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ENERGY MANAGEMENT AND PUBLIC AWARENESS IN SELECTED HUNGARIAN SETTLEMENTS

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Annotation

Environmental and energy efficiency problems are important problems of our present. Despite a freeze on energy prices energetic self-preservation is a growing problem in Hungary also for households and local governments. Even though energy waste and poverty both typical for them. Energy efficiency as a problem has not only an environmental and social aspect (in a broader sense) in Hungary but another special aspect too. Eighty percent of Hungarian households are affected by energy poverty because they spend more than 10 % of their income on energy costs usually. According to a countrywide, representative poll of Hungarian Gallup Institute in 2007 the vast majority of the population is willing to make (not too significant) sacrifices for the environment, but many others are waiting for others help for solution. Only a small group of respondents think that each person has just as much responsibility as the local governments, environmental organizations and the government in solving environmental problems. Moreover in recent years - as a result of governmental savings - a start of a strong debt spiral can be observed in local governments. The municipalities' material expenses, which are controlled by the State Audit, increased by 136,8 % between 2007 and 2010. Hungarian local governments spent 345 million € (totally) on energy expenditures in 2011 according to a presentation by former vice mayor of Gödöllő, Zsolt Fábián. Quite sure that rural areas and local governments are able to spread environmentally conscious and energy efficient development methods, because the citizen's energy efficiency (and climate) awareness can be strengthened by local public institutions, mostly municipalities. In order to the local governments are increasingly able to meet energy efficiency requirements during everyday management creating energy efficient operation of public buildings is essential. That is why it would be necessary to insert energy efficiency requirements into local governmental (relevant) legal provisions, so this important requirement appears in everyday practice too. In order to support the above mentioned facts I used and evaluated two kind of questionnaires to examine the environmental and energy awareness of selected Hungarian settlements and their inhabitants.

KEY WORDS: climate awareness; energy efficiency; financial position of local governments; energy poverty in households.

Introduction

According to the thought of a well-known climate scientist, John Gardner (State of the World, 2009) see global warming as breath taking opportunities disguised as insoluble problems. Environmental and energy efficiency problems are determinative problems of our present. Despite – using environmental indicators of most of the OECD countries – the fact, there is a strong relationship between energy consumption and CO₂ emissions, apart from the depletion of the fossil energy sources, Hungary is highly dependent on them yet. Hungary has one of the highest gas dependences of International Energy Agency member countries, energy dependency and security issues have been a primary concern of the government (Ürge-Vorsatz et al., 2010). From 2008 to 2009 energy consumption significantly decreased in Hungary (CSO, 2010), but increased again in 2010. That year the relative energy intensity of the economy decreased by 0.7%, while GDP increased by 1.7%. In Hungary 29.4% of final energy is consumed by the residential sector, and 15% is consumed by the (local) governmental sector inter alia (Fábián, 2011). Hungary has a large potential to reduce its energy consumption through improvements in the energy efficiency of the various end-use sectors. Hungary's energy saving potential in the middle-term (by 2020 and 2030) is greater than the EU27's average, and also that households are by far the sector with the largest potential in Hungary (Ürge-Vorsatz et al., 2010). According to the Hungarian NGO,

ENERGIAKLUB Climate Policy Institute's investigations (Fülöp, 2013) the energy consumption of Hungarian state office buildings can be reduced by 50%. According to the same study the energy consumption of Hungarian state educational buildings (various kind of elementary schools and high schools) can be reduced by 62,9%. Moreover buildings are key to the climate not only energy challenge as they are responsible for approximately 50% of energy-related CO₂ emissions (Ürge-Vorsatz et al., 2010). One of the reasons why this figure is so high is the inefficiency of its building stock. The high energy consumption of the average residential unit in Hungary is a consequence of the long-time subsidised energy prices and of the deterioration of the residential stock. It can be argued that if the energy inefficiency of the Hungarian building stock is improved, not only will this reduce GHG emissions significantly, but it can also contribute to other important elements of the social, political and economic policy agendas, including the improvement of energy security, the reduction of fuel poverty, the promotion of new business opportunities, as well as an improved air and life quality and health.

