Szilvia BÍRÓ-SZIGETI – Mária VÁGÁSI

# A STAKEHOLDERS' APPROACH OF BUILDING ENERGY SAVING PROJECTS IN HUNGARY

## SUSTAINABILITY ORIENTATION VERSUS COST SAVING

**The paper focuses on projects aimed at energy saving on the residential / housing segment of the building energy / energetic market where SMEs and microenterprises are predominant in Hungary and expect finding individual business opportunities. The first part of this paper refers to the imperatives and indices related to energy consumption and saving. In the second section three models of a stakeholders's approach are presented regarding their motivations, resources and relations.**

*Keywords:* **building energetics, energy saving, Hungary, small and microbusinesses, stakeholder, sustainablity**

In Hungary the main stream of current topics about energy saving projects in the buildings sector focuses on sustainability requirements, technological solutions, financial and legal aspects and administrative incentives or measures, respectively. Economic approaches or policies, European or national projects, as well as academic researches and publications are mainly concentrating on the above questions. At the same time, available evaluations about the buildings' sector and its projects refer mainly to market dynamic or difficulties in relation to investments or projects in which potent market stakeholders are involved, e.g. big (more often national than international) companies operating on the domains of investments in new residential buildings or eminent improvement and renewal works, or financing, commercialisation and property management.

Little attention is payed to a wider and integrative scope of stakeholders, their involvement, motivations and project resources in the market segment where smaller stakeholders, like small and microenterprises, expect to find individual business opportunities and face constraints. This latter market segment includes particularly the energy saving projects of residential (housing) buildings in which individual consumers' (households) needs are concerned. Activities of the supply-side include designing and implementing new equipment installation, as well as the renewal or repair works in new or existing buildings. A great part of works provided in the framework of individual projects is performed by microenterprises or single businesses.

### Sustainability Orientation and Indices of Energy Consumption and Saving Regarding the EU and Hungary

According to the definition sustainable development stands for a "*development which meets the needs of the present without compromising the ability of future generations to meet their own needs*." (World Commission on Environment and Development, 1987) Why and how to save energy? The main point of energy saving in relation to sustainability requirement is the need to reduce energy consumption and greenhouse gas emissions. Energy saving is an imperative for national economies as well as for an international organization like the EU due to the need of reducing import dependence and energy expenditure. Applying energy-saving technologies, enterprises can reduce costs and attain higher energy efficiency of their performance, while consumers can reduce household expenditure for maintaining or enhancing their quality of life.





*The energy autarchy level* of a country or a region can be defined as the relation of its own energy consumption to its supply and its own energy generation. A smaller number of EU member-countries disposes of important natural stocks of oil, gas, coal or geothermal energy, while their majority depends on energy import. The EU depends on energy imports for 50% of its current consumption, and this figure could reach 70% by 2020 (Europe's Portal website). Hungary belongs to the group of countries highly depending on oil and gas energy import with its 60,8% (Europe's Energy Portal's website).

*Energy intensivity* of an economic sector shows the energy consumption needed for its performance or output in relation to other sectors. Together with manufacturing, energy conversion and transport, the building sector is considered to be an energy-intensive sector. Buildings account for around 40% of Europe's energy consumption. Consequently they also offer the greatest potential for energy-efficiency improvements, to help moderate the burden of growing energy costs and reduce greenhouse-gas emissions (Europe's Energy Portal's website). Expressed by another index, the overall energy intensity is 438kg oe/€ 1.000[1] in Hungary, while in the EU27 this value is 185kg oe/€ 1.000 in 2004 (Europe's Energy Portal's website).

Reduction of energy consumption for the same performance results in *energy-efficiency* improvement. The Green Paper estimates that the EU could reduce energy consumption by 20% by 2020 (Europe's Energy Portal's website). According to the Action Plan for Energy Efficiency (2007-12) the biggest energy savings are to be made in the following sectors: residential and commercial buildings (tertiary), with savings potentials estimated at 27% and 30% respectively, the manufacturing industry, with the potential for a 25% reduction, and transport, with the potential for a 26% reduction in energy consumption (Europe's Portal website). It is envisaged that out of the 20% of possible savings 10% could result from the full application of existing legislation, particularly in the transport, heat production and building sectors. The other 10% of energy savings require new laws and new behaviour to be adopted by all players concerned, i.e. across all public authorities, industries and individuals.

