

Case Study 3

Social Housing Energy Efficiency Renovation Programme (Apartment Block Renovation Programme)

Hungary



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Energy behavioral changes

 **Changing Behaviour**



Work package 2

Development of the conceptual model: Analysis of success factors,
underlying models and methods in target group interaction

Case Study 3:

**Social Housing Energy Efficiency Renovation
Programme (Apartment Block Renovation
Programme), Hungary**

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Summary of the case

Social Housing Energy Efficiency Renovation Programme (SHEER) is carried out by the D.V.D.¹ company located in Budapest, Hungary. Established in 2005, the company has developed a Global Environmental Social Business (GESB) mechanism and completed energy efficiency renovations in around 45 pre-fabricated apartment blocks in Budapest and other Hungarian cities. The target group of the programme is middle-low income households in poor condition. The size of the target group, i.e. the total number of apartment blocks that are planned to be renovated is approximately 50 (over 2 thousand apartments) in Hungary. The renovations include installation of new heating systems, windows frames, and insulation of walls, basement and roofs. Solar panels and passive housing standards are planned to be the next step in the development.

The main objective of the programme is to provide an optimal technical and financial plan for the block houses that will help renovate the buildings, thus reducing environmental impact (GHG emissions), increasing the value of apartments, generating income (through lower energy bills), alleviating poverty and creating jobs. Therefore, the company pursues both environmental and development goals.

The role of the company is develop and manage the renovations by providing financial guarantees, developing portfolio for the banks, recovering loan defaults, collecting common costs and disseminating the information. The company follows a social business model which is reflected in the reinvestment of profit into new projects and benefits for middle-low income tenants who would not be able to implement energy efficiency renovations otherwise.

The programme is successful in the way that 45 apartment blocks have already been fully or partially renovated, and the mechanism is ready to be replicated on the EU level. The programme includes innovative services in Hungary, such solar panel installation and implementation of passive housing standards (planned). However, so far there has been no in-depth evaluation and quantification of impacts, although the information on the completed energy audits which quantifies the GHG emissions before the renovations and expected emission level after the renovation is available for some of the apartment blocks (displayed on the website). The behavioral aspects do not seem to be properly addressed.

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Step 1: Context of DSM programme

National context in general

Hungary is located in Central Europe, northwest of Romania. Other bordering countries are Serbia, Croatia, Slovenia, Austria, Slovakia and Ukraine. The population of the country is 10.3 mln (Eurostat 2008). In the early 1990s Hungary experienced significant economic and political transformations due to the change of political course and shift from planned centralized economy to the market one. This transition period was followed by a series of negative consequences, such as bankruptcies, rising inflation and unemployment, and external debt (Efficient Lighting Initiative). Another impact of this period is a rapid decrease in the total energy consumption due to the bankruptcy or closure of the main industrial enterprises. However, the electricity consumption has grown from 35.2 TWh in 1993 to 42.9 TWh in 2006 (Government of the Republic of Hungary 2007). The electricity market was to be fully liberalized starting from June 1, 2008. Given that the country has limited energy resources of its own, it has to rely on import of gas and oil and therefore, the energy prices are constantly rising, affecting the most vulnerable population – the poor. As of 2008, the rate of unemployment is 7.8%, while just in 2006 it was 3.7% (Hungarian Central Statistical Office 2009).

The situation with the dwelling stock is characterized as having a very low turnover due to low level of people mobility, as compared to other EU member states (Novikova 2008). That is why partial or full renovation of the residential sector in Hungary should be one of the priorities. According to Ball (2005), one fifth of all dwellings need full restoration, two fifths should be partially restored and only a quarter of residential buildings are in satisfactory conditions.

After joining the EU, Hungarian government is trying to harmonise its legislation with the EU requirements, including in the sphere of environment. As part of this process, Hungary has adopted the National Energy Efficiency Action Plan in 2007.

