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**STAKEHOLDER RELATIONSHIP
OF HOUSEHOLD INVESTMENTS INTO RESIDENTIAL
BUILDING ENERGY SAVING PROJECTS –
MODELLING APPROACH IN THE HUNGARIAN CASE**

The paper presents the results of research focusing on residential energy saving investment projects of households in Hungary with the aim of identifying the relationship systems of stakeholders, based upon the stakeholder approach of the Overseas Development Administration (ODA) method. The research concept is based upon the need of identifying primary and secondary stakeholders, their resources, interests and conflicts, potential forces and weaknesses, and interactive relations that influence initiating and carrying out successful household building energy projects. Primary information is obtained from interviews with industrial experts and small enterprise owners and managers who are considered as authentic sources of knowledge about projects. The weaknesses of secondary sources also justify resorting to empirical research. The research findings are structured in the tables and figures as modelling tools and provide new research results. The modelling may serve as a practical instrument for the market actors and government decision makers and finally help to enhance energy saving opportunities.

Keywords: Eastern European countries, energy industry, government policy, Hungary, stakeholders research

DOI: 10.15611/aoe.2016.2.06

1. INTRODUCTION: CONCEPT OF ANALYSING AND MODELLING THE HUNGARIAN RESIDENTIAL ENERGY SAVING RELATIONSHIPS

1.1. Research problem definition and objectives

The concept of stakeholder analysis for project development and implementation (MacArthur, 1997) has an actual influence on the successful management approach of a wide scale of project fields including environmental investment projects. Analysis of energy-saving behaviour and

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the motivations of the different economic, political and social stakeholder groups have become increasingly significant in recent decades. It also has proved to be indispensable for the better planning of residential building energy saving projects.

Energy saving is a high imperative for achieving sustainable development goals. The energy saving and the reduction of energy import due to energy scarcity and the high energy costs is a highlighted objective of the European Union. According to EU level evaluations 28% of the energy saving may be attained by new or replacement investments into building energy saving projects (European Union, 2006). About one third of all the final energy is consumed in housing and the greatest portion of it (80%) is used for the heating and preparation of hot water in East European countries such as e.g. Lithuania (Bumelyté, Galiniené, 2013). More than 40% (152 PJ) of Hungarian household energy consumption could be saved with more energy-efficient buildings. 70% of the 4.3 million buildings in Hungary do not meet modern requirements, so the energy saving potential in residential buildings is significant (NEGAJOULE2020, 2011; Novikova, Ürge-Vorsatz, 2008). Heating energy use for a unit area in Hungary is twice the Western European average currently (Szlávik, Csete, 2012). Besides the new constructions which apply the newer, energy-conscious technologies such as passive houses and other alternative heating methods, renovation of the existing family houses, blocks and condominium type flats offer great potential as well. As generally attested, residential energy saving is an important source of sustainable development, while Hungarian households are rather more interested in cost saving than in sustainability requirements because of the relatively low household incomes and financial savings (Bíró-Szigeti, Vágási, 2009). The same is observed in Romania as well (Miron, Preda, 2009).

According to secondary (statistical) sources, a great part of household investment projects into residential building energy saving in Hungary is carried out by micro and small enterprises¹. So inside the various groups of stakeholders that are interested in and influence the residential energy saving investments, the study gives room to the generally neglected aspects of micro and small enterprises (Bíró-Szigeti, Vágási, 2009). These enterprises

¹ According to statistical definitions, a micro-sized enterprise employs less than 10 persons and its annual turnover and/or annual balance sheet total does not exceed EUR 2 million (~HUF 550 million). A small-sized enterprise employs less than 50 persons and its annual turnover and/or annual balance sheet total does not exceed EUR 10 million (~HUF 2,75 billion) (HUP, 2004).

operate in controversial, difficult circumstances due to uncertainty about energy prices, subsidy systems, economic conditions and the social attitude of customers regarding the changing macroenvironment (Bíró-Szigeti, Pataki, 2012; Kadocsa, Francsovcics, 2011). The increasing role of the micro and small enterprises is promoted by a set of administrative and financial tools while the efficacy of this promoting behaviour remains below expectations (Bíró-Szigeti, 2014). According to secondary sources and our empirical research, the identification of the scope of stakeholders and the analysis of their respective motivation and interactive relations may contribute to a deeper understanding of contemporary conditions, as well as to the elaboration of the potential successful promotional tools for the involved stakeholders. This is the final objective of the study.