Beyond the financial necessity there are other important factors which could press Hungarian local governments to "think green", and take measures to create energy efficiency. The base of the substantive political priorities defined by Multiannual Financial Framework 2014–2020 are the priorities from the Europe 2020 document (European Commission, 2010) which will have an important role in this decade. According to

the framework, 37 % of the available financial resources will be spent on sustainable development and natural resources in the next years, and after 2014 the environmental and climate policy priorities will prevail in all major EU funding instruments. It is necessary to increase the proportion of expenditures on climate policy by minimum 20 % together with contribution from other policy areas. The Commission's announcement – the so called Europe 2020 report which was finalized by 2010 – suggested that the European Union should set realistic targets in the fields of energy, education, R&D, furthermore fight against poverty, and climate change. The national goals could be deduced from these targets. We could find causes of the energy consumption rate reduction in poverty rather than in serious changes of consumer's behaviour. Consumers and enterprises are exposed to harmful and costly price changes; this threatens the economic security and contributes to the climate change.

According to researchers (Lányi, 2012, The Climate Paradox, 2007) local communities will have an essential role in prevention of climate change - this role will be much greater than what the central authorities would have - that is why it is justifiable to let them take a major role in the fight against climate change. Rural areas and local governments will have an important role in spreading environmentally conscious and energy efficient development methods, because the citizen's energy efficiency (and climate) awareness can be strengthened by local public institutions, mostly municipalities. Hard steps should be taken against climate change and energy waste making it difficult to communicate these steps to the people. It is important to make these decisions by authorities which are close to the people. Furthermore local and regional strategies have to be evolved in order to shape public opinion into the right direction, build people's environmental responsibility, and create a strong environmental parochialism. (Kovács, 2001) In Hungary energetic self-preservation is a problem also for households and local governments even though energy waste and poverty both typical for them. In the past few years many Hungarian local governments – mostly counties, larger towns, but some smaller ones too – financial situation is very difficult. Still only few Hungarian local governments employ energy and climate experts, who should contact with authorities, and non-governmental organizations, residents, coordinate the work on energy efficiency and climate change, monitor climate protection tender opportunities, prepare tender documents, and finally participate in the implementation of the projects.

My presupposition is if a local government (settlement) took care of energy efficiency in its everyday practice than the local government would be able to save energy and money. Moreover the inhabitants would live their everyday life in an energy efficient (and climate friendly) way, because they can learn from the good examples they can see very close to them.

Results and Discussion

Energy poverty in households

Energy efficiency as a problem has not only an environmental and social aspect (in a broader sense) in Hungary but another special aspect too. This is energy poverty, which as a social problem arose in 1970s and 1980s. According to the most common interpretation a household is considered to be in energy poverty if the adequate heating is a disproportionate burden, so more than a certain percent of household income is spent for energy bills (Fülöp - Lehocski-Krsjak, 2014). The Hungarian researches are based on energy costs provided by households and they compare the energy costs to the household's total income. Eighty percent of Hungarian households are affected by energy poverty because they spend more than 10 % of their income on energy costs usually. Physical illness (especially respiratory) and mental (anxiety, feelings of isolation) diseases are the most common effects of energy poverty, furthermore drastic deterioration in the condition of the buildings - high rate of CO₂ emission is associated with it - and an increase in households debt (Tóth - Szemes 2013).

In 2013, the annual average consumption expenditure of a Hungarian household was 833.000.-Huf (2.650.-Euro), which is - taking into account the annual inflation too - little changing compared to the previous year. The largest item of a Hungarian household's expenditure remained the home maintenance and household energy, they spent averagely 201.000.-Huf (660.-Euro) per capita per a year. In an average Hungarian household 196.000.-Huf (630.-Euro) was spent for food and non-alcoholic beverages, 101.000.-Huf (325.-Euro) was spent for travel and transport per capita, per a year (CSO, 2015). The ratio of housing costs was decreased by 1.3 percentage points compared to 2012, because of the lower overhead expenses (officially regulated).