There are several energy-saving programmes and measures in place in Hungary. With regard to renovations of households, the governmental support programme for residential buildings was started in 2002. Within the framework of this programme, housing associations and local governments can apply for a bank loan to implement renovations. For the period from 2001 to 2005, almost 130 000 apartments were renovated. However, the programme was controlled by different governmental authorities throughout its relatively short history, which might have had an impact on the success of the implementation. Currently, the Ministry of Local Governments and Regional Development has not taken a decision whether to continue the programme or not.

As for external projects in the field of energy efficiency, one of the biggest was implemented by the UNDP and GEF and called Municipal Energy Efficiency Project. The implementation of the project resulted in 0.1% energy savings per year (Ministry of Economy and Transport 2007). The programme has ceased its operation in 2005.

A study made by Begnina Kiss (2005) revealed that the Hungarian public displays a low level of environmental awareness and literacy with regard to climate change. However, the knowledge about global warming has grown during the period from 2002 to 2005 and is expected to grow in the years to come. Kiss notes that 42% of respondents to the survey place blame on governments regarding the situation with the climate and turn to the central authorities for a solution to the problem. This shows that Hungarian people do not perceive the global warming as an issue where they can be personally involved and display a tendency to shift blame to the authorities. Therefore, the author concludes that there is a strong need in Hungary for rais-

ing environmental awareness and connecting the effects of the climate change to the behavior of people.

Similarly, the government reports about unsustainable consumption and low environmental awareness among the population. Surveys show that people are actually aware of poor environmental situation which results from unsustainable practices but are not willing to change their lifestyles and behaviour (Government of the Republic of Hungary 2007). The low level of environmental awareness is mainly attributed to the low living standards, inadequate access to environmental information and lack of participation in the environmental decision-making. Also, the negative legacy of the 1990s crisis has its stake in the low environmental interest and unsustainable practices: After the liberalization of the market small and medium enterprises, as well as farms that used to employ traditional, environmentally benign technologies, had to face fierce competition which forced them to use harmful substances or techniques in order to survive on the market (Government of the Republic of Hungary 2007).

On the governmental level, efforts have been made to reach the goal of raising the environmental awareness. In particular, the Climate Change Action Programme was adopted as part of the Second National Environmental Programme 2003-2008. However, it is believed to be ineffective because of financial and capacity shortages (Kiss 2005). In 2008 Center for Climate Change and Sustainable Energy Policy was established in Central European University. The mission of the Center is to promote 'solutions to climate change and sustainable energy challenges, while advancing the implementation of development agendas' (3CSEP). In addition, researchers from Central European University were part of the IPCC Nobel prize winning team, which attracted a lot of media attention in the country and definitely helped to advance climate change issue in public debates.

Specific context of the project

In general, there are no opposing institutions that could influence the project. The government is overall supportive, and the support is expressed in the form of co-financing of the renovations in middle-low income apartment blocks. The share of governmental support is 1/3 of the total costs, while 1/3 is paid by the municipalities, and the house contribution is 1/3 or 2/3 depending on the availability of the support from municipalities. The bank loans are given for 5, 8 or 10 years and can be paid through increased common costs.

This project was inspired by Hungary Energy Efficiency Co-financing Program (HEECP) that was initiated by the World Bank and co-financed by the GEF and IFC. HEECP started in 1997, and in 2005 it was merged with a similar project called Commercializing Energy Efficiency Finance. One of the founders of the D.V.D. company used to work for the HEECP projects, so the idea of creating this mechanism resulted from the founder's previous experience. At the moment, D.V.D. is an independent private company specializing in energy efficient renovations, targeted at middle-low income apartments in Budapest and other Hungarian cities. These projects are treated as successful (in official reports).

This project is considered to be unique and first of its kind on the Hungarian scene, and the managers are actively seeking to replicate the project in other European countries. The target group, i.e. middle-low income apartment blocks, is regarded by the managers as one of the unique features. According to them, this target group has not previously benefited from any energy efficiency projects, as government has a difficulty in communicating with the poor, while the private sector is profit-oriented and tries to sell its product to the mass, without considering individual needs. In addition, banks that could potentially give loans consider the target group unable to afford such renovation projects. Another problem with the governmental support is lack of finances and resources to deal with all households needing renovations.