1.2. Research method and modelling

The presented stakeholder analysis is built upon the “stakeholders of environmental investments” method developed by the Overseas Development Administration (ODA) (ODA, 1995; Grimble, 1996). The range of potential stakeholders in connection with the residential energy saving investments at various levels, the relations between stakeholders, their motivations/interests and goals, the impacts and influences of each stakeholder were identified via empirical research and the analysis.

After having realized that the existing secondary sources do not provide enough information for the given topic, we decided to resort to empirical research. The research includes the examination of the relationships of all potential stakeholders. This integrative aspect of analyzing the building energetics sector can be considered as a new approach to the Hungarian case. As an empirical qualitative research, 17 in-depth interviews were conducted in 2010 with experts of the building energetics sector and with owners and managers of micro and small enterprises focused on clarifying the following questions:

- What are the expectations of the different stakeholders regarding the residential energy saving investment projects?
- What stakeholder motivations/interests converge most closely with the energy policy and objectives related to residential energy saving investments?
- What different benefits can be identified with the different stakeholders?
- What resources do the stakeholders wish to commit (or avoid committing) to the residential energy saving investment?

- What stakeholder interests are against the goals of the residential energy saving investment?
- What conflicts can be identified between the different stakeholder groups?
- What problematic issues can be identified in the field of the residential energy saving investments?
- What influence and importance of the different stakeholders can be identified in the residential energy saving investments? How to classify them?
- How can the relations between the stakeholders be defined? What different roles do the stakeholders have in each of the stages of residential energy saving investment?

The general modelling approach is presented in Figure 1 which shows the steps of the completed stakeholder analysis of residential energy saving investment projects. The different steps are explored in the appropriately detailed tables and figures as modelling tools in the following sections.

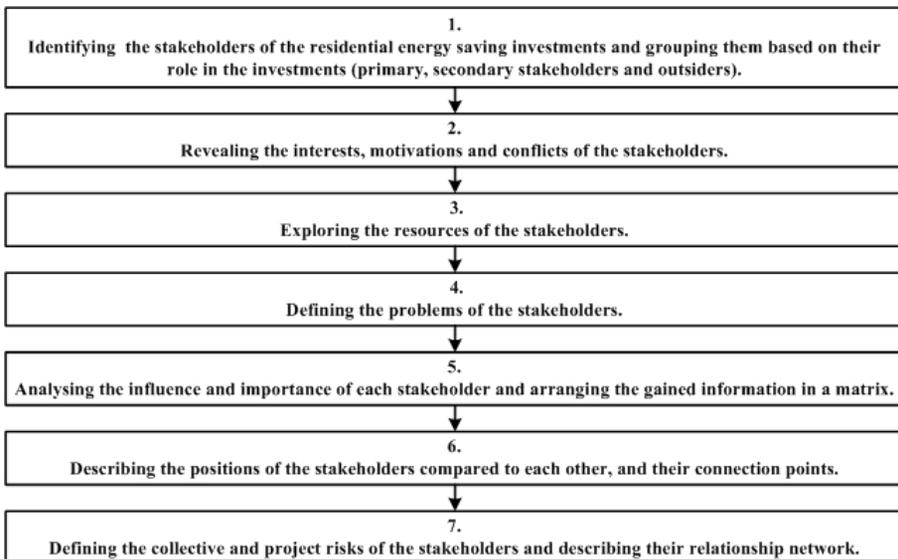


Figure 1. Steps of the Stakeholder Analysis of Residential Energy Saving Investments.

1.3. Aim and potential utility of the research

The residential energy saving investment projects of households have a large number of stakeholders with the same or different motivations, either expressed or latent. The development of residential energy saving projects is directly influenced by the strategy-making and coordinating role of the state/government, the professional vocation and business goals of micro and small enterprises, the background of the Hungarian energy infrastructure, as well as the environmental, technological and market conditions related to the different energy sources, respectively.

The research results can contribute to increasing the efficacy of national strategies and the number and rate of the successful residential energy saving projects regarding the following needs:

- to overcome more effectively the obstacles which appear due to potential conflict of interests, and to provide the necessary motivational factors for the realization;
- to organize “lobbying” for the building energetics micro and small enterprises and to help them to reach their goals successfully;
- to increase the information and the social acceptance of the investment opportunities;

to develop the communication strategy in the government organizations and the enterprises in order to avoid or lessen the resistance due to insufficient awareness, to correct the misunderstandings and to help with going through the investments.

Among the technological fields of building energy saving investments the considered key technological areas of the stakeholder analysis are shown in Figure 2. The term ‘building energetics’ includes all building industry products and services (electrical, mechanical, etc.) that actively or passively influence the energy consumption of the building in the long term.