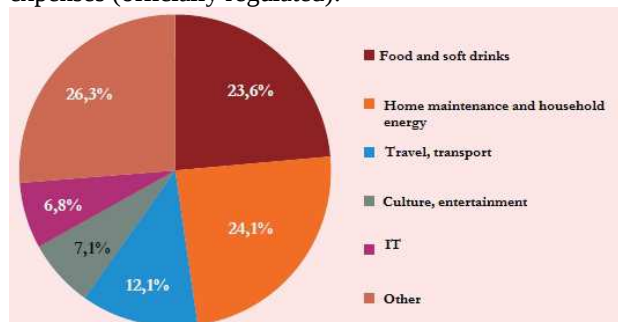


Fig. 1.: The distribution of total expenditures according to main consumer groups (CSO, 2015)

An average Hungarian household spent 51.000.-Huf (170.-Euro) for gas, 47.000.-Huf (155.-Euro) for electricity, 15.000.-Huf (50.-Euro) for district heating, and 14.000.-Huf (45.-Euro) for water supply per capita in 2013. The income released as a result of energy expenditures decrease for those who live in the lower income categories generated some consumption increase in the other main expenditure groups (CSO, 2015).

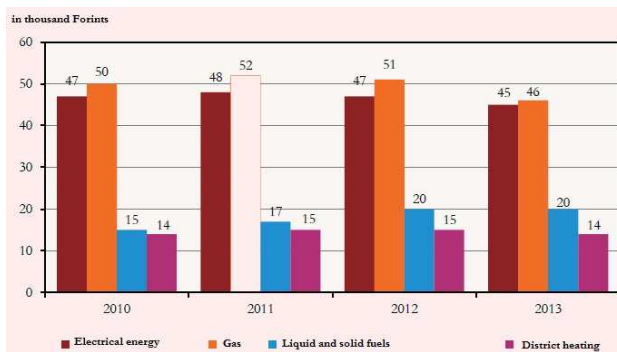


Fig. 2.: Households annual energy expenditures per capita (CSO, 2015.)

Energy poverty as a problem mainly affects elderly people living alone in smaller towns in countryside. 39 % of respondents participating in the CSO Household Budget and Living Conditions Survey complained (Fülöp - Lehoczki-Krsjak, 2014), home maintenance is very difficult for them. These respondents mostly lived in large families, or they were single parents with their child/children. 54-60% who lives in energy poverty are not poor in terms of income.

In the first report of the project “Energy Poverty in Hungary” Tirado-Herrero and Ürge-Vorsatz (2010) stated that the main reasons of the high level of energy poverty in Hungary are high energy prices, relatively low level of GDP per capita, high level of energy consumption of houses, and finally the inadequate temperature regimes of low-income families’ houses. The number of energy-efficiency investments is expected to be lower and lower because of the overhead reduction introduced from January 1st, 2013, which decrease gas and electricity and district heating prices in Hungary. However, as a result of the overhead reduction the survival of public utility services is problematic, so they cannot pay too much attention to their customers to reduce consumption. That is why the uncertainty in prices leads decrease of developments in the market of energy efficiency. The Hungarian building stock has very low energy efficiency. The Hungarian residential energy consumption is among the ten highest in the EU 27 countries relative to the average EU climate. There are several possibilities to moderate the effects of energy crisis in state and municipal level. The governmental interventions possibilities (Tóth - Szemes 2013): (1) increasing energy efficiency, create legal framework and an incentive system to encourage the use of new energy sources, (2) increasing the support for energy supply improvement, and researches on new, more efficient energy utilization, (3) developing energy efficient buildings and means of production, (4) communication new knowledge (about energy efficiency) to the general public. Local governmental interventions possibilities (Tóth - Szemes 2013): (1) organization new, energy efficient enterprises/firms immigration to the area, (2) improving energy self-sufficiency of municipalities.

