Journal of Renewable Energy and Environment

Research Article

Journal Homepage: www.jree.ir

Laudable Intentions, Parochial Thinking: Climate Change, Global Warming and Clean Energy Concerns in Investment Decisions Regarding Renewable Energy Projects in Poland

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PAPER INFO

Paper history:
Received 30 April 2020
Accepted in revised form 27 October 2020

Keywords:
Renewable Energy Investments,
Social Cost-Benefit Analysis,
Local and Global Concerns about Renewable Energy Projects,
Wind Energy Projects in Poland

ABSTRACT

The issue of renewable energy is an important one in Poland. The Polish economy heavily relies on coal. Polish cities are among the most polluted in Europe. Therefore, there is a considerable societal support for renewable energy projects. Some people, however, keep having objections, e.g. to windfarms. This paper analyzes social costs and benefits identified by representatives of municipalities in whose territories renewable energy investments have been carried out and by representatives of companies investing in renewable energy projects. The data come from a series of surveys conducted in the period of 2013-18. It has been found out that municipalities and companies significantly differ in their identification of the key social costs and benefits related to renewable energy projects. They are alike in one aspect: such problems like climate change, global warming, energy security, air pollution, energy diversification, etc. are replaced in their thinking by more parochial concerns of land price shifts, social tensions, and others. The article finishes with discussion of reasons explaining why the Poles declare to be staunchly pro-environmental in general and at the same time turn out to be benefit-seeking when asked about particular solutions.

https://doi.org/10.30501/jree.2020.222916.1090

1. INTRODUCTION

Poles are exceptionally pro-European, favoring and supporting closer ties with the European Union and counting on a stronger role that Poland could perform in EU affairs. On average about 80 % of Poles declare that they are in favor of EU membership and only 10 % say they are against [1]. Among the EU countries Poland has consistently been placed as the one with the largest percentage of EU enthusiasts [2]. As Piotr Cichocki argues "by referring to a simple line of thought, where Euro-sceptics are opposed to Euro-enthusiasts, one could claim that Polish society and public discourse remain to a large extent enthusiastic towards integration" [3]. The recent European Union Parliament elections indirectly confirmed it as the turnout surged to 45 % and all the key parties declared that Poland needs the European Union [4].

This attitude of the Polish people may come as a surprise to those who follow only political reports about what governments of the EU countries do. At the governmental level, especially in a given parliamentary constellation with the ruling Law and Justice party, Poland is frequently viewed as a country opposing many EU policies (the issue of migrants, refugees and asylum seekers, the issue of the Nord Stream 2, the adoption of euro, cooperation with the US, the court reform, etc.) [5].

A similar situation can be observed vis-à-vis renewable energy sources (RES). In general Poles warmly embrace the idea of renewable energy (RE). They demonstrate unmitigated support for the development and use of RE installations like wind farms or solar panels [6]. At the same time at the governmental level Warsaw fights with Brussels for CO_2 emission quotas and allowances, the future of Poland's coal sector, etc. [7] Also Poland will most likely not reach its 15 % renewable energy target for 2020 as established in the Renewable Energy Directive (2009/28/EC) regarding shares of RE in the overall consumption of energy [8].

The above remarks do not mean that Poland does not want to develop RES at the state level. Although preferences for particular types of RE have varied (e.g. at present off-shore wind farms seem to be favored over land windmills at least officially) and the system of financial support has drastically changed (the green certificate mechanism introduced in 2005 was replaced by energy auctions in 2016) Poland still aims at having a robust and vibrant RE sector in the near future [9]. It also executes a verity of supporting programs for RES. Analyzing his research on public support for RE in Poland Michał Ptak contends that "the financial support is disbursed to many categories of beneficiaries and is delivered through

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URL: http://www.jree.ir/article_118476.html

Please cite this article as: Krystosiak, P., "Laudable intentions, parochial thinking: Climate change, global warming and clean energy concerns in investment decisions regarding renewable energy projects in Poland", ***Journal of Renewable Energy and Environment (JREE)***, Vol. 8, No. 1, (2021), 44-48. (https://doi.org/10.30501/jree.2020.222916.1090).

