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Offshore wind farms in Southern Europe – Determining tourist preference and social acceptance



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ABSTRACT

There is increasing consensus that resistance to the siting of wind power facilities cannot be explained by the NIMBY phenomenon alone or other localized environmental impacts. This deficiency is addressed by examining the determinants of tourist preferences for positioning of wind farms in the Mediterranean Sea. A principal component analysis is used to identify general attitudinal themes that act as covariates in a choice model. We demonstrate that the welfare economic impacts associated with spending holidays in the vicinity of an offshore wind farm do not merely depend on visibility effects, but equally on the individual's opinion of climate change, efficiency of wind energy and the substitutability of nuclear and fossil fuels with renewable power generating sources.

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1. Introduction

Energy planners are often said to be faced with the tri-lemma of sustainability, security of supply, and competitiveness, but a fourth problem is increasingly recognized, viz. public acceptance [1]. The proposal to install offshore wind farms in the French region of Languedoc Roussillon, to help the nation meet its commitment to increase the share of renewable energy² has met significant local resistance [2,3]. Opponents argue that offshore wind farms would disrupt a unique seascape, to the detriment of the tourist industry [4]. As nations strive towards transitioning to a low carbon economy, and increase the share of renewable energy sources in their energy mix, tackling obstacles at the local level is becoming increasingly important. In this light, it is important to reveal the dynamic subjectivities that frame wind farm disputes in order to obtain insights in how to overcome the current policy impasse [5].

In Westerberg et al. [6], we demonstrated how coastal community resorts were likely to be affected by the installation of offshore wind farms at different distances, and what could be done to compensate for those impacts in terms of artificial reef installation or environmental policy developments. We also showed how different tourist segments (those that are loyal to the community resort, culturally or historically interested, were visiting friends or family or came from the Northern Europe) were differentially affected by potential 'wind farm, artificial reef or environmental policy developments'. In this paper, we dig one step deeper, showing that these differential impacts may be explained by underlying concern over climate change, nuclear energy and the cost-effectiveness of wind power are important determinants of the welfare economic impacts that individuals experience when vacationing in proximity to an offshore wind farm.

To do so, this study develops a conceptual framework for tourists, systematizing a multi-dimensional set of drivers that influence preferences for the positioning of offshore wind farms in the Mediterranean Sea. A principal component analysis is used to reveal general attitudinal themes, which are used as covariates in a choice model to uncover sources of preference heterogeneity regarding the installation of offshore wind farms. In explaining preferences for wind farms, previous studies have considered the role of socio-demographic factors and residency [7–9], prior experience with wind farms [10,11], the respondents' use of the

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² Following the adaptation of EU climate treaty, France has engaged to increase the share of renewable sources to 23% of the energy mix by 2020 according to article 4 of Directive 2009/28/EC on Renewable Energy [93].

coastal zone [12–14], and preferences to renewable energy [15]. To our knowledge therefore, few valuation studies have comprehensively addressed the influence of wider concerns such as respondents' awareness of climate change, their assumptions about the effectiveness of wind energy as a generator of electricity, their preference for alternative energy forms, or the relative strength of 'concern over local environmental impacts' associated with wind farms on stated preferences for wind farm installation. Strazzeria et al. [15] do so, and our study follows in the same research direction.

A better understanding of tourists' preferences for offshore wind farms in their holiday-backyard is an important contribution to the literature. Local opposition to wind farms is often related to the expected impact on local business and tourism [16,17]. In this study, preferences were elicited from tourists and not from locals. Less than ten percent of the private residences in the Languedoc Coastal community resorts are occupied all the year round, highlighting the importance of tourists as a stakeholder group in this coastal area [18].

While the case study focuses on the French Mediterranean coastline of Languedoc Roussillon, the case study matters beyond the Languedoc Roussillon. The tourists interviewed come from different backgrounds and more than 10 different countries. As such, the results are likely to carry over to other sites too, particularly to other coastal community resorts. Aside from showing the potential impact of the installation of offshore wind farms, eco-efficient initiatives and artificial reefs on coastal tourism (as likewise addressed in Westerberg et al. [6]), we are particularly interested in understanding the attitudes among coastal tourists that shape those preferences. This is because the scaling up of renewable energy at a country-level is often limited by poor understanding of underlying social preferences [19]. By looking at possible sources of resistance to offshore wind farms that goes beyond visibility effects, the study engages with a number of themes touching upon human centred research methods, sociology and social psychology. By describing how consumers make decisions, human centred methods help uncover the multidimensional role of attitudes, habits and experience that shapes energy consumption and the supply-side options built to meet them [19]. As argued by Lutzenhiser [20] such methods can enable more accurate understanding of the cultures and lifestyles replacing commonly used demographic variables, which are only crude indicators of attitudes.

