Consumers' knowledge of bio-energetics

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Keywords: renewable energy, attitude, associations, primary research.

Summary findings, conclusions, recommendations

Our aim was to establish the specific objectives and toolkit of eco-energetic marketing targeting the North Hungarian region, through a primary survey of 600 persons. Our research objective was to examine – taking the region's economic and social circumstances into consideration – what conditions, consumer reception, and affinity is needed to gain competitive advantage with the involvement of renewable energy sources, and also to point out the characteristics of how the population currently uses energy, its mode and satisfaction level.

During the examination of consumers' familiarity level with renewable energy sources we observed the dominance of solar, hydro, and wind energy, nevertheless, their knowledge about these renewable energy sources was rather superficial.

Concerning the main sources of knowledge on renewable energy sources we can state that the respondents showed a preference for traditional media, such as television, the press, and radio. It is apparent – as opposed to similar results from previous research – that the reference groups were the least significant influential sources of information in respect of the whole spectrum of respondents.

The results of the attitude examination established the following facts: of the factors associated with renewable energy sources, environment protection, inexpensiveness, local energy production, and investment demand were most frequently mentioned. All this suggests that respondents are well aware of the cleanness of renewable energy sources and also that these sources will probably be cheaper than fossil fuels. Most respondents would typically give moral rather than financial support for the implementation of such an initiative.

Introduction

Examining the tendencies of alternative energy consumption we can declare that energy consumption per GDP can be twice or two and a half times as much as in other European countries. The structure and type of energy consumed in the past ten years have changed.

The ratio of coal decreased while the use of oil products slightly increased. The increase of natural gas is the most significant one. According to forecasts the role of solid fuels will continue to decrease, the use of mineral oil and natural gas will remain constant while the importance of nuclear energy and renewable energy is likely to increase.

One of the 97 objectives of the National Environment Protection Programme for the 1997-2003 period is to eliminate the obstacles from the use of renewably energy and to gradually develop the subsidisation system. The government accepted the Energy-saving programme in 1995, according to experts 25-30% of energy could potentially be saved nationally.

According to other experts Hungary will have to spend about HUF 65-75bn in order to be able to fulfil its European Union obligations on renewably energy *(Réczey, 2005)*.

In the European Union the proportion of renewable energy sources was 5.7% in 2004, by 2012 it is planned to increase to 12%, while according to the latest EU Committee investigation there is a chance to cross the 10% threshold. Hungary agreed that by 2010 it will increase the proportion of renewably energies to 3.6%. Liquid fuels can last for a coupe of decades, which postulates and requires the renewal of 60% of Hungarian energy consumption *(Gergely, 2006).*

The results of the primary research carried out in North Hungary and in the surrounding counties

The objectives of the research. Our objectives are to take a survey of how well informed and energy-conscious the population is, to learn more about the attitudes toward renewable energy sources, and to get familiar with the expectations and demands concerning energy utilisation. In this paper we would like to introduce the results of some relevant questions in this field – without a demand for completeness.

The circumstances of the research. In May, 2006 we carried out a standard questionnaire survey among the population of Heves, Jász-Nagykun-Szolnok and Borsod-Abaúj-Zemplén, Nógrád, Pest, Szabolcs-Szatmár-Bereg and Hajdú-Bihar counties, as well as in Budapest.

Initially we planned to question 600 persons. The number of the returned questionnaires that can be analysed is 598. The composition of our sample, in respect of age and sex, follows a national representation; during sampling we applied a procedure according to quota.

During data analysis the SPSS 14.0 statistical programme software was used.

In this paper the results of the following areas will be introduced:

- Knowledge on energy resources
- Methods of knowledge acquisition
- Attitudes toward renewable energy

The demographic data of the sample. In connection with gender composition we followed the national ratio according to the data from KSH (Hungarian Central Statistical Office), which means that 46.5% of the respondents were men while 53.5% were women.

In respect of age our sample slightly over-represents the middle-aged population. Our sample keeps to the 95% confidence level, beside this minimal (5%) margin of error.

As for the place of residents of the respondents we aimed to collect data from the Region of North Hungary and from the surrounding counties. It can be stated that the largest percentage of the respondents live in Heves county, followed by Borsod-Abaúj-Zemplén county, Nógrád county, and Jász-Nagykun-Szolnok county.

