UTILIZATION OF RENEWABLE ENERGIES AND CHANGING ENERGY STUCTURE AT LOCAL GOVERMENT, AS DRIVERS OF ECONOMIC RECOVERY: HUNGARIAN CASE STUDY

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─Abstract ─
The growth and stability of the world economy is hindered because of the exhaustion of the fossil and traditional energy sources and because of environmental consequences and increasing costs of their use. The energy supply of is increasingly unstable and unsafe because in countries which suffer from high dependence of energy import. The traditional sectors have been facing recession during the last couple of years and the recovery also highly depends on new solutions in energy supply. The rural regions are more vulnerable from both economic and social, because their adaptive capacities are limited. The main goal is this paper is to show the key factors of the limited possibilities of their recovery, such as low level of income, high rate of unemployment and migration, high share of unskilled labour, lack of capital and appropriate know-how in energetics. Development requires a new approach in energetics, in agriculture and also in waste management, resulting in high utilization of the renewable energies generating regional economic growth. In this paper, a Hungarian case study will be presented, which will show one solution of a rural municipality for viability, stability, job creation, and economic and social development. The paper concludes the necessity of the role of the public private partnership and of the increasing social capital, in the future economic environmental and social balance in the rural area.

Key Words: *sustainable, energetics, municipals, rural development*
JEL Classification: R11, R51, Q01

1. INTRODUCTION

In recent decades, the energy prices rise and the environmental impacts of fossil energy have put the search for alternative solutions into focus for the science, politics and for the actors of economics. This is especially true for the European Union, which takes a leading role in policy creation for decreasing greenhouse gas emission, but its economy's stability and competitiveness is risked by the high energy dependence, and the increasing trend of the volatile fossil energy prices. The theoretical and professional experts have been reaching consensus, that one of the key driver for the future economic growth is the spreading of the use of green energy technology's.

In the European Union the most important source of renewable energy is bioenergy which accounting for over two-thirds in the EU-27, and a key contributor to the EU 2020 target of achieving 20 % reduction in CO_2 emission and at least a 20% share of energy from renewable sources in the Community's gross final energy consumption. (EC, 2010,A) The European Union has worked out and updated its strategy for the new challenges in the document entitled "Towards a new Energy Strategy for Europe 2011-2020". The document states, that the delivery of the 2020 goals will imply a coordinated effort at all levels. The objectives of sustainability, competitiveness and security of supply in energy can be achieved through the collective acts in both EU and Member State level, where cities and regions must play a key role in developing local integrated solutions (EC, 2010,B). In the European Union we can find several program which offer financial with the requirements of mobilization of local resources as well. One example for the several initiatives is the establishment of the Energy Cities in 2002, which is European Association of local authorities (Covenant of Mayors Office, 2011). The Energy Cities is strengthening skills and roles in the field of sustainable energy, to develop and promote initiatives, transfer know how and experiences in implementing joint projects.

In the Central and Eastern Europe, including Hungary, the self-government system is young, it was set up together with the political and economic systems change in the beginning of the 1990's. The cooperation and division of work between state and local governments, the lack of competence and insecurity around organizing the necessary financial funding, the lack of experience of managing economic processes, the inherited undeveloped infrastructure, the rising social tensions all meant a huge challenge to the local governments which could

not be well handled by the young, new organizations. In the end of the 90's, the economic boom and the European membership had brought new hopes. But realizing and carrying out EU funded projects required the economically undeveloped local governments to bring in external financing, to be able to provide the necessary self-shares, which was resulting in increasing depths levels of the municipalities. The 2008-2009's economic and financial crisis has intensified the consequences of bad economic policy and its decisions, which doubled the level of state depth and increased rising unemployment and caused economic downturn. As a result, state subsidy and funding have been fallen back. Many of the municipalities have been gone bankrupt or come close to bankruptcy.

In the energy balance, the energy consumption of the private and public buildings is a significant factor in all countries. This means that the municipalities are becoming more and more sensitive and vulnerable due the fossil energy prices and supply problems, their awareness and responsibility about environmental and social effects of their services are also increasing.

This is especially true for the Eastern European countries like Hungary. Because of the missed developments in the municipalities in their energetics infrastructures, these systems are old, unreliable an inefficient, which makes it very costly to operate. The local governments are facing the problems of the increasing costs of the operation of their energetic systems (lighting and heating) but are unable to modernize their systems due to the lack of financing and know how. Therefore finding innovative solutions became necessary, which simultaneously can serve and boost the local economy, bring employment to the mass of low level skilled unemployed work labor forces in the deprived regions and at the same time does not burden the local government with investment costs in the short term and means a cost saving in the long term during the operation (EC, 2011). Besides all the economic and social benefits, this solution which will be presented is an eco-friendly development possibility, which can also enable the municipals to gain EU subsidies for the modernization.

The Energy Cities, the European Association of local authorities has been giving several bottom-up policies and territorial cohesion (Covenant of Mayors Office, 2011), but in their pilot projects the smaller sized settlements from the deprived regions are missing.

In the following part of the study, one possible solution is presented which was worked out for a small undeveloped settlement in Hungary and which could be adapted to other European municipalities which are facing similar situation.

2. INTRODUCTION OF THE SETTLEMENT

The settlement, which has been chosen as an example, is Kiskunmajsa. Has 12.000 inhabitants and can be found in the middle of Bács-Kiskun County, in Hungary. This little town is considered to be a backward, less developed micro region. Currently, in 2010, 11% of the economic active population is unemployed (KSH, 2009). The Kiskunmajsa region is suffering from different demographic problems, such as aging of the population and migration of young and highly qualified persons. The migration occurs due to the lack of job and carrier opportunities, which is why young people generally move to bigger cities. The region's main source of living is still agriculture, there are few companies in the food industry, primary producers and entrepreneur are typical. Kiskunmajsa has created an industrial park on 65 acres with application resources, but it currently operates only at 39 % occupancy. (KLG, 2010).

