

Public opinion on the settlements' environment and the use of renewable energy sources in the Micro-region of Gyöngyös

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Climate change, adaptations, sustainable rural development, settlements' environment, the use of renewable energy sources

SUMMARY

This paper intends to give an overview on some results of our studies carried out on the public opinion of the above aspects (settlements' comfort level and the use of renewable energy sources) directly or indirectly linked to the topic of climate change and possible adaptations. These studies were carried out by applying questionnaire survey in the (altogether 25) settlements of the Gyöngyös Micro-region. Knowledge on general human perceptions related to climate change and its impacts is considered to be important as it should advance the elaboration of adaptation and applied scientific works. They are highly required as rural areas, due to their closer relationship (dependence) to the physical environment, are more susceptible to changes resultant from the climate change with their possibilities to adaptation also being impeded.

The beauty of environment plays an important role in the settlements studied within the micro-region with more than two third of pollees opting the environment as a factor they most proud of, especially among those residing in the villages for more than 10 years. It can be presumed that any change in this environment would greatly impact their everyday life and emotional relationship to their home villages. The overall picture after analysing the public opinion on the use of renewable energy source (as possible way of adaptation to the impacts of climate change) is rather controversial. Even basic knowledge and information are limited regarding the relevant technologies calling attention to the importance of raising environmental awareness and providing full information seems to be essential and should be implemented, through the media and education.

INTRODUCTION

Laymen attitude towards climate change has undergone fundamental changes in the past two decades. Instead of basic questions such as 'Is there a climate change?', topic related to the cause of the process or possible adaptation are apparent. More emphasis is put on the role of society and modernisation in the process, too.

As concluded in a study by Dunlap (1998), climate changes was proved to be one of the last among environmental problems regarded to be important in recent years, ozone depletion, destruction of the tropical rainforests, water and air pollution were all judged to be more relevant. Responses also indicated a limited knowledge of laymen with many being confused about climate change and the depletion of the ozone layer or air pollution – however, in this respect, some positive changes has occurred in recent years. The study above also intended to give an answer on the opinions of the potential negative impacts of climate change. Impacts on the socio-economic welfare was, in general, claimed to be less important.

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SOCIETY, SETTLEMENTS' ENVIRONMENT AND THE USE OF RENEWABLE ENERGY SOURCES

Settlements have become the centres of mankind-environment disharmonic relationship, i.e. the main source of environmental pollution, being present, especially in towns and cities, in the form of an environmental conflict being more complex and more significant in size. By the end of the past decade, in addition to conventional environmental problems (sewage treatment, waste management, emission of pollutants from transport etc.) ever increasing, new factor of environmental loading also became apparent (Eke Zamárdi and Baros, 2007).

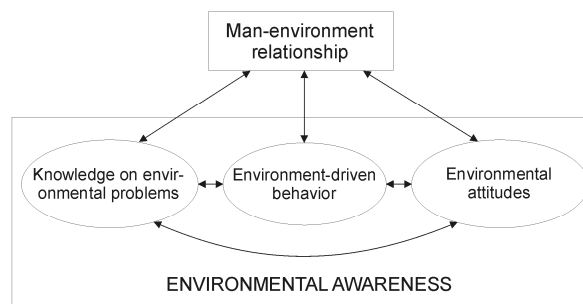
Development of the settlements' environment to a required level is a basic factor from the aspect of the settlements' successfulness. Relevant infrastructural developments are fundamental segments of the development of the settlements involved. It is evident that their presence greatly contributes to the improvement of the living residents' standards and, in a broader sense, to achieve a higher quality of life. This latter is also reflected in the state of the elements of environment.

As a whole, the sate of environment is a segment of what is conceptualised as a liveable settlement as well as of the improving of the local society's status, thus residents opinion play an important role in the increase of the

population retaining capacity of the given settlements. Behind the individuals' attitudes towards the environment, a general image of the mankind-nature (or man-environment) relationship as well as knowledge on environmental problems is found (Rannikko, 1996; Figure 1); a consequence of these is the range of activities and tools that would be devoted by individuals to improve their state of environment.

