REGIONAL DEVELOPMENT

IN THE ROMANIAN-HUNGARIAN CROSS-BORDER SPACE – FROM NATIONAL TO EUROPEAN PERSPECTIVE

Edited by István Süli-Zakar

ENERGY PRODUCER BACKGROUND OF THE RENEWABLE ENERGY SPREADING IN THE NORTHERN GREAT PLAIN

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Debrecen, 2007

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Summary

The primer condition of the efficient renewable energy usage is the exact knowledge of the natural energy possibilities in a region of the surface in a period. Henceforth in the alternative energy usage the technological background has determinant position. Besides the natural and technical aspects the supporting-financial background is the third pillar that determine the energy usage. There is a fourth pillar the social acceptance of an energy source, which depends on the teaching system, media and politics.

Serious changes will be reach by the coordinated policy of the European Union, the government of Hungary and the regional policy. Communication, teaching system and Research and Development will have central mission for the spreading of the environmental-friendly thinking.

Key words: alternative energy usage, technical-social aspects, supporting-financial aspects

Introduction

The following study is going to shown the energy producer background, the technical-sociological aspects and the supporting-financial aspects of the North-Great Plain Region. We hope that this essay can be a starting-point for the decision makers and users.

At the same time we will give estimation about the quantity of the electricity that can make from renewable energy sources on different technological backgrounds. Through the technical aspects we are going to show the influences of the supporting-financial situation and the social attitude of the solar and other energy system. After these pillars we are going to give a short summary about the near and middle-distance future.

Main factors in the Northern Great Plain

	territory	population	Energy cons. (MWh)	MWh/ capita	Natural gas cons. 1000 m^3	Gas cons./ capita
Hajdú-Bihar County	6210 km^2	549.372	569.299	1,03	214.900	0,377
Szabolcs-Szatmár-Bereg County	5936 km^2	581.623	562.839	0,96	210.371	0,373
Jász-Nagykun-Szolnok County	5581 km^2	410.823	406.858	0,99	179.562	0,437

1st Figure: Main factors in the Northern Great Plain (resource: KSH, 2005)

During the analization will be shown the main factors in connection with the energetic sector in Hajdú-Bihar County, Szabolcs-Szatmár-Bereg County and Jász-Nagykun-Szolnok County. In the North-Great Plain Hajdú-Bihar County is the most developed and has the higher ratio of GDP/capita. The developmental differences can be shown quite easily:

In the most developed Western European countries the more the country/person developed, the less the electricity the country/person uses. As a result of our questionnaire in the North-Great Plain the "Environmentally friendliness" is not an important point of view (Csákberényi-Nagy G., 2003), consequently the more the electricity is used the more the region is developed, it can be seen in the 1st figure (MWh/capita).

In the case of the Natural Gas consumption the situation is more difficult. More than 80 % of the households use this source of energy system, which makes easily the calculations, but this is the Achilles heel of the energy sector in Hungary. There are two other important factor besides the Natural Gas consumptions, these are the wood consumption which is 6-12 % higher in Szabolcs-Szatmár-Bereg Country than in the other two Counties (Csákberényi-Nagy G., 2003). The other factor is the district-heating, which is 6,2 % in Hajdú-Bihar County, while only 1,9 % in Jász-Nagykun-Szolnok County (KSH, 2005). This heating system is the most developed, most environmental friendly for instance:

Power plants in the North-Great Plain

First of all we have to write down the big (over 50 MW) and small (between 1 and 50 MW) power plants. As we can see on the picture in our examining territory only 1 "big" power plant can be found in Debrecen.