Concerning the building sector the Action Plan encourages industry and consumers to use their energy in a better way through more economical technology

*Figure 1*

**Households Energy Expenditure in Hungary between 2000–2006 (1 HUF/head/year)**

Source: based on (KSH, 2009)

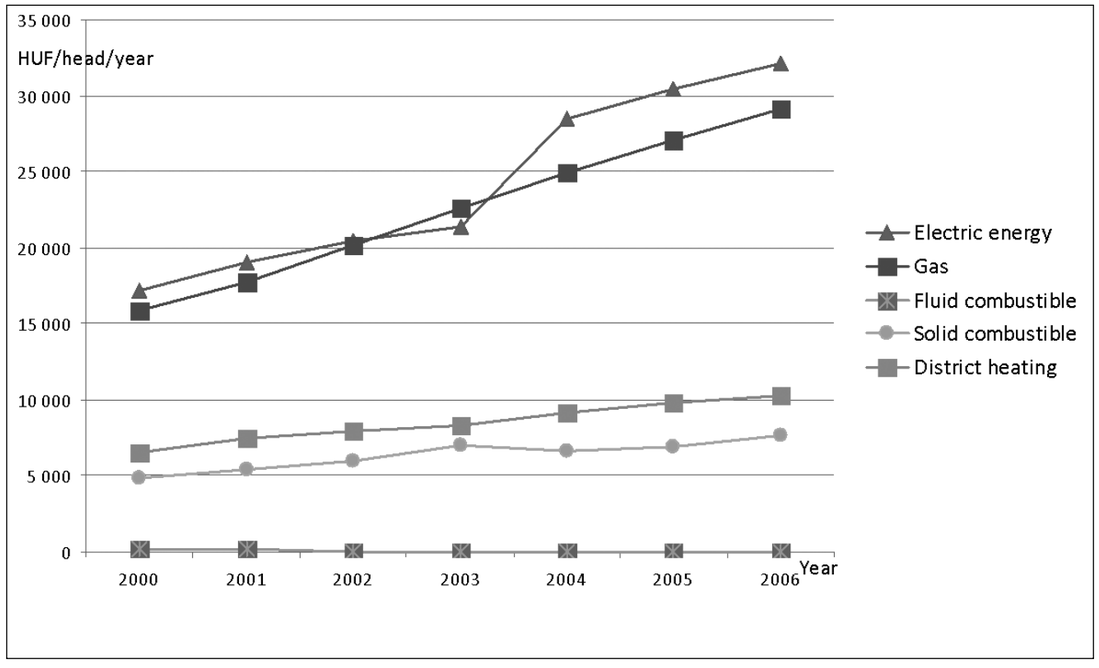
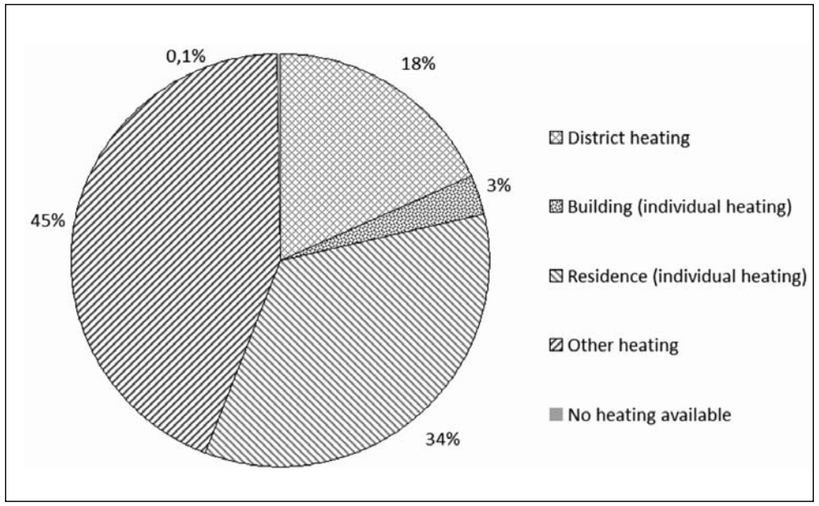


*Figure 2*

**Shares of Different Building Heating Methods in 2006**
Source: based on (KSH, 2009)




and behaviour. In order to achieve substantial and sustainable energy savings in the industry, energy-efficient techniques, products and services must be developed. As far as consumers are concerned, consumption habits must be changed so that less energy is used to maintain the same quality of life. The Action Plan relies on public authorities set an example in the field of energy-saving behaviour.

