SUSTAINABLE CONSUMPTION 2008

Academic conference proceedings

Edited by Edina Vadovics and Emese Gulyás

8 October 2008

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About the Conference

Building on the success of the "Sustainable Consumption in Hungary 2007" conference organised in December 2007, the Institute of Environmental Sciences at the Corvinus University of Budapest, the Department of Environmental Economics at the Budapest University of Technology and Economics, GreenDependent Sustainable Solutions Association, the HAS-ELTE Communication Research Group, the Association of Conscious Consumers, Central European University and Sustainable Europe Research Institute organised an international conference on sustainable consumption on 8 October 2008 in Budapest. The conference had a special focus on the Central and Eastern European region with the following objectives:

- to review and summarise completed and ongoing research activities on sustainable consumption in the region;
- to create an academic forum that can serve as the basis for professional communication and development in the field; and
- to create an informal network of scientists who work and are interested in this field in order to share and promote knowledge about sustainable consumption.

In 2008, the conference was organised in conjunction with the annual conference of the Environmental and Sustainability Management Accounting Network (EMAN) titled „Measuring and Managing Business Benefits".

Date, Venue, and Fees

The conference took place at the **Corvinus University of Budapest**, Hungary, on **8 October 2008**.

Participation at the conference was free of charge, but required registration.

Conference themes

The call for abstracts was announced for the following themes of sustainable consumption:

1. The state of and challenges to sustainable consumption in the Central and Eastern European (CEE) region
2. Sustainable consumption and consumer behaviour; determinants of consumer behaviour; sociology and psychology of consumption
3. Theories, principles and ethics of sustainable consumption
4. Links between and indicators of consumption and well-being
5. Measuring sustainable consumption and life satisfaction
6. Sustainable consumer lifestyles and values
7. Sustainable consumption policies and regulations; challenges to and opportunities for national and regional policy frameworks in the CEE region
8. Analysis of best practices, success stories, failures and experiences in the CEE region

Organising and scientific committee

Boda, Zsolt; Corvinus University of Budapest, Business Ethics Centre and Hungarian Academy of Sciences, Institute of Political Science

Gulyás, Emese; Institute for Sociology and Social Policy Corvinus University of Budapest and Association of Conscious Consumers

Hofmeister Tóth, Ágnes; Corvinus University of Budapest, Institute of Marketing and Media

Kerekes, Sándor; Corvinus University of Budapest, Institute of Environmental Sciences

Lorek, Sylvia; Sustainable Europe Research Institute

Pataki, György; Szent István Egyetem

Székely, Mózes; Eötvös Loránd University, HAS-ELTE Communication Research Group

Vadovics, Edina; GreenDependent Sustainable Solutions Association and Central European University, Department of Environmental Sciences and Policy

Zilahy, Gyula; Corvinus University of Budapest, Institute of Environmental Sciences

Conference outcomes

From among the abstracts submitted to the academic committee of the conference for evaluation, 18 were accepted for presentation. In the end, thirteen full papers were submitted and seventeen presentations delivered in five conference sessions. On the conference day we had over 130 registered visitors from academic institutions, civil organisations, governmental bodies and from the media. Conference presentations and proceedings in English can be downloaded from the following websites:

www.greendependent.org/

www.tve.hu/sustcons

Sustainability principles on the site

Conference organisers committed themselves to organising the event in the most sustainable way. The conference was held in the historic building of the Corvinus University of Budapest, which is in the downtown area of Budapest and easy to access by public transport. Catering services for the conference were provided by the Fair World Fairtrade Alliance; the conference lunch was a meal prepared from organic and fairtrade ingredients. No plastic cups or plates were used. Conference materials were printed on recycled paper and the proceedings were made available in electronic format.

Further information

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SUSTAINABLE CONSUMPTION 2008 CONFERENCE

8 OCTOBER 2008, BUDAPEST

PROGRAMME

Venue
Corvinus University of Budapest, Hungary
Budapest IX. 1093, Fővám tér 8.

Programme

8:30 – 9:00 Registration, *Auditorium III.*

9:00 – 10:30   Plenary session: recent topics in Sustainable Consumption, *Auditorium III.*

Chair: Sándor Kerekes, Director, Institute for Environmental Sciences, Corvinus University of Budapest

FRUGALITY
László Zsolnai, Corvinus University of Budapest, Hungary, and
Knut Ims, Norwegian School of Economics (NHH) Bergen, Norway

CHANGING CONSUMPTION PATTERNS: DEVELOPING POLICIES, INFRASTRUCTURE AND ENGAGEMENT
Chris Church, Co-Chair of ANPED, the Northern Alliance for Sustainability; Director, CEA, London, UK

Questions, comments and discussion

10:30 – 11:00   Coffee break

11:00 – 13:00   Parallel sessions I.

A. The state of sustainable consumption in Central and Eastern European countries, *Auditorium III.*

1. HOUSEHOLD ENVIRONMENTALLY SUSTAINABLE BEHAVIOUR AND COMMUNICATION IN LATVIA
Janis Brizga, University Of Latvia, Institute for Environmental Science and Management

2. EVALUATION OF RUSSIA'S PROGRESS IN PROMOTING SC POLICIES
Olga Martinenco, Eco-Accord, Centre for Environment and Sustainable Development, Moscow, Russia

3. THE STATUS AND REVIEW OF NATIONAL GREEN PUBLIC PROCUREMENT (GPP) ACTION PLANS IN THE NEW EU MEMBER STATES
József Szlezák, Péter Szuppinger and Ana Popovic, Regional Environmental Centre, Hungary

4. SUSTAINABLE HOUSEHOLD CONSUMPTION: THE STATE AND THE PERSPECTIVES IN LITHUANIA
Renata Dagiliūtė and Genovaitė Liobikien, Department of Environmental Sciences, Vytautas Magnus University, Lithuania

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Questions, comments and discussion

B. The sustainable consumption of food, *Rm 3005*

1. BUY OR NOT TO BUY ORGANIC FOOD? A CASE STUDY ON PRAGUE'S POPULATION
   Jan Urban and Milan Ščasný, Charles University Environment Center, Prague, the Czech Republic

2. ALTERNATIVE AGRI-FOOD NETWORKS IN HUNGARY
   Bálint Balázs, ESSRG, Szent István University, Hungary
   Borbála Simonyi and Csilla Kiss, Védegylet (Protect the Future), Hungary

3. SYSTEM ARCHETYPES TO DIAGNOSE CHALLENGES OF SUSTAINABLE CONSUMPTION AND PRODUCTION IN THE FOOD SECTOR
   Márton Herczeg, Danish Topic Centre on Waste and Resources, Denmark
   Péter Bodó, Geologika Ltd., Hungary

Questions, comments and discussion

13:00 – 14:00   Lunch break

14:00 – 16:00   Parallel sessions II.