Energy self-sufficiency problems in local governments

Paradoxically, increased investment activity related to EU applications had a negative impact on the financial position of local governments (Domokos, 2012). The EU financial support system would work more appropriately if resources can be available to support operations and constructions. It was announced in October 2012 that the state would assume the full debt of settlements which have less than 5000 inhabitants and partly assume the debt of larger settlements. The financial balance of local municipalities deteriorated between 2007 and 2010. Municipality bank debts increased by 77,7% (Hunyor, 2012). The most important conclusion of the national audit (in 2011) that investments, paradoxically investments which were co-financed by the European Union (and the local governments) led to the current situation. The majority of facilities created by the above mentioned new investments do not generated revenues, but cause additional expenses for local governments. That is why investments financed from loans accumulated so many problems, and often led to difficult situations: besides loan repayments, and related interests the operating incomes should also cover the further maintenance of the facility, in addition these investments often linked to local government's self-imposed tasks. The forms of indebtedness consisted of operating credits, investment credits from banks and bonds. The biggest increase could be observed in the field of bond issues (Vas, 2011). The non-operating budgets of every Hungarian municipality had deficits in every year between 2007 and 2010. There are commitments the repayments of which are not assured because of increased investments. Another risk factor concerns the future management, operations and sustainability of facilities established by previous developments (National Audit Office [NAO], 2012). Another problem is that in many cases the operation did not result in additional own revenues, and significant savings in expenditures. In the past few years, the investments main goal did not involve improving equipment used in obligatory municipal tasks nor the efficiency of tools (Domokos, 2012). Operating incomes of local governments declined steadily from 2008 (from 2007 to 2010 operating incomes decreased by 55,8 %) (NAO, 2012). Material expenses spent on public institution operations were very important items of municipal budgets. Their energy (utility) costs increased. The growth rate of energy was higher than any other material expenses growth rate (Kovacsics, 2003). Communal consumers represented an increasing proportion in the national energy balance. The municipalities’ material expenses, which are controlled by the State Audit, increased by 136,8 % between 2007 and 2010. During the decision-making process, priority was not given to repayment requirements but to compulsory tasks, the improvement of equipment efficiency, and the preservation of existing assets. Moreover, because most Hungarian municipal buildings are old, their maintenance is also expensive. Hungarian local governments spent 345 million € (totally) on energy expenditures (Fábián, 2011). The local governments’ main reason for energy investments was maintenance

(Kovacsics, 2003). Energy efficiency improvements have many benefits. However, the approach of local governments and residents needs to change. This pertains not only to climate protection and morality but expenditures too. It can be stated that despite the consolidation of debt default risk remained, but declined significantly. The findings of the State Audit Office - made in 2011 - were still true unfortunately in 2013-2014 too, so the State Audit Office can give such suggestions what they gave in 2011 to the local governments involved in the inspection (Renkó, 2013).

About a related research

One of the researches related to the mentioned topic can be connected to Szent István University, which is a part of a research consortium (deals with pyrolysis as waste management technology). One of the areas of this research is about the acceptance of new waste management technologies (which creates and save energy) within the community, or generally the environment and energy (saving) awareness of (local) communities. It was assumed that the presupposition (mentioned in the materials and methods chapter) can be better verified by examining smaller settlements, because there is a much more direct relationship between the inhabitants and the local government than in larger settlements. That is why four relatively small (3-8000 inhabitants in one by one) Hungarian settlements were chosen randomly where surveys were carried out in Autumn 2013 in order to define the level of the environment and energy (saving) awareness of inhabitants. The chosen settlements are Vértesszőlös, Tura, Sajóbáony and Polgárdi. The selected settlements represent the specific problems of their wider area very well. Vértesszőlös is one of the most energy conscious Hungarian settlements located in Central Transdanubian Region, about 100 km from Budapest. The administrative area of the town is quite small that is why establishing industrial parks or big agricultural areas are not possible. The small area is the reason why there is no chance to designate as much residential areas as municipality would like, therefore the prices of building sites are high. Since 1970s many people have been moving from the neighbouring big towns, mostly affluent young people. The Mayors main goal is a liveable and a sustainable ("pain-free" savings) nice town, transparent management. In 2010 the town spent about 43.000.-euros to pay electricity bills, and about 32.000.-euros to pay gas bills. The town got approximately 215.000.-euros from Energy and Environment Operative Program (co-funded by the European Regional Development Fund) to full energy reconstruction of cultural centre of the village, the mayor's office, the school, and so on. Currently 17 projects are running; every 2 out of 9 applications for EU funds are rejected every year. In Vértesszőlös not only the mayor but the notary monitors energy bills every month. The municipal is in contact with Greenpeace; two tree planting events are held every year by the municipality, NGOs and head of municipal institutions. This year is the third one when the pruning waste is collected from residents by the municipality. In 2011 the Vértés Power Plant used this pruning waste, but from

