The impact of distance on a 'NIMBY' stance towards windfarms' development

Yiannis Moysiadis, Chrisovaladis Malesios & Iosif Botetzagias

A U T H O R S I N F O

Yiannis Moysiadis holds a M.Sc. in Environmental Policy & Management from the Department of Environment, University of the Aegean, Greece. The current paper originates from his M.Sc. thesis.

Chrisovaladis Malesios is a researcher at the Department of Agricultural Development, Democritus University of Thrace, Greece.

Iosif Botetzagias* is an Assistant Professor at the Department of Environment, University of the Aegean, Greece

**email*: iosif@aegean.gr

A B S T R A C T

Research on local reactions to the establishment of a windfarm (WF) has suggested a 'proximity hypothesis' which argues that those living closer to a proposed WF would reject it more strongly, arguably due to their NIMBY (not-in-my-back-yard) stance. In this paper we put this hypothesis to the test, by comparing the local inhabitants' NIMBY attitudes towards a privately-owned WF in two areas of the Greek island of Lesvos (in the area where the WF will be built and in an area which is not going to be affected by the project, aggregate N= 278). We find that one's area of residence is not a statistically significant predictor of NIMBY, similarly to his/hers demographic characteristics. On the contrary, one's perceived costs, unfairness of the siting, lack of benefits and risks associated with the project all impact on a NIMBY attitude.

K E Y W O R D S (in alphabetical order): *Greece; NIMBY (not-in-my-back-yard); proximity hypothesis; windfarms*

Introduction

Local reactions to windfarms' development which is initiated from outside the affected community are, still, routinely dismissed as a 'NIMBY' (Not-in-My-Back-Yard) reaction. NIMBY is supposed to encapsulate 'the protectionist attitudes of and oppositional tactics adopted by community groups facing an unwelcome development in their neighborhood [..] Residents usually concede that these «noxious» facilities are necessary, but not near their homes, hence the term «not in my back yard»' (Dear 1992: 288). Promoters of 'these "noxious" facilities', windfarms included, all to easily describe any opposition as 'NIMBY' (e.g. Barry et al. 2008) and those reacting are thus labelled as 'ignorant', 'misinformed', 'irrational' and/or reacting due to a selfish, economic rationale (Aitken 2010, Barry et al. 2008, Freudenburg and Pastor 1992, Wolsink and Devilee 2009), arguably in a strategic attempt to

downgrade and disqualify the opposing camp's arguments (Cass and Walker 2009:68).

Nevertheless, past research has demonstrated that local opposition can stem from a variety of reasons. Wolsink (2000; 2007b) shows that visual impacts, perceived annoyances, the potential benefits of clean energy as well as the feeling that one can influence the decision making process, all have a larger impact than NIMBY on an individual's willingness to resist a wind farm. Thus NIMBY is *not* the same with rejecting a WF: the former is one of the possible predictors of the latter. Furthermore, NIMBY is *not* the same with the 'I-don't-want-the-WF-here' statement: 'not-here' may be just a sub-category of 'not-anywhere' (a case of NIABY, Not-In-*Anybodys*-Back-Yard'), a stance stemming from a complete rejection of the particular type of development – and quite common in opposition to nuclear plants for example- (see Luloff et al. 1998:83): rather, 'A positive attitude towards wind power, combined with opposition to the construction of a wind farm anywhere in one's own neighbourhood … reflects the only true NIMBY standpoint' (Wolsink 2000:57).

Accordingly, a NIMBY standpoint seems to intraxicably linked to space: the further away, or even better as-far-away-as-possible, the proposed development the less likely it is that the local inhabitants would entertain NIMBY considerations. In this paper we put this claim to the test, by comparing the presence of NIMBY considerations among the inhabitants of the Greek island of Lesvos, where a mega wind-farm is to be installed. We juxtapose the views of two sub-samples of the local population: on one hand, those living on the western part of the island where the development is to take place and who will thus be directly affected; on the other hand, those living on the eastern part of the island who will have no visual or other contact with/effect by the proposed windfarm. If the 'physical proximity' hypothesis is correct, then the (strongest) differentiating factor between the two sub-groups' NIMBY attitudes should be their area of residence.

Thus the paper develops as follows. In the next section we present the Literature review discussing both the framework for conducting a meaningful analysis of the NIMBY attitude concerning a proposed project as well as the findings of previous research on the 'physical proximity' hypothesis vis-à-vis other predictors of an oppositional attitude. Next we present our case-study's and sample's characteristics and introduce the (latent) variables we will use for our analysis. In the, subsequent, Results' section we present the findings of the regression models utilized. We find that 'proximity to the proposed WF' is not a statistically-significant predictor of one's NIMBY stance. Our results show that an individual wants a WF out of one area and into some other, not because of the particular area s/he lives but because s/he perceives the siting of the WF in that 'particular' area as costly, risky, not beneficial and, most importantly, unfair. Yet, since these negative attributions are more

pronounced in the area closer to the proposed WF development, we conclude the paper by discussing why this may be the case and by proposing avenues for future research.