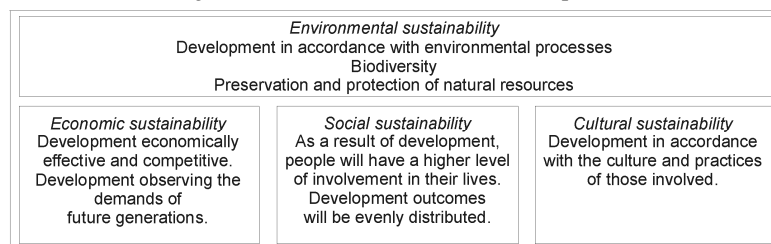
Renewable energy related investments intending to achieve a change in energy production and consumption are often regarded as the first step taken toward sustainable development. Their advantages have become, by now, well-known as well as the fact that they make contribution to the improvement of the environmental quality and socio-economic welfare of the regions involved. The use of renewable energy sources requires a complex social-economic-political-ecological agreement (Figure 2) that when lacking represents the main obstacle for the low use of them. The social segment of this system of criteria is also considered to be very complex itself as being influenced by several factors. Among them, the economic-driven attitude of the population must be emphasised (decrease in the energy-related expenses), the level of environmental consciousness (decrease in environmental loading), their knowledge on the technology (its benefits and disadvantages, reliability – taking uncertainties towards anything 'new') and disturbances caused by the given facility (noise, light, visual impacts etc.).

Figure 1: Conceptual background of environmental awareness



Source: Rannikko (1996) after Kantola and Kontinen (1994)

Figure 2: Dimensions of sustainable development



Source: Rannikko (1999) after Rouhinen (1991) and Iisakkala (1993)

Such installations can be landscape-forming factors, as being integrated to its physical environment and as such will be an important part of the identity and culture of the community of the region through everyday perceptions (Baros and Patkós, 2004). Even more, e.g. according to Stanton (1996), wind-power plants are a decisive elements of the sight of a given region. Most places have their own identities that include their physical features and functions as well as the related significances (Entrikin, 1991). Two types of them are distinguished by Rannikko (1997): (a) personal and (b) place-related common significances. Consequently, identity can be studied as the relation of a given individual to a given place and, on the other hand, as collective local/regional identity. This latter one emerges as a result of a long-term social practice, thus – as being relatively easily changed in most cases – it is important that alterations impacting the community should not be either too rapid or radical as can only be adopted gradually by the community involved. They have to be enduring and acceptable by individuals. In case, the community is affected by rapid and large-scale changes, it may become unstable (Rannikko, 1999). Older age groups are especially characterised by slower adaptation. As claimed by Vanclay (2002), a closer relation to the given land and landscape resulting in a lower adaptability to any changes should be taken into account especially in their case.

An investment of this kind can, in the meantime, significantly alter the image of those involved on their residential area and its liveability. This is partly the reason that no support of the entire community can be expected for e.g. community wind-energy development projects.

Human comfort perceived at a given settlement is also an integral part of the local community's identity. It is represented by human activities, both materially and immaterially and becomes part of the cultural values as well as becomes part of the image developed by residents both in and outside the region involved (Paasi, 1989).

Image of the settlement among visitors from other regions as well as its popularity could improve that would eventually could contribute to the improvement of the settlements' and the region's competitiveness.

METHODS

This paper intends to give an overview on some results of our studies carried out on the public opinion of the above aspects (settlements' comfort level and the use of renewable energy sources) directly or indirectly linked to the topic of climate change and possible adaptations. These studies were carried out by applying questionnaire survey in the (altogether 25) settlements of the Gyöngyös Micro-region.

Questions included in the questionnaire aiming to research the settlements' comfort level (Baros et al., 2008) can be classified into four groups as (a) questions on the general satisfaction on basic services, (b) judging the settlements' environment, (c) level of satisfaction related to the home village and town and the micro-region and (d) judging the state of agriculture.