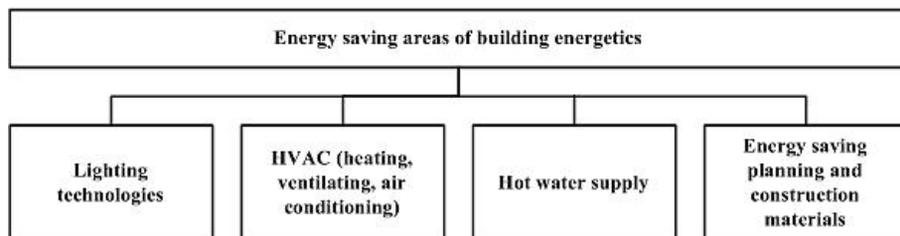


Figure 2. Technological Areas of Residential Energy saving Investments.

2. RESULTS AND DISCUSSION

2.1. Stakeholder classification regarding the goals of residential energy saving projects

The stakeholders' issues are discussed in the extensive literature. In the following considerations we refer to the stakeholders' definition and categories according to Freeman (1984) as widely accepted and referred to, and selected as relevant for our research. According to the usual definition, *stakeholder* is anyone who has an expressed interest in a project. The stakeholders are individuals or organizations that are actively involved in the project, or whose interests are directly connected to the results of the investments and final goals. They may also exert influence on the objectives and the outcomes of investments. Stakeholders are classified in three categories: primary, secondary and outsider stakeholders. *Primary stakeholders* have a direct and determinant influence on the outcome of the investment – whether in a positive or negative sense. *Secondary stakeholders* are the 'intermediaries', individuals or organizations who affect the outcomes of the investment in an indirect way. *Outsider stakeholders* are the existing passive factors regarding the outcomes of the investments.

The *households* and the *building energetics micro and small enterprises* are the primary stakeholders of the residential energy savings investments. The households as individual customers turn to building energetics enterprises usually in order to design and implement their residential investment. This residential segment is a significant market for the stakeholder enterprises. The number of secondary stakeholders is high with a wide scope including: *government, local governments, environmental protection organizations, energy suppliers and public energy companies, financial institutes, universities and research institutes*. Different *lobbying* groups are also considered as secondary stakeholders because they influence either formally or informally the investment projects. *Natural environment* is considered as an outsider stakeholder in the classification. However, the natural environment represents the most important sustainability imperative as the expressed or tacit condition to respect and preserve.

The achievement of energy saving is the final objective of building energetics investments and the investments can or will be sustainable in an economic, environmental and social way (Vágási, 2004). The short-term aspect of energy cost minimization is usually preferred to the long-term benefits.

2.2. Motivation, conflicts and resources of the stakeholders

Table 1 and Table 2 illustrate the research results of motivations (interests) and conflicts. Table 3 and Table 4 contain the resources used by stakeholders for energy saving investments. The outsider aspect is included in Table 2 and Table 4.

Table 1

Motivations and conflicts of primary stakeholders in relation to residential energy saving investments

Stakeholders	Motivations	Motivations/ interests coincide with aims of investments	Motivations/interests are in conflict with aims of investments
Customers (household)	Energy and cost saving, Favourable/low price, Subsidized investments, Contemporary technology, Return on investment.	Cost saving increased comfort feeling, Stable value of property.	Investments are hindered by high investment costs and long term return.
Building energetics enterprises	Manu-facturers	Appropriate quality, Products with price advantage, Marketable goods, Profit, Professional recognition, Competitive advantage.	Competition, Low price is coupled with low quality, Foreign enterprises can leave the market in case of low demand.
	Designers	Commission from manufacturer or traders, Professional challenge, Designing energy efficient systems.	Products/brands recommended for installation depends on the commission, Manufacturer's commission rate depends on the mix of products, Customization weakness.
	Distributors	Offering marketable goods and services for sale and installation, Profit and professional recognition, Brand awareness.	Motivation of consumers is not the main principle, Return on investment is negative.
	Constructors	Offering appropriate quality and marketable goods and services for sale and installation, Profit and professional recognition.	Applying professional appropriate technological solutions during the construction.