Literature Review

The importance of the research's timing of the research

Available research has demonstrated that local attitudes towards wind energy/windfarms are not static but rather exhibit a U-shape trajectory over time, as a wind farm proposal moves across the 'no plan', 'planned proposal' and 'built/completed project' (cf. Wolsink 1994; Devine-Wright 2005; Wolsink 2007b). The fact that the lowest level of support/most negative attitudes are recorded at the planning phase of a WF project, shows that 'The announcement of a project suddenly creates a vested interest [in the local population] and, therefore, it starts a process of thinking' with 'general attitudes becoming more critical' (Wolsink 2007b:1199). It is particularly at this stage, when confronted with a real possibility, that locals are more likely to exhibit the free-riding approach to the social dilemma which is implicit in the 'NIMBY syndrome' formulation: to refuse to bear the *personal costs* associated with the development although they recognize the *social benefits* this development will bring along (Wolsink 2007a:2699). Thus, we concur with van der Horst (2007) who claims that when it comes to measuring the responses by the public

> *The facts that the strongest opposition occurs during the planning phase and that it is the frequent difficulties of gaining local planning permission which have brought the NIMBY debate to the fore, clearly speak in favour of abandoning academic reference to the so-called NIMBY phenomenon in the 'after' stage (or in the 'before' stage when it is just hypothetical)* (p.2710).

Accordingly, in this paper we measured the locals' attitudes and perceptions concerning a real-life WF which, at the time of research, was at the stage of gaining permission. Thus, we are able to study the occurrence of NIMBY at the most appropriate stage of the local opposition.

A reliable scale for measuring NIMBY

Another important condition for any meaningful analysis, is to develop and use a reliable scale for measuring the 'not-in-my-back-yard' stance. Available studies on NIMBY are notorious for not properly identifying what exactly is measured by the term (cf. Wolsink 2006). Usually NIMBY is simply equated with resistance/rejection of a development while it should represent 'a positive attitude to wind power with resistance against a particular project' (Wolsink 2000:53).Thus, for properly measuring NIMBY, one should use items which actually 'measure the individual's inclination to motivate resistance with backyard arguments', and those

> *Items for the backyard-scale must be variants of the recognition that only the population living near a certain site will be confronted with the cost of the facility, whereas others (the initiators, the investors or the society as a whole) enjoy the benefits. The items should reflect the component of the assumed tendency to frame the issue in terms of (economic) rationality and utility maximisation, which can be summarised as «citizens demand the completion of such projects, but refuse to have them located in their vicinity» (Frey and Oberholzer-Gee 1997, p. 747)* (Wolsink & Deville 2009:224-225).

Accordingly, in this paper we use a NIMBY scale which has been developed and tested in previous research concerning local reactions to the siting of waste infrastructure facilities in the Netherlands (Wolsink and Devilee 2009) and subsequently used in the study of wind farms in Greece (Botetzagias et al. 2015) (see Data and Methods section for details on the scale).

The role of distance on NIMBY views

There exists a substantial literature on the issue of wind farms' acceptance and the so-called 'proximity hypothesis'. Nevertheless, all of the available studies we are aware of focus on existing wind farms, on wind energy acceptability in general and/or examine the influence of distance on one accepting/rejecting a WF -with mixed results.

Concerning the relation between proximity and wind energy acceptance, Ek (2005) found that distance from an operational WF has no influence on 'general attitude towards wind power' while Showfford and Slattery (2010:2514-2515) report an inverse relation between proximity to an existing WF and positive attitudes towards wind energy -similar to Jacquet (2012:682-683).

Concerning the relation between proximity and views on an *operational/existing* WF, Warren et al (2005) and Braunholtz (2003:20) found a 'reversed NIMBY effect' whereas people living closer to *existing* WFs hold more positive views of them: this unanticipated finding was attributed either to nearby residents being the beneficiaries of projects benefits/royalties etc (Jacquet 2012:678) or to the fact that the anticipated negative impacts, prior to the operation of the WF, failed to materialize (Braunholtz 2003:9-10; Warren et al 2005:863).

Concerning the relation between proximity and acceptance of *new* WFs, the results of available studies are inconclusive. Johansson and Laike (2007:448) found that living at different distances from an *existing* WF had no statistical effect on one's willingness to oppose additional turbines. Braunholtz (2003) found that those living closer to WFs are more willing to accept their expansion while, on the contrary, Showfford and Slattery (2010:2515) report that they are less willing to accept the installment of new WFs in one's property/sight/community. On

the other hand, when studying the attitudes towards a *proposed* WF, Warren et al (2005:863) found that those living closer to an approved-to-be-built WF were more negative to it, similar to Jones and Eiser's (2010) analysis of four proposed sites in the UK in which positive attitudes towards the WFs were found to increase (albeit not in a linear fashion) with increasing distance from the identified sites (p. 3114). The previous discussion is summarized in Table 1.