Taking the types of the settlements into consideration we can say that city dwellers and villagers are represented at 50-50% respectively. As for the size of the settlements most of them has a population of 1,001-5,000 and 10,001-50,000. The least number of respondents live in the smallest villages.

The breakdown by *educational level* is as follows:

Those with intermediate level of education prevail (59.9%), the ratio of respondents with higher/university education is 23.8%, and while those with an elementary education is 16.3%.

The monthly net income per capita of the family fell between HUF 50-100 thousand in 44.4% of the sample, and between HUF 20-50 thousand in 39.9%. Those with less than HUF 20 thousand (4.3%) are counted as explicitly low income families, the 39.4% of the sample has low income between HUF 20-50 thousand, an income of HUF 50-200 thousand counts as average – 54.8% of the sample, while 1.6% of the

respondents belong to the higher than average level.

The method of knowledge acquisition, the knowledge and familiarity in connection with energy sources

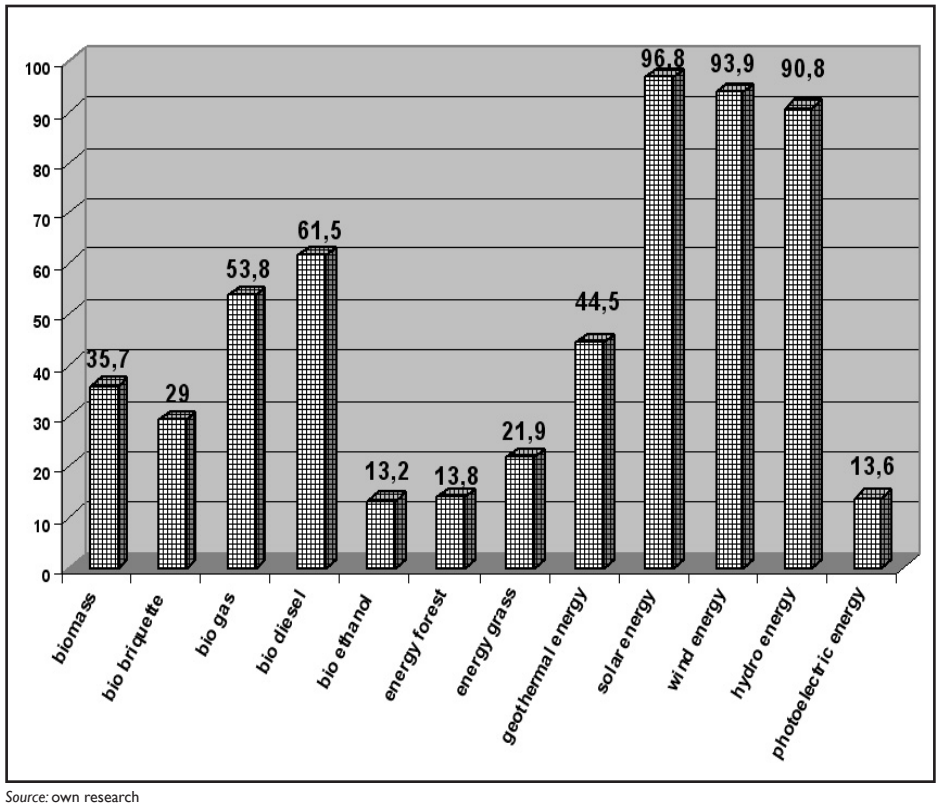
Basic knowledge. More than 90% of the respondents stated that they had heard about solar-, wind-, or hydro energy. Bio diesel (61.5%), bio gas (53.8%) and geothermal (44.5%) were also frequently mentioned. The least known energy sources were bio ethanol (13.2%), photoelectric energy (13.6%), and energy forest (13.8%).

Familiarity versus knowledge

When comparing the respondents' familiarity and knowledge level the most significant difference appeared at the solar-, wind-, and hydro energy sources where the familiarity level was furthest above real knowledge. It means that knowledge about these resources are only superficial. Although familiarity level was ahead of real knowledge levels, there were no marked differences at other energy sources (Figure 2).

