

Carbonarium, Hungary

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Summary of the case

Carbonarium is the name of an association (not-for-profit and non-governmental) in Hungary that was founded at the beginning (spring) of 2005.

Carbonarium was founded with the main aim of decreasing its members' CO₂ emissions and also increasing climate change awareness of the general population. The members of the association keep track of their own CO₂ emissions, compare them with one another, implement mitigation measures, and pay the membership fee based on their calculated CO₂ emissions.

Based on the founding document of the association:

- The aim of the association is to create a voluntary community of its members who believe that it is their responsibility and task to reduce the CO₂ content of the atmosphere, accepting at the same time that the increase in the amount of CO₂ in the atmosphere is a global problem.
- Members are aware of the negative impacts of their own CO₂ emissions into the atmosphere, but undertake to use a certain part of their material and other resources to reduce their emissions or mitigate impacts.
- Members of the association can be both individuals and organisations.

The most important aims for founding the association were

- to help highlight the impacts of our lifestyles and its modifications **using members' own (measured) consumption data**,
- to **create a community of members** responsive to the global problem of rising atmospheric CO₂ content,
- to **provide information** to any interested party,
- to **influence public opinion and knowledge**, with particular attention to young generations.

In a way, Carbonarium is a special case as it is an organisation created specifically for the implementation of a particular DSM programme.

Step 1: Context of Carbonarium

National context in general¹

Carbonarium was created and its activities are carried out in Hungary. The country is a member of the European Union since 2004. Thus, energy related policies and programmes are largely influenced by EU directives, guidelines and targets.

In the EU, Hungary is the country where the population has the smallest per capita ecological footprint. Still, just the energy-related footprint in the country is larger than the world average available biocapacity (based on 2001 data, WWF et al., 2005).

¹ This chapter was prepared based on Vadovics and Kiss, 2006

The Hungarian economy, similarly to the neighbouring post-communist regimes, has been undergoing significant structural changes. The country has engaged in privatization and liberalization of – among others – the energy sector during the 1990s and 2000s respectively (INFORSE-Europe, 2006, Urge-Vorsatz et al., 2003). Key characteristics of the energy supply in Central Eastern Europe (CEE), thus in Hungary, are the low source diversity, high dependence on monolithic fuel mix, large share of nuclear energy, and particularly high level dependence on Russian energy imports. At the same time, the result of the Soviet energy policy is a well-developed district heating system and similarly developed gas-distribution system, which allows these countries to use one of the least polluting fossil fuel sources in a large share (almost half of the energy supply in Hungary is natural gas). Legacies from the socialist era are both positive and negative; however, the most problematic area is the wasteful energy production and use as a result of the socialist attitude (Molnar, 2004; Urge-Vorsatz et al., 2003). The change of regime had significant positive impacts on energy use in terms of environmental impacts and energy efficiency.

EU membership has had further positive impacts on the energy sector (liberalization, prioritizing energy efficiency, RES targets, strategic thinking as few examples), and the obligation to meet the EU political agenda is straightforward. However, the effective and true implementation of the EU agenda poses significant financial, political and social challenges (Urge-Vorsatz et al., 2003).

Energy dependence in Hungary is significant (71%), as only 19% of the gas and 26% of the oil is produced in the country. The situation is better in the case of coal, of which 85% is domestic. Thus, in order to satisfy growing needs (i.e. increasing consumption) as well as to reduce the dependence on imports, there is need for a more sustainable energy policy (GKM, 2005; INFORSE-Europe, 2006; Tihanyi et al., 2006).

the Hungarian national target is 3.6% of electricity production from renewable sources by 2010, and it was already achieved in 2005, and is expected to reach 5.8% by the target date (INFORSE-Europe, 2006; Energia Klub, 2006). Estimations for the RES potential in the country range between 10-250% of the current energy consumption (Energia Klub, 2006).

Public awareness

In the past, the Hungarian public was repeatedly found to be little interested in environmental problems compared to other countries. In the early 1990 surveys, it was demonstrated that Hungarians cared the least about environmental problems among the 22 surveyed countries (Dunlap et al., 1992; Dunlap, 1994). The situation changed somewhat during the 1990s. In 1996, Hungarians underlined a number of environmental problems as serious (Meszaros, 1996), nevertheless, environmental problems without direct immediate impacts on the respondents were not considered to be grave.

News and information about the environment started to attract the attention of the public after 2000. In 2001, a Eurobarometer survey was conducted in the Accession Countries regarding their attitudes to the EU and issues related to the EU and the EU decision-making, such as the environment (EC 2002). Almost half of the New Member States' respondents (48%) declared to be interested in environmental news, however, other issues took precedence. One year later, another Eurobarometer survey showed that

environmental developments were the top interest issues (61%) in Hungary (Hungarian Gallup Organization 2003).