Table 1: The influence of distance on views concerning wind energy/windfarms

Views on wind energy acceptance	Distance from operational WF plays no role (Ek 2005) Acceptance increases with distance from operational WF (Showfford and Slattery 2010; Jacquet 2012)
Views on operational/ existing WFs	People living closer to WF have more positive views (labeled as a 'reversed NIMBY effect') (Warren et al. 2005; Braunholtz 2003)
Views on expanding an existing WF	Distance has now effect (Johansson and Laike 2007) Those living closer to the WF are *more* willing to accept expansion (Braunholtz 2003) Those living closer to the WF are *less* willing to accept expansion (Showfford and Slattery 2010)
Views on establishing a new WF	Those living closer to the WF are *less* positive/willing to accept establishment (Warren et al. 2005; Jones and Eiser 2010)

Since our study focus on the assessment of a *proposed* WF by the local community, it is comparable to Warren et al (2005) and Jones and Eiser (2010). Similar to them, we expect that negative attitudes will be stronger closer to the proposed WF site yet whether this is also going to by the case for NIMBY attitudes remains to be tested. Nevertheless, since a 'not-in-my-back-yard' stance is in any case a rejection of the proposal, we anticipate that NIMBY attitudes will be stronger closer to the proposed WF site.

2.4 The role of other predictors on NIMBY views

Since the 'not-in-my-back-yard' stance is supposed to encapsulate an individual's willingness to maximize his own utility, then it is only logical to expect that NIMBY will be

positively correlated with risks and costs perceptions concerning the WF development. On the contrary, the more an individual perceives (personal) benefits out of the project, the less likely s/he is to demand its relocation.

Nevertheless, a growing literature is suggesting that 'fairness' is also playing a crucial role in the local acceptance of WFs (e.g. Devine-Wright 2005; Gross 2007; Ellis et al. 2007; Breukers and Wolsink 2007; Wolsink 2007a; Toke et al. 2008; Jones and Eiser 2010; Botetzagias et al. 2015). Researchers have usually distinguished between four types of 'fairness' (or 'justice') regarding the siting process (cf. Besley 2012, Huijts et al. 2012). 'Procedural fairness' refers to the extent that an individual considers that the decision making process had been properly conducted and that s/he had had a meaningful voice in it. A related, yet rarely analyzed, type is 'informational fairness', the belief that decision-makers have provided appropriate and meaningful information over the decision-making process. 'Distributive' or 'outcome' fairness refers to whether distribution of perceived benefits, costs and (especially) risks associated with a particular decision is considered fair. And, finally, 'interpersonal fairness' relates to whether individuals think that decision makers are respectful of their views and trustworthy -and this is why this type of fairness is usually subsumed under the concept of 'trust'.

In this paper, similar to Wolsink and Devilee (2009) and Botetzagias et al. (2015), we do not examine the impact of all four fairness' types, but only the 'distributive/outcome fairness' one. This is because of our dependent variable, the existance of NIMBY. The basic idea behind the 'NIMBY syndrome' has been that it is a manifestation of free-riding in a social dilemma: locals recognize the social benefits of the proposed development yet they refuse to bear the personal costs associated with it (Wolsink 2007a:2699). Nevertheless, there exists another possible explanation: people may wish to "pass-the-burden" *not* because they are free-riders but rather because they feel that they get an unfair/excessive (share of the) burden. This latter explanation relates to what Kerr (1995:39) describes as 'the equity norm' in social dilemmas which 'applies to the allocation of resources among group members. It prescribes that payoffs are distributed in proportion to contributions, inputs, or costs'. It is because of the equity norm's importance in social dilemmas and of its obvious correspondance with the distributive fairness concept that we focus on 'distributive/outcome' fairness in this paper. If one's willingness to move the WF out of his 'back-yard' (NIMBY) is also correlated with *distributive* unfairness then its justification as mere "free-riding" will be severely weakened. As a matter of fact, this has been demonstrated to be the case by other research (Botetzagias et al 2015), with the authors commenting that when it comes to the acceptance of WFs 'slightly paraphrasing Wolsink and Devilee (2009:231-232), «the crucial factor is clearly not that

residents have strong intentions to shift the burden to others, but that they consider it unfair that others, the decision makers [and the outsider promoters, who the locals do not trust,] are placing the burden on them»' (Botetzagias et al 2015:17).