Source: own work

Table 2

Motivation and conflicts of secondary stakeholders and outsiders in relation to residential energy saving investments

Stakeholders	Motivations	Motivations/ interests coincide with aims of investments	Motivations/ interests are in conflict with aims of investments
Government	National competitiveness and development.	Decreasing costs in national economy, Reducing energy dependence.	Giving preference to some lobbying organization.
Local government	Reducing cost, Developing the region.	Decreasing transport cost, energy prices, Motivating decentralized energy generation.	High cost of training, subsidizing, bureaucracy.
Environmental protection organization	Protecting natural environment and energy sources.	Increasing the environment awareness.	Conflicts with other stakeholders interests (consumers or fuel, gas and oil lobby, etc.).
Energy suppliers, public energy companies	Energy services, Profit, Meeting consumer needs.	Innovative energy saving solutions, new services, Disseminating knowledge about energy saving, Customer loyalty.	Decreasing profit from energy saving, Market restrictions.
Financial institutions	Increasing profit, Credit intermediation.	Making easier the financing of investments.	Risking the return of investments and the repayment of credit.
Universities, research institutes	Researching and developing energy saving solutions, Examining social and economic effects.	Determination of R&D directions, Implementation of results in industrial practice, Education.	Research projects dependence on subventions and funds. Different research interest in academic and industrial areas.
Lobbying (informal and formal influencers)	Maintaining demand for oil and gas consumption.	Generating new needs and projects due to enhancement of energy saving.	Profit maximization and short term thinking that leads to selling faster the available energy stocks.
Natural environment	Climate protection, Sustainable energy consumption.	Saving energy sources, Reducing CO ₂ emission (greenhouse effect).	Energy saving projects can generate new environmental problems.

Source: own work

The lack of mutual motivation/interest appears in the case of the two primary stakeholders (*building energetics enterprises and household customers*) in connection with the financial terms and objectives. The maximum profit approach of *enterprises* could mean the risk factor for the customers when the quality of professional implementation and the return of

residential investment projects are compromised. The preferred target customers are defined according to their incomes because of the typically high investment cost. The four groups of the enterprises can be identified in the scope of activities such as manufacturers, designers, distributors and constructors. Enterprises provide the necessary tools for intellectual and physical implementation and there are strong and interdependent relations between them. Their interests in the projects are often derived from the recommendations/mediation fees received directly from manufacturers according to the project costs.

Seven secondary stakeholders have been identified, whose contribution is generally necessary, but some of them are never neglected for the completion of the projects. Their respective roles can be divided between the tasks of supporter, monitor and mediator. These tasks are divided between the government, the local government and the environmental protection organizations.

The *government* and the *local governments* have similar interests, and the local government is often the local executor of the government. However most of the conflicts are caused by the weakness of communication and the provision of resources. *Environmental protection organizations* are those monitors and mediators who try to find a common platform with other stakeholders and their interests in the natural environment. *Energy suppliers and public energy companies* give tools and solutions, but the objectives of energy saving investments are the opposite to their basic interest. Their income depends on the amount of energy sales. The energy companies intend to offer complementary services according to new market challenges and as a compensation for decreasing incomes as well as due to the social and economic expectations. *Universities and research institutes* usually have the role of providing tools such as intellectual resources. The biggest challenge for them is keeping up with market requirements and being capable of continuous renewal according to new tendencies. *Lobbying organizations* are the direct or indirect supporters or the opponents of the implementation of the investment. They try to coordinate interest and to mediate conflicts in order to respect the represented interests of stakeholders. The *financial institutions* are able to create the financial resources that are necessary for the wider spreading of residential energy saving investment projects. Limited volume of (subventioned) loans and social (family) assistance funds under stringent conditions are available in Hungary for energy saving investment projects. Aversion to financial risk is particularly related to the slow return of the projects.

Table 3

Resources of primary stakeholders for residential energy saving investments

Stakeholders		Relevant project resources	Use of resources (opportunities)
Households		Financial resources (own funds, credit, subventions, property).	Investment in projects of energy saving.
Building energetics enterprises	Manufacturers	Manufacturing tools, professional knowledge.	Manufacturing, innovation.
	Designers	Professional knowledge.	Designing products, innovation, consulting.
	Distributors	Skills, equipment, capital, manpower.	Distributing products and services, consulting.
	Constructors	Skills, equipment, capital, manpower.	Construction, service providing, consulting.