Moreover, the government cannot reach all households and link them to the private sector that could be involved in this type of projects.

As for supportive incentives, the fact that according to the Hungarian legislation only 50% + 1 person's consent is needed to go ahead with the renovations in an apartment block, can be considered as such. However, the managers of the company emphasize that they never rely on this legislation. Instead, they seek agreement of at least 70% of all tenants, which requires long negotiations and, in some cases, an individual approach. Such percentage also helps to avoid risks connected to possible financial losses, as the target group is in a middle-low income category. After the consultation with the apartment owners takes place, the renovations proceed in all apartments, including the ones that did not support the idea.

Step 2: Focus of DSM programme

General Issues

The D.V.D. company was established in 2005. Since then it has been implementing renovation projects in apartment blocks in Budapest and other Hungarian cities. The programme does not have a final date, as the company is planning to expand and renovate more apartment blocks in the future. There is no concrete budget for the renovation projects, as it is financed partly by the government, partly by the banks and partly by housing condominiums. However, it is estimated that the cost of renovations in 30-50 apartment block will amount to 10 million euro (Dobi-Rozsa 2008). Individual tenants do not directly cover the cost of renovation. As for the share of investments, it varies depending on the situation of an apartment block: sometimes municipalities are not able to provide 1/3 of the costs as it is planned, so in this case the other stakeholders increase their share. The company itself is mainly involved in management issues, dealing with the banks (developing portfolios), making energy audits, disseminating information etc. The dissemination of information takes place on regular conferences and workshops, organized twice a year.

The renovation programme can be considered very ambitious. Currently, the company is still developing and has limited financial and human resources to complete renovations in the whole sector. However, it has already made efforts to replicate the project in other countries. Pilot project together with partners from other EU countries is planned, that will be based on energy efficient renovations and passive housing standards.

Also, according to the managers, although the behavioral change is not in the focus right now due to limited resources, the company plans to adopt it as one of the main goals in the future. Finally, renewable sources of energy, in particular, solar panels are the next step in energy efficiency renovations by the company. The managers say that already 25% of tenants expressed interest in installing this technology.

Initiators and partners

The company was established by three individuals. One of them was a former manager in the HEECP programme back in 1997. . Also banks and partly municipalities are among the co-financers. Housing condominiums are also the main partners, as they receive the means for renovations and participate in the negotiations.

Problem definition and Goals

The main problem as identified by the managers of the company is the fact that middle-low income families are unable to upgrade the houses due to poverty, and constantly growing energy prices may eventually lead to them losing their apartments. The spending on the energy bills amounts up to 25% of the income. This situation is called 'fuel poverty'. So the main goal of the intervention is to alleviate poverty by providing an opportunity to renovate the apartments with energy efficient equipment that will reduce the costs and as an indirect result, will decrease GHG emissions. Another benefit is that the value of the apartment will be increased after the renovation, so tenants will gain additional value on their properties. Thus, it follows that social goal of reducing poverty is the primary one, while environmental impact is an indirect effect. The goals are formulated clearly, however they are not quantified. The company does not have a target number of apartments to renovate, as the company is still developing and growing. At this stage the environmental goals are also not quantified, although the managers emphasize their importance. Overall, the goals are quite ambitious, as the managers expressed a strong intention to improve the project by trying to influence the behavior

of tenants in the future and making the evaluation and impact assessment of the implemented renovation projects. The goals of the mechanism are summarized below:

- To provide optimal technical and financial plan for the block houses
- To make the projects bankable and maintain their ability to pay on a long term, give share to the people from the business
- To provide affordable financing
- To build the social system in the small communities and for the whole system
- To provide information and encourage people to take responsibility to support communities to be able to make decisions (Dobi-Rozsa 2008).

Targets and target group

Middle-low income apartment blocks in Budapest and some other Hungarian cities are the main target group. The company approaches apartment blocks where the majority of tenants cannot afford energy efficient renovations due to low income and huge costs of such works. Behavioral change is not specifically targeted at this time, and the managers believe that in 99% of cases people are motivated to make the refurbishments but do not have the appropriate means. However, the company admits, that future savings also depend on tenants' energy efficient behavior which is hard to influence due to the lack of resources in the company. This is rather seen as a long term perspective by the company. The size of the target group is estimated to be over 2 thousand apartments (50 block of apartments). To date, the company participated in the renovation of 45 apartment blocks, according to the managers.