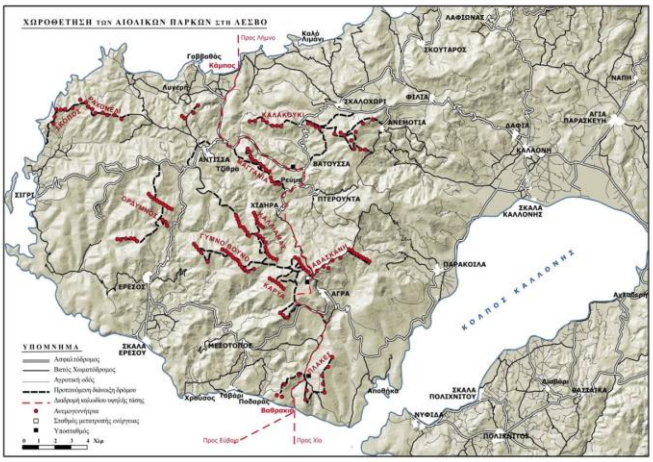
Accordingly in this paper we test the influence of perceived risks, costs, benefits and distributive fairness on NIMBY, alongside the standard socio-demographic predictors, in conjunction with the 'proximity hypothesis'.

Data & Methods

Case-study areas & samples

Under Greek law, permission to build a WF rests with the Greek Regulatory Authority for Energy (RAE) and the Ministry for the Environment. Local communities & government have the right to opine on an application yet they have no means for rejecting the development as long as it meets the legal requirements (i.e. successful completion of environmental impact studies etc.). Similar to other countries, wind energy electricity production enjoys feed-in tariffs, while areas nearby the WFs are entitled to "reciprocate benefits", standing at a 3% of the electricity's price (before taxes), payable to the local government.

Our case study area is the Greek island of Lesvos, in the northern Aegean Sea. The WFs' siting on Lesvos is part of a larger, privately-owned, project called "Aegean Link" (Greek: Αιγαία Ζεύξη). In its most basic form, "Aegean Link" aims to install a total of 373 turbines (706MW of installed power) on the Greek islands of Lesvos, Chios and Lemnos, which will then be interlinked and connected to mainland Greece via underwater cables. Lesvos stands to host 10 WFs with 153 wind-turbines (306MW installed power) at the western part of the island (see Map 1), an area which currently hosts two small (one state-owned and one privately-owned) WFs (2.02MW and 9.6MW installed power respectively). At the time of our research the application was still under consideration by the local government authorities (which nevertheless held a favorable view and in fact opined in favor of the project a few weeks after we concluded our research in the area).



Map 1: The siting of the 'Aegean Link' wind-farms on western Lesvos. The red dots represent individual wind turbines. The names in **black** stand for local villages. The names in **red** stand for the wind farms sites.

In Autumn 2012 we visited a number of villages on western Lesvos (which are situated within the development's range thus will be affected by it) and on eastern Lesvos (which will have no direct effect (i.e. visual, noise, etc.) by the 'Aegean Link' project) (see Map 2), and conducted face-to-face interviews with local inhabitants. The sampling technique selected was simple random sampling while, based on the population of the areas' surrounding villages and for a predetermined margin of error (e=5%), the required sample size was 267 (see Table 2 for the samples' details). We tried to survey villages of similar sizes between the two areas, and the number of questionnaires distributed and collected per village/area is shown in Table 1). In the following analyses and discussions we refer to and use the aggregate data.

Map 2: Villages surveyed for this paper. In **orange** background are the 'would-be-affected' villages of western Lesvos; in **yellow** background are the 'not-to-be-affected' villages of eastern Lesvos.

Table 2: Places surveyed and number of interviews

		Questionnaires	
Area/ Village name	Population (*2001 census*)	Distributed	Collected
Western Lesvos	**4,242**	**139**	**134**
Agra	990	32	32
Eresos	1097	37	37
Antissa	900	29	24
Sigri	402	13	13
Mesotopos	853	28	28
Eastern Lesvos	**4,936**	**161**	**144**
Ippios	900	29	29
Skopelos	1768	58	41
Mantamados	1156	38	38
Keramia	400	13	13
Kato Tritos	712	23	23
TOTAL	***9,178***	***300***	***278***

Variables used

Dependent (latent) variable: The dependent variable in our analysis is the respondent's NIMBY stance towards the proposed WF. As we have mentioned earlier, a truly 'backyard motives' attitude should clearly manifest "free-riding" in a social dilemma. Thus, for constructing a NIMBY scale, we take our cue from Wolsink & Devilee's (2009) and Botetzagias et al. (2015). We asked our respondents the following question: '*Here follow*

some statements concerning the wind farm to be constructed at western Lesvos. To which extent do you agree or disagree with each one of those statements?'. It is important to note that, irrespectively of whether the respondent resided in eastern or western Lesvos, the formulation of the statements in the questionnaire, for *both* areas of our study, referred explicitly to attitudes, perceptions, risks, costs, benefits and so on as far as western Lesvos is concerned, the area where the WFs would actually be constructed.