The study is organized as follows. The next section provides a review of literature on preferences for and attitudes to wind power landscapes. We consider two concepts: NIMBY-ism and the 'green vs. green debate', which are both prevalent in framing wind power debates. We argue that explanations of opposition to or support of wind farm positioning stretch beyond the postulates embedded in these concepts. In Section 3, we review a set of discrete factors that literature has shown play a role in shaping attitudes to wind farm proposals. In Section 4, we develop a conceptual framework of postulated drivers of tourist preferences for the siting of offshore wind farms. The framework is applied on empirical data in Section 5, using a principal component analysis.

2. Factors affecting public perceptions of wind farms and wind energy

In the following section we summarize the factors known to be important to the acceptance wind turbine infrastructure. The section provides evidence that support of or opposition to wind farms is influenced by site-specific issues relating to development in offshore and/or tourist locations, the context in which they are installed, personal experience with turbines, and the socio-demographic characteristics of those who reveal their preferences.

We furthermore show that discourses over the siting of wind farms are often framed around the "green vs. green debate", but that other factors, falling outside this debate are similarly powerful in explaining objection to or support of wind farm developments.

2.1. The green vs. green discourse

Scenic views are for the most part public goods in that they are non-excludable and non-rival. Wind turbines are, by their nature, highly visible and have an unavoidable impact on scenic views. It is therefore not surprising that research identifies the perceived landscape aesthetics of turbines as one of the strongest determinants of attitudes to wind farm proposals [21–24] and the most important factor in explaining contrasting views on wind power installations [5]. At the same time, wind energy falls under the category of green energy, as it can help displace electricity generation more greenhouse gas intensive power plants and is not associated with negative externalities such as acid rain or reduced visibility [25]. Typically therefore, while opponents tend to express concern over impacts on landscape, noise-scape and local wildlife, supporters tend to view wind turbine development as a symbolic effort to avert climate change and air pollution [5,26]. This apparent conflict has been termed the Green vs. Green debate [24,27]. The juxtaposition of wind energy as a local public bad, but with features of a global public good, is said to lead to high levels of general public support of but frequent local opposition to actual local development [28]. That is, wind energy is accepted and embraced as long as it is not produced in my backyard where self-interest prevails (NIMBY). In the next section, we summarize the factors identified in past research as affecting public perceptions of wind farms. We also show that there is evidence that both support of and opposition to the location of wind power facilities stretch beyond concern over local environmental impacts and the Green vs. Green debate.

2.2. Political factors

Research has shown that NIMBY-ism does not adequately explain local opposition to wind farms ([23,29–31,96]). NIMBYism is based on motivations of self-interest, which means that even if a particularly good location for wind farm installation was identified from a societal perspective, such plans may not materialize, as individuals and communities would vote against the project, due to the disutility they would experience if they were installed in their neighbourhood (see e.g. Wolsink [32] for a more detailed description). Research indicates however, that local opposition may be broader. Ellis et al. [5] investigate the discourses of supporters of and objectors to a proposed offshore wind farm on the Tunes Plateau in Northern Ireland. They show that opposition to wind power developments does not always derive from a desire to protect a pristine natural environment, but may derive from an overall scepticism of wind power, or an impression that wind power is inferior to conventional energy sources, and sometimes coupled with a low priority given to climate change. Similar results have been reported elsewhere [26]. In Sweden, Söderholm et al. [33] found that citizens who were willing to give up 'economic benefits' in order to gain 'environmental benefits' expressed a more positive attitude to wind power than those who contested wind energy subsidies or taxes on competing energy sources. Support for renewable energy may relate to the extent to which governments should interfere in energy markets. The above studies confirm that opposition to renewable energy is not just grounded on 'local' consequences (aesthetics, wildlife, noise, etc.), but that citizens are considering wider societal opportunity costs of wind energy development when shaping their preferences.

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