Source: own work

Table 4

Resources of secondary stakeholders and outsiders for residential energy saving investments

Stakeholders	Relevant project resources	Use of resources (opportunities)
Government	EU and national funding investments, Legal regulation.	Calls for application and proposals for subventions, Certification systems, lobbying.
Local government	Authority functions, Human resources, Own financial resources.	Authorization and control, Initiation of energy saving investments, Social education programs.
Environmental protection organizations	Professional knowledge, Human resources, Organizational funds, Legal authorization.	Actions and campaigns, Professional advising, Lobbying.
Energy suppliers, public energy companies	Skills, Infrastructure.	Infrastructure development, New services.
Financial institutions	Financial resources.	Credits, investments.
Universities and research institutes	Human resources, Laboratories.	Research and development, Industrial application, Education.
Lobbying: influencers	Relationship capital.	Lobbying for or against projects and organizations.
Natural environment	Energy sources.	Sustainable energy consumption.

Source: own work

The *natural environment* is a passive factor in the process of energy saving investments, however the natural aspect is the most important sustainability factor. The environment has no direct effect in the short term on the output of the investments, but this factor influences directly the activities of all stakeholders.

The primary stakeholders have financial resources (savings, loans, grants, equity), intellectual resources (expertise, innovation) and physical assets (technology, labour, real estate) (Table 3). The problems usually occur in financial resources and raise difficulties for the implementation of the projects. Among the primary stakeholders, the household customers are supported by the state in the process both directly and indirectly.

The set of resources of secondary stakeholders (Table 4) differs according to the given stakeholder category and can be used for exerting many sorts of influence on the projects.

2.3. Influence and importance of the stakeholders

A fundamental question in the analysis of residential energy saving investments is how strong the influence and the importance of the given stakeholder are. *Influence* means the power the stakeholders in the process of

Table 5

Problematic issues of stakeholders in relation to residential energy saving investments

Stakeholders		Problems faced by the stakeholder
Households		High general expenses, building obsolete energy systems.
Building energetics enterprises	Manufacturers	Increasing competition, high technological, environmental and legal requirements, decreasing profit.
	Designers	No defence to the commission, increasing complexity of plans, customization, increasing legal requirements, decreasing profit.
	Distributors	Need for more and higher levels of service, decreasing profit, increasing competition.
	Constructors	Decreasing profit, increasing quality requirements, stronger legal conditions.
Government		High energy dependence, competitive disadvantage of national economic, high cost of the social supports (energy price).
Local government		Low levels of public satisfaction.
Environmental protection organizations		Increasing responsibility for the future of the society and the environment.
Energy suppliers, public energy companies		Decreasing profit, increasing competition, technological, environmental and legal requirements, and social expectations.
Financial institutions		Preference of low-risk investments, stricter credit conditions.
Universities and research institutes		Growing importance of participation in R&D projects, keeping up with market demands and development.
Lobbying: influencers		Increasing competitiveness in lobbying for the benefit of different stakeholders.
Natural environment		Growing need for the protection of natural resources.

Source: own work

projects have to enforce their interests in relation to decision making, implementation and control. *Importance* indicates what priorities are given to the needs, interests and problems of the different stakeholders.

The estimation of the importance of each stakeholder includes the definition of the problems as a first step. Table 5 shows the research results.

The interviews have confirmed the relatively high importance or influence of some groups of the secondary stakeholders such as government, energy companies and financial institutions. Thus the representation and safeguards of interests for the rest of the stakeholders (especially households and small and micro enterprises as primary stakeholders) are less considered in the decision making process.

Based on the ODA method, the relative importance and influence can be combined in a matrix diagram (Figure 3) that allows the positioning each stakeholder group. Even if we neglect here the details (factors and marks) concerning how to evaluate influence and importance (see in Appendix 1), the matrix can be informative. The implications of the boxes are summarized below.

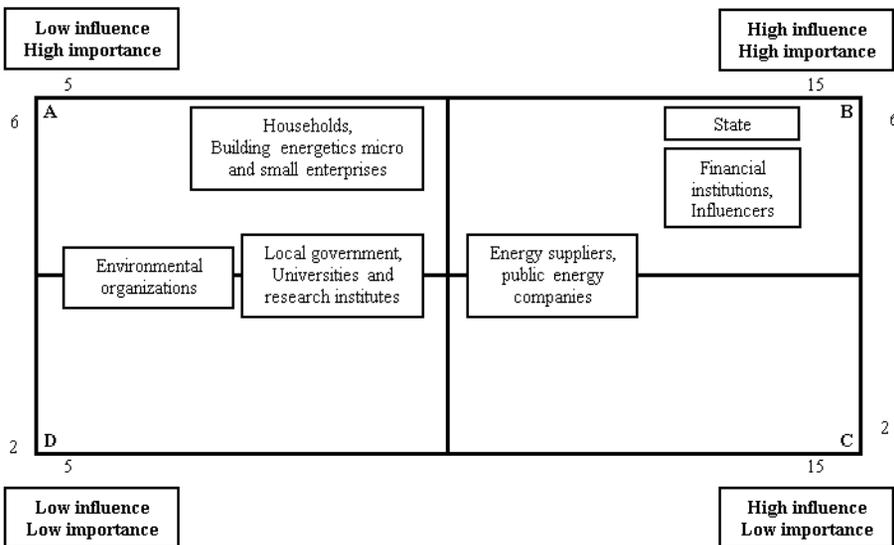


Figure 3. Matrix classification of stakeholders according to relative influence on and importance in the residential energy saving investments

