
THE ECONOMIC AND SOCIAL ASPECTS OF ENERGY PRODUCTION FROM RENEWABLE ENERGY SOURCES IN THE SOUTH MORAVIAN COUNTRYSIDE

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ABSTRACT

This paper examines the social and economic aspects of the renewable exploitation energy and it is methodically trying to validate two hypotheses. The hypotheses are based on empirical case of municipalities and sociological analyzes of the community. The paper is trying to find out, if the installation of facility for renewable energy refreshes and strengthens the social life at concerned municipalities. It will be also solved in the paper whether the implementation of projects on renewable energy sources has an increasing acceptance in communities with a low index of age. People usually do not want to support project of building stations for renewable energy at their neighborhood. The inhabitant's view of producing energy from renewable source is changing, when citizens may participate in the energy production. My next detection is, that in municipalities, where the power station for RES was built, the cultural and social life is functional. In the surveyed villages a lot of events have taken place. Actually, the building of RES station motivates residents to joint tree planting or takes care about municipal pond. A certain factor for acceptance of RES stations will be also age – young people are less conservative and more open to new technologies. The index of age in any of the municipalities does not extend above the value 120.

Key words: renewable energy sources, motivation and acceptance, budget, social life in municipalities

Acknowledgments: This paper is based on results of the project called The South Moravian countryside as a space for the production of energy from renewable sources. The project was carried out with the support of Internal Grant Agency of Faculty of Agronomy of the Mendel University in Brno.

INTRODUCTION

Using rural energy production from renewable sources is highly dependent on the specific environmental conditions that are not so favorable in the South Moravian Region. The alternative sources play an important role in securing regional self-sufficiency in energy supply. Biomass, solar, hydro, wind and geothermal energy - that can be used to produce electricity, heat and transport fuels from renewable energy sources.

"Energy Makes the World Go Round" - this is the name of the chapter in the book Short Circuit written by R. Douthwaite (1996). The author summarizes the benefits of renewable and decentralized energy sources for municipalities there. The energy supplies by electricity and heat our homes, offices and industrial production. However, it caused many problems in its current form, and I do not think just about environmental pollution. Energy has also a significant impact on the economy and on making process of political decision.

MATERIAL AND METHODS

This paper examines the social and economic aspects of the exploitation renewable energy. The study is methodically trying to validate two hypotheses. I will try to propose a generally valid premise. The premise will be achieved by studying the available foreign and domestic literature and also by the implementation of quantitative research. The proposed premise will be also based on empirical case of municipalities and sociological analyzes of the community.

The following hypotheses are solved in the study:

- 1) The installation of facility for renewable energy refreshes and strengthens the social life at concerned municipalities.
- 2) The implementation of projects on renewable energy sources has an increasing acceptance in communities with a low index of age.

I will endeavor to verify continuously the hypotheses by deductive approach and I will look for possible new connections on examples of case studies. By studying the case studies I will simultaneously verify the hypothesis mentioned in the literature, and their terms expire.

The main aim of the study consists in generalizing knowledge for the potential use of renewable energy sources in the South Moravian countryside.

RESULT AND DISCUSSION

The economic aspects of energy production from renewable energy sources (RES)

Hermann Scheer (the Member of the German Parliament and a visionary of renewable energy) looks at the energy production through its chains. If we look at the energy sources in terms of internal process chains - according to energy production, we will find that in this regard renewable energy is much less demanding. It means that both the electricity and the actual operation of facilities for electricity production are less costly (compared with energy from conventional production). (Sheer, 2004)

Nowadays, the economic aspect is so important. Many residents prefer lowest price of the products. There are two basic views on the cost of energy from renewable sources (as well as the price of any product): first view is the investor's view and second is the buyer's view. Investor (operator) will logically try setting the price appreciation of its assets invested in investment, while the ordinary

citizen (the buyer) is willing to pay for electricity up to a price which is in the market (while respecting the technical parameters supplied of electricity). Citizens may seem RES electricity much more expensive when looking at electricity bills. What the individual can seem like highly economical, it can be disadvantageous from the viewpoint of the whole society and environmental impacts. Therefore, we must not forget about externalities when we evaluate prices, we should included them into the price. Then the price of energy from renewable energy becomes competitive with conventional sources of energy, when external costs are included. It is shown in Table 1.

Tab. 1: The price of energy from coal (without and included externalities) and price of energy from RES

Energy source	Energy price (CZK/kWh)
coal (without / incl. externalities)	1,18 / 2,82
geothermal energy	1,87
residual biomass	2,50
Wind Energy	2,60
Hydroenergy	2,80
biogas	3,20
biomass (energy crops)	3,60

Source: European Commission, 2008

The energy generation from renewable sources is usually more expensive than the energy from conventional sources. Therefore, the question is: Are people ready to pay a higher price for environmental benefits and reduction of dependence? Longo et al. (2008) found among the inhabitants of the English spa town Bath that citizens are willing to pay additional costs for renewable energy in the amount of 16 – 98 USD per year. However, we cannot believe that the situation in Czech market would be similar. It demonstrated Hermann (2012) on his survey in Ústecký Region. The survey among 1007 respondents showed that 58 % of the respondents do not want to pay extra money for cleaner electricity production and 61 % are strongly against further increasing of electricity price.