A. Behaviour, values and lifestyles, *Auditorium III.*

1. ROOTLESS AND CLUSTERED ENVIRONMENTALLY SIGNIFICANT CONSUMPTION. A CASE STUDY FROM CLUJ-NAPOCA (ROMANIA)
   Laura Nistor, Babes-Bolyai University, Cluj-Napoca, Romania

2. ENVIRONMENTALLY FRIENDLY BEHAVIOUR: CONSISTENT OR NOT?
   Melinda Majláth, BMF Keleti Károly Kar, Hungary

3. VALUES AND LIFESTYLE: DO CONSUMERS DECLARING SUSTAINABLE VALUES DEMONSTRATE SUSTAINABLE CONSUMPTION PATTERNS?
   Mózes Székely, Hungarian Academy of Sciences, Research Group of Communication Theory
   Gyöngyvér Gyene, Institute of Psychology, ELTE University, Hungary
   Katalin Pörzse, Hungarian Academy of Sciences, Research Group of Communication Theory
   Szabolcs Takács, Institute of Mathematics, ELTE University, Hungary

4. THE SUSTAINABILITY OF THE CONSUMPTION OF UNIVERSITY STUDENTS
   M. Tóth, Gy. Málovics and J. Tóth, University of Szeged, Faculty of Economics and Business Administration, Hungary

Questions, comments and discussion

B. Actors and factors influencing sustainable consumption, *Rm 3005*

1. WHAT ROLE CAN CIVIL SOCIETY PLAY TO ENCOURAGE SUSTAINABLE CONSUMPTION PATTERNS IN THE CEE REGION?
   Burcu Tuncer and Satu Lähteenoja, UNEP/Wuppertal Institute Collaborating Centre on Sustainable Consumption and Production, Germany
   Éva Csobod, Regional Environmental Centre, Szentendre, Hungary
   Martin Charter, The Centre for Sustainable Design, University College for the Creative Arts at Farnham, Surrey, UK

2. THE ROLE OF TIMING IN THE SUCCESS OF ENERGY SAVING PROGRAMMES
   Mikko Rask and Eva Heiskanen, National Consumer Research Centre, Finland
   Ynke Feenstra and Ruth Mourik, ECN, The Netherlands

3. INFORMAL NETWORKS IN DIRECT MARKET DEVELOPMENT AT TISZA CATCHMENTS
   Zsuzsanna Flachner, MTA-SZTAKI, Hungary

Andrea Szabadkai, SZÖVET – Living Tisza Association, Hungary

4. USING THE LATEST RESEARCH FOR BETTER COMMUNICATION ON SUSTAINABLE CONSUMPTION - CASE STORY OF ONE DID IT.
Marja Salo, One did it Ltd., Finland
Satu Lähteenoja and Michael Lettenmeier, UNEP/Wuppertal Institute Collaborating Centre on Sustainable Consumption and Production, Germany

Questions, comments and discussion

16:00 – 16-30 Coffee break

16:30 – 17:00 Closing of the conference, *Auditorium III.*
Short summary by Session Rapporteurs

<div align="right">Chapter 1</div>

Household Environmentally Sustainable Behaviour and Communication in Latvia

<div align="right">Janis Brizga</div>

<div align="right">*University Of Latvia*
Institute for Environmental Science and Management</div>

Abstract

Current unsustainable consumption and production patterns are responsible for many environmental problems. Studies analysing household environmental impacts, demonstrate that food and drink, private transport and housing are the most important sectors with the highest environmental impacts of household consumption. To minimise these impacts immediate actions should be taken to change household behaviour for more sustainable.

This paper analyzes sustainable consumption in Latvia. It looks at household environmental attitudes, concerns and behaviour. The study is based on analyses of several representative surveys done in Latvia over the last years.

Results from these surveys show that household environmental awareness in Latvia is comparatively high, but most of households are ready to change their behaviour patterns in order to minimize environmental impacts only in the future. This shows also significant value – action gap in Latvia's society in relation to sustainable consumption.

Key words*: sustainable consumption, environmental pressures, environmental information, behaviour change.*

1. Introduction

Household environmental behaviour patterns account for a large amount of environmental problems. Most of the latest studies on household environmental impacts in Europe are focusing on consumption aspects and emphasize them as the main household's environmental pressure. These studies suggest that current unsustainable consumption and production patterns are responsible for many environmental problems, like climate change, eutrophication, biodiversity loss, resource depletion and others (Tukker et.al., 2006) and that effective environmental sustainability efforts should focus on 3 main product groups: food and beverages, housing (including electricity and fuel) and personal transport, offering frameworks to support needed change. However, the potential of other product groups of lower environmental relevance (especially recreation, clothing, hotels and restaurants and transport services) must be taken into account as well.

Sustainable lifestyles and consumption patterns are getting more and more popular by mainstream media in Latvia. Especially women and girls magazines (Shape, Santa, Ieva etc.) and several internet portals (www.apollo.lv, www.politika.lv, www.tvnet.lv etc) are regularly having publications on environmental and health aspects of different products – mostly cosmetics and beauty products, but also cleaning products, food, cookware and other product groups are covered. There is growing

number of specialized eco-shops appearing not only in capital Riga, but also in other towns around Latvia and some supermarkets are starting to sell eco-labelled and Fair-trade products. Even green procurement is starting to become an issue on governmental and corporate agenda.

However the question remains: how much of this thinking and talking is actually coming into real action and how much dose it improve environment and supports sustainability? Is sustainable consumption linked to the increasing income in society? Do people with the higher education and income practise more sustainable lifestyles? And what are Latvian consumer attitudes to sustainable development and how are they 'translated' into corresponding practices? Therefore in this article I try to investigate people's environmental awareness, its links to their behaviour and patterns of environmentally sustainable practices in Latvia.

2. Research background

There is very limited research in Latvia concerning pro-environmental behaviour, household environmental concerns and values or sustainable consumption patterns. Only restricted number of studies and surveys are available and there is no systematic work going on to analyze or monitor household environmental behaviour in Latvia.

This study looks at the household pro-environmental behaviour and communication in Latvia and it's built on complementary analyses of several representative public surveys done in Latvia over the last years. First survey was conducted by sociological research centre SKDS as a part of the development of Latvia's National sustainable development strategy (NSDS), where I was participating as an expert on sustainable behaviour questions. It consists of 62 questions and was based on responses from 809 randomly chosen respondents throughout Latvia. The aim of the survey was to find out the values, attitudes and lifestyles of Latvia's inhabitants. Further in the study it's referred as *NSDS survey*.

The second (Eurobarometer 295, 2005) and third (Eurobarometer 295, 2008) surveys were commissioned by EuroStat and looking at household environmental attitudes in general, but also consumption patterns and environmental behaviour. These surveys are commissioned in all the European Union countries and therefore allow for the comparison with results from other countries. 2008 survey was conducted by independent research company TNS Latvia and involved 1009 randomly chosen respondents, but survey from year 2005 was done by TNS Baltic Data House (1011 randomly chosen respondents).

All these surveys are based on people's responses to a broad range of questions. For this study author used only part of those questions related to attitudes, concerns and behaviour. But also these surveys are not covering all the relevant questions. That is why not all the questions on environmentally sustainable behaviour and communication are answered here and it's no possible to unfold all the links between those components.

This study also refers to 4 dimensional environmental awareness model, consisting of: knowledge, values and attitudes, motivation and concerns and behaviour. However mainly attitude, concerns and behaviour have been analyzed here. Second model on which this study is based on is R. Ernstein's environmental communication action oriented model, which consists of 4 complimentary and to be integrated components: information, education, participation and collaboration and behaviour.

As the background for this study it's also important to understand the social-economic situation in Latvia and historical aspects. Most of the people are still with the experience of the Soviet era when people strived to be politically correct. This can appear in the answers of surveys, when respondents tend to give supposedly right answers. Also public information space and purchasing parity significantly differs from the Western Europe.