second half of 2012 the municipality have been used it in new local biomass furnaces. The most important energy-conscious step is to acquire EU resources to achieve 50% reduction in energy consumption till September 2012, but the main goal for 2020 is to achieve energy independence. In contrast with Vértesszőlös we can mention Sajóbáony a small town located in Northern Hungary Region a relatively poor part of the country. The town faces different kind of problems, for example it has a pollutant chemical industrial park for decades, the housing stock is relatively old, and the proportion of disadvantaged population groups is rather high. This settlement is a very interesting case study because it has two working hazardous waste incineration plants but the inhabitants refused (in a local referendum) to build there a biomass (pig manure)-fired power plant. The energetic self-preservation is a very big problem for the 50% of the inhabitants according to the mayor. Even so the local government tries to help to the households during renovations. The third location is a settlement in Central Hungarian Region, Tura close to Gödöllő and Budapest. This town tries to be energy conscious that is why for example their nursery's building get hot water and most of the electricity from solar cells, and the local government plans to produce tomatoes in greenhouses heated by geothermal energy. The public acceptability of energy conscious projects is better than in Sajóbáony thanks to the location of the settlement inter alia. Polgárdi a town near to Lake Balaton, in Central Transdanubian Region was chosen because there will be a working pyrolysis waste management plant in a short period of time. Till now more than 600 questionnaires were collected from the mentioned settlements (their processing were done). Unfortunately approximately another 100 questionnaires have to be collected from Polgárdi town in February than the sample will be representative.

Out of the 677 completed questionnaires we got 172 from Vértesszőlös, 203 from Polgárdi, 209 from Tura and 93 from Sajóbáony. An opportunity was offered in every town, complete the questionnaire via the internet. It was thought this could be a real opportunity for youngsters, and students. Unfortunately very few people chose this option.

In **Vértesszőlös** 53.5% of the responders finished their secondary studies and 37.8% had university or college degree. 68.6% of the responders had a job, but only 6% was student. The proportion of unemployed person was 1.7%. Most of the responders (72%) lived in a rural, family housing milieu. Only two person lived in block of flats.

In **Polgárdi** 60.1% of the responders finished their secondary studies and 20.2% had university or college degree. 67.49% of the responders had a job and 26.10% were retired. The proportion of unemployed person was 4.9%. Most of the responders (92%) lived in a family housing milieu. Only 14 person lived in block of flats.

In **Tura** 59.33% of the responders finished their secondary studies and 19.61% had university or college degree. 59.80% of the responders had a job and 28.23% were retired. The proportion of unemployed person was 3.8%. All of the responders lived in a family housing milieu.

In **Sajóabony** 64.52% of the responders finished their secondary studies and 10.75% had university or college degree. 52.69% of the responders had a job and 35.48% were retired. The proportion of unemployed person was 6.45%. Most of the responders (69.89%) lived in a family housing milieu. 21 person lived in block of flats.

Most of the variables I used are nominal ones, but I worked with ordinal variables too. This fact is basically determined the statistical methods I used, which were cross-table analysis, logistic regression, and non-parametric tests. For each variable pairs I tried to perform the above mentioned tests in order to acquire well-founded results. The relevant results of our analysis are the following:

"What is the level of your highest qualification?" versus "Have you ever tried to reduce your household energy costs?"

I was able to use 97.9% of the answers to the mentioned questions. According to my cross-table analysis results I can state that the level of the highest qualification of the people who have ever tried to reduce their household energy costs mostly high school, vocational or industrial school. Most of the responders have not tried to reduce their household energy costs yet. The result of the Chi-square test ($p < 0.01$) is highly significant, so the associative relationship is statistically justified. My logistic regression analysis results partly confirm what I said before. Based on significance values and odds ratios those who answered "Yes, I have." to the question "Have you ever tried to reduce your household energy costs?" mostly had less than 8 class, or a degree from industrial/vocational school. According to the non-parametric Mann-Whitney Test unfortunately we have to say the tests of this variable pair cannot give us valuable results. Because the probability that somebody has higher level of qualification who answered the second question "No, I have not." is high.