Figure 1

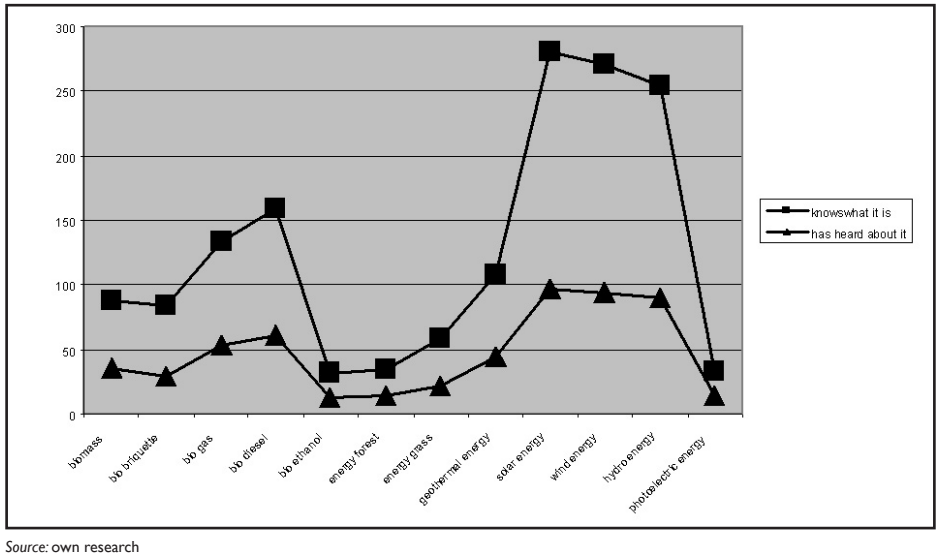
Consumers' basic knowledge on alternative energy sources



Source: own research

Figure 2

Familiarity and knowledge in connection with renewable energy resources

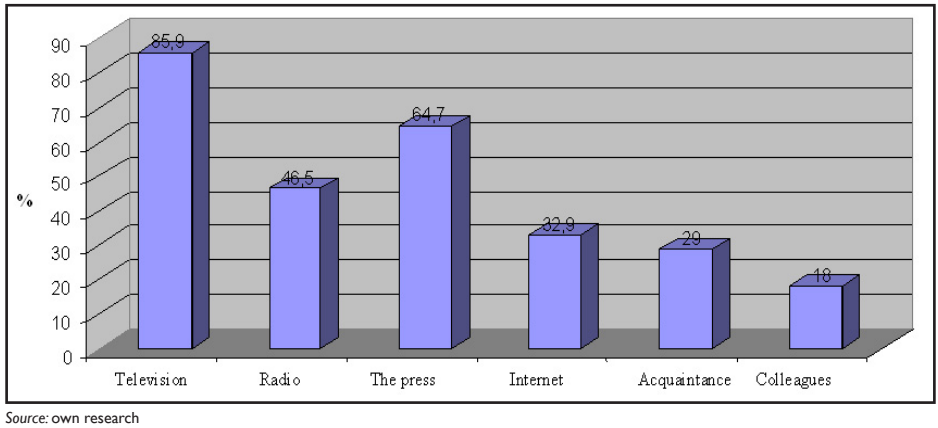


Source: own research

Knowledge acquisition. Examining the source of knowledge about energy sources we can declare that the participants have obtained their knowledge mainly from the traditional media such as the television (85.9%), the press (64.7%), the radio (46.5%), which is supported by the results shown in Figure 3. It is apparent that reference groups have the least important role as an information source.

Figure 3

The source of knowledge on renewable energy-sources



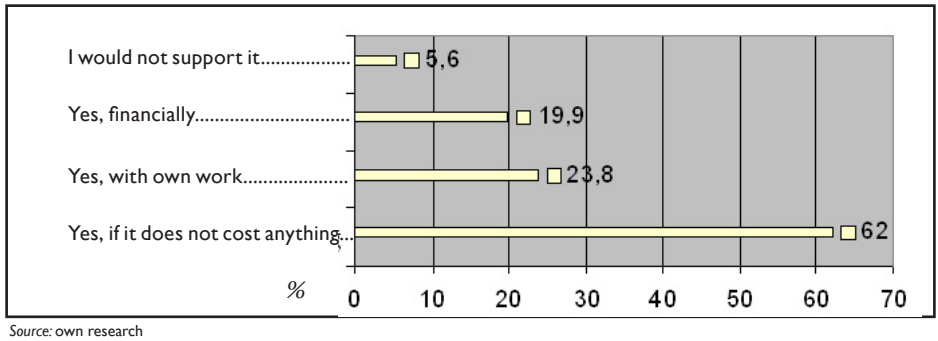
Source: own research

The respondents' attitude towards renewable energy producing factories to be established in the settlements