Other studies on environmental awareness in Latvia (SKDS, 2006; SKDS 2008) show that people in general assess Latvia's environment as very clean and with high biodiversity, especially compared to the Western Europe. Latvia has lowest CO_2 per capita emissions in EU and ecological footprint is 3.7 ha/cap. (main consumer pressures appear to be food, housing and transportation) while EU average is 4.8 ha/cap., but biocapacity is 5.8 ha/cap. (EU average 2.2 ha/cap.) (Brizga, 2007). Because of these aspects and poor economical situation (Latvia's GDP is 58% of EU average) people generally prioritize achieving EU average income level and tend to set environmental priorities for the future.

With the economic growth and increase in household income, over recent years, household consumption is increasing at around 20% annually. In the year 2003 major consumer priorities were food (32.4%), housing expenses (12.7%) and transport (10.7%), but over the years these priorities have changed. In 2006 food account for 28.1%, housing for 12.2% and transport for 13.1% of household expenditures (CSB, 2007). These data also differ between urban and rural areas, where in urban areas there is higher expenditure for housing, recreation and clothing, but in rural areas food account for higher proportion in the household expenditures.

3. Household environmental attitudes and concerns in Latvia

Majority of the people in Latvia (65%) claimed that state of the environment influence their quality of life. Nevertheless people value environmental impact on their quality of life less then social and economical factors, respectively 82% and 84% of respondents claimed they have impact on their quality of life (Eurobarometer 295, 2005). However NSDS survey revealed that people think pollution (73.5%) and climate change (63%) have impact **on their quality of live**, which is more then possibilities for education (57.4%) and social integration (47.4%), but less then inflation (91.9%) or prices (94.9%). This might be explained by the increasing public awareness on environmental issues and short term thinking.

How do consumers evaluate their environmental concerns? According to the NSDS survey people asked about their main concerns, ranked pollution of water and air, chemical threats and waste problems as the main concerns (see Figure 1). Also according to the Eurobarometer 2007 survey people in Latvia are mostly concerned of water, chemical and air pollution. But at the bottom of the ranking there are issues like noise pollution (6%), consumption habits (7%), transportation patterns (10%) and urban problems (traffic jams, pollution, lack of green spaces, etc.) (13%). But differently from most of Europeans people in Latvia don't rank climate change as a top concern. This might be linked to the fact that in Latvia there is one of the lowest CO_2 per capita emissions in Europe. This show that people are generally less concerned about the issues they could directly change, like transport or consumption patterns, but instead focus on wider issues like pollution.

Figure 1. Are you concerned about following issues? (NSDS survey, 2007)

Proceedings: Sustainable Consumption 2008. 8th October 2008, Budapest, Hungary.
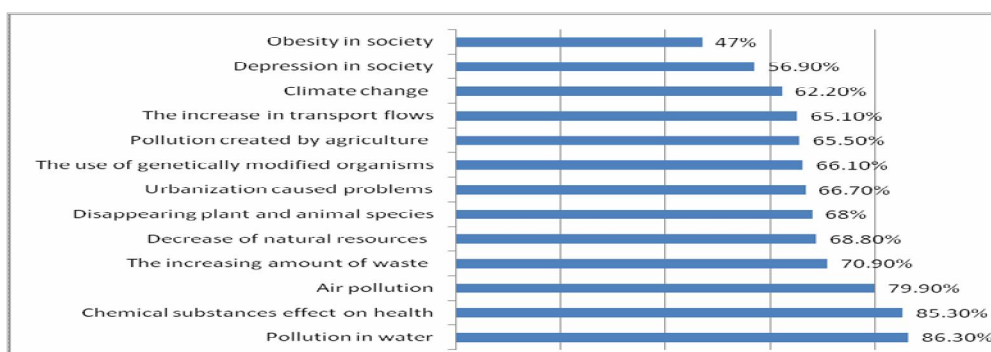
Eurobarometer study (Eurobarometer, 2005) revealed that majority of persons tend to say they **take care of environment**. They also feel better informed about environmental issues: 63% against 52% for those who say they sometimes make an effort. But public survey done with identical questions in 2007 (NSDS, 2007) showed that number of people taking care of environment has decreased. Most of the respondents (41-50%) are sceptical if their efforts in environmental protection make any difference. Number of respondents convinced that their activities are benefiting environment over the last 3 years has decreased from 16 to 7%, but number of people uncommitted to take care of environment has increased from 13 to 21% (see Figure 2).

2. Figure: The impact of individual efforts in the state of environment (Eurobarometer, 2005; SKDS, 2007)

What effort do you make to take care of the environment?
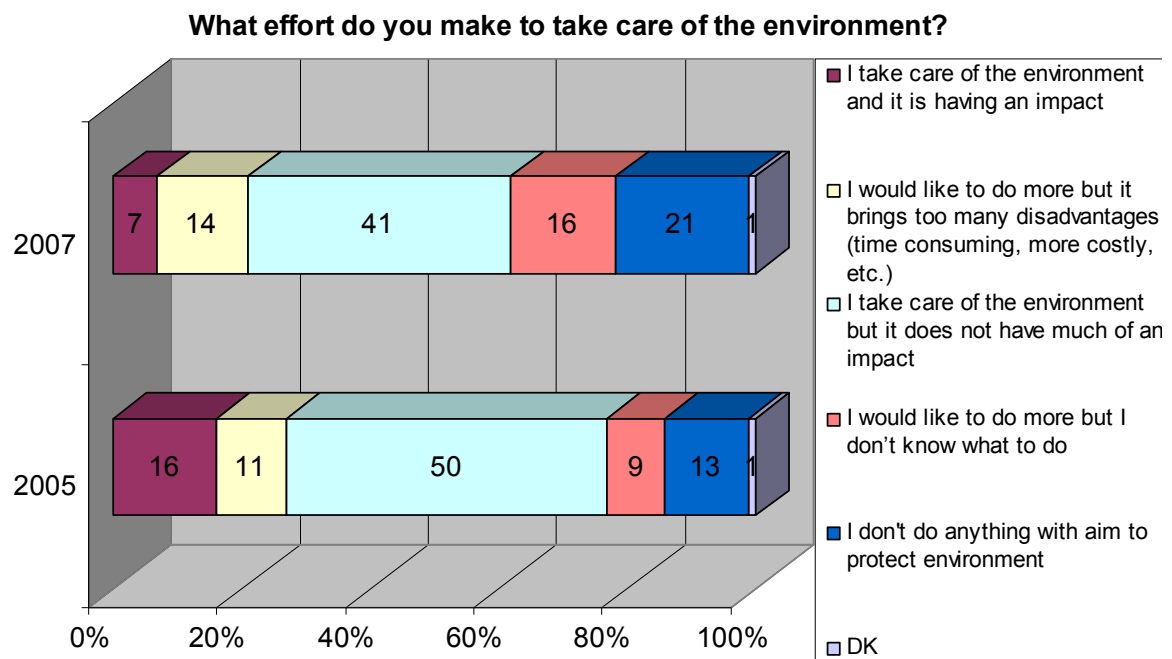
Those who are saying they take care of environment are generally older then 45, with the secondary or higher education and average income. Interesting that 60% of those who don't take care of environment are man, but division between man and women in other options are almost equal with little predominance by women.

Latvians compared to the other Europeans put the main responsibility for environmental pollution on big polluters (98%), but only 71% believes that they as individuals can play a role in protecting the environment. This is lowest result in European Union, according to the Eurobarometer 2008 survey.