However, the inhabitant's view of producing energy from renewable source is changing, when citizens may participate in the energy production. Some authors give us several examples of the perception of RES. British economist Richard Douthwaite presents a study of the Irish population of Hatherleigh town. The study maps out the possibilities of using renewable energy sources by local community. Douthwaite reached an interesting phenomenon. The inhabitants would accept a wind power only when the investor would be one of the local businesses or the city itself. (Douthwaite, 1996)

A similar effect is achieved by projects of the "civic power station". This idea is expressed in practice for several years abroad. For example, whole villages work on this principle in Austria. This type of power stations is in the Czech Republic in Litoměřice (Ústecký Region) and in Hrobec (Středočeský Region).

The civic power station in Litoměřice was put into operation in 2001 and works as shared assets of citizens. The local primary school has several solar panels installed on its roof that every citizen could buy. The investor SolWin guaranteed to the citizens the appreciation of investments on value at 6 % for 20 years, and 60 % of the financial rating of "excess" electricity. The same approach can be observed by the company ELDACO with wind turbines.

An economic aspect is a major motivation for the RES station construction - the contributions of energy station's investors to municipalities. This is illustrated by interviews in municipalities Jívová, Lipina and Huzová in the Olomoucký Region. Mayors of these villages, communes, municipalities will get 1 000 EUR per year for each wind turbine in their district and extra money

from the rent of land. The mayor of Huzová, Mrs. Szukalská told me: "We have the financial resources that we can use for example in infrastructure. We can renovate preschool and park."

The social aspect

The hypothesis that the realization of projects for RES has increasing acceptance in communities with a low index of age, I proved by inference from the Czech Statistical Office data. I also verified my estimate by personal visit in the affected villages and by interviews with local residents.

The age composition of the population in the municipalities is generally low. The index of age in any of the municipalities does not extend the value 120. Also the age will be an important factor – young people are less conservative and more open to new technologies. I selected municipalities where the project for RES stations was discussed a lot.

Tab. 2: The index of age in surveyed villages

	Total residents	Index of age	Region
Bantice	285	82	South Moravian
Huzová	622	95	Olomoucký
Jívová	583	104	Olomoucký
Lipina	150	100	Olomoucký
Vranovská Ves	247	120	South Moravian

Source: Data 2012 by Czech Statistical Office, author

I made interviews with local inhabitants. The interviews were semi-structured. I rather kept them telling me their view on the development of village or what they think about life in the village. In all municipalities residents agreed, that the construction of RES station helps to their village in development. The annual contributions (the contribution is almost a half of the village's budget) plus money from the lease of land facilitate to municipalities renovation of public buildings (cemeteries, churches, municipal building authorities) and repairing infrastructure.

The strengthening of social life

Douthwaite (1996) describes the development of the construction of municipal biomass boilers in Austria. Douthwaite's study is based on the European Commission report. The report said, that in cities where heating stations were built. Many local associations for residents were located. Local residents in clubs devoted to the preparation of events like planting trees and flowers in public spaces or they joined an interest in music and sport. A common celebrations were another important characteristics. Among the people there was generally good communication.

I came to the same conclusion in my case studies (village Bantice and Vranovská Ves). I realized an empirical study also in other municipalities Huzová, Jívová and Lipina in Olomoucký Region. In the surveyed villages A lot of events took place. Actually, the building of RES station motivates residents to joint tree planting (Jívová) or takes care about municipal pond (Bantice).

CONCLUSIONS

Nowadays, the diversification of energy production communities is becoming increasingly important. When we leave aside the legal obligations to the EU, we conclude that without decentralized energy production we will be waiting for unhappy tomorrows. The South Moravian countryside has a great potential in the production of biomass for energy production. The location

of South Moravian Region makes this region as one of the most favorable territory for the energy production from the sun in Czechia. The estimation of the potential for renewable energy in South Moravian Region is shown in table 3.

Tab 3: *The potential for renewable energy in South Moravian Region*

	TJ per year
geothermal energy	0
wind energy	90
solar energy	259
hyrdoenergy	51
biomass	15,660
total	16,060

Source: Ing. Aleš Pantůček, Department of Environment, South Moravian Regional Office, 2012

The South Moravian countryside has some potential for diversified energy production but where it could be hitch – it is a social community. This and also other studies have shown that RES is easier to promote in community with a low index of age and in communities where a cultural life exists.

RES can bring many financial positives to communities - new jobs, income for the village from the lease of land or annual contributions to the city's budget.

It is true, that many inhabitants are skeptical about the energy from RES. The low awareness can be a fault. The study results also show that ownership of RES can change the population perception and make them excited about it.

While we are speaking about the genius loci, we must remember that the spirit of a place means for us a kind of landscape silhouette which we know since time immemorial. We are very critical about today's landscape with wind turbines. However it is possible, that our children will love landscape with wind power, because it will be regular part of the genius loci of their homes.

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