Since definitions of NIMBY still remain very vague and it is usually, and wrongly, simply equated with opposition (cf. Wolsink 2006), it is important to present respondents with statements which actually tap on a back-yard mentality/inclination (see also Section 2.2 of this paper). To this extent, Wolsink and Deville (2009) designed, proposed and tested –in the context of opposition to waste treatment facilities- an inclusive list of 17 statements which are considered as relevant for measuring a local person's 'assumed tendency to frame the issue in terms of (economic) rationality and utility maximization, which can be summarised as "citizens demand the completion of such projects, but refuse to have them located in their vicinity"' (p.225). The same list of statements was also used in a study measuring NIMBY attitudes towards WF's development (Botetzagias et al. 2015). For a full list of the statements the reader is referred to Table X1 in the Appendix.

We presented our respondents with the whole list of the 17 'NIMBY' statements, measured on a 5-point Likert scale ranging from '1' (Strongly Agree) to '5' (Strongly Disagree), and recorded their answers. The initial factor analysis of these 17 statements (using a rotated varimax transformation) indicated the existence of five factors as the best solution for explaining the variability in the data (Eigenvalue > 1).

Similar to Wolsink & Devilee (2009:224-227) and Botetzagias et al. (2015), following the examination of these factors and the statements' loadings, we chose seven of the initial 17 statements for establishing the 'NIMBY' scale (see also Table X1 in the Appendix). All these statements load strongly on the first factor returned by the factor analysis (24% of the total variance explained) and they relate to an individualistic and free-rider attitude, typical of a presumed 'NIMBY mentality': the respondent opposes the *specific* wind farm because s/he does not want to bear a share of the collective problem while s/he wishes the WF to move to another location - in which case his/her opposition would cease. These statements, which form a very reliable scale (Cronbach's $\alpha = 0.834$), are the following:

(1) 'It's quite stupid to accept the WF in western Lesvos [one's 'back-yard' for the context of this study] ';

(2) 'Because I don't think it's very necessary to bear a part of the collective burden, I don't accept the WF in western Lesvos';

(3) 'It's completely logical for me that the WF should be sited in someone else's area';

(4) 'I don't accept the WF in western Lesvos, because I think that somebody else would not accept it in his or her own area';

(5) 'Accepting the WF in western Lesvos means that you don't represent your own interests strongly enough';

(6) 'I don't feel like shouldering the burden of a problem that is also caused by others, by accepting the WF in western Lesvos';

(7) 'As far as I'm concerned, the WF should be sited in somebody else's area'.

The remaining statements load to other factors which, albeit relevant, do not represent the "pure" NIMBY-mentality of passing the full burden to someone else while enjoying the (personal) benefits. Thus, three statements load on the second factor (9.69% of variance explained): '*With respect to the location of the WF in western Lesvos, I certainly want to contribute in one way or another to solving a problem that is also caused by other', 'Whoever wants to make the profits also has to bear the associated burden: the WF in western Lesvos may cost me something*' and '*As a matter of fact, I don't think it's fair to saddle another municipality with the WF*'. Actually, then, this second factor denotes a tendency to reach common ground and sharing costs and benefits- which is *not* what NIMBY is supposed to be all about. Similarly, the third factor (8.9% of the variability in the data: '*It's only common sense not to object in advance to the WF being built in western Lesvos*' and '*As long as a WF facility is not built in western Lesvos, I don't object to it*') and the fourth factor (8.9% of the variance explained: '*If good arguments can be found to site the WF in western Lesvos instead of somewhere else, I will accept it*' and '*Life is competitive: if the WF is sited in someone else's area it is not sited western Lesvos*') acknowledge the existence of a (personal) cost yet they couple this with a willingness to be persuaded by sound arguments- again, *not* what NIMBYies are expected to do. The last, fifth factor (8% of variance explained) consists of a single statement, indicating the respondent's willingness to pay-his-way-out of the social dilemma: *'I'm willing in some way to pay extra in order to contribute to the costs of building the WF in another municipality'*. Finally, two statements ('*The costs resulting from WFs should be borne by all of us*' and '*Because a WF has to be built somewhere, I don't object in advance to it being sited in western Lesvos*') do not load to any factor.

Predictor variables

Perceived attributes of the facility and of the siting decision: Most of the statements used in the construction of the following latent variables originate from Wolsink (2007b), Wolsink and Devilee (2009) and Jones and Eiser (2010) and, following these authors' original formulation, are measured on a 5-point Likert scale ranging from

'1' (Strongly Agree) to '5' (Strongly Disagree). These are:

"Perceived risks": 3-item scale (Cronbach's α= 0.635); (blade movement would distract drivers and cause car accidents…; WF will cause health problems to the locals…; there are no risks related to the WF (**reversed**)…, at western Lesvos).