This shows that even if Latvians are concerns about environmental problems (mostly pollution and waste), they are not interested in sustainable lifestyle and don't believe their everyday behaviour, including consumption patterns, would have significant impact on environment. Yet there are many people practising pro-environmental behaviour and consumption.

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4. Pro-Environmental behaviour

Many have suggested that people with higher environmental awareness should be more likely to engage in sustainable consumption. However range of such behaviour is quite large and environmental concerns may have higher impact on some behaviour then other. Household environmental behaviour is determined not only by knowledge and attitudes. Social aspects, costs and infrastructure are also playing important role. Surveys show that household consumption is driven by price and experience, but health effect and environmental concerns are not so high on individual priority list (Brizga, 2008).

People may not always be aware of the environmental consequences of their behaviour and therefore unknowingly perform actions that increase or decrease their environmental pressures. According to the surveys most of the people in Latvia don't know about sustainable lifestyle. Asked if they have heard or are interested in sustainable lifestyle almost ¾ of respondent's (63.2%) replied that they have never heard about it, but only 1/5 know about it. Knowing about sustainable lifestyle of course does not means that you are practicing it.

In the Eurobarometer 2008 survey people were asked to determine things they **have done in the last months** to protect environment. A largest part of Latvians say they have been choosing local products (49%, highest in EU27), choosing an environmentally friendly way of travelling (37%) and separating waste for recycling (25%, EU27 average – 59%). But what people are refusing to is using less car (only 10%) and buying eco-labelled products (16%) (there is very limited choice of such a products in Latvia). On average every Latvian over the last month have done 2,1 action to protect environment (EU average 2,6). This shows that Latvians are not so engaged in environmental protection as most of the Europeans.

Similar results are also from NSDS study. It shows that people **right now are ready to** sort waste (60.5%), spend time to find out more about environment protection (50.2%) and use more public transport (48.6%). However people are not ready to paying more in taxes right now, but in the future. Similarly people are saying that in the future they would choose environmentally friendly products (see Figure 3). This might be linked to the fact that people generally tend to discount the future and are leaving the things for the future which they know would be right to do, but are not ready to change their behaviour right away.

Figure 3. Which of the following activities you would undertake in order to protect environment? (NSDS survey, 2007)
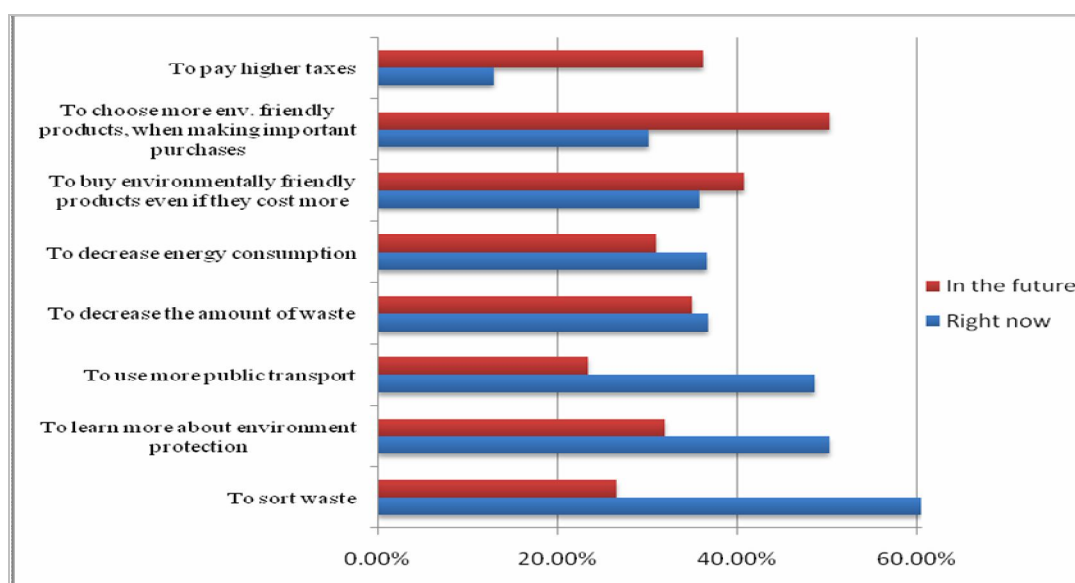
Interesting that there are no differences in what people would be ready to do right now among those who know about sustainable lifestyles and those who don't know.

In both studies mentioned above (Eurobarometer 2008 and NSDS) most likely people would be ready to recycle (19%) right now, but only 12% would be ready to reduce waste. People also would be ready to purchase ecologically friendly products (28%) and save energy (16%). Over the last two years the number of people who would prefer public transports over private has increased. But only 6% would be ready to consider environmental aspects when buying car or house and 3% would be ready to pay more in taxes.

Waste recycling system in Latvia is not well-established, yet people are ready to sort waste right now. Surprisingly, but activities which might give financial gains, like energy and water saving are not amongst the most popular. This can be explained by the low prices of energy resources before recently. However actions those require more "active" choices and which can be almost directly linked to environmental concerns are the ones people most likely to refrain from: using their car less (10%) and buying eco-labelled products (16%).

4.1.   Profile of the green consumer

Environmental awareness appeared to be the strong predictor for sustainable consumption. Most of the respondents think that their quality of life is most likely affected by climate change and pollution and they are the ones who would be ready to buy environmentally friendly products in the future even if they are more expensive and also consider environmental aspects when purchasing car or house in the future. However those who think their quality of life is highly affected by pollution and/ or climate changes are ready to buy environmentally friendly products right now and also consider environmental aspects when purchasing big items.

Moreover, in absolute numbers, older respondents (50% of those buying environmentally friendly products are aged over 45 years) (see figure 4) and respondents with secondary education (31%) said they would be ready to buy environmentally friendly products right now. But we have to take into account also that Latvia is aging population and majority of people are with secondary education. A person who buying environmentally friendly products also would be slightly more likely to be:
-    female than male (59 and 41% respectively) – 54% of the population in Latvia are women;
-    from Riga (39%) then rest of the country – 33% of the population in Latvia live in Riga. Riga is followed by Riga region and Kurzeme. These are also regions with highest income;
-    Latvian then other nationality (64%) - 59% of the population in Latvia are Latvians.

It is also interesting that people who practice more environmental behaviour are more religious and altruistic and more frequently feel interested, inspired and active (Auzāne & Elere, 2007). And they are not people with highest income but with income on one household member between 200 and 350 EUR a month. However income appeared not to be significantly related to the purchase of environmentally friendly products.

Non-environmentalists, however, are less educated, less interested in politics, more hedonistic and oriented towards fast results (Auzāne & Elere, 2007). There is no difference in nationality amongst those refrain from environmentally friendly consumption and those practicing it. But a person who tends to refrain from buying environmentally friendly products is more likely to be:
-    man (54%);
-    young – between 25-34 years old, or in pension (see figure 4);
-    from Latgale region (24%), but also 24% of those refraining are from Riga;
-    from rural areas;
-    with elementary education.

Interesting that most of the respondents from Riga (44%) would be ready to buy environmentally friendly products right away, while most of the people from other towns (44) or rural areas (39) would be ready to do it in the future.