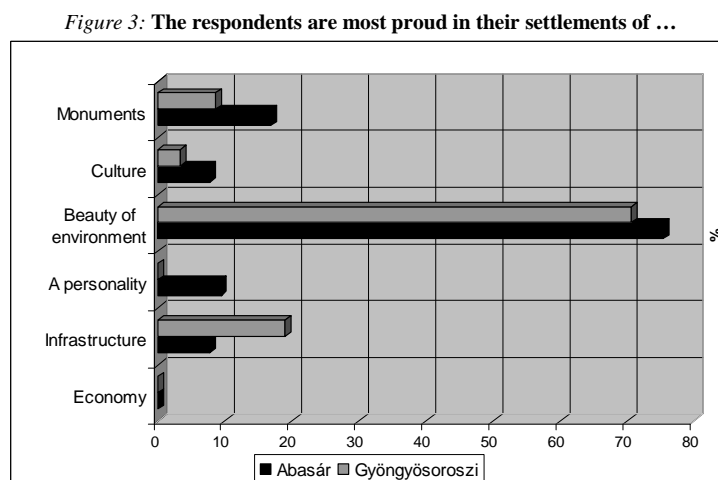
The second questionnaire aiming at exploring public opinion on the use of renewable energy sources (Patkós and Baros, 2003), included questions on the residents' heating and hot water generating methods and appliances and on such expenses. Also, as the main segment, general knowledge on renewable energy sources, their innovative attitude, the acceptance of such innovations and the judging of potential benefits were studied.

For these studies, we intended to obtain representative samples, thus in the first case 1991 questionnaires were sent to the respondents. Of these, result for two settlements (the villages of Abasár and Gyöngyösoroszi) will be introduced below. For the second questionnaire, altogether 1701 were filled in.

RESULTS

Public opinion on the settlements' environment

Of the options given, pollees were asked about what they are the most proud of their settlements. In addition to the environment, monuments, culture (cultural heritage), a (famous) personality, infrastructure and economy were listed. As seen in Figure 3, the beauty of environment is far the most important factor in both settlements studied being marked by 68% of male and 74.5% of female respondents.



Source: Baros et al. (2008)

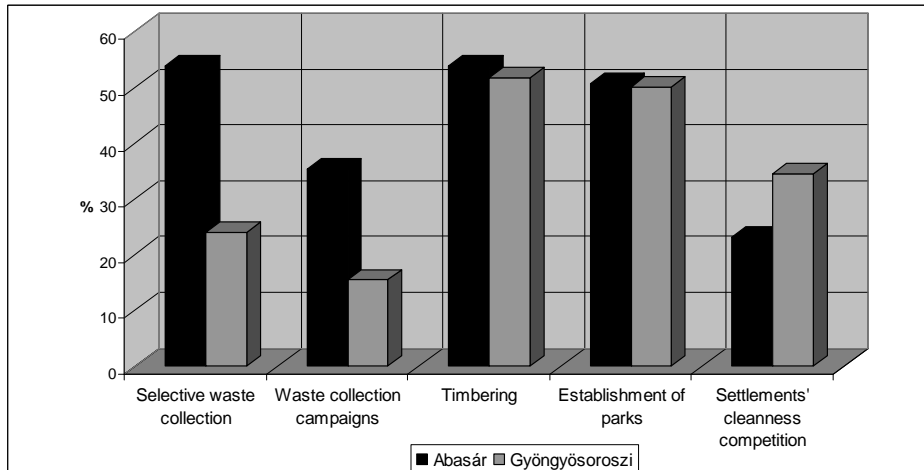
The above results well correlate with the duration since respondents have lived in their villages. Thus, it can be concluded that with 88.6% residing there for more than 10 years, they villagers must have a decent knowledge on their environment and are deservedly proud of their home settlements.

Only 14.1% in Abasár while 5.2% in Gyöngyösoroszi responded that would move away from these villages. A push factor is certainly a better environment at a minority of this group of pollees.

Satisfaction with the village's image was generally high in the village of Abasár, however significantly lower in Gyöngyösoroszi. In the village of Abasár, 72.7% of all male while 66.7% of all female respondents were satisfied whereas in the village of Gyöngyösoroszi, such figures were only 7.7% and 23.3%. After having the age distribution of these answers studied, it can be concluded that in Abasár, it is mostly the younger generations (between the ages of 18 and 31) who are satisfied (83.3%) with the same value in Gyöngyösoroszi being 25%. At older age groups, there is a slight decrease in Abasár (to 62 and 69.2%) with more or less similar results obtained for Gyöngyösoroszi.