"Perceived costs": 10-item scale (Cronbach's α= 0.909); (WF operation will cause disturbing noise…; will spoil the landscape…; will cause problems with TV reception…; will be ugly…; will harm local husbandry/agriculture…; will harm wild animals…; will devaluate land/property…; will take up too much space…; wild birds will be killed on it..; will spoil the view from the villages…, at western Lesvos).

"Perceived benefits": 8-item scale (Cronbach's α= 0.892); (WF will give extra revenue to Lesvos municipality; will improve local environment…; will help the area to develop…; will offer jobs to the locals…; will impact positively on tourism…; will bring about positive changes in our community…; will benefit the local economy…; will make local electricity bills cheaper…, at western Lesvos).

"Perceived unfairness": 2-item scale (Cronbach's α= 0.687); (Siting the WF in western Lesvos is in conflict with my ideas about equity; I don't consider it fair).

Area of residence: Dummy dichotomous variable, distinguishing between respondents from (the affected area of) western Lesvos ('1') and eastern Lesvos ('2')

Demographic characteristics: We also examine the influence of Age, Gender and Educational Attainment

Results

Our data were analysed through SPSS 21.0 software (IBM Corp. Released 2012). Two regression models were utilized for the estimation of NIMBY based on the previously described predictor variables. Specifically, we fit two regression equations, the first including as predictors the four latent structures (Perceived risks, costs, benefits and unfairness) along with the dichotomous variable of area of residence and the demographic items (i.e. age, level of education and gender) (MODEL A), and the second additionally including the interaction effects of area of residence with each one of the four latent structures (MODEL B).

As a preliminary analysis step we compare the perceived risks, benefits, cost and unfairness of the siting of the specific WF between the two areas (Table 3). As it follows from the t-test results, the two areas have statistically significant differences on all the latent variables. The negative signs in the average scores mean that those living in the area of the development (on western Lesvos) agree more than those living away from it (on eastern Lesvos) that the WF's siting is risky, costly, unfair and it will have little benefits (note the positive sign for the 'perceived benefits' variable with regards to the 'close' to the WF area). This is also the case for the

NIMBY stance, which was found to be more pronounced amongst respondents living closer to the WF development (average score = -0.170, compared to 0.158 for those living away).

Table 3: Results of the t-test for the average scores of the latent variables by area of residence.

Latent variable	**Area in relation to WF**	**N**	**Average**	**Std. Deviation**	**t**	**p-value**
PERCEIVED RISKS	Close	134	-0.242	1.092	-3.999	<0.001**
	Away	144	0.225	0.849		
PERCEIVED COSTS	Close	134	-0.296	1.104	-4.953	<0.001**
	Away	144	0.275	0.803		
PERCEIVED BENEFITS	Close	133	0.261	1.103	4.306	<0.001**
	Away	144	-0.241	0.828		
PERCEIVED UNFAIRNESS	Close	134	-0.187	1.076	-3.049	0.003**
	Away	144	0.174	0.893		
NIMBY	Close	134	-0.170	1.061	-2.769	0.006**
	Away	144	0.158	0.915		

(**) Differences in the average scores are statistically significant at a 1% significance level

Next, we conducted a regression analysis in order to explore the potential factors influencing NIMBY (Table 4). It follows that one's NIMBY stance is influenced by perceptions of risks, benefits, costs and fairness while the area of residence as well as the demographic factors (save 'Educational attainment') are not statistically significant predictors.

Table 4: Parameter estimates for the two models (dependent variable: NIMBY)

	Model A			**Model B**		
Parameter	**b**	**t**	**p-value**	**b**	**t**	**p-value**
Constant	0.290	1.969	0.050*	0.189	1.222	n.s.
EDUCATION (Ref. category: *Higher education***)**						
Lower	-0.269	-2.401	0.017*	-0.231	-2.019	0.045*
Middle	-0.132	-1.238	n.s.	-0.129	-1.213	n.s.
GENDER (Ref. category: *Female*)						
Male	0.023	0.263	n.s.	0.038	0.422	n.s.
AGE	0-.004	-1.280	n.s.	-0.003	-1.008	n.s.
RISKS	0.184	2.881	0.004**	0.134	1.369	n.s.
COSTS	0.245	3.321	0.001**	0.309	2.788	0.006**
BENEFITS	-0.159	-2.628	0.009**	-0.262	-2.955	0.003**
UNFAIRNESS	0.254	4.556	<0.001**	0.282	3.661	<0.001**
AREA OF RESIDENCE (Ref. category: *Away from WFs***)**						
WFs area	0.024	0.275	n.s.	0.050	0.568	n.s.
AREA * RISKS				0.092	0.712	n.s.
AREA * COSTS				-0.081	-0.537	n.s.
AREA * BENEFITS				0.166	1.317	n.s.
AREA * UNFAIRNESS				-0.059	-0.528	n.s.
	$R^2 = 0.544$ (Adjusted $R^2 = 0.529$)			$R^2 = 0.553$ (Adjusted $R^2 = 0.531$)		