"Are you concerned about the status of the environment?" versus "Energy saving is very important for me. I would pay for it irrespective of my financial status."

I was able to use 84.9% of the answers to the mentioned questions. According to my cross-table analysis results I can state that most of the people who would like to pay for energy saving (irrespective of their financial status) are concerned about the status of the environment mostly, or very. The result of the Chi-square test ($p < 0.01$) is highly significant, so the associative relationship is statistically justified. Unfortunately my logistic regression analysis results do not confirm my presuppose, rather a common truth: if we consider environment protection as a moral issue most of the people want to protect environment. But if we consider environment protection as a financial issue it is not true. According to the non-parametric Mann-Whitney Test the probability of answer "Yes" to the question "Energy saving is very important for me. I would pay for it irrespective of my financial status." is higher if the responder is more environmentally conscious than the average.

"Are you concerned about energy efficiency?" versus "Have you ever tried to reduce your household energy costs?"

I was able to use 97.5% of the answers to the mentioned questions. According to my cross-table analysis results I can state that most of the responders have not ever tried to reduce their household energy costs however they are concerned about energy efficiency. The result of the Chi-square test ($p < 0.01$) is highly significant, so the associative relationship is statistically justified. Let us take into consideration the results of logistical regression! Then we can state it is sure those will answer "Yes, I have." to the question "Have you ever tried to reduce your household energy costs?" who are concerned about energy efficiency mostly, or very. According to the non-parametric Mann-Whitney Test confirm what I said before. Probably because of financial problems, and the rate of returns most of the responders who are energy conscious have not tried to reduce their household's energy costs.

"Have you ever tried to reduce your household energy costs?" versus "If the municipality of your residence did more for environment protection and energy saving you would be more environment friendly and energy conscious than now?"

I was able to use 97.0% of the answers to the mentioned questions. According to my cross-table analysis results I can state that most of the responders have not tried to reduce their household energy costs, however they said if the municipality of their residence did more for environment protection and energy saving they would be more environment friendly and energy conscious. The result of the Chi-square test is less significant, so the associative relationship is statistically barely justified.

Unfortunately most of the responders are energy conscious (and environment friendly) but only in a conceptual level. Reducing household energy costs can be very costly. People need raise funds (for example from EU applications) and they need good examples they can see very close to them. If a local government takes measures to increase energy efficiency these measures will have a spill-over effect. The public buildings will be more energy efficient, local governments will pay less to energy bills, and residents will see good examples so their attitudes will change.

"Instead of conclusion" – Ideas vs. reality

Among municipal energy management measures firstly, preventive or mitigation measures should be developed. Ensuring energy efficiency and using more renewable energy will enable the reduction of greenhouse gas emission and prevent or slow down climate change. It is essential for local governments to be able to meet energy efficiency requirements in their everyday management as well as creating energy efficient operations in public buildings. That is why it is necessary to introduce energy efficiency requirements to the relevant legal provisions for local governments. In addition, it is important that each municipality, with more than 1000 inhabitants, employs at least one climate rapporteur or energy professional. To achieve these goals the local governments' participation in applications should be made easier. Various steps should be taken in order to change people's environmental or energy approach. Residents need to become aware that they

belong to a community. If steps are taken to create energy efficiency local governments/communities, it will be possible to use their local energy resources and create jobs.

There are two important alliances of climate friendly and energy efficient settlements in Hungary.