In order to improve the state of environment in the villages involved, about half the pollees thought selective waste collection and the establishment of green areas should be the most important actions they could also participate. Campaigns proved to be less popular and favoured by our respondents (Figure 4)

Figure 4: Actions to be undertaken by respondents in order to improve their environment

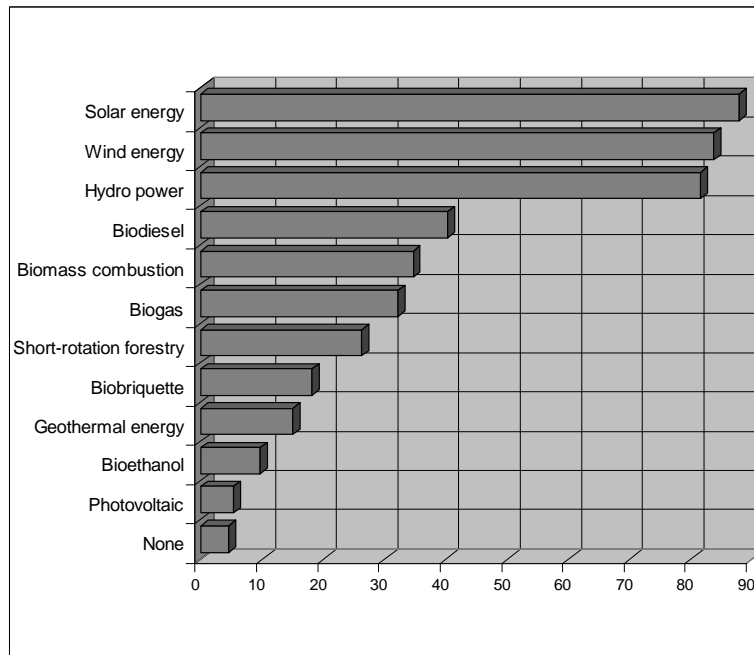


Source: Baros et al. (2008)

Public acceptance of renewable energy sources

The main segment of this questionnaire compiled for inhabitants contains questions on renewable energy sources. First, we intended to obtain information on the type of RES the pollees had already heard anything at all (Figure 5). In this respect, according to the responses given, solar energy, wind energy and hydro-power (with a general knowledge exceeding 80%) proved to be the most well-known. The share of those had not heard about any of these technologies is only 4.47%.

Figure 5: The general knowledge on renewable energy sources among the citizens (in percent)



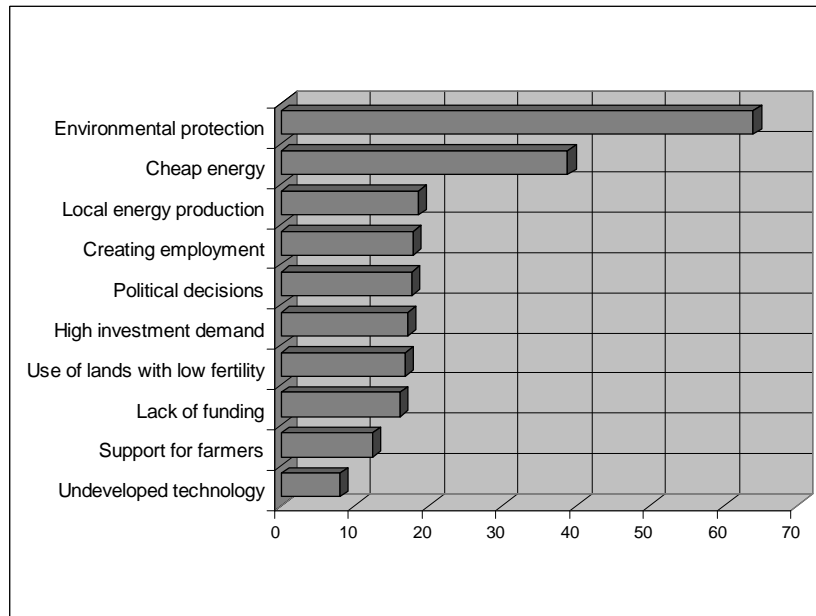
The knowledge on various bioenergy-related technologies can be regarded in general as moderate. Only somewhat 26% of the respondents had heard about short-rotation forestry, whereas biobriquette has knowledge of 18.11% and bioethanol has nearly 9.64% - by this, them being the least well-known after photovoltaic technologies. On the contrary, the average knowledge on biogas, biodiesel and the combustion of biomass exceeds 34%.