**: parameter is significant at a 1% significance level; *: parameter is significant at a 5% significance level

Discussion & Conclusion

This paper set out to examine whether individuals living closer to a proposed wind farm are more likely to exhibit a 'not-in-my-back-yard' stance compared to people living further away. The validation of this 'proximity hypothesis' is anticipated by the very nature of the NIMBY rationalization: if locals do not want the WF on their turf because they are 'free-riders', then this 'free-riding' behavior will be more pronounced among the inhabitants of the area most affected, that is the area closer to the wind-farm-to-be.

Our analysis of two sub-samples of inhabitants on the Greek island of Lesvos, where a mega WF is set to be built, shows a more complicated reality. As it is evident from Table 3

the views between those living close to the proposed development and those living far away from it differ an all accounts, and these differences are statistically significant (as it follows from the t-tests' results). Similar to previous research (Warren et al 2005; Jones and Eiser 2010), which found that negative views are most prominent in the area closer to a proposed WF development, the sub-sample of western Lesvos, where the project is to be developed, scored *higher* on costs, risk and unfairness perceptions and *lower* on perceived benefits. This is also the case for NIMBY: people living in the affected area espouse more strongly a 'not-in-my-back-yard' stance towards the WF than those living further away.

These findings seem to support the mainstream rationalization of NIMBY, as the protective, 'free-riding' reaction of the *locally*-affected community. In other words, and following the NIMBY logic, wanting the WF to be moved to somewhere else location is a spatially-bounded stance: people want the WF out of an area more strongly if it involves "their" area (the case of western Lesvos' respondents) while their 'free-riding' reaction is more lukewarm if the development concerns an area they are not in direct contact with (the case of eastern Lesvos' respondents).

Yet, when examining the predictors of NIMBY, a more complex picture emerges. To start with, and similar to other research (e.g. Wolsink and Devilee 2009, Botetzagias et al 2015), we find that the perceived risks and costs regarding the WF development, as well as considering the siting of the WF as 'unfair', are positively correlated with NIMBY while the perceived benefits by the WF impact negatively on NIMBY (Table 4). Furthermore, perceiving the siting of the WF as 'unfair' is one of the strongest predictors of NIMBY, a finding which is accordance with previous research (op.cit) and suggests that respondents want the WF out of the particular area not only because they wish to pass the burden to someone else (as it is the case for the costs and risks predictors' correlations with the NIMBY variable), but also because they consider the decision as unfair. On the other hand, the demographic variables have no statistically significant impact, save the

'Educational attainment' predictor: individuals with a lower educational attainment exhibit a *weaker* NIMBY stance when compared to individuals with middle/higher educational levels, a rather surprising finding which seems to contradict the common wisdom that NIMBYies are 'ignorant' or 'misinformed'.

Whereas the stand-alone effect of the area of residence on NIMBY as shown by the t-test is significant, when we examine the overall effect on NIMBY caused by perceptions of risks, benefits, costs, fairness, area of residence and demographic variables we observe that the overall effects of area of residence (i.e. both main effects and interactions) tend to be cancelled out. This is due to the fact that the effects of area of residence are dominated by the more strong effects of the other predictors and specifically the four latent constructs. This is evident in Table 4, where one's 'Area' of residence is not a statistically significant predictor: whether one lives close (and in direct impact) or away (and not affected) from the development, has no effect on his/her NIMBY views. Furthermore, as it shows from beta coefficients' estimates for the interaction effects between the predictors, the area of residence has no effect on the other predictors' impact on NIMBY: for example, people who consider the siting of the WF as costly will have a stronger NIMBY inclination irrespectively of the area they live in.

In conclusion, our results show that an individual wants a WF out of one area and into some other, *not* because of the particular area s/he lives but because s/he perceives the siting of the WF in that 'particular' area as costly, risky, not beneficial and, most importantly, unfair. Nevertheless, we also found that these perceptions, which ultimately guide one's NIMBY attitude, are more pronounced in the area where the WF is to be built (see Table 3). Why is this the case? In other words, why do the people who live closer the affected area consider the WF *more* risky, *more* costly, *more* unfair and *less* beneficial? Although answering this question does not fall within the scope of this paper, we conclude by offering some thoughts on this issue, although we lack the data necessary for testing these ideas.