Figure 4. Would you be ready to buy environmentally friendly products even if they are more expensive: Age structure (NSDS survey, 2007)
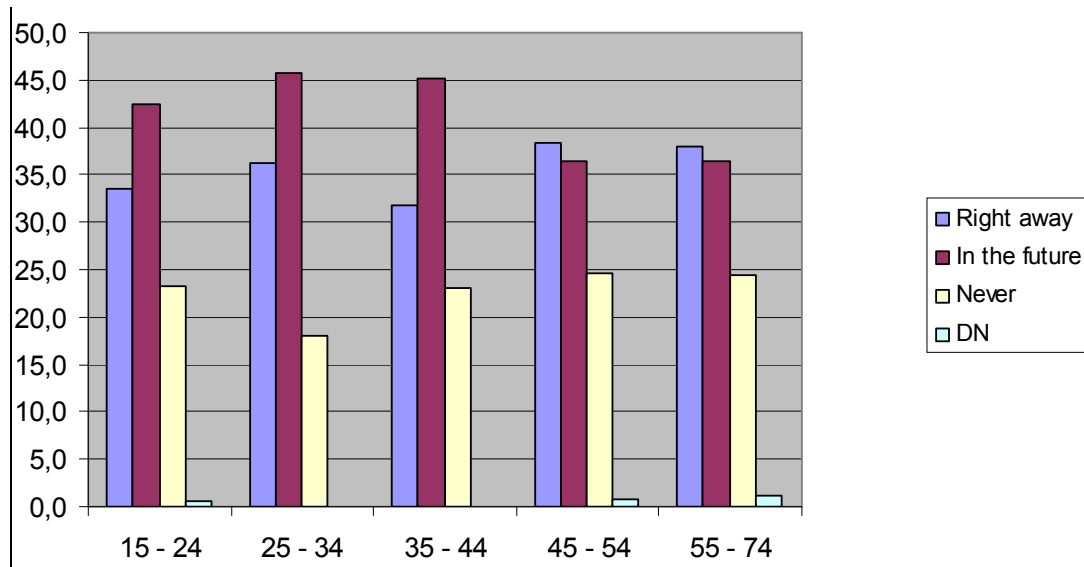
Environmental awareness appears to be important thus not enough to change daily routines and current definition of comfort and convenience. Behaviour can be closely linked to the socio-economic status of respondents which can be presumed to be a driver of behavioural choices in certain situations such as when environmental choices require financial sacrifices.

4.2.   Value-action gap in Latvia's society

It is well reported that for many people there is a gap between their high level of concern about the environment and their actions – the value-action gap - gap between high levels of awareness of environmental problems and understanding what these are and what people can do about it. For example:

- 62% of people in Latvia are concerned about climate change, but only 52% of those who are concerned about climate change are also saying they right now are ready to use more public transport. In the same time 25% of those worrying about climate change would not be ready to shift to public transport;
- while 79% (in the NSDS survey 35.8 would be ready to buy now and 40.8 in the future) respondents say they are ready to buy environmentally friendly products even if they are more expensive, only 16% have actually done so in the month before the survey.
- Those who interested in sustainable lifestyle use less public transport (63.5 %) then those who are not interested (69.1%).

Most of the people who answered that they would be ready to use public transport right now also replied that already now they are using only public transport. However those who told they would be ready to use more public transport in the future now are using all kind of different transport modes

(public, public + private, private), but those who told they would not be ready to use public transport are not using it now.

1/3 of those using only public transport are concerned about climate change and 1/3 are not, but 55% of those using only private transport are concerned about climate change.

It is often agreed that there are numerous barriers of motivation for individual and collective environmental action, and that the factors involved in making people willing to reduce environmental damage are fundamentally different from the factors involved in making people actually take active steps to reduce damage and to improve the environment. It is therefore argued that a fundamental shift in the attitudes held by individual citizens towards the environment and their use of natural resources is needed to ensure sustainable development.

5. Environmental communication

Most of the people in Latvia (66%) feel not sufficiently informed about environmental issues. But 18% think they have very poor knowledge about environmental problems. Only 25% of people consider well informed about environmental issues in Latvia. Respondents tend to be more informed about chemical pollution (43%), drinking water quality (41%) and waste separation and recycling (31%) (SKDS, 2006).

Here of course an important aspect is access to information. Surveys show that environmental information is dominated by mass media. Especially television, but also newspapers come up high if people are asked about their main sources of environmental information. However other information sources, like internet or special events score very low. Nevertheless Internet is also gaining in. (see Figure 5) This is raising the importance of marketing and public relations activities to channel information down to the public and use of the internet media in environmental behaviour campaigns.

5. Figure: Main sources of information about the environment in Latvia (MAX. 3 ANSWERS)
(Eurobarometer 2005 and 2007)

Proceedings: Sustainable Consumption 2008. 8th October 2008, Budapest, Hungary.
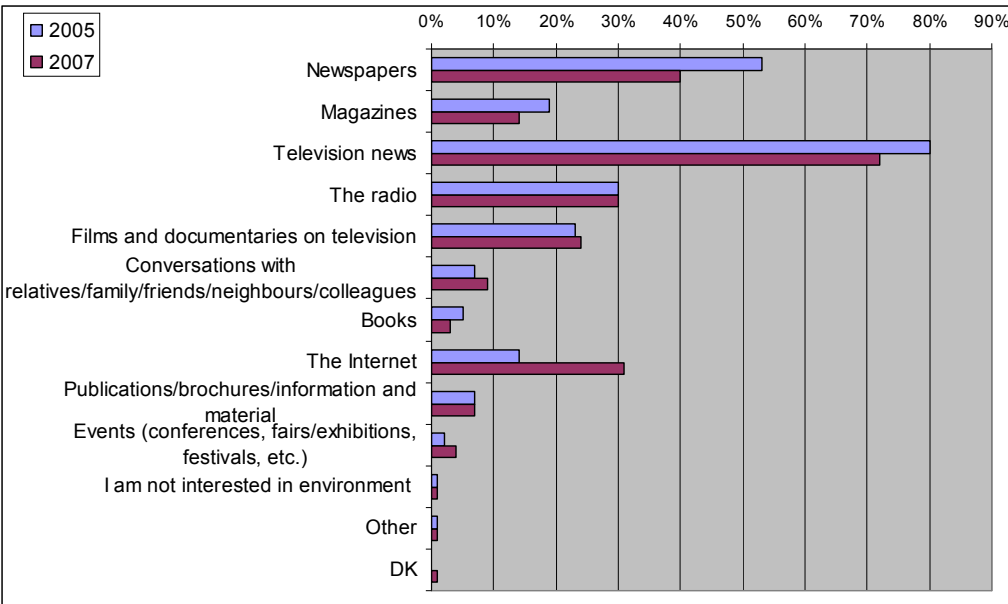
6. Conclusions

There is limited number research and studies on environmental behaviour and sustainable consumption in Latvia. However there are several activities initiated by different target groups (media, NGOs, businesses and government) organized towards promotion of pro-environmental behaviour and sustainable consumption patterns. Nevertheless these are not systematic and coordinated.

There is need for additional research in the field of sustainable consumption and behaviour change in Latvia. Additional life cycle analyses, input-output analyses and benchmarking of household environmental impacts are needed. Also more detailed analyses of the society, breaking it down to different life styles would help to organize more targeted behaviour change oriented environmental information campaigns.

Research findings show that people are concerned about environmental problems and many people are willing to do a bit more to limit their environmental impact. Yet people may not always be aware of the environmental impacts of behaviour related to their consumption patterns and the environmental benefits of changes in these behaviour.

