects. Project assessments can therefore be flawed if relevant contextual factors are not taken into account.

Overall, it is intriguing to see the impact of choice setting and identity salience on stated preference estimates, related WTA values and reported attitudes. Further research is clearly needed to see whether this result carries over to different studies and different settings. This type of research may be important in the design of communication and compensation strategies by policy makers, municipalities or green energy producers. Invoking both the citizen role and the consumer role may be an important step towards reducing the environmental attitude-behaviour gap that has frequently been observed in reality. The type of compensation scheme may be an interesting starting point in this respect (Cowell et al., 2011; Garcia et al., 2016). It seems plausible that offering compensation schemes at the community level such as direct investments in schools, sports facilities or green spaces or community ownership of shares of the wind project is more likely to activate the citizen role. On the other hand, compensation schemes at the individual level such as lump-sum payments or rebates on the energy bill may make the consumer role more salient.

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References

Alvarez-Farizo, B. & N. Hanley (2002). Using conjoint analysis to quantify public preferences over the environmental impacts of wind farms. An example from Spain. *Energy Policy*, 30, 107-116

Arlen, J.H., & Talley, E.L. (2008, eds.). Experimental law and economics. Economic approaches to law. Edward Elgar

Borgida, E., & Nisbett, R.E. (1977). The differential impact of abstract vs. concrete information on decisions. *Journal of Applied Social Psychology*, 7(3), 258-271.

Camerer, C.F., & Fehr, E. (2006). When does "economic man" dominate social behavior? *Science*, 311(5757), 47–52.

Champniss, G., Wilson, H.N. & E.K. Macdonald (2015). Why your customers' social identities matter. *Harvard Business Review,* 93 (1/2), 88-96

Christie, M., Warren, J., Hanley, N., Murphy, K., Wright, R., Hyde, T. & N. Lyons (2004). *Developing measures for valuing changes in biodiversity: Final report.* Report to DEFRA London.

Cowell, R., Bristow, G., & Munday, M. (2011). Acceptance, acceptability and environmental justice: the role of community benefits in wind energy development. *Journal of Environmental Planning and Management*, 54(4), 539-557.

Crompton, T. (2008). *Weathercocks and signpost: The environmental movement at a crossroads.* Surrey, UK: WWF-UK. Retrieved from: http://www.wwf.org.uk/filelibrary/pdf/weathercocks_report2.pdf

Czajkowski, M., Budzinski, W., Campbell, D., Giergiczny, M. & Hanley, N. (2017). Spatial heterogeneity of willingness to pay for forest management. *Environmental and Resource Economics*, 68(3), 705-727

DEFRA (2011). Biodiversity 2020: A strategy for England's wildlife and ecosystem services. Retrieved from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69446/pb13583-biodiversity-strategy-2020-111111.pdf

Dekkers, J.E.C. & van der Straaten, J.W. (2009). Monetary valuation of aircraft noise: A hedonic analysis around Amsterdam airport. *Ecological Economics*, 68(11), pp. 2850-2858.

Dimitropoulos, A. & A. Konteleon (2009). Assessing the determinants of local acceptability of wind farm investment: A choice experiment in the Greek Aegean Island. *Energy Policy*, 37, 1842-1854

Drechsler, M., Ohl, C., Meyerhoff, J., Eichhorn, M. & J. Monsees (2011). Combining spatial modeling and choice experiments for the optimal spatial allocation of wind turbines. *Energy Policy*, 39, 3845-3854

Dröes, M.I. & Koster, H.R.A. (2016), Renewable Energy and Negative Externalities: The Effect of Wind Turbines on House Prices. *Journal of Urban Economics*, 96, pp. 121-141.

Ek, K. & L. Persson (2014). Wind farms — Where and how to place them? A choice experiment approach to measure consumer preferences for characteristics of wind farm establishments in Sweden. *Ecological Economics*, 105, 193–203

Ek, K. (2006). Quantifying the environmental impacts of renewable energy: the case of Swedish wind power. In: D. Pearce (Ed.), *Environmental Valuation in Developed Countries: Case Studies,* Edward Elgar, Cheltenham, 181–210

European Commission (2013). *Renewable energy progress report.* Report from the commission to the European parliament, the council, the European economic and social committee and the committee of the regions. COM(2013) 175 final

Frey, B. & F. Oberholzer-Gee (1997). The cost of price incentives: An empirical analysis of motivation crowding out. *American Economic Review*, 87(4), 746-755

García, J.H., Cherry, T.L., Kallbekken, S., & Torvanger, A. (2016). Willingness to accept local wind energy development: Does the compensation mechanism matter? *Energy Policy*, 99, 165-173.

Gibbons, S. (2015). Gone with the wind: Valuing the visual impacts of wind turbines through house prices. *Journal of Environmental Economics and Management*, 72, pp. 177-196.

Gundlach, A., Ehrlinspiel, M., Kirsch, S., Koschker, A., & Sagebiel, J. (2018). Investigating people's preferences for car-free city centers: A discrete choice experiment. *Transportation Research Part D: Transport and Environment,* 63, 677-688.

Hanley, N., Mourato, S. & R.E. Wright (2001). Choice modeling approaches: A superior alternative for environmental valuation? *Journal of Economic Surveys,* 15(3), 435-462

Heintzelman, M.D. & C.M. Tuttle (2012). Values in the wind: A hedonic analysis of wind power facilities. *Land Economics*, 88(3), 571-588

Hensher, D.A. & W.H. Greene (2003). The Mixed Logit model: The state of practice. *Transportation,* 30 (2), 133–176

Hoen, B., Wiser, R., Cappers, P., Thayer, M. & G. Sethi (2011). Wind energy facilities and residential properties: The effect of proximity and view on sales prices. *The Journal of Real Estate Research*, 33(3), 279-316.