Step 3: Design of programme

What knowledge and ideas informed the design of the programme?

The idea of establishing GESB mechanism originated from the director's previous experience of working as a coordinator for the GEF/ICF programme called HEECP. According to the director, work in HEECP helped to establish contacts with the stakeholders, and explore the possibilities of the market. It is important to note that the company was established with an idea of following a social business model. The term 'social business' was coined by Nobel Prize Laureate Muhammad Yunus and described businesses that either have social objectives and the profit is reinvested into new projects, or the business is profit-oriented and is owned by the poor. The company proclaims to follow the former model (Dobi-Rozsa 2008).

The target group was selected based on the previous experience of the director. The main motivation for selecting this particular group was that middle-low income apartment blocks were in dire need for energy efficiency renovation but stayed outside of all major programmes because, due to the financial situation, the tenants or condominiums were not bankable. So this was a window of opportunity for the company. The managers of the company did have some kind of research of the target group. They found out that the energy use is very substantial and so are the fees, due to the low wages and obsolete and inefficient equipment. Also, it was found that the target group is quite open for change, i.e. for the renovation but lacks necessary resources for it. The company declares to have consulted the target group prior to the design of the programme through interviews with tenants. In order to obtain a commitment of the target group, the company had to approach condominiums, and if there were some people against it, they talked to tenants individually. Also, when the renovations are in place, the company stays in touch with the apartment blocks and cooperates with the social workers. The reason is that sometimes some tenants can stop paying the common costs which is part of the renovation loan. In this case the social worker tries to find out the reasons why it happens by visiting the family. After that, the social worker passes the information to the company and in its turn the company tries to take some to assist the families.

The programme was designed to focus not only on the energy savings but on the social benefits as well. The renovations are made for people who would not be able to afford it without the programme. This reduces their costs for energy, and thus increases household income indirectly. Also, it improves the value of their apartment enormously. Finally, tenants are not required to put mortgage on their houses, as the costs are covered partly from the common costs that they are paying anyway and partly from the government sources and bank loans. This gives them confidence and eliminates the fear of losing the apartment if the mortgage is not paid.

The programme aimed to target the following barriers:

- Poor state of houses
- Increasing number of conflicts in local communities
- Lack of information
- Lack of financial means for renovations
- Lack of responsibility
- Underdeveloped market

The programme targeted such behavioral determinants as practical abilities and capacities of households to change energy related behaviour through installation of more efficient technology.

Intervention methods

First of all, the target group was given the information about the benefits of their participation and in a way was educated. This was done through personal meetings with the tenants. Secondly, the financial instruments were used on the micro level, i.e. for renovations in selected apartment blocks. The intervention method was specifically chosen to fit the target group interests and capacities. Because it is based on financial mechanisms, the income level and the ability to pay the long term loan by tenants have to be taken in to account. Organization of regular workshops and conferences twice a year is another instrument used. It should be noted though, that these events were targeted on the energy companies, banks, government, international partners and other stakeholders, except individual tenants.

The intervention is quite timely as the need for improving energy efficiency in residential sector has been discussed in public and emphasized as one of the priorities by the government as part of the EU directive requirements.

The responsibilities of all stakeholders were clearly voiced and accounted for, as the costs of refurbishment per apartment block is quite high. The refurbishments were made by an independent construction company hired by the condominiums.

The programme was developed in close cooperation with all stakeholders, i.e. condominiums, municipalities, government and banks. The social environment of the programme was targeted, as the company aimed to get an approval from as many tenants as possible. The involvement of the end users was needed on the very first stage of the implementation, as the tenants should give their consent to renovate their apartments.

The social pressure within the target group was expected and aimed for when some of the tenants were reluctant to agree for renovations.