An ALTENER project in 2002, the 4CE (Consumer Choice and Carbon Consciousness for Electricity) survey analysis found that concern about the impacts of electricity is rather high in Hungary, above European average (Palmer, 2003; Kiss, 2005). In 2004, in the scope of the special Eurobarometer survey 32% of Hungarians chose climate change as one of 5 most important environmental problems that they were worried about (EC, 2005a).

Energy saving awareness is significant in Hungary. The recent surveys (e.g. the special Eurobarometer EC, 2006; Valko, 2003) have shown that over 50-60% of the population pays particular attention to environmental/energy saving information on a product when shopping. Energy saving is among the top priorities that Hungarians actually do as environmentally friendly behavior (Lang, 2000). Valko (2003) found that respondents prioritize energy saving measures as means to reduce environmental impact.

Policy framework and support schemes

Currently, energy policy in Hungary is determined by global, EU and Hungarian policies and guidelines. At the global level, the most important agreement from the point of view of energy policy is the Kyoto Protocol. Satisfying the requirements of the Protocol is embedded into both EU and Hungarian policies and guidelines.

The EU adopted the Green Paper on Energy Efficiency in 2005, which aims at reducing costs in the energy sector and promoting energy efficiency. It observes that increasing demand for energy cannot solely be met by renewable energy sources but have to be supplemented with measures for high efficiency in production and use. The Green Paper on Energy Efficiency sets the target of reducing energy use by 20% solely through efficiency measures. To comply with the guidelines and targets laid, member states need to draw up national energy efficiency strategies and action plans (Hungary's plan is in the process of being adopted; GKM, 2008), inform households, improve the energy efficiency of buildings, adjust taxes on energy so that they reflect real pollution levels, and introduce appropriate fiscal measures. (Tihanyi et al., 2006)

The EU and member states financially support the achievement of the above-mentioned aims from five basic sources, through:

- the EU community programmes such as the research framework programmes, the Intelligent Energy for Europe programme, etc.;
- the applications and tenders relating to the Hungarian National Development Plan and the Cohesion Fund;
- Hungarian national funding;
- national financial support mechanisms such as feed-in tariffs, purchase obligations, guaranteed prices, etc.; and
- other sources, for example bank loans, International Financial Institutions, initiating and encouraging private sources. (EC, 2005b; Tihanyi et al., 2006)

Although the aims and objectives in terms of more sustainable energy production and use are clearly stated in various policy documents, the amount of funding available, for example for renewable energy sources, does not necessarily reflect them unfortunately.

At the same time, there are several important sustainable energy production and consumption support mechanisms in Hungary that need to be mentioned. First of all, the Electricity Act (VET 2001 CX) introduced a feed-in tariff system for renewable electricity from January 2003 (INFORSE-Europe, 2006). Secondly, the government has been operating a National Energy Efficiency Programme since 2000 introduced by a governmental decree. The National Energy Efficiency Programme had support programmes in eight different areas, offering part-financing for households, local authorities, homesteads, SMEs, etc. It has been found, however, that the funding available in the frame of these programmes was less than there would be demand for (Fodor et al, 2005).

In 2005 the National Energy Efficiency Programme was stopped due to lack of resources, and was re-opened again in 2006 for households for a very short period of time (ten days!), during which an overwhelming number of applications were handed in supporting our claim above that households would indeed be ready to change to renewable energy sources and more energy efficient solutions should the supporting funding and infrastructure be available. In 2008, the programme is going on again, but with less favourable funding opportunities.

Besides, in 2008 new funding has been made available for financing sustainable consumption campaigns targeting different groups of the population, however, as the calls are still open, no results are available yet.

Scenarios and projections for the future

Based on a study conducted for the Ministry of Economy and Transport (GKM) in Hungary as a background for the preparation of the new energy policy and strategy, demand for energy is projected to increase in the next couple of decades. The increase, based on preliminary data, is calculated to be between 0.4 and 1% for primary energy, and between 1 and 3% for electricity (GKM, 2005). For the time being, growth in GDP is decoupled from growth in CO₂ emissions (Archibald et al., 2004), partially due to the restructuring of the industry. However, CO₂ emissions are projected to start rising again (EEA, 2005).