Low energy efficiency or wasteful national consumption is the case when a country consumes more energy than others for the same performance or output in similar climate conditions (Székely, 2006). As efficiency correlates not only with the level of development of the technological and economics of a country but also with its culture and living standard, Northern and Western European countries perform better in energy efficiency then Eastern and Central European countries. An expressed frontier line can be drawn between the ex-socialist member-countries and the majority of the earlier EU members.

Figure 1 shows that the energy expenditures of Hungarian households increased progressively between 2000–2006 for almost all traditional types of energy. This increase is originated particularly in three main tendencies: the progressive rise of energy prices, the growing energy consumption and the low-level of investments in projects aimed at using renewable energy sources. Consumption is growing or at least not decreasing due to the high share of old buildings provided with obsolete energy systems and weak insulation, the increasing number of new residential buildings equipped with traditional heating systems and the proliferation of electrical appliances. The recent depreciation of HUF currency brings forth the further increase of energy expenditures just in the near future.

Households' expenditure for overhead (with 21% rate) including energy cost represents the second biggest set of expenditure after food products. Gas and electric energy cost increased to the highest degree. Electrical energy consumption increased owing to air conditioning by 31% between 2000–2007 (from 41 388 million kWh to 54 278 million kWh), while the total energy consumption grew by 6% (from 1055,1 pJ to 1120 pJ) (KSH, 2009). Energy saving based on renewable energy sources is barely used in Hungary, therefore import energy dependence continues to be high.

From among the different applications heating is the most energy consuming one. Figure 2 shows the shares of different heating methods in 2006. The consumption of the most traditional energy sources (heating with wood, coal and oil) sensibly declined in the last decades. The share of pipeline gas in energy expenditure has progressively increased (29 percent in 2000, 33,5 percent in 2007) (KSH, 2009). The pipeline-gas price-index was higher than the consumer price-index (by 6,7%) in the last years. All these conditions can be considered as a background that serves as the base for analysing stakeholders' motivations in energy saving projects.

## A Stakeholders' Approach for Building Energy-Saving Projects

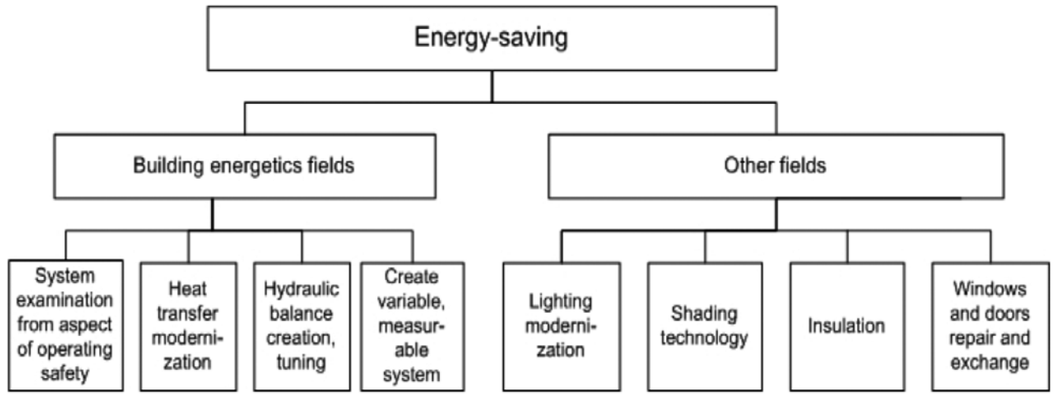
On the investigated market segment energy saving projects in which consumers / households are involved include the designing, implementing and installing new equipment, renewal or repair works in new or existing residential buildings, respectively. Figure 3 would present a systematic approach concerning the main categories of equipments or application fields to which projects and household investments may be oriented.





*Figure 3*

**Fields of Household Energy-saving Projects**
Source: Own figure




According to the usual definition, stakeholders are anyone who have an interest in a project. Project stakeholders are individuals or organizations that are actively involved in the project, or whose interests may be affected by the results of the project completion. They may also exert influence on the project's objectives and outcomes. In other words, project stakeholders are those sponsor who a project or expect to have an interest or a gain in the successful completion of a project.