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grants or soft loans. Loans are likely to become increasingly important in the coming years" [10].

If the Polish people think highly of renewable energy and care about climate change how strongly do considerations about global warming, pollution, diversification of energy resources, sustainable development, etc. figure in their decisions regarding investments in RE projects [11]? This is the question I tackle in this paper. Between 2013 and 2018 I conducted a series of surveys combined with selected in-depth interviews targeting representatives of companies investing in RE projects and representatives of municipalities in which such projects were carried out. The main goal of these surveys and interviews was to identify what social costs and benefits the companies and the municipalities deemed to be the most important in RE projects and what methods of analysis of these costs and benefits the companies and municipalities applied.

Large RE projects, especially those using EU funds, in their preparation stage are required to be supplemented with a social cost-benefit analysis. Such an analysis naturally requires establishing what social costs and benefits are necessary to take into account [12]. Smaller projects, in effect majority of windmills, solar farms and biogas plants, may be implemented without careful examination of social costs and benefits generated by such investments [13]. Both in the case of larger and smaller projects I intended to find out how municipal officials and company managers thought about social costs and benefits and whether their perception and understanding of these costs and benefits were congruous.

2. RESEARCH

The surveys were based on a questionnaire designed to elicit the respondents' views on key social costs and benefits accompanying renewable energy projects. The most significant social costs and benefits were listed and respondents were asked to pick three of them and rank them in the order of importance. In this paper I will attempt to demonstrate that despite proclaimed concerns for global warming, climate change, polluted air, etc. both top managers of the companies investing in RE projects and high-ranked officials in municipalities where such projects were located opted for down-to-earth and pragmatic categories of social costs and benefits as the most salient and consequential from their perspectives.

In 2013 the survey reached 396 municipalities of which only 112 responded correctly (some questionnaires received in this survey were filled out inaccurately and therefore were discarded form further examination). If it comes to companies investing in RES 354 of them were covered in this survey. 87 valid responses were received. Both the municipalities and the companies were engaged with reviewable energy mostly of the wind and sun types with some occurrences of biogas installations. When asked to identify the most important category of social costs in the case of RE projects the representatives of the self-governments and companies chose the following.

Table 1. Results of the 2013 survey regarding the most decisive and far-reaching social costs accompanying investments in RE projects

	Drop in land prices	**Social tensions**	**Crowding out other investments**	**Negative consequences for people**	**Negative aesthetic impacts to landscape**	**Environmental dangers**
Companies	8	29	10	10	18	12
Municipalities	31	14	39	13	12	3
Source: the results of own research.						

In the above and further tables the numbers indicate the total of respondent opting for a particular alternative. Also in the tables the drop in land prices stands for the phenomenon of decreased land prices in the close proximity to RE installations (e.g. in the neighborhood of windmills). All types of land (the recreational, transport, agricultural, residential and commercial type) may be affected [14]. To illustrate what the classification of social tensions refers to it suffices to mention jealousy felt by farmers whose land borders the patch upon which a windmill has been built. They reap all the negative externalities of the windmill's operation missing on any direct financial reimbursement whereas the owner of the patch cashes in on his land being used for the windmill's construction.

The crowding out effect may occur when, for instance, a biogas plant is constructed and because of unpleasant smell it may produce it is unlikely that in the neighborhood any recreational complex is put up. The classification "negative consequences" in the above table implies mostly negative consequences for people like the noise produced by the rotor blades of turbines in windfarms, the stroboscopic effect, or electro-magnetic waves. The negative aesthetic impact to landscape is a social cost stemming from worsened landscape qualities when windmills or solar farms are constructed. Finally, environmental dangers cover threats to birds and other animals, soil erosion, excessive use of water, the need for land restoration, shading, etc.

The representatives of the companies investing in RE were mostly concerned with social tensions which might undermine the realization of the project and least worried about the land prices in the vicinity of their investment. In contrast, the representatives of local communities expressed their highest apprehension that RE projects might deter other investors who could think about business enterprises nearby. They were least disturbed by environmental dangers.