Hole, A.R. (2016). *MIXLOGITWTP: Stata module to estimate mixed logit models in WTP space*. Statistical Software Components S458037, Boston College Department of Economics.

Jensen, C.U., Panduro T.E. & T.H. Lundhede (2014). The vindication of Don Quixote: The impact of noise and visual pollution from wind turbines. *Land Economics*, 90(4), 668-682

Kahneman, D., Knetsch, J.L. & R.H. Thaler (1991). Anomalies: The endowment effect, loss aversion, and status quo bias. *The Journal of Economic Perspectives*, 5(1), 193-206.

Kløjgaard, M.E., Bech, M. & Søgaard, R. (2012), Designing a stated choice experiment: The value of a qualitative process. *Journal of Choice Modelling*, 5(2), pp. 1-18.

Krueger, A.D., Parsons, G.R. & J. Firestone (2011). Valuing the visual disamenity of offshore wind power projects at varying distances from the shore: An application on the Delaware shoreline. *Land Economics*, 87(2), 268-283

Ladenburg, J. & A. Dubgaard (2007). Willingness to pay for reduced visual disamenities from offshore wind farms in Denmark. *Energy Policy*, 25(8), 4059-4071

Lang, T. & Y. Gabriel (1995). The consumer as citizen. *Consumer Policy Review*, 5(3), 96-106

Liebe, U., Bartczak, A., & Meyerhoff, J. (2017). A turbine is not only a turbine: The role of social context and fairness characteristics for the local acceptance of wind power. *Energy Policy*, 107, 300-308.

Louviere, J.J. (1988). Analyzing Decision Making. Metric Conjoint Analysis. Newbury Park: SAGE publications, p. 95.

Mariel, P., Meyerhoff, J. & S. Hess (2015). Heterogeneous preferences toward landscape externalities of wind turbines – combining choices and attitudes in a hybrid model. *Renewable and Sustainable Energy Reviews*, 41, 647–657

Marin, L., Ruiz, S. & A. Rubio (2009). The role of identity salience in the effects of corporate social responsibility on consumer behavior. *Journal of Business Ethics*, 84(1), 65-78

McFadden, D. (1986). The choice theory approach to market research. *Marketing Science*, 5, 275-297

McGregor, S. (1999). Towards a rationale for integrating consumer and citizenship education. *Journal of Consumer Studies and Home Economics*, 23(4), 207-211

Meyerhoff, J., Ohl, C. & V. Hartje (2010). Landscape externalities from onshore wind power. *Energy Policy*, 38, 82–92

Navrud, S. & K.G. Braten (2007). Consumers' preferences for green and brown electricity. A choice modelling approach. *Revue d'économie Politique*, 117, 795–811.

Pearce, D., Atkinson, G., & Mourato, S. (2006). *Cost-benefit analysis and the environment*. OECD

Prothero, A., Dobscha, S., Freund, J., Kilbourne, W.E., Luchs, M.G., Ozanne, L.K. & J. Thogersen (2011). Sustainable consumption: Opportunities for consumer research and public policy. *Journal of Public Policy and Marketing*, 30(1), 31-38

Sagebiel, J., Müller, J.R., & Rommel, J. (2014). Are consumers willing to pay more for electricity from cooperatives? Results from an online Choice Experiment in Germany. *Energy Research & Social Science*, 2, 90-101.

Sagoff, M. (1988). The economy of the Earth: Philosophy, law, and the environment. Cambridge: Cambridge UP.

Sanfey, A.G., Lowenstein, G., McClure, S.M., & Cohen, J.D. (2006). Neuroeconomics: Cross-currents in research on decision-making. *Trends in Cognitive Sciences*, 10(3), 108–16.

Scarpa, R., Thiene, M., & Train, K. (2008). Utility in willingness to pay space: A tool to address confounding random scale effects in destination choice to the Alps. *American Journal of Agricultural Economics*, 90(4), 994-1010.

Scheufele, D.A. (2000). Agenda-setting, priming, and framing revisited: Another look at cognitive effects of political communication. *Mass Communication & Society*, 3(2&3), 297-316

Schwanenflugel, P.J., & Shoben, E.J. (1983). Differential context effects in the comprehension of abstract and concrete verbal materials. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 9(1), 82-102.

Strazzera, E., Mura, M. & D. Contu (2012). Combining choice experiments with psychometric scales to assess the social acceptability of wind energy projects: A latent class approach. *Energy Policy*, 48, 334-347

Street, D.J., Burgess, L. & J.J. Louviere (2005). Quick and easy choice sets: Constructing optimal and nearly optimal stated choice experiments. *International Journal of Research in Marketing*, 22, 459-470.

Swofford, J. & M. Slattery (2010). Public attitudes of wind energy in Texas: Local communities in close proximity to wind farms and their effect on decision-making. *Energy Policy*, 38, 2508-2519

Thogensen, J. (2005). How may consumer policy empower consumers for sustainable lifestyles? *Journal of Consumer Policy*, 28(2), 143-178

Train, K. & Sonnier, G. (2005). Mixed logit with bounded distributions of correlated partworths. In R. Scarpa & A. Alberini, eds. *Applications of simulation methods in environmental and resource economics*. Dordrecht, The Netherlands: Springer Publisher, chapter 7, 117-134.

Walls, M., Gerarden, T., Palmer, K. & Bak, X.F. (2017). Is energy efficiency capitalized into home prices? Evidence from three U.S. cities. *Journal of Environmental Economics and Management*, 82, pp. 104-124.

Wolsink, M. (2000). Wind power and the NIMBY-myth: Institutional capacity and the limited significance of public support. *Renewable Energy*, 21(1), 49–64.