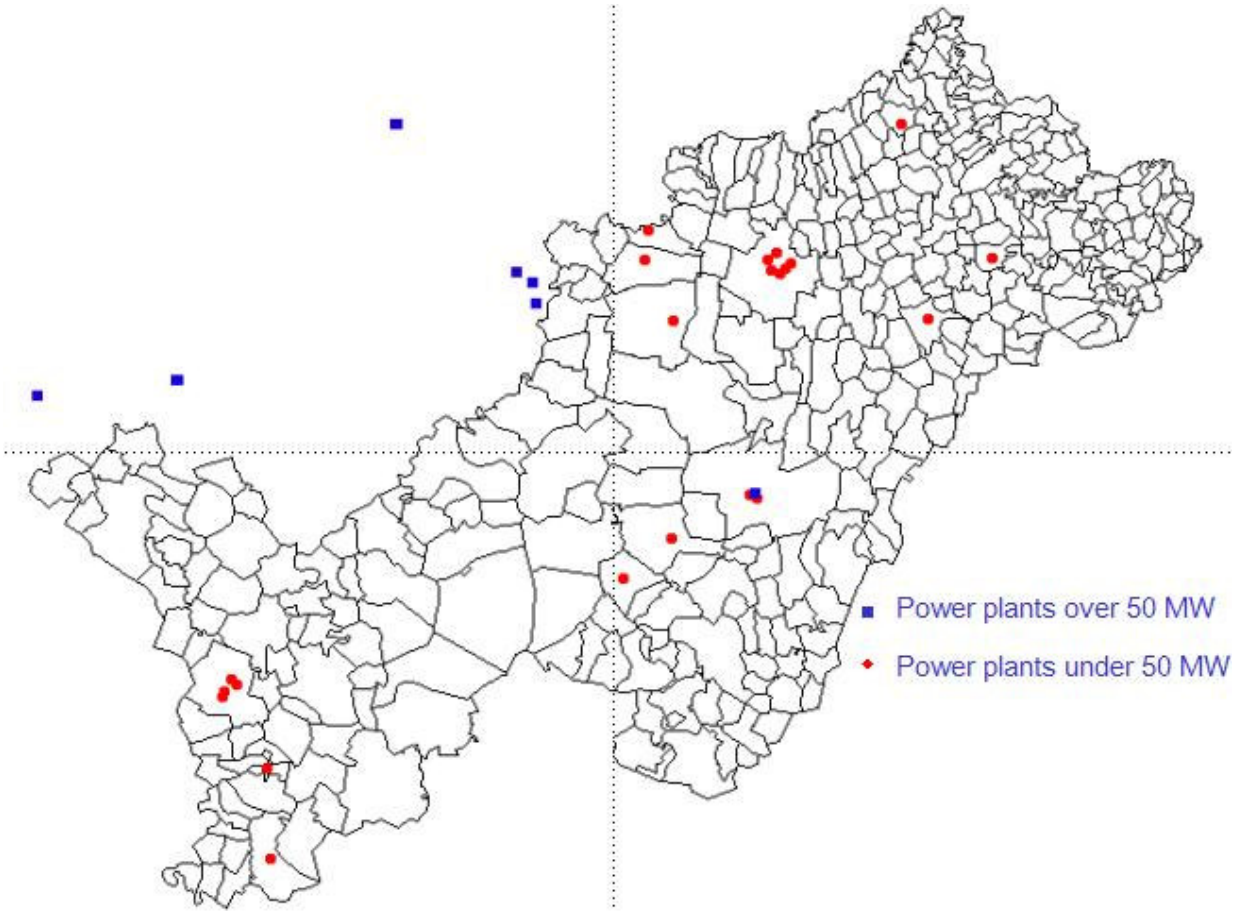
"Big" power plants can be found in Borsod-Abaúj-Zemplén County, the nearest is an oil powered in Tiszaújváros, and in Heves County, the lignite powered Gyöngyös-Visonta. These

plants were built during the Communism. These plants were built on the local resources and the Russian oil, which arrives on pipes from Ukraine till today.

The “small” power plants (between 1 and 50 MW) are modern, fashioned ones (natural gas, water and bio powered), contrary to the big power plant, which are old fashioned. These small power plants are concentrated into to bigger cities. T

he majority is operating for an industrial unit, or industrial park. The bigger industrial units and the power plants are concentrated in cities with the 10.000 minimum population. The higher the city is the more the small power plants it has.