Source: own work

Box A: Stakeholders have high importance but low influence on the project. This implies that they will require special initiatives and support if their interests are to be protected.

Box B: Stakeholders appear as having a high degree of influence on the project, and high importance for its success as well. This implies the opportunity for good working relationships between them and building up an effective coalition for the project's success.

Box C: Stakeholders have high influence and low importance. They can therefore affect the project outcomes, but their interests are not directly included in the project goals. This conclusion implies that these stakeholders may be considered as a source of significant risk, and their position will need careful monitoring and management.

Box D: Stakeholders of the box have both low influence on, and low importance from the point of view of the project objectives. This position may require limited monitoring or evaluation, but these actors have low priority. They are not really interested in the goals and the implementation of the project.

Based upon the matrix analysis some additional propositions may be suggested. Primary stakeholders are in box A, secondary stakeholders are on the border of boxes A and D. As a matter of fact, there is no stakeholder representing category D, that is who would not be involved in any form in the investments. Secondary stakeholders located on the border of boxes A and D have to increase both influence and importance because they can fall into box D in cases of the lack of power of interest. Boxes A, B, and C of the matrix can exert significant influence on the implementation of energy saving investments. Government, financial institutions and lobbying organizations have an appreciable rate of influence and importance, so they can effectively enforce their interests. Energy suppliers and public energy companies can be found on the border of boxes B and C. Their high influence is mostly due to their lobbying activities, but they are not the most important stakeholders in the problem solving processes.

As far as the role of matrix construction is concerned, the relative positions of the different stakeholders allow identifying the direction of acting in order to improve their importance and influence. The primary stakeholders have actually high importance, but collaboration with each other and lobbying activities are required to improve their influence. The needed government support can be considered as a sort of investment or input in order to attain actual long-term national goals of energy saving. Without improving the position of the environmental organizations, the local

government, as well as the universities and research institutes as secondary stakeholders can fall out of the scope of this group due to inadequate lobbying.

2.4. Networks of stakeholders according to relative positions

The relation network model of stakeholders (Figure 4) shows the connection points and positions of different stakeholders to each other from the aspect of the primary stakeholders, e.g. enterprises and households as seen by experts and managers. The broken arrows mark the indirect effects and the bold arrows represent the direct effects.

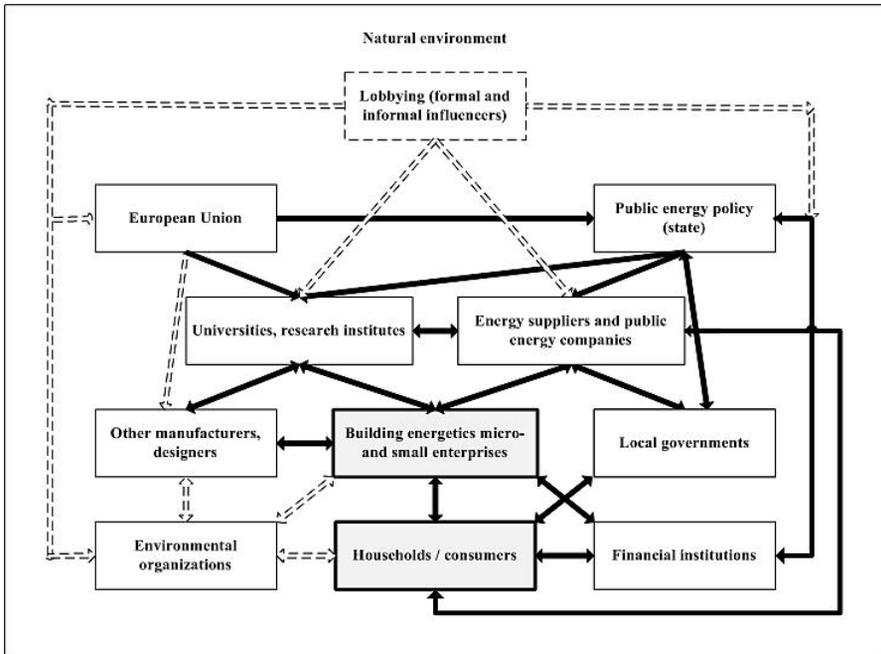


Figure 4. Relation network model of stakeholders of residential energy saving investments
Source: own work