In the past 10 years, the number of inhabitants is continuously decreasing, but at the same time, the number of people receiving welfare is also increasing, which is deepening the budget balance problem of the local government. (KSH, 2009)

This process is typical at smaller cities and villages in the countryside. The region still has a significant farm world, still lives a farm life. This region has the most rural inhabitants and also the most widely dispersed farm world. We can conclude, that the various negative social and economic processes are steadily ruining and limiting the possibilities of the local people and their businesses.

Figure 4: Brief overview of the social and economic overview in Kiskunmajsa

Source: own editing

Similarly to many other regions in Hungary, people living in Kiskunmajsa and its surroundings as well as operating enterprises and public institutions purchase their electricity from the network; and the majority uses gas-fired or mixed fired boilers for heating. Currently, renewable and alternative energy use is marginal. (Energoffer Kft, 2010).

In a part of the local government institutions minor energy upgrades and insignificant modernization were made. The energetic system of the institutional buildings is outdated, inefficient and wasteful. Currently, the municipality has 19 institution buildings, such as: schools, kindergartens, museums, city hall, cultural center, etc. The energy system is unsafe, outdated, and must be renewed, because the boilers and the heating systems could break down at any time, however, the municipality can not finance such investments. (Energoffer Kft, 2010)

3. OPPORTUNITIES AND GOALS OF MUNICIPALITY

The local government would like to achieve and realize the following targets which are listed below. (KLG, 2010).

3.1. In the field of energetics:

- The institutional energy system's renewal, replacement, modernization
- Achieving more efficient energy services, energy consumption reduction
- Reduce energy dependence and increase the security of energy supply by using renewable energy sources

3.2. In the field of economics:

- Complex economic development driven by energetics
- Reducing unemployment rate
- Increase the municipality's income from local taxes and create sources for further development
- Reduce social spending and payouts' amount
- Money spent on energy should stay in locally owned businesses
- Attract energy intensive industries with cheap and safe energy sources
- More efficient heating systems to reduce energy costs
- Reduce social spending and ensure job opportunities that are useful and create added values.

3.3. In the social and demographic field:

- stop the decrease of the number of population and migration, through establishing new local work and business possibilities

However, the financial situation does not permit any development; there are no resources, knowhow and experiences of the settlement's government. The local government could use EU or domestic subsidy funds, but they don't even have enough financial sources to provide the necessary share's for the subsidy's. (KLG, 2010). This problem is typical at similar or smaller sized settlements around the country (Fekete Farkas et al., 2010).

4. SUGGESTED COMLEX SOLUTION

The settlement can overcome its lack of financial and lack of professional background partly with help of subsidies and partly of private investor's capital and specialized knowledge in a special PPP construction which can utilize the huge biomass potential of this agricultural area. The following development and vision is realized (Energoffer Kft, 2010):

- The settlement and the professional investor establish a joint venture company, which will provide heat services for the municipality.

- the joint venture company applies for subsidy from EU funds, to modernize institutional buildings' energy systems and to link the building to district heating system. The professional investor pays the required part of the investments for the development and also provides the knowhow.

- A briquette making small capacity (4000t/y) factory is also built from the subsidy, which is capable to produce briquettes for mixed or co-fired stoves from green waste.

- The district heating system is designed to reach the industrial park besides the institutional building and provide low cost and stable heat supply. The district heating systems heating energy is sourced from a central biomass boiler, which operates on different kinds of biofuels coming from the local agro waste, such as woodchips, and "softly pressed" agro briquettes produced by the briquetting machine, which can be fed into the boiler's automatic feeding system.

- The local government gets the right to briquette a certain maximum amount of green waste for itself from its gathered waste, what may be hand out among people who are receiving welfare, as social support instead of financial aid for heating.

- The local government operates the briquette machine not the investor.

The settlement can gain the following advantages when realizing this complex solution:

- institutional buildings get modernized both technically and in outlook

- tax revenue growth
- role of local contactors during construction/effectuation
- local producers biomass delivery potential
- gas dependence will partly decrease
- the settlement can work at low cost with its communal workers; their workforce can be effectively used in collecting the waste's. The electricity produced by the biomass stove is cheaper compared to the market price electricity, the used material – green waste is collected anyway, so it will not be an extra cost to the plant so briquette production takes place at small costs.

The private investor can gain back its financial investment and profit from the following sources:

- from energy supply service
- from sales of biomass products.

The region and wider areas will also realize positive effects of development (Farkas, 2011).

- job creation
- income generation in the region
- mobilizing under skilled labor force
- decreasing migration
- creating social cohesion

- increasing share of the renewable energies, decreasing share of fossils and CO2 output balance improving, through with fulfilling international commitments regarding environmental protection and alternative energy sources

- spreading and promoting the technological solutions used in the country and in the European Union, technology transfer

- adaptable projects and samples

- exemplary project from social point of view, where local patriotism and social cooperation must play an important role which overrides short term benefit thinking.

5. CONCLUSION

During times of economic and financial crises, the enterprises and economies developments slow down dramatically. Especially this is true in deprived regions, where earlier agricultural production used to be the driver behind the economy.

The local and diffuse energy production, local energy service and consumption is a new strategic area, which must get more attention in the future. When there is a lack of state financing in developments because of the strict budget balance and state depth, then public private partnership can bring possible solution.

The decision makers from the local governments, from the central government and from the European Union all see better and better, that with changing and modernizing the energy structure and energy pattern not only the energy costs can be effected, but important economic and social processes can be strongly influenced. This new approach can be noticed in the newest subsidy program funded by the European Union and the domestic programs.

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