There is still a huge potential for energy efficiency improvement in Hungary, one of the largest (30%) for the household sector (Energia Klub, 2006; Nilsson, 2006). With this, and the European Union target of 20% energy saving potential in mind it should be possible to substantially increase the amount of energy saved, or in other words Hungary has a significant “negajoule” potential (Energia Klub, 2006)

Local and specific context

Theoretically, the activities and services of Carbonarium are open and available to anyone speaking Hungarian (and living in Hungary). So, it can be said that they are provided at the national level, so there is no specific local context. By “theoretically”, I mean that anyone from the country can join the initiative (and the association) if he/she agrees with the aims, signs the membership agreement and is willing to provide data on his/her consumption. Information is available for anyone speaking Hungarian on the internet at <http://www.carbonarium.com>

In practice, however, the programme has not been communicated widely, it is really the voluntary, bottom-up initiative of a small group of people.

It also needs to be noted that climate change and energy issues have been discussed and debated increasingly in the media at both the national and local levels. In addition, the energy efficiency action plan (GKM, 2008) and energy policy (GKM, 2007) of the country have both been on the agenda and the general public has been invited to participate in the debate and provide comments. The Hungarian Academy of Sciences in cooperation with the Ministry of Environment and Water has also been running a widely communicated research and awareness raising programme for several years².

In the last few years, there have been an increasing number of initiatives related to climate change and energy awareness. Examples that are related to Carbonarium are the following:

- The founding of the *Alliance of Climate-friendly Settlements* initiated by the climate change research group of the Hungarian Academy of Sciences. In the framework of this programme the academy cooperates with towns in initiating and implementing local climate change and awareness raising projects, as well as in developing local climate change strategies.
- The founding of the *Alliance of Energy Efficient Local Governments* initiated by the Energy Club, a non-profit organisation.

These two examples, although not initiated by individuals, help prove that in Hungary an increasing number of voluntary schemes exist that aim at increasing energy efficiency and reducing greenhouse gas emissions.

Step 2: Focus of DSM programme

General issues

Carbonarium started in the spring of 2005. It has 13 members who all agreed to record their monthly energy consumption (household electricity, heating – gas or other -, car mileage, etc.), send it to the administrator of the programme, and pay membership fee based on their calculated CO₂ emissions. Carbonarium prepares statistics on its members' consumption and emission data, makes comparison between members, and also publishes some of the statistics on its website, accessible to the general public.

Based on the relevant literature, Carbonarium developed its own methodology for calculating emissions. It is fully adapted to Hungarian circumstances and data. The background theory for their methodology, calculation methodology as well as some specific data (e.g. the CO₂ emission data of particular makes of cars) is also available on their website for the public.

The programme is rather ambitious as it builds on its members' sense of responsibility and voluntary initiative in cutting consumption and related emissions. They do this in a country where there is no supporting infrastructure or any funding easily available for such initiatives.

Carbonarium has not yet applied for or received any funding for its activities. The sole source of income is the membership fee paid by members based on their emissions.

² More information on this programme can be found at <http://www.vahava.hu>

Initiator, main partners and target group

The initiators of Carbonarium are individuals (interestingly, based on information on their website, almost exclusively men – however, they, of course, represent households). Individuals as well as organisations can become members, there is no clearly defined target group as they believe that cutting CO₂ emissions is everyone's responsibility. As of today (August 2008), they only have individuals as members.

Problem definition, goals and objectives

The Kyoto Protocol came into force on February 16, 2005. However, Carbonarium believes that the actions required by and guidelines provided in the Protocol will not be sufficient for stopping climate change and its negative impacts. For this reason, the founders of Carbonarium (10 individuals) started the association and undertook to take steps to record and reduce their own emissions as well as start projects to inform others about climate change and its impacts.

The main objectives of Carbonarium are to

- provide information with specific data on climate change, and raise public awareness in the field;
- research climate change;
- reduce the atmospheric concentration of CO₂.

Step 3: Design of programme

As was stated above, Carbonarium is not aimed at a specific target group. Consequently, no research was conducted on either the target group and their particular needs, or on achieving lasting behavioural change. Carbonarium builds on individuals and organisations, on the one hand, recognising their responsibility for the well-being of the ecosystem and the negative impact high CO₂ emissions have on it, and on the other, voluntarily taking action to reduce their own impact. Carbonarium offers various tools for this: most importantly the methodology they developed for calculating CO₂ emissions, specifically adapted to the Hungarian situation. The methodology used for the calculations was developed partly by members and partly by involving experts in the field. The collected data and associated emissions are regularly communicated to members and also on the website.

Carbonarium also organises community programmes (e.g. bicycle tours) for its members and interested parties to encourage low-carbon living, the exchange of ideas and community-building.

Unfortunately, Carbonarium does not have a communication plan, so membership in the association has not been growing. Carbonarium has not yet made links to other organisations and programmes either. They are, however, very open to such cooperation. It appears that there are serious human resources and time constraints on working to make the work and objectives of Carbonarium more visible. Carbonarium does not have any full-time employees, it relies solely on voluntary work and the personal commitment of its members. Because of the regularly collected membership fee, financial resources

would be available for initiating programmes, or to provide resources for applications for further funding.