There is a need for clear definition for household sustainable behaviour, but then, in multi-stakeholder cooperation, system to support promotion of sustainable consumption should be built and developed. This is very important because there is:
- luck of sustainable consumption examples in Latvia,
- little awareness of links between consumption patterns and environmental quality and
- value-action gap in society.

When dealing with household behaviour it is important to remember about non-linear process and different barriers to overcome. That's why to ensure behaviour change it is important to address symbolic and social dimension of consumption as well. Also without other policy tools, campaigning on environmentally sustainable behaviour will not deliver significant behaviour change. Therefore it is important also to build necessary infrastructure and policy framework to facilitate change.

Latvia's government should also become more active in integrating sustainable consumption and pro-environmental behaviour tools in different national policy frameworks and get involved in international processes like UNEP and Marrakesh process, dealing with sustainable consumption issues.

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Evaluation of Russia's Progress in Promoting Sustainable Consumption Policies

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Abstract

This paper deals with evaluation of Russia's progress in promoting sustainable consumption policies. For this purpose special assessment criteria were elaborated on the basis of the extended UN Guidelines for Consumer Protection and a qualitative scoring system was developed. The paper provides a detailed description of the methodology and an extensive analysis of Russian realities as regards sustainable consumption issues. The evaluation results show that Russia tries to promote sustainable consumption policies but their implementation is in many cases unsatisfactory. A number of recommendations are proposed to improve the situation.

Keywords: sustainable consumption, policy evaluation, Russia, UN Guidelines for Consumer Protection, sustainable development.

1.   Introduction

The UN Conference on Environment and Development acknowledged the negative influence of prevailing consumption and production practices on sustainability and quality of life and called for "changing consumption patterns" (UN, 1992). Since then many attempts have been made to evaluate countries' progress in managing sustainable consumption (SC) issues.

One of such attempts was undertaken by UNEP (UNEP, 2002; 2004) on the basis of the UN Guidelines for Consumer Protection expanded in 1999 with a special section – Section G – on the promotion of SC (UN, 2001). The research team identified key paragraphs in Section G and gave a score for the execution of each. Although the total score per country gave an objective picture about the situation with the beginning of implementing the guidelines at national and regional levels, the developed methodology did not allow seeing how far the participating countries had gone with their implementation.

UNEP study approached Section G as the principal document with recommendations on promoting SC that should be followed by governments. Countries were evaluated on the basis of whether they had started implementing the guidelines or not. The present paper views the expanded Guidelines from another perspective. Here Section G is regarded not as the main reference document but as an extensive source of criteria that can be used for evaluating countries' progress in relation to SC. The criteria identified are further applied to Russia's case study.

The next section discusses the research methodology in detail. Section 3 deals with critical analysis of Russia's achievements within the framework of the criteria elaborated, while the final section

summarizes the main findings and provides recommendations for further promotion of SC policies in the Russian Federation (RF).

2. Elaboration of evaluation criteria and scoring system

2.1 Identification of evaluation criteria

The policy process can be viewed as a combination of three major stages: planning, implementation, and evaluation. Planning implies the establishment of objectives and formulation of strategies/programmes/plans required for their achievement. Implementation stands for the realization of strategies through the adoption of relevant policy measures, while evaluation is about the availability of elaborated benchmarks and criteria against which policy implementation is measured.

The implementation stage is considered the "core and critical stage" of the policy process (Jann and Wegrich, 2007) and its importance has been widely discussed in academic literature (Pressman and Wildavsky, 1973; Hogwood and Peters, 1983; O'Toole, 2000; Cherp et al., 2004). Effective policy implementation will largely depend on the availability of a comprehensive strategy/concept and on the provision of efficient policy measures and monitoring and assessment schemes.

Besides general approach, in the context of sustainable development (SD), the policy process should also rely on two key principles: a) the integration of economic, social and environmental aspects; and b) wide and active participation of stakeholders (Cherp et al., 2004).

Section G of the expanded UN Guidelines consists of fourteen paragraphs (from §42 to §55), while some of the latter touch upon different aspects of SC policy (e.g. §§43, 44 or 48). Therefore, several evaluation criteria were obtained from such paragraphs (Table 1). The criteria were further distributed among four major groups that were identified on the basis of the discussed above characteristics of the policy process. The groups are as follows:

1. Planning activities;
2. Policy measures through which SC policies are implemented;
3. Monitoring and assessment schemes; and
4. Stakeholder involvement and shared responsibilities.

Each group except the 2nd one consists of three criteria, while the 2nd group comprises six of them because policy measures can be diverse. As seen from Table 1, the integration principle was respected throughout the criteria elaborated.

2.2 Elaboration of scoring system

The principal objective of the research was to evaluate the degree of Russia's progress in promoting SC policies, i.e. to monitor the "depth" (Carvalho and White, 1997) of its involvement in the process. For this purpose the qualitative evaluation scale seemed to be more appropriate.

The scoring system was elaborated with assumption that theoretically many requirements of the identified criteria are met in RF (necessary legislation is available, objectives are properly formulated, clear targets are set, funds are allocated). However, serious problems start at the implementation stage. For instance, the Russian REC recently reported with reference to a large Russian news and information agency that "Russia is ready to join the Aarhus Convention" (RREC, 2008) because it already has a comprehensive body of legislation that deals with the issues of environment and SD. At the same time, according to the corruption perceptions index of the Transparency International, in 2008 Russia occupied the 147th place out of 180 surveyed countries. This means that legal enforcement in the country is extremely weak and many laws and standards can be easily violated. Although Dmitry Medvedev called eradication of corruption one of the top priorities of his presidential

programme, the results of his team's incentives in this area will be seen only in a very distant future (Kommersant, 2008).

Taking into account the principles of availability and implementation described above, the following scoring system was proposed:

A requirements of the criterion are met and are being well implemented;
B requirements of the criterion are met and are being generally satisfactorily implemented;
C requirements of the criterion are met, some of them are being satisfactorily implemented and some are not;
D requirements of the criterion are met but are being generally unsatisfactorily implemented;
E requirements of the criterion are not met as of today but are under consideration;
F requirements of the criterion are not met and are not under consideration.

Table 1: Identification of evaluation criteria.

Groups of criteria	Identified criteria and their requirements	§§ in the UN Guidelines	Text of the UN Guidelines (UN, 2001)
Planning	SC strategy encompassing economic, social and environmental aspects is available	42	SC includes meeting the needs of present and future generations […] in ways that are **economically, socially and environmentally sustainable**.
		44	Governments, in partnership with business and relevant organisations of civil society should **develop and implement strategies that promote SC.**
	Sectoral SC policies are available	44	Governments […] should develop and implement […] **sectoral policies in such areas as land use, transport, energy and housing.**
	Integration of SC policy with other public policies is in place	43	Governments should promote the development and implementation of policies for SC and **the integration of those policies with other public policies**.
Policy measures	Legal instruments are available and effectively used	44	Governments […] should develop and implement strategies that promote SC through a mix of policies that […] **include regulations**.
		51	Governments are encouraged **to create or strengthen effective regulatory mechanisms**.
	Economic instruments are available and effectively used	44	Governments […] should develop and implement strategies that promote SC through a mix of policies that […] **include […] economic instruments**.
		52	Governments should **consider a range of economic instruments**.
	Educational and awareness raising instruments are available and effectively used	44	Governments […] should develop and implement strategies that promote SC through a mix of policies that […] **include […] social instruments**; […] **information programmes that raise awareness**.
		49	Governments should **promote awareness of the […] benefits of SC and production patterns**.
	New technologies, sector specific best	44	Governments […] should develop and implement strategies that promote SC through a mix of

