

Social acceptance of wind turbines: An empirical study using choice experiments

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Overview

The purpose of this study is to investigate the conflicts between decarbonization by renewable energy use and local environments preservation, often referred to as the “green vs. green debate,” and propose the policy implication on the introduction of offshore wind turbines. Since the Paris Agreement in 2015, there has been an increasing awareness that energy decarbonization is urgent. In Japan, the interest in renewable energies, such as offshore wind power, is growing to achieve zero greenhouse gas emissions by 2050. However, coastal communities have concerns about the negative impact of offshore wind turbines on the landscapes, health, economic, and environmental aspects and often oppose the construction of offshore wind turbines. Therefore, understanding the people’s perceptions about offshore wind turbines is essential to build the consensus among local people and promote offshore wind farms in Japan.

Methods

This study conducted a nationwide online survey and a choice experiment for 900 valid respondents. In our settings, the choice experiment evaluates the people’s preferences for the introduction of offshore wind turbines attributed to *the distance to wind farms; the number of wind turbines; the impact of the marine ecosystem; the amount of reduction of CO₂ emissions; the number of new labor hiring; yearly taxation* in monetary terms (i.e., willingness to pay). To include the heterogeneity of people’s preferences in the model, we used a mixed logit model to estimate the preference.

Results

A mixed logit model reveals that the marginal willingness to pay (MWTP) for the *distance* to the wind turbines was JPY 98.2, which indicates that people prefer far away wind farms to neighboring turbines. Additionally, the model estimated JPY 36.6 for *the number of wind turbines* and JPY 74.2 JPY for *CO₂ reduction*, which means that people demand more wind turbines and reduce CO₂ emissions. In contrast, the MWTP was JPY -8.1 for *marine species preservation* and -10.9 JPY for *new labor creation*. Respondents stated a negative preference for aquatic ecosystem conservation and new labor creation. The results suggest that there is a green vs. green debate among people. People evaluate offshore wind turbines positively in terms of climate change mitigation, but negatively in terms of the impact on the landscape.

Conclusions

The study proposes the following policy implications to promote offshore wind turbines according to the results. First, when planning and zoning offshore wind projects in Japan, the planner should care about the landscape, especially offshore wind turbines’ distance from the coast. Second, emphasizing the external benefit of offshore wind turbines, such as climate change mitigation, would reduce the opposition. The planner should understand local people’s preferences for offshore wind turbines to overcome the “green vs. green debate.”

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