Our stakeholders' approach includes identifying of the different stakeholders, their motivations and the specific resources they dispose for initiating, implementing or supporting energy saving projects. We have identified stakeholders according to the methodology developed by the UK Overseas Development Administration (ODA, 1995). Stakeholders are classified in three categories: primary, secondary and outsider stakeholders. *Primary stakeholders* are those ultimately affected in the projects' outcome, in our case they are households or individuals who formally express their needs and order the design and completion of the projects on the one hand, as well as enterprises that deal with completion i.e. sponsor projects. On the other hand *secondary stakeholders* are the 'intermediaries', individuals or organizations indirectly affected in projects outcomes. In this field they are numerous: as Table 1 shows, we have identified ten important players indirectly involved or affected. *Outsider or external stakeholders* are rather passive factors (e.g. natural environment) that cannot affect on the defined projects outcomes directly in ways specified above and shown in the related recapitulative tables. However, out of the different stakeholders' motivations, natural environmental concerns represent the most important sustainability imperative.

Table 1 and Table 2 illustrate research results gained from an investigation aimed at revealing how players on the supply side, namely potential sponsors of projects, perceive contemporary project conditions. Investigation was conducted among small and microbusinesses' owners or leading managers and complemented with additional information delivered by experts in buildings energy-saving projects. Seventeen personal interviews were performed with owners and managers, and seven others with experts. The latter interviewees have contributed to the identification of a wider stakeholders's view. (Research results will serve as the basis for a further survey to be conducted among a wider interested public).

Besides the main motivations of the different stakeholders we included main conditions too (see Table 1), that may lead to the projects' success or failure, respectively. These conditions are presented as cases of motivation conformity to project goals and cases of conflicts with project goals on the appropriate level of the different stakeholders. While Table 2 shows specific resources disposable or available by the different stakeholders it also allows to realise how plentiful and multifaceted resources are to be mobilized at the national level in order to attain significant energy-saving achievements by sets of different projects.

The stakeholders' relations model (Figure 4) would visualize connections and positions of the different stakeholders depicting a simplified network graph from the aspect of projects of primary stakeholders i.e. small and microenterprises.

*Table 1*

**Stakeholders' Motivations in Relation to Energy Saving Projects**
Source: Own Table

| Categories of stakeholders | Stakeholders | Motivations | Cases of motivation conformity to project goals | Cases of conflicts with project goals |
|---|---|---|---|---|
| Primary stakeholders | Building energetics enterprises (trade and installation) | Offer of marketable goods and services for sale and installation. Profit and professional recognition | Right technical solution in designs and installation | The consumer's motivation is not the main principle. The investment will not be returned |
| | Customers (households or organizations) | Energy and cost saving, contemporary technology, return on investment | Cost saving, increasing comfort and the value of the property | High investment costs and long term return trouble investments |
| Secondary stakeholders | Manufacturers | Demand conform quality, price advantage, marketable goods, profit, professional recognition, competitive advantage | Reputation establishing, producing marketable and energy saving goods | Competition, low price coupled with low quality. Foreign enterprises can leave market in case of short demand |
| | Designers | Commission from manufacturer or traders, professional challenge, design of energy efficient systems | Design of energy efficient systems | Products/brands recommended for installation depends on the commission |
| | Government | National competitiveness and development | Decreasing costs on national economy level, reducing energy dependence | Favour given to certain lobbies' interests |
| | Local government | Cost reducing and regional development | Incitements to decentralization in energy generation producing, decreasing transport cost, lower energy prices | High cost of incitement programs, bureaucracy |
| | Environmentalist organisation | Protection of environment and energy sources | Increase of environment consciousness | Conflicts with other stakeholders interests (consumers or fuel, gas and oil lobby, etc.). |
| | Energy suppliers, public energy companies | Energetic service, profit, consumer need satisfaction | Innovations in energy saving solutions, new services, diffusion of knowledge about energy saving, customer loyalty | Energy saving may decline profit and market demand |
| | Financial institutions | Increase profit and demand for credit | Make easier financing of investments | Risky return and repayment |
| | Competitors | Competitive advantages against others and increase of market share | Competition leads to innovation, new services and price reduction | Lower price coupled with lower quality |
| | Universities, Research institutes | R & D for energy saving solutions, examination of social and economic effects and interests | Definition of R & D directions, industrial implementation of results, education | Dependence of research projects on supporting programs and funds. Discrepancy between research and industrial interests |
| | Informal and formal influencers (Fuel, gas and oil lobbies, etc.) | Maintaining demand for oil and gas consumption | New needs and projects replacing lost demand because of enhancement of energy saving | Profit maximization and short term thinking that lead to selling faster available stocks |
| Outsider stakeholders | Natural environment | Climate protection, sustainable energy consumption | Saving energy sources and reducing gas greenhouse effect | Energy saving projects creating new environmental problems |