The programme was tailored to the level of interest of the target group by emphasizing first of all the financial benefits from upgrading the apartments (money saved on the bills) and only after that on the environmental ones (saving energy and reducing CO₂). This was prioritized in this way because for the chosen target groups living in poor social conditions it is hard to put environmental benefits on the first place. The tenants received full information about the costs of installations, condition of loans, and payback periods on the meetings with the company. On the later stage, the energy savings are projected as well.

There was no specific marketing campaign or advertisement. First of all, because extra marketing can generate extra demand which the company might not be able to deal with at this stage. Secondly, there is no need in promoting the programme because when the apartment block is approached, most of tenants are interested in the offer.

The evaluation and monitoring were not part of the design. However, the managers do recognize a strong need in assessing the results, interviewing tenants and calculating the savings. This is planned for later stages.

No conflicting interest with other companies has been noted so far, although one of the utility company's representative once said that they were competitors, apparently meaning that the increased energy efficiency of the renovated houses will decrease the the payment for energy to the utilities.

Step 4: Process of programme

The programme demonstrates strong engagement of all relevant actors, including government, banks, condominiums and individual tenants. This kind of engagement and understanding is needed in order to deliver the project in every chosen apartment block, as it guarantees that all parties assume responsibility. The most common problems that arise are related either to reluctance of some tenants to participate in the project or financial matters. In the first case the company chooses an individual approach which permits to find out the reasons for lack of acceptance. Through the dialogue with tenants the company seeks to increase trust and ensure the commitment. The persuasion of tenants in such cases is achieved by demonstrating successful examples and highlighting the benefits of the project.

Step 5: Outcome of process

Overall, the objectives of the programme are achieved, and they mainly involve economic and environmental benefits. However, the behavioral aspect was not considered by the managers a crucial part and therefore, was not continuously targeted. In this respect, it is doubtful that the behavioral changes will persist, although the renovated households are given initial instructions how to operate new equipment in most energy efficient way. So the main effect of the intervention in this programme is the increased comfort and value of households, reduced maintenance costs and energy bills, and apparently, a considerable impact on the energy consumption. From these perspectives, the programme is really successful.

On the negative side, apart from lack of behavioral target, there has been no real evaluation and quantification of impacts so far, although the managers do seem to be in favor of these measures. Also, it is not certain that all the renovated households received full feedback and are followed-up afterwards due to limited human resources of the company.

The programme looks cost effective, as the company reinvests the profit and continues to target new households. It is hard to judge whether the behavioral changes will persist but the new equipment will certainly pay off the costs and have a positive environmental impact.

As for the social learning, to some extent it has been achieved by all stakeholders: The programme has demonstrated that it is possible to make energy efficiency accessible for poor category of people, if there is the involvement and commitment of tenants, condominiums, municipalities and government, reinforced by the private sector and bank support. The renovations have certainly led to the increased comfort of tenants, reduced energy use and increased trust in partnerships with private businesses which have social and environmental objectives at the same time. However, more emphasis is need on the behavioral aspects to support the positive changes in the future.

Step 6: Analysis and conclusion

The positive factors that influence upon the success of the programme are the following:

- Prior experience in a similar international project of the manager helped to build the network of stakeholders (banks, governmental support) and explore the market, as well as assist in identifying the right target group.
- Benefits offered by the programme, together with the chosen social business model are effective and attractive for the target group.
- The fact that the company decided to obtain up to 70-90% of consent in each apartment block instead of being satisfied with the legal 50% +1 scheme makes it possible to build trust between all the stakeholders and eliminates the danger of financial failure which is important given the finances involved.
- Company's individual approach in 'hard cases' and follow-up actions after the programme (if there are financial problems at some households) also contributes to credibility and commitment issues.
- The company is committed to explore new technologies, for example renewable energy and implementation of passive housing are among future targets.
- However, lack of evaluation and behavioral targets, i.e. more emphasis on what should be done by the tenants to sustain their energy savings, are among weak points. Substantial energy audit before the renovations would allow having baseline information, and on completion of the project, as well as later on, would make it possible to quantify the savings and use them as evidence in next projects.

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