The **Association of Climate Friendly Towns** was established on 17 November 2007, in Hosszúhetény, with the active participation of Hungarian Academy of Sciences Institute of Sociology Climate Change Research Group. It aims to help Hungarian municipalities to get their own, professional climate change and energy efficiency strategy, help to realize these strategies, represent the interests of towns in climate change issues. With the help of British Embassy they created the Climate Call to urge the development of local climate change and energy efficiency strategies. The Association is searching for energy and water saving opportunities for towns and in order to neutralize the greenhouse gases emission and support the local-level green programs it founded a Climate Fund. Tatabánya, Pomáz and Hosszúhetény (Fehérvári, 2010, Antal, 2007) already have had an own local climate strategy which is accepted by the local council. After a town joins to the Association a local Climate Association has to be founded there; the real work will take place in the future in them in collaboration with the municipal representatives.

The **Association for Energy Efficient Towns** founded in 2006. The aims of the Association are the protection of the environment, education, upbringing of the local youth and children in order to introduce the energy efficiency as a very important aspect of local community's life. This service is indirectly affecting the whole society, representing individual and common interests. In order to perform its task the Association helps to the municipalities to form their own energy management, scientific and research activities and training the local government representatives.

They have 39 members, totally.

Within the framework of a survey questionnaires were sent to them in order to test their climate friendly and energy conscious everyday operation, and their operations effect to their inhabitants. I have got 18 completed questionnaires back till now. My experiences are very mixed. In the settlements members of the local government's council, or the vice mayor are the contact persons between the settlement and the alliance. In others the contact persons are employee of mayor's office, or "just" technicians. That is why some settlements are able to answer questions like "Has the local government ever tried to decrease the energy accounts permanently?", or "Does the settlement apply climate change (energy efficiency) specialist permanently?" easily. Unfortunately other settlements said the information in connection with for example energy efficiency are scattered between various departments so they are not able to answer my questions. That is why now I am publishing only part information.

Only four settlements employ a climate expert permanently: Tata, Tatabánya, and two districts of Budapest. Tata is the smallest of them, but the settlement has more than 23600 inhabitants. Other members – including official centre of counties – do not employ

climate experts, 10 out of 18 have never requested advices from a climate expert. Otherwise every tested settlement have tried to minimize their energy (electricity, and gas) bills. Furthermore every tested settlement answered "Yes" to the following question: "Are the monthly energy consumption of local public buildings and public lighting system recorded by the local government?" In three settlements (Martfű, Sajólad, Tápióbicske) there are not any energy or environmental conscious NGO. Energy production from any kind of waste is not specific to alliance member settlements, except districts of Budapest.

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ENERGY MANAGEMENT AND PUBLIC AWARENESS IN SELECTED HUNGARIAN SETTLEMENTS

S u m m a r y

Hungary has one of the highest gas dependences of International Energy Agency member countries, energy dependency and security issues have been a primary concern of the government. Hungary has a large potential to reduce its

energy consumption through improvements in the energy efficiency of the various end-use sectors. Moreover buildings are key to the climate not only energy challenge as they are responsible for approximately 50% of energy-related CO₂ emissions. The high energy consumption of the average residential unit in Hungary is a consequence of the long-time subsidised energy prices and of the deterioration of the residential stock. If the energy inefficiency of the Hungarian building stock is improved, not only will this reduce GHG emissions significantly, but it can also contribute to other important elements of the social, political and economic policy agendas. Rural areas and local governments will have an important role in spreading environmentally conscious and energy efficient development methods, because the citizen's energy efficiency (and climate) awareness can be strengthened by local public institutions, mostly municipalities. The Hungarian residential energy consumption is among the ten highest in the EU 27 countries relative to the average EU climate. Eighty percent of Hungarian households are affected by energy poverty because they spend more than 10 % of their income on energy costs usually. Most of Hungarian municipal buildings are old, their maintenance is also expensive. Hungarian local governments spent 345 million € (totally) on energy expenditures in 2011. It is essential for local governments to be able to meet energy efficiency requirements in their everyday management as well as creating energy efficient operations in public buildings. That is why it is necessary to introduce energy efficiency requirements to the relevant legal provisions for local governments. Various steps should be taken in order to change people's environmental or energy approach. Unfortunately the mentioned requirements are realized entirely neither in "normal local governments" nor in climate friendly and energy conscious ones.

KEYWORDS: climate awareness, energy efficiency, financial position of local governments, energy poverty in households

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