	practices, and environmentally sound products and services are actively promoted		policies that [...] **include [...] promotion of sector-specific environmental-management best practices.**
		45	Governments should **encourage the design, development and use of products and services that are safe and energy and resource efficient**.
		48	Governments should safely manage environmentally harmful uses of substances and **encourage the development of environmentally sound alternatives** for such uses.
		50	Governments [...] should encourage [...] **the development and use of new environmentally sound products and services and new technologies.**
	Efficient support for environmentally friendly waste management schemes and procurement of recycled products is provided	45	Governments should **encourage recycling programmes that encourage consumers to both recycle wastes and purchase recycled products.**
		48	Governments should **safely manage environmentally harmful uses of substances**.
	Relevant standards are available and implicitly respected	46	Governments should **promote the development and use of national and international health and safety standards for products and services.**
Monitoring and assessment	Relevant indicators, methodologies and databases are publicly available	53	Governments [...] should **develop indicators, methodologies and databases for measuring progress towards SC at all levels.**
	Impartial EIA procedures and environmental testing of products are in place	47	Governments should **encourage impartial environmental testing of products.**
		48	**New potentially hazardous substances should be evaluated** [...] prior to distribution.
	Research on consumer behaviour is promoted by the government	55	Governments [...] should **promote research on consumer behaviour related to environmental damage.**
Stakeholder involvement and shared responsibilities	Wide and effective stakeholder participation is in place	43	Government policy making should be **conducted in counsultation with business, consumer and environmental organisations, and other concerned groups.**
		44	Governments, **in partnership with business and relevant organisations of civil society** should develop and implement strategies that promote SC.
		50	Governments, **in partnership with the private sector and other relevant organisations** should encourage the transformation of unsustainable consumption patterns.
	Responsibilites are shared between government and all	43	**Responsibility for SC is shared by all members and organisations of society,** with informed consumers, Government, business and labour organisations, and consumer and environmental

stakeholders		organisations playing particularly important roles.
Government takes the lead in SC practices	54	**Governments […] should take the lead** in introducing sustainable practices in their own operations […].

3. Russia's progress in promoting SC policies

3.1 Planning activities

3.1.1 Sustainable consumption and sustainable development strategies

Russia does not have any separate SC strategy. In fact, the Russian version of the term itself "*sustainable consumption*" has not been officially adopted in environmental discourse. Nevertheless, SC issues related to energy and resource efficiency, effective environmental management, waste reduction, living standards, etc. have been discussed in Russian environmental circles since long ago. Most strategic documents on social and economic development of the country integrate SC matters to a certain extent (e.g., *Strategy of Economic Development of RF until 2010,* two-year social-economic development programmes).

Different aspects of SC were discussed in Russia's official documents related to SD. For instance, the *State Strategy of RF on Environmental Protection and SD* (1994) required the implementation of the state policy in close relation with concerns for the environment, preservation and restoration of natural resources, and the use of natural resource potential in line with the principles of SD. Oldfield (2002) argues that the elaboration of this strategy was to a large extent the follow-up of the Rio Conference and this was, probably, the only document that really influenced Russian environmental policy.

The *Concept of Transition of RF to SD* (1996) and draft state strategy for SD submitted in 1997 discussed in detail SC and production matters. The first document emphasized the necessity of bringing back economic activity within the limits of carrying capacity of ecosystems, the importance of switching to energy and resource-saving technologies, and the need for substantial changes in the structure of national economy, in personal and societal consumption patterns. A range of SC indicators (e.g., waste generation, energy and resource consumption) were suggested. The followed SD strategy draft was widely discussed in various fora, including meetings of non-governmental organisations (NGOs), parliamentary and ministerial hearings. However, this document has never received the official status, firstly, because of frequent reorganisations in the Government, and, secondly, as a consequence of the Financial Crisis of 1998. After the Default, incentives envisaged in the draft became insufficient to meet the new challenges and, therefore, the strategy was abandoned as outdated (UNEP, 2006).

The *Ecological Doctrine* adopted in 2002 can be considered the official descendant of the *Strategy on Environmental Protection* of 1994 timed to the Johannesburg Summit (Chereshnev, 2003). It deals with causes of environmental degradation and sets long-term SD objectives for Russian environmental policy. The document recognizes a number of SC and production issues, namely effective waste management, efficient resource utilisation, sustainable ecosystem management, as national priorities and enumerates activities that are necessary for their implementation. However, the term SC is ignored, some of the Doctrine's objectives can be considered rather vague and lacking clear targets and well-defined criteria (Timalina, 2003). In this regard, the need for a separate SC strategy that would contain concrete actions and avoid mere rhetoric is felt more intensely nowadays.

3.1.2 Sectoral sustainable consumption policies

Similarly to the situation with overall SC strategy, there are no specific sectoral SC policies. However, SC and SD issues are present in all sectoral strategic documents. The federal programme on *Energy*

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Efficient Economy for 2002-2005 and until 2010 deals with energy saving matters, promotion of renewables, reduction of production costs, mitigation of pollution, etc. The *Main Directions of Agrifood Policy of the RF Government for 2001-2010* enumerate reduction of anthropogenic impact, improvement of soil fertility, land restoration, food safety and other issues among environmental priorities. *Transport Strategy of RF until 2020* sets the goals of stimulating sustainable use of transport, modernizing existing vehicle fleet, improving fuel quality and diversifying its types, controlling levels of emissions, etc. The draft *Concept of Construction Strategy of RF until 2010* proposed in 2003 discussed inter alia the use of environmentally friendly building materials, strictening of construction standards, minimization of construction waste volumes, possible ways of waste processing and recycling, recovery of disturbed lands, etc. Unfortunately, in many cases the main sectoral SC concerns are identified but no concrete actions are proposed for their solution. As in the case of Ecological Doctrine, environmental objectives set in sectoral strategic documents are vague and lack proper benchmarking and monitoring schemes. Most activities within the scope of sectoral policies are subject to EIA procedures. However, often the latter is sought to be avoided or its recommendations are neglected (see also Section 3.3.2).

3.2 Policy measures

3.2.1 Legal instruments

As mentioned above, Russia has got a comprehensive body of legislation that deals with the issues of environment and SD. SC issues are partially addressed in those laws. Besides, the federal law *On the Protection of Consumer's Rights* was adopted. It deals with consumers' social guarantees and responsibilities of producers and retailers. The law introduces procedures aimed to ensure high quality of products and services: quality control, warranty enforcement, provision of information about products, etc. It also stipulates responsibility for the violation of consumer's rights. Since its adoption in 1992 the law has been working relatively well.

At the same time, it is worth mentioning that because of the corruption, the majority of Russian laws, especially related to the environment and SD, are characterized by extremely weak enforcement and a large number of gaps. In addition, the majority of population are "legally illiterate" and unaware of their environmental rights and guarantees. Currently the number of campaigns aimed to raise public awareness in SC and SD issues is still low and requires more effort.