On one hand, one might question whether we should accept at face value the respondents' answers concerning the WF's possible impacts. It may well be the case that people living closer to the proposed WF are answering strategically and they are consciously exaggerating its potential risks, costs and siting problems, while downplaying its benefits, in an attempt to justify their opposition to the project[1] (cf. Bell et al. 2005:464; van der Horst 2007:2710). Yet, if this was indeed the case, why aren't the respondents *also* answering strategically in the NIMBY-related questions, similarly downplaying their "true" egoistical/free-riding point of view? As it

[1] As a matter of fact, opposition to the project is much higher to the area closer to the development (47.7% of respondents '(Strongly) Against' the WF) than the area further away (15.3% '(Strongly) Against'), and the differences are statistically significant ($t = -4.535$, $sig < 0.001$)

is obvious from Table 3, the respondents on western Lesvos make no such attempt: contrary to previous research, which has identified that locals are aware of the risk of being branded as NIMBYies and thus they try to justify their opposition in broader terms (Burningham 2000:61-63), they seem quite eager to agree with politically *in*correct statements such as '*Because I don't think it's very necessary to bear a part of the collective burden, I don't accept the WF in western Lesvos*' and '*As far as I'm concerned, the WF should be sited in somebody else's area*'.

Thus, if the western Lesvos inhabitants' responses reflect their true appraisal about the project, then a number of reasons may account for the fact. As we mentioned in the 'Case-study areas & samples' section of the paper, western Lesvos already hosts two (much smaller and out of sight of most of the western Lesvos' villages we researched) WFs, Although in this study we did not record the communities' views on the *existing* WFs, it is plausible that their existence influences the western Lesvos inhabitants' views concerning the *new* WFs. Thus it may be the case that people on western Lesvos, hold much more negative opinions on the existing WFs[2] which inform their negative assessment of the new, proposed development; or, they may think that siting *more* (and/or much larger) WFs in their greater area (no matter how nice and necessary it may be) is simply unfair and/or not worthy[3]. On the other hand, their negative assessment may reflect some actual shortcomings of the particular development: it could be the case that the inhabitants of western Lesvos, due to their vested interests, have (strived to achieve) a better knowledge of the 'Aegean Link' project and its impacts and this, more in-depth, comprehension of what the particular project entails may have created more negative appraisals compared to their more disinterested (and thus less informed) inhabitants of the eastern part of the island. In any case, these are tentative arguments and more detailed research is needed for settling the issue.

Based on the above, it is recommended that future research examining the possible role of distance on NIMBY perceptions should take into account the possible influence of more factors: knowledge about the project, the appraisal of any existing windfarms as well as the 'vested interest' one *feels* s/he has concerning the development (irrespectively of his/hers area of residence) may play a role in shaping individual preferences and views when it comes to windfarms' siting.

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[2] Yet one should note that if this is indeed the case then it would contradict the existence of a 'reversed NIMBY effect' identified by Warren et al (2005) and Braunholtz (2003)

[3] Similar to Showfford and Slattery (2010) and *contra* Johansson & Laike (2007) and Braunholtz (2003). Yet the reader should note that these studies refer to 'acceptance' of establishing a new park or expanding an existing one, and *not* to 'attitudes' towards establishment/expansion.

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APPENDIX

Table X1: NIMBY-related statements' loadings on factors (rotated varimax transformation, with Kaiser normalization)

Statements	*Factors*				
	1	2	3	4	5
1. It's quite stupid to accept the WF in western Lesvos	0.790				
2. Because I don't think it's very necessary to bear a part of the collective burden, I don't accept the WF in western Lesvos	0.773				
3. It's completely logical for me that the WF should be sited in someone else's area'	0.599				
4. If good arguments can be found to site the WF in western Lesvos instead of somewhere else, I will accept it				0.521	
5. I don't accept it because someone else wouldn't accept it either	0.705				
6. I am not in principle against it					
7. Accepting the WF in western Lesvos means that you don't represent your own interests strongly enough	0.540				
8. I don't feel like shouldering the burden of a problem that is also caused by others, by accepting the WF in western Lesvos	0.741				
9. As far as I'm concerned, the WF should be sited in somebody else's area	0.713				
10. Life is competitive: if the WF is sited in someone else's area it is not sited western Lesvos				0.811	
11. WFs related burdens should be shared by everyone					

12. It's only common sense not to object in advance to the WF being built in western Lesvos			0.718		
13. With respect to the location of the WF in western Lesvos, I certainly want to contribute in one way or another to solving a problem that is also caused by other'		0.645			
14. Whoever wants to make the profits also has to bear the associated burden: the WF in western Lesvos may cost me something		0.646			
15. As long as a waste facility is not built in western Lesvos, I don't object to it'			0.519		
16. I'm willing in some way to pay extra in order to contribute to the costs of building the WF in another municipality					0.838
17. As a matter of fact, I don't think it's fair to saddle another municipality with the WF'		0.525			