*Table 2*

**Stakeholders' Resources in Relation to Energy Saving Projects**
Source: Own Table

| Categories of stakeholders | Stakeholders | Relevant project resources | Main resource usage opportunities |
|---|---|---|---|
| Primary stakeholders | Building energetics enterprises (trade and installation) | Skills, equipment, capital, manpower | Production, service providing, advising, construction, trading |
| | Customers (households or organizations) | Financing resources (own funds, credit, subventions, property) | Investments in projects of building energy saving |
| Secondary stakeholders | Manufacturers | Manufacturing tools, professional knowledge | Manufacturing, innovation |
| | Designers | Professional knowledge | Designing products, innovative designs |
| | Government | EU and national funding projects, legal regulation | Calls for application and proposals for supporting projects, certification systems, lobbying |
| | Local government | Authority functions, human resources, own financial resources | Authorization and control<br>Initiation of energy saving projects, applications for subsidies, social education programs |
| | Environmentalist organizations | Professional knowledge, human resources, organizational funds, legal authorization | Actions and campaigns, professional advising, lobbying |
| | Energy suppliers, public energy companies | Skills, infrastructure | Developing infrastructure or new services |
| | Financial institutions | Financial resources | Credits, investments |
| | Competitors | Skills, equipment, capital, manpower | Attractive offers, gain over of customers |
| | Universities, Research institutes | Human resources, laboratories | Research and development, industrial application, education |
| | Informal and formal influencers (Fuel, gas and oil lobbies, etc.) | Relationship capital | Lobbying for or against projects and organizations |
| Outsider stakeholders | Natural environment | Energy sources | Sustainable energy consumption |