The ratio of those obtaining at least basic knowledge on renewable energy sources indicates a similar tendency however with significantly lower values. Although many of the pollees have a rather explicit knowledge on these technologies, this fact is not indicated by the overall picture.

Among the most important benefits in relation to the use of RES, environmental aspects proved to be the most relevant (63.96%). The respondents are, apparently, aware of the non-polluting nature of RES as well as of

the fact that by the use of these technologies, cheaper energy compared to fossil energy sources can be produced (38.8%). Following this aspect, the possibility of local energy production was indicated by the most pollees (18.52%). Other options – making use of agricultural areas of poor quality, the improvement of employment, etc. represent more or less similar percentages (ca. or under 16-17%; Figure 6).

Figure 6: Advantages associated with the use of renewable energy sources (in percent)



Knowledge on the funding available (e.g. funding demandable from municipalities, energy efficiency or energy saving programmes) is minimal.

In the final section of the questionnaire, the inhabitants were asked about the realisation of a hypothetical installation utilising RES, in connection to whether it would be supported and if yes, on what way and degree, what organisation should take the role of initiator, whether the settlements or those involved would benefit from such investment and whether such an installation would be accepted in the environment of the residence.

The share of those opposing this type of investments has not proved to be significant (approximately 8%) despite which openness was experienced towards such new technologies. More than half (61.96%) of the respondents would offer primarily no-financial support. The share of those offering financial contribution to the establishment of such installation remains under 10%.

Regarding financial contributions, the results indicate that inhabitants intend to make contributions in order to establish such an installation primarily by the taxes paid. The share of those who do not intend to devote any sum on such purpose is rather considerable.

The role of initiator, considered to be necessary to such projects, is put on by 55.32% of the pollees to the central government. The relevance of regional institutes and municipalities of the settlements within the county remains moderate (somewhat above 20%). Far behind of these are all other responses giving such role to other potential actors, as e.g. civil organisations, entrepreneurs, among others.

On the judging of benefits of an RES-related development on the level of settlements it can be claimed that about half of the inhabitants are aware of the fact that an installation to be implemented would not only bring environmental (cleaner air) but also socio-economic benefits (increasing tax revenues, creation of jobs). Only 10.93% thought that an investment of this kind would prove to be disadvantageous.

A similar picture is drawn for the benefits on the level of individuals however socio-economic benefits for the inhabitants are recognised by significantly less (35.92%) than in the previous case.

No significant opposition was experienced against a RES project to be implemented in the neighbourhood of the residential area, only four of the respondents claimed to disapprove any of this kind of installations. The lowest number of those with support to these investments would approve a biomass-based heat power plant or a smaller hydro-power plant. The low rate of support for this heat power plant is due to the opposition against chimneys and smoke and dust not to the wood as raw material. Installation related to the use of wind and solar energy, among them especially solar cells and wind wheels enjoy much greater support.

CONCLUSIONS

The beauty of environment plays an important role in the settlements studied within the micro-region with more than two third of pollees opting the environment as a factor they most proud of, especially among those residing in the villages for more than 10 years. It can be presumed that any change in this environment would

greatly impact their everyday life and emotional relationship to their home villages. Although not described in this paper in details, respondents found the level of environmental awareness moderate or low.

The overall picture after analysing the public opinion on the use of renewable energy source (as possible way of adaptation to the impacts of climate change) is rather controversial. Even basic knowledge and information are limited regarding the relevant technologies. Raising environmental awareness and providing full information seems to be essential and should be implemented, through the media and education. Among the first, mass media has the largest power whereas for development projects on the level of micro-regions, regional television and radio should play a more decisive role as they could be the main factor of regional culture and identity (Paasi, 1989).

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