For the spreading of the alternative energy systems many free, agricultural, natural place needs. The situation is ideal in the northern and eastern part of the region, near to the Ukrainian and Romanian border.



2nd Figure: Power plants in the North-Great Plain (own research)

In our research we analyzed, which territories could be the best place for the plant of renewable energy systems and we found a well-defined region in the North Great Plain, which is the Ukrainian and Romanian border region. These settlements are far away from the “big”

power plants, all of them are small disadvantageous agricultural settlements, villages, with great technical possibilities for the usage of renewable energy power.

In the northern Ukrainian border part good background can be found for the usage of wind power as we found on our measurement (Csákberényi-Nagy G., 2005). Along the Ukrainian and Romanian border agricultural areas can be found, which makes a good base for the bio-energy usage as we can see for instance in Nyírbátor (biogas power plant), but we can find more bio-energy power plant in this region under planning (Vásárosnamény, Hajdúsámson, Gelénes). Thermal energy can be used in some part along the Romanian border for instance in Szentpéterszeg, but after more researches more place could be found.

As it was shown the technical background is a good in the border region, in the following chapter it will be supported that the financial-supporting problem can be also solved.

Energy problem solving possibilities for Hungary

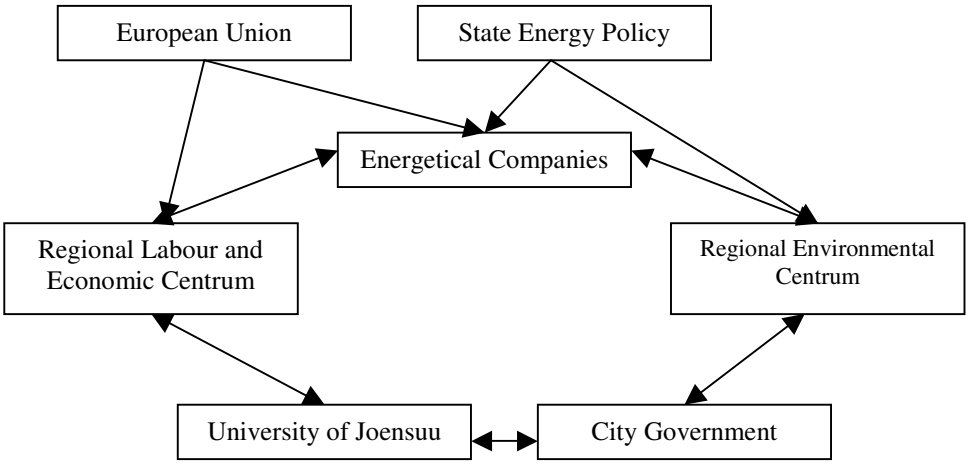
In this chapter two real examples will be mentioned, which are working well in the European Union. The first example is the Finnish regional energy developmental system, while the second example in Denmark, where we can find a NUTS4 energy developmental system. Due to these examples we made a system for Hungary, which can help of the solving of the energy problem in this region.

In the well developed Finland, the system is refined. First of all the European Union is very important in Finland many project get support from the EU. The second pillar of the successful Finnish energy policy is the Governmental System: on one hand, we can find the system of the taxation and supporting, but on the other hand the Finish government says that the realization of governmental energy policy is the most effective in regional level. In this level the concern should co-operate with the local university, the town council, and with the Regional Environmental Centrum and Regional Employment Centrum. These associations help the investors in the increasing of the efficiency.

In the system of the taxation we can find Energy tax, which size hang on the type of the energy source, the quantity of the energy usage, and the quantity of the CO_2 emission. If a company or a household use renewable energy system can pay less tax, while the usage of the most polluting coal results the most tax. The other tax is CO_2 tax, which is an extra fee for the big emissioners. In Finland we can find an Environmental Management System, which helps though energy audits for the requiring companies.