The establishment of an energy-producing factory. Examining the support of the establishment of a possible factory producing renewable energy we can discover a strikingly high value (62%) according to which the respondent is willing to support the project on condition that it carries no financial obligation. Almost one quarter of the respondents (23.8%) would be willing to support such initiations with his own work, which is a positive sign (Figure 4). Only 5.6% of the respondents have a negative approach towards it in the examined region.

Figure 4

The support of the establishment of a possible factory producing renewable energy



Source: own research

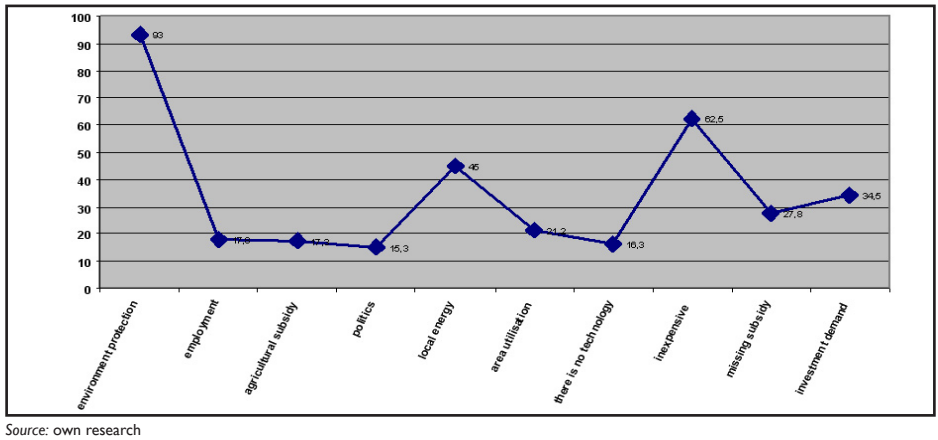
The examination of the attitudes towards energy sources

Our association examination was aimed to find out what concepts the respondents had formed about renewable energy.

As a result we can state that environment protection was mentioned in an outstanding number (93%), followed by inexpensiveness (62.5%), local energy production (45%), and investment demand (34.5%).

Figure 5

Association about renewable energy (%) concerning North-Hungary



Source: own research

Multiple variable examinations of the attitudes towards renewable energy sources

In order to find out what factors, characteristics, and associations are connected and show a systematic structure in relation to renewable energy sources in the minds of the respondents we applied factor analysis which produced an acceptable KMO domain (0.591). As a result of the examination we can distinguish three factors: the "The factor group of macro level problems" comprising investment demand, the missing subsidies, undeveloped technology, and the lack of political support. The second group is the sphere of "Macro level possibilities", which contains the possibilities to support agricultural producers, the ability to utilise inferior areas, and the ability for large-scale employment. The third factor, "The domain of functional possibilities", comprises the possibility to provide local energy sources, environment protection, and inexpensiveness.

Table 1

The factors of the attitudes towards renewable energy sources

Factors	Factors		
	Macro-level problems	Macro-level possibilities	Functional possibilities
Investment demand	0.640	-0.097	0.188
Missing subsidy	0.632	0.186	0.154
undeveloped technology	0.583	0.122	-0.120
Necessity for political support	0.519	0.005	-0.214
Agricultural subsidy	0.097	0.759	0.165
Inferior area utilisation	0.156	0.747	0.095
The employment of many people	-0.093	0.577	-0.298
Local energy production	-0.014	0.060	0.643
Environment protection	0.130	-0.060	0.589
Inexpensiveness	-0.331	0.078	0.522

Source: own research

In our view all three factors carry great importance in the shaping of social consciousness, and the development of environment-conscious mentality. They, however, need to be supported through different marketing activities in order to achieve a successful shift in the scale of values concerning the positive attitude towards renewable energy sources.

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