A Chi-square test was performed to establish whether there was a connection between the selected category of social cost and the belonging to a company or a municipality. The Chi Square test is commonly used for verifying relationships between categorical variables to establish whether there is a relationship between them or they are rather independent. In the present case the intention was to check out whether there is a relationship between which social costs people deem vital and which group they belong to (representatives of companies or municipalities). A statistically significant difference in how municipal officials and company managers identified social costs of a given RE project was detected (Chi-square value = 40.449, df = 5, p = 0.05; the probability of occurring the difference when actually it is absent is less than 0.05, df stands for degrees of freedom usually calculated as the

number of columns in a table minus 1, the calculated Chi-square value is compared to the value from the Chi-square distribution table and if it is larger than the null hypothesis is to be rejected where the null hypothesis says that no relationship exists between the categorical variables and that they are independent). It may be asserted then that whether the respondent works in a company or in municipality determines which categories of social cost she or he deems the most important. To determine the strength of this connection a Cramer's V test was conducted (a Chi-square test tells us whether there is a relationship between the studied variables; in order to ascertain the relationship's strength a Cramer's V test is typically carried out). The Cramer's V value was found to be equal to 0.451 which means that there is a fairly strong relationship between the type of organization a respondent belongs to (a company or a municipality) and the choice she or he makes regarding the key social cost in carrying out a RE project.

In the same survey I tried to verify what category of social benefits was regarded to be the most compelling in the process of realization of RE projects. The results are presented in Table 2.

Table 2. Results of the 2013 survey regarding the most decisive and far-reaching social benefits accompanying investments in RE projects

	Revenue	Prestige	Local economy	Electricity	Jobs	Infrastructure
Companies	12	6	6	18	19	26
Municipalities	36	21	18	8	12	17
Source: the results of own research.						

In the above table "Revenue" stands for revenues from local taxes levied on RE projects (as well as some non-tax fees and fines). "Prestige" refers to an enhanced status of the municipality on whose territory modern technological investments are being carried out. "Local economy" means a greater degree of local economic development and activity due to the implementation of a given RE investment. "Electricity" refers to the use of electricity in the local grid that is produced by RE installations. "Jobs" stands for the creation of employment for local people through the realization of a RE project. Finally, "Infrastructure" implies that the implementation of a RE projects leads to improvement of local infrastructure.

The representatives of RE investing companies held the view that the key social benefits from their projects were infrastructure development and additional jobs. From the perspective of the representatives of municipalities the most important social benefit was extra local budget revenue.

Using a Chi-square test it was established that there is a noticeable connection between the type of organization a respondent belongs to (either a company or a municipality) and the category of social benefit she or he viewed as the crucial in RE projects (the Chi-square value = 30.992, df = 5, p = 0.05). The strength of this connection was ascertained by applying a Cramer's V test. The Cramer's V value worked out to be equal to 0.395 which indicates a moderately strong connection.

The survey was repeated in 2018. Altogether 442 municipalities were targeted along with 387 companies investing in RES. There were 124 responses received from the municipalities and 79 from the companies. The results of this survey are displayed in Table 3 and Table 4.

Table 3. Results of the 2018 survey regarding the most decisive and far-reaching social costs accompanying investments in RE projects

	Drop in land prices	Social tensions	Crowding out other investments	Negative consequences for people	Negative aesthetic impacts to landscape	Environmental dangers
Companies	7	27	8	9	17	11
Municipalities	32	16	40	16	15	5
Source: the results of own research.						

Table 4. Results of the 2018 survey regarding the most decisive and far-reaching social benefits accompanying investments in RE projects

	Revenue	Prestige	Local economy	Electricity	Jobs	Infrastructure
Companies	10	6	7	14	18	24
Municipalities	37	25	22	12	15	13
Source: the results of own research.						

In the 2018 study, similarly to the earlier one, the representatives of companies investing in RE projects opted for "social tensions" as the most essential social cost from their angle of view. This is understandable as local protests have frequently been a huge hindrance for carrying our RE enterprises in Poland. "Crowding out other investments" remained the imperative concern for the representatives of local communities who tried to avoid blocking other business undertakings in the region. Also, in line with the earlier survey, the representatives of companies and of municipalities were lest worried about "drop in land prices" and "environmental dangers" respectively.