The other part of the Finnish State Energy Policy is the supporting system, which is in close co-opeation with the EU. The government made energy saving programmes such as Climtech and Efom, which are financial foundations. Two organization: the Motiva Oy, and the Tekes Oy are responsible for these foundation, and also makes researches in the field of energy.

In the Regional (NUTS2) level the energy policy built a close co-operation among five different organization, which are the following: Regional Labour and Economic Centrum with the target of the increasing of the employment, the Regional Environmental Centrum with the target of the control of the EU and State supporting system, and the co-ordination of the regional energy investments. The third organization is the Town Council, which gives supports to the investors. The local university makes researches in different aspects of energetic system. These organizations, and energy-saving measurements help of the Regional Energetical Companies.



4rd Figure: Energy Investor System in Finland (own research)

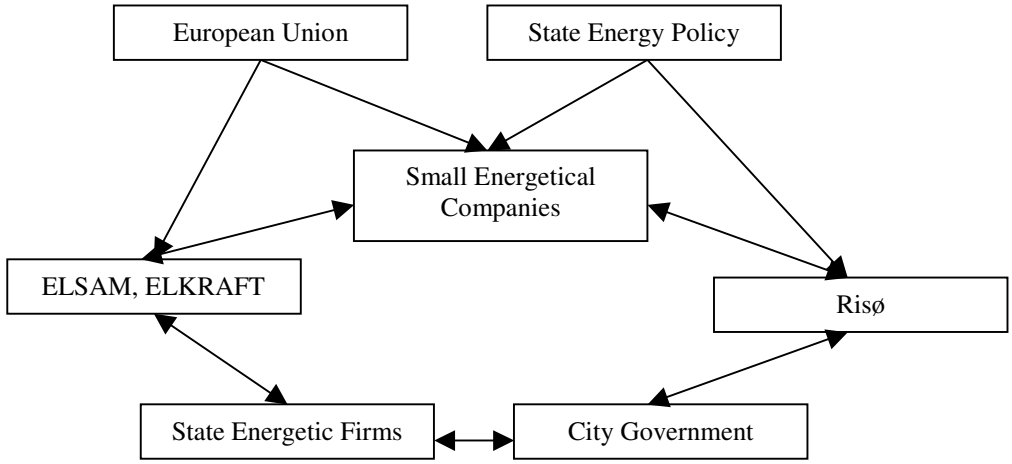
The results of the Finish energy sector give reasons for the governmental policies. In the last ten years the ratio of the renewable energy systems increased by 2.59 % in the whole energy sector (without water power). In North Carelia, where I accomplished my research, between 1998 and 2003 different associations installed six power plants, which use bio energy (Humphreys. P., 1990; Taisto Y. T., 2002; www.vn.fi).

Energy policy is the most complex in Denmark. The Danish government's target is the highest ratio of the competition, and liberalization under governmental control, and this governmental control is the pledge of the world leading environmental-friendly economy.

In the system of the Danish taxation we can find Energy tax, like in Finland, which size hang on the type of the energy source, the quantity of the energy usage, and the quantity of the CO_2 emission. If a company or a household use renewable energy system can pay less tax,

while the usage of the most polluting coal results the most tax. The other tax is CO_2 and an SO_4 tax, which is an extra fee for the big emissioners, with this second tax the Danish system has more taxes than in Finland. We can find an Environmental Management System in Denmark also, which helps though energy audits for the requiring companies.

The other part of the Finnish State Energy Policy is the supporting system, which is in close co-opeation with the EU. The government made energy saving programmes through the Danish Energy Agency, which is the co-ordinator organization.