Step 4: Process of programme

Interaction between the different participants

Interaction between members has been smooth and problem-free.

The external relations of Carbonarium, however, are problematic because it has not so far had the human resources and time needed to create a supporting and sustainable network around the work of the association. As of now, they do not have links with other organisations, their work and objectives are not widely known, and as a result, the membership has not been growing and they have not had capacity to initiate projects.

Another challenge is that although their methodology for calculating emissions is very well developed and data submission by members is smooth, they do not really provide information as to what could be done in order to reduce emissions.

Reaction of the project manager to issues/problems

The project manager was very pleased that the Changing Behaviour project expressed interest in Carbonarium. He appeared to be very enthusiastic about Carbonarium and committed to leading a low-carbon lifestyle and spreading information about it.

He expressed concern at not having the time and capacity to spread information about their association, establish links with other organisations (both to cooperate with and to provide services for), and to initiate projects. In his opinion, Carbonarium is at the point where decision has to be made by the general assembly (the highest level decision making body comprising of all the members) whether the activities of the association are continued and strengthened or are put on hold (or even stopped).

At the same time, he believed that the methodology they developed for calculating emissions is sound, an important achievement in Hungary, and could be used very well to help both individuals and organisations to register and monitor their emissions. He has quite a few ideas as to what kind of projects the association could initiate and implement – if only they had the time.

Step 5: Outcome of process

Objectives/goals/outcomes

Carbonarium successfully achieved quite a few of its original objectives, namely:

- Creating a database of members' emissions which makes it possible to create statistics for each member on his/her emissions and its change over time;
- The methodology for registering and calculating emissions was created and updated;
- Using the data collected, it is possible to compare data related to different types of energy and also to follow how the consumption of a certain type of energy changed over time (monthly data is available);

- It is possible to compare the consumption and emissions of members on a monthly basis;
- It is also possible to compare the consumption of different types of energy between members;
- Membership fee paid on the basis of emissions can also be monitored;
- Technical summaries on the methodology used were prepared and made available on the website of the association.

Carbonarium has some plans to improve the services it provides to its members. For example, they are planning to improve the database to be able to make a comparison between the consumption and emissions of individual households and average consumption and emissions data so that individual members can see how their data compares to general trends.

On the other hand, the initiative of Carbonarium remained little known and a result, limited in impact.

Social learning

As it was mentioned above, the program manager is not fully satisfied with the achievements of the association. Due to time and capacity constraints, they have not been to achieve and implement as much as they had hoped they would be able to.

At the same time, members of the association (and the interested public studying their website) learnt a great deal about their CO₂ emissions related environmental impacts and which are the most important factors contributing to the emissions. Their calculations and the statistics made on their basis revealed, for example, that more than half members' combined emissions (56%) are caused by personal mobility, i.e. driving cars. Thus, members learnt a lot about where they need to place the most emphasis on in their attempt to lead a low-carbon lifestyle.

Step 6: Analysis and conclusion

Some of the most crucial factors in the context, focus, design and/or process of programme that contributed to its success in some areas and limited success in others:

Relating to the specific organisation:

- The format of the association is good for implementing voluntary programmes: it is fully democratic and gives each of the members space for expressing opinion and influencing the activities of the organisation;
- At the same time, because of its voluntary nature, it does not always provide the necessary structure for effective action. In the specific case of Carbonarium, none of the members had the time and capacity to design and implement a communication programme and to establish links with other organisations working in the field. For this reason, the initiative remained isolated and little known.

Relating to specific context:

- The initiative operates in a context that is not yet supportive and appreciative of such programmes. Generally, the population of Hungary is not yet able and ready to take responsibility for individual emissions and take steps on a voluntary basis

for its reduction. Furthermore, although funding is available to support individuals in their attempt for a low-carbon lifestyles, it is not easily and widely accessible.

- At the same time, with a more effective communication programme, Carbonarium could target the so-called early-adopter individuals (and organisations), convince them to join the association and offer them tools to monitor and reduce emissions. The methodology that they developed would also be suitable for giving guidance for people as to where to concentrate their efforts.

Relating to programme design:

- Participation on a voluntary basis contributes to the success and makes use of individual commitment.
- The methodology developed is also effective and illustrative. It has helped members understand the impact of their lifestyle and prioritise individual effort in the field of climate change.
- What is missing from the programme is providing advice as to what exactly could be done and what would be the most effective action. Perhaps this aspect of the work of Carbonarium could have been improved through establishing links with organisations working in the field.

References

In preparing the detailed case description and analysis, the following were used throughout without making specific references to them:

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