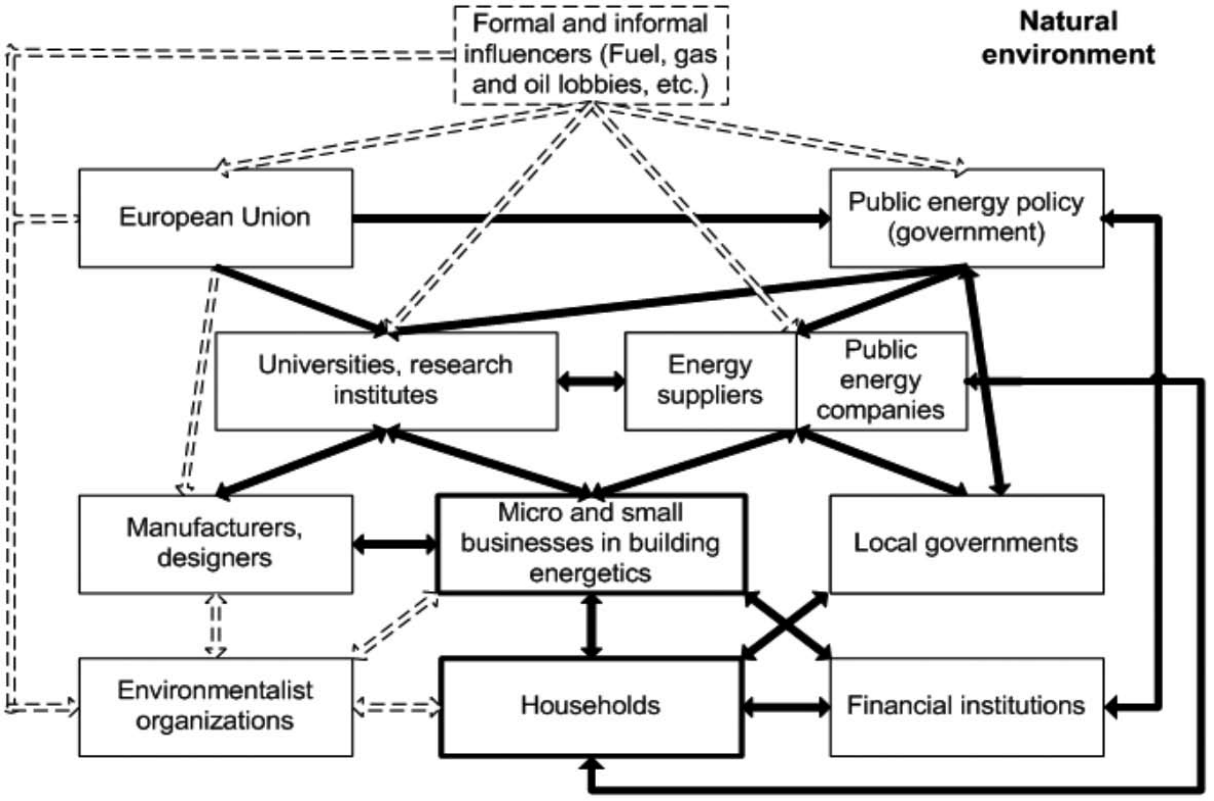
## Conclusion

By presenting a stakeholders' approach, the intention of the paper was to contribute to a more punctual market description of the building energy sector in Hungary, in the matter of energy-saving projects. A stakeholders' approach can be considered as a standard method for any market analyses, but it has not yet been applied to this market. Our examination has been directed to the household segment, as that is one of the main fields of activities of SMEs and microenterprises operating in the sector. The importance of this segment from the aspect of energy-saving endeavours is high because it possesses considerable reserves for reducing energy consumption. References to EU objectives and directives have confirmed that this segment plays a central role both in order to reduce energy import dependence and attain sustainability goals. Therefore an integrative stakeholder aspect in the examination of projects concerning to building energy-saving achievement can reveal indispensable information on market conditions and opportunities for each stakeholder interested in initiating, designing, completing, supporting or financing projects. Research results suggest that motivations of households and those of the majority of stakeholders in relation to building energy projects reflect rather cost-saving endeavour than environment consciousness. Requirements of the sustainable development are included in project goals rather implicitly than explicitly.

*Figure 3*

**A Stakeholders Relation Model of Energy Saving Projects**

Source: Own figure




1kg oe /€ 1.000 = kilogrammes of oil equivalent /€ 1.000

## References


- *Europe's Energy Portal's website:* Green paper for energy efficiency – Memo: http://ec.europa.eu/energy/efficiency/doc/2005_06_green_paper_memo_en.pdf [25th March 2009]
- Hungarian Energy Mix Fact Sheet: http://ec.europa.eu/energy/energy_policy/doc/factsheets/mix/mix_hu_en.pdf [13th March 2009]
- Communication Staff Working Document – Proposal for a Recast of the Energy Performance of Building Directive: http://ec.europa.eu/energy/strategies/2008/doc/2008_11_ser2/buildings_impact_assesment.pdf [13th March 2009]
- *Europe's Portal website:* Communication Staff Working Document – Annex to the Green Paper: http://www.energy.eu/directives/2006_03_08_gp_working_document_en.pdf [13th March 2009]
- Action Plan for Energy Efficiency (2007–2012): http://europa.eu/scadplus/leg/en/lvb/l27064.htm [13th March 2009]
- *Hungarian Central Statistics Office' website:* http://www.portal.ksh.hu/pls/ksh/docs/hun/xstadat/xstadat_eves/tabl2_02_06i.html [30th January 2009] Compiled by Mikesné M. B.
- *ODA (Overseas Development Administration) Social Development Department* (1995): Guidance note on how to do satkeholder analysis for aid projekts and programmes. London.
- *Székely Cs.* (2006): Az alternatív energiaforrások szerepe Kelet-Közép-Európa energiaellátásában (Roll of Alternative Energy Sources in Energy Supply in East-Middle-Europe), Az alternatív energiaforrások hasznosításának gazdasági kérdései – Nemzetközi Konferencia (Economic Questions of Alternative Energysources – International Conference) Nyugat-Magyarországi Egyetem, Sopron (The University of West Hungary Sopron, Hungary). In CD form.
- *World Commission on Environment and Development* (1987): Our Common Future Retrieved from: http://www.are.admin ch/imperia md/content/are/nachhaltigeentwicklung/brundtland_bericht.pdf?PHPSESSID=bc5177f3d754e76d9f2916dc74aa219b pp. 54. [1st May 2006]