The figure illustrates that the natural environment as an outsider stands for basic reference and frames all other stakeholders and relations. The constructed mesh graph shows top-down pressure regarding energy policy in

which the lobbying organizations are able to influence almost all other stakeholders indirectly, but not with the same intensity. The different stakeholders accept this system according to pressure or constraints, as well as to their resources and strengths. The national energy policy (state) will take the decisive position in the next interpretation.

The households, for instance, are inclined to prefer the high fossil energy costs to the higher energy saving investments into alternative sources, usually due to lack of savings, weak borrowing opportunities and long-term return. The Figure 4 illustrated the interdependence of stakeholders and can be considered as a further contribution to the relation network model.

2.5. Managing risks of investments

The risks of stakeholders connected to energy saving investments include the consideration and critical analysis of the potential difficulties that result from the power relations of influence and importance. The identification and assessment of risks are important tasks in order to increase the commitment of the stakeholders to the investments or to decrease the resistance. The necessary steps can be realized theoretically or practically by each stakeholder with the aim to prevent or to overcome the barriers related to energetics investments. The presented procedure follows the national policy level and is divided in two phases, i.e. first defining the participation/relationship type of each stakeholder (section 2.5.1) and after that defining the main conflicts of each stakeholder (section 2.5.2) in the different stages of the investments/projects.

2.5.1. Stages of investments/projects and types of participation

Table 6 illustrates what roles the different stakeholders can play in each of the project stages such as objectives, planning, implementation, monitoring and assesment and thereafter the results are detailed.

Objectives and Planning. The research results show that the government, leading financial and environmental experts make the primary contribution to the definition of the objectives and the planning of energy saving project investments. Other stakeholders are invited for consultation or participation in committee groups. Households are usually represented by non-profit organizations in the initial stage in the concerned studies and databases. The lobbying organizations are already present from the first stage as consultant partner. The role of the local governments and the building energetics micro

and small enterprises is to be informed on. Representatives of building energetics micro and small enterprises often mentioned as a criticism that the government does not involve them in the stages of the objectives and planning of the investments.

Table 6

Stages of household energy saving investments and participation of stakeholders

Stages of investment	Stakeholders to be informed	Partner stakeholders for consultation	Direct partner stakeholders	Stakeholders involved in controlling
Objectives	Local governments Building energetics micro and small enterprises	Households Lobbying: influencers	Government Environmental protection organizations Financial institutions	Energy suppliers, public energy companies Universities and research institutes
Planning				Universities and research institutes
Implementation	Building energetics micro and small enterprises Households Universities and research institutes	Government Financial institutions	Building energetics micro and small enterprises Households	Local government Lobbying: influencers Environmental protection organizations
Monitoring and Assessment	Local governments Building energetics micro and small enterprises	Households Lobbying: influencers	Government Environmental protection organizations Financial institutions	Universities and research institutes Energy suppliers, public energy companies

Source: own work

Implementation. The success of this stage actually depends on the two primary stakeholders. The government takes care of the harmonization of objectives and the legal and political environment. The financial institutions deal with providing financial tools for the implementation.

Monitoring and Assessment. The supervisory function is accomplished by the environment protection organizations, while the impact of the objectives and implementation on stakeholder interests are assessed by the local government and lobbying organizations. In an ideal situation the energy saving investment project is a process that allows sustainable energy

management for the long term. A continuous assessment from the initial stages onward is carried out by the different stakeholders based on the form of the performed partnership.

2.5.2. Conflicts of the stakeholders with each other and with the investments

Conflicts between stakeholders are perceived as those originated in the differences between their own goals, resources and opportunities, however the final common objective can be defined as carrying out household energy saving projects according to actual requirements and conditions. Conflicts can be identified between the different stakeholder groups (primary-secondary) and between the different actors inside a given group (inside primary and inside secondary groups).

Most conflicts between primary stakeholders (*households* as final energy users and *enterprises* as business actors operating to carry out household projects) come from different motivations/interests already in the short and medium term. The great majority of households is highly cost-saving oriented with limited financial resources and expect calculable cost/return advantages in the short term. Enterprises are profit-oriented and turnover maximizers regarding any project. Business efficiency means for them investing less time into service selling, using less resources in a product or service units. However, the customers expect well conceived designs and quality installation, as well as customized products and sales at the lowest possible price.