It is instructive to note that the preferences expressed by the representatives of RE investing companies and local communities did not change as compared to their choices in the 2013 survey. From the companies' perspective their contribution to local infrastructure and to creation of jobs for local people persisted to be the key social benefits of their RE

projects. At the same time the local communities' view was that an increase in budget revenues and overall prestige for municipalities constituted the most significant social benefits.

The corresponding Chi-square analyses and Cremer's V tests showed that there is reasonably strong connection between whom respondents represent (either companies or municipalities) and what choices they make regarding the key social costs and benefits.

Tables 3 and 4 manifest in a palpable way which social costs and benefits are regarded as the most vital for local communities (Municipalities) and firms investing in RE projects (Companies). It is important to see that both in the 2013 study and in the 2018 study the representatives of RE investing companies and of municipalities where such investments took place think first and foremost about immediate consequences from RE investments and regard issues like environmental protection and energy diversification as less weighty.

3. DISCUSSION

The top managers and high-ranked officials may differ in their perception of what the most significant social costs and benefits are in the case of RE projects. They are similar, however, in their disregard for such lofty issues like climate change, global warming, energy security, air pollution, energy diversification, etc. [15]. Between 2013 and 2018 selected municipalities and companies were visited and in-depth interviews were conducted concerning, among other topics, the perception of social costs and benefits in carrying out RE projects. It was typical experience when the interlocutor started to talk about how important and consequential the problems of global warming, pollution by fossil fuels, etc. were in the world and, in particular, in Poland. However, when asked to rank various categories of social costs and benefits the interlocutor tended to opt for down-to-earth, concrete, and locally pertinent social costs and benefits.

Both the surveys and the interviews point to the same observation: people are aware of global concerns regarding climate and environment, they vigorously side with those who actively supports the restriction of CO_2 emissions, etc., yet when confronted with various options they tend to pick those that have direct relevance to local community. Managers of the companies investing in RE projects and officials of self-governments dealing with these investments tend to believe that major effects such investments have at the local level.

There may be several explanations for this phenomenon. One of them is that Poles consider themselves as those who are catching up with the more developed countries of the European Union. A typical argument in popular discourse is that in Poland we still cannot afford many luxuries which are prevalent in the West, and thinking about global issues instead of focusing on one's own courtyard is thought to be such a luxury.

Another explanation is related to the controversial nature of renewable energy projects [16, 17, 18]. Are windmills save for people? Do they constitute a treat to flying birds? Is it possible that solar farms make an ineffective use of available land? There are many other questions regarding disadvantages of renewable energy solutions. Since these questions are not settled yet, at least not entirely, the respondents may have felt the need to justify the realization of a RE investment by referring to tangible social benefits they generate and by delineating concrete social costs that are easier to measure as compared to such costs as harm to environment and climate.

The main conclusions for policy making is the following. The social cost-benefit analysis should be used on each occasion where perceptions on what constitute key social costs and benefits of an intended investment are contentious. The more the diverging views are made known to all the parties and the more effort the parties spend on discerning the long-lasting consequences of a project as opposed to short-term effects, the more successful the project is likely to be.

If it comes to policy recommendations it is important to point out that the sides which are intimately related to carrying out RE projects, i.e. the local communities and companies investing in RE, will first and foremost regard the direct consequences of investments as the most pivotal in their view. If we intend to motivate them to care about environment and energy diversification we will need to create corresponding incentives by means of specific regulations.

Despite the coronavirus pandemic and the ensuing slowdown of the world economy the need for development of renewable energy solutions is well understood both in Poland and in other countries of the European Union. The recent forecasts for Poland suggest that the share of energy produced from renewable sources will increase in coming years, although this increase will be not be as significant as in other EU countries [19, 20]. It might well be the case that Poland would be the last country in the European Union to give up coal-fired power plants [21].

4. ACKNOWLEDGEMENT

I would like to offer my special thanks to Professor Stanisław Kasiewicz (Warsaw School of Economics, Warsaw, Poland) for his unflagging and wholehearted encouragement during my research. I also owe my deepest gratitude to Warsaw School of Economics for its financial support of my project at the first phase of its realization.

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