5th Figure: Energy Investor System in Denmark (own research)

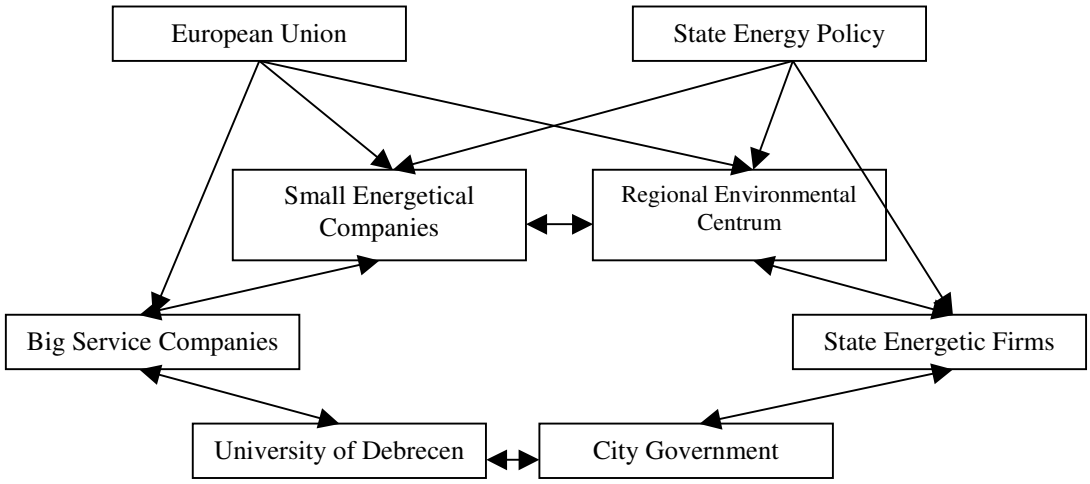
In the NUTS2 level there are small service companies, small CHP power plants in nearly every settlement, with an 80 % energy efficiency. The huge power plants and the current network owners are the ELSAM (Yütland), and the ELCRAFT (islands) under partial governmental control. The government helps companies with two more organization: on one hand there is the Risø, which is a governmental researching center with mission of the helping of the energy efficiency, and on the other hand we can find governmental wind farms in Denmark, scilicet for if the increasing is not high enough the government helps companies, and the energy efficiency as well (www.ens.dk, IEA, 1998). The fifth pillar is the local Town Council, which gives supports to the investors.

As a result of the successful energy policy between 1992 and 2004 the increasing of the renewable energy ratio is 15.66 % in Denmark, which is World Leader.

After the analization of two successful Northern European example we adapted the advantages of these system for the Hungarian conditions. From the January of 2007 Hungary will be able to reach enough financial sources from the EU. The State taxation started the Energy Tax in 2004, but its weightless. The solution could be find in the Danish system, which is the following: the installation of the Energy Tax, CO_2 tax and SO_4 tax was continuous from

1996 to 2000. On one hand the government decreased every year the Employer tax and the Employment Foundation tax, while on the other hand increased annually the Energy Tax, CO_2 tax and SO_4 tax. The result was obvious: the ration of the unemployment decreased, while the energy usage also decreased.

The other side of the Hungarian State Energy Policy is the supporting system, which will be close co-operation with the EU from 2007. The programmes and the organizations are existing now, they have financial problems now, but it can be solved by the EU.



6th Figure: Possible Energy Investor System in Hungary (own research)

In the regional level Hungary could help for the increasing of alternative energy resources in many way, for instance by state owned firms, as we can see in Denmark. Every big Service Company have foreign owners more than 50 %, so at this level the increasing of renewable energy sources can be reached only by taxes, lows and supporting system. The most successful system is the making of Small Energetic Companies in every bigger settlement and make their energy by CHP system, with the efficiency of 80 %, or with the usage of other hybrid system (solar-bio, solar-wind, wind-bio, bio-thermal).

The local governments will have a very important role, the Leaders attitudes can be transformed, changed into a more environmental friendly thinking by training courses. Due to the making of these leader teaching courses has the Universities a very important role, the other pillar of the importance of the high education institutes is the researches on many subjects.

Finally the Regional Environmental Centrum (in Hungary has more different organization) has leader and co-ordinator function, so it would be better if only one organization could co-ordinate the investments, planning, audit, researches and EU sources.

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