Conflict identification regarding the rest of stakeholders shows the following main perceptions and opinions. The *government* is right in trying to redress abuses of regulation and to render conditions of tenders more strictly, but the often experienced excessive rigour, as well as the government reviews and changes often cause the failure of the projects already in the initial stages. The application system has been almost impossible to predict both for enterprises and households in Hungary, recently and for many years previously.

The *financial institutions* are ready to finance projects if the return on investments is really calculable and corresponds to business expectations. The lack or the weaknesses of government guarantees are also important obstacles to loans. The main conflicts with the *environmental protection organizations* are originated in the environmental requirements they promote and that are usually considered excessive both from economic and technology considerations, and are not accepted by potential customers.

Concerning the *lobbying organizations* there are positive and negative experiences as well, depending on the different stakeholder interest-relationships as conflict sources. The contribution of *universities and research institutions* is especially important for the government in the elaboration of technical details, conditions and impact studies of development projects. They often provide significant expertise. *Energy suppliers and public energy companies* are basically on the opposite side of the energy saving investments because the decreasing consumption leads to a decrease of their turnover and profit. However, this attitude is contradictory to the expected general social responsibility towards business organizations. The negative impact on the *natural environment* can be interpreted as a risk factor. If the support system of energy saving investments is not well considered, the optimal energy resource management cannot be realized.

CONCLUSIONS

Residential building energy consumption has a great potential for energy saving and the efficacy of household investment projects may be enhanced by using a stakeholder analysis of the actors participating in the entire process including conception, planning, implementation and controlling.

The study analyzes conditions related to the relationship of the stakeholders in the studied projects using the modelling method that contributes to a systematic approach, with the novelty of analyzing qualitative information gathered by interviews with industry experts, small enterprise owners and managers as authentic information sources. Information structured in comprehensive tables and figures shows clearly the importance of the different factors in the relationship of stakeholders and gives recommendations for their practical use. The modelling approach can serve as a practical instrument for the market actors and for the government decision makers and finally help with increasing household energy saving via the number of successful projects.

Besides the advantages of modelling tools of the stakeholders' relationship, the research has proved the importance of asking and involving primary stakeholders in the process of the elaboration of national residential energy saving strategies and plans including subsidies and other support systems. The further research aims at assessing how the NeFMi (2011) document include newer considerations in this aspect.

Finally, the Hungarian case may be instructive for another country specific case study, especially in Eastern European countries, regarding similarities of conditions.

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Received: January 2015

APPENDIX 1

Qualitative research results – Evaluation of Industry Experts and Micro and Small Enterprise Owners about Importance and Influence of Stakeholders

Table 7

Influence of Formal Stakeholders/Organizations

Stakeholders	Degree of formal influence in formal organizations				
	Legal hierarchy	Authority of leadership	Control over strategic resources	Possession of special knowledge	Strengthening of negotiating position
Government	(3)	(3)	(3)	(2)	(3)
Local government	(2)	(2)	(1)	(1)	(2)
Environmental protection organizations	(1)	(1)	(1)	(3)	(2)
Building energetics enterprises	(1)	(1)	(3)	(3)	(1)
Universities and research institutes	(2)	(1)	(1)	(3)	(1)
Financial institutions	(3)	(3)	(3)	(2)	(3)
Energy suppliers, public energy companies	(3)	(2)	(2)	(3)	(2)

Source: own work

Table 8

Influence of Informal Stakeholders/Organizations

Stakeholders	Degree of formal influence in informal organizations				
	Social, economic and political status	Degree of organization	Control over strategic resources	Ability of influencing other stakeholders	Degree of dependence on other stakeholders
Households	(2)	(1)	(2)	(1)	(3)
Lobbying: influencers	(3)	(3)	(3)	(3)	(2)
Natural environment	(2)	Not interpreted	(2)	Not interpreted	(3)

Source: own work

Table 9
Importance of Stakeholders

Stakeholders	Effect of objectives on stakeholder problems	Interests of stakeholders are in conformity with project objectives
Building energetics enterprises	(3)	(3)
Households	(3)	(3)
Government	(3)	(3)
Local government	(2)	(2)
Environmental protection organizations	(2)	(2)
Energy suppliers, public energy companies	(2)	(2)
Financial institutions	(3)	(2)
Universities and research institutes	(1)	(3)
Lobbying: influencers	(3)	(2)
Natural environment	(3)	(3)

Source: own work