3.2.2 Economic instruments

Russian economic instruments related to SC are mostly represented by pollution fees and user charges. Industries and private enterprises pay for air and water emissions, the generation of toxic and/or non-toxic waste, the utilization of natural resources, etc. These payments are mostly low and do not provide necessary stimulus for changing environmental behaviour. Golub and Gurvich (1996) elaborated a mathematical model according to which air emission charges should have been increased 30-fold across Russia in order to make industries consider serious mitigation measures. Figure 1 shows the efficiency of installations for the separation and neutralization of impurities from waste gases mounted in Russia since 1992 (solid line) and demonstrates the dynamics of air emissions from stationary sources for the same period (dashed line). Although the correlation between the two trends is not too evident, it is visible that the number of waste gas purification installations mounted in 2007 is much smaller than that of 1992 or 1995, while air pollution indices have been constantly growing since 2000.

Figure 1: Efficiency of waste gas purification installations, TCM (right scale, solid line) and dynamics of air pollution from stationary sources, mln t (left scale, dashed line).
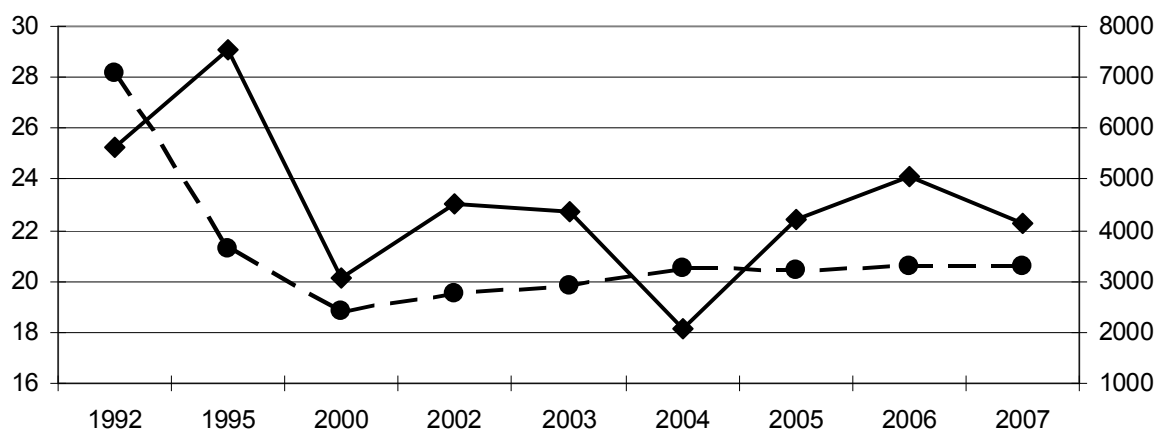
Source of data: Federal State Statistics Service, 2008

In order to change the situation the Russian Government tried to introduce the practice of so the called "pollution fee credits". The idea was to subtract the environmental expenditure of companies from their pollution fees. However, the notion of "environmental expenditure" was poorly defined and could, in fact, imply any technological innovation. Therefore, this practice was mostly abandoned after 2000 (UNEP, 2006).

Figure 2: Residential electric energy use.
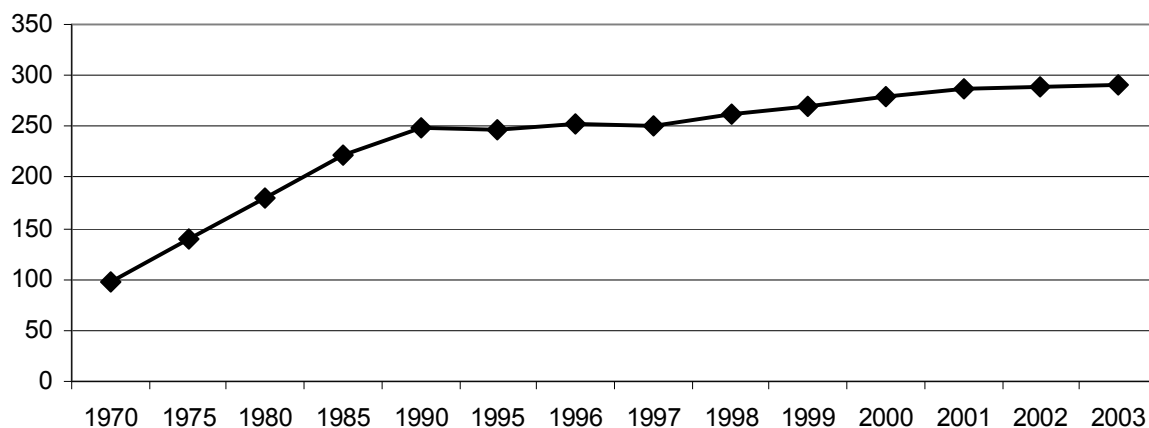
Source of data: Federal State Statistics Service, 2008

The same problem of lack of motivation is characteristic of utilities and electricity charges paid by ordinary citizens. As per Figure 2, for instance, residential electricity consumption is steadily increasing. According to APEC (2006), residential electricity demand is expected to grow yearly in Russia by one per cent up to 2020. On the other hand, many people would not be able to pay excessive charges as the number of the poor is still very high in the country. Bashmakov (2005) argues that a 7 per cent rise of public utilities charges will inevitably lead to the decline of payment discipline.

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3.2.3 Educational and awareness raising instruments

There is no special education for SC in Russia. Some of its aspects (e.g., environmental pollution, energy saving, waste management, recycling, water conservation) are part of environmental education (EE) and education for SD (ESD). EE is a part of curriculum at different educational levels, although the federal law *On State Regulation of Education in the Field of Environment* has never been approved by the State Duma. At the same time, the law on EE got official status in different subjects of RF (Dagestan, Khanty-Mansi Autonomous Region, Primorsky Territory, Ulyanovsk Region, etc.). ESD is still a developing concept in the country and is not a part of the official curriculum. At present it is taught as a part of EE.

Nevertheless, SD and SC issues are addressed in various optional courses for students and schoolchildren. For instance, one Moscow centre for children and youth has developed a special program on waste. An energy saving project is under implementation in the North-West of Russia. The Centre for Environment and SD "Eco-Accord" in tandem with REC CEE has successfully introduced the *Education for Environment and SD Kit "Green Pack"* in Moscow Region. Similar initiative was taken in St. Petersburg and Leningrad Region.

Unfortunately, after reorganizations in the Russian government in 2004 the development of EE and ESD remains suspended. The newly created Ministry of Natural Resources and Ecology does not have a special agency dealing with education issues, while the Ministry of Education has never been responsible for EE (UNEP, 2006). At present, initiatives on the promotion of SD and SC issues rely mostly on NGOs enthusiasm.

At the same time, some municipalities start being involved in the awareness-raising campaigns for SC and SD. For example, Moscow municipality has been pursuing energy-saving, waste recycling and sustainable transport campaigns since 2006. Nevertheless, sociological surveys prove these efforts have been ineffective so far (Amlinsky, 2007).

3.2.4 New technologies, sector specific best practices, environmentally sound products and services

According to the joint report of three Russian Ministries: the Ministry of Economic Development and Trade, the Ministry of Foreign Affairs and the Ministry of Natural Resources (2002) country's scientific potential is very high and the share of innovation enterprises among all industrial companies is projected to reach 17 per cent by 2010. However, the volume of innovative goods in the total volume of industrial production does not exceed 7 per cent. This means that support for the new technologies is still insufficient. The same source admits that the OECD countries provide twice as much financing of innovation projects as RF.

State support related to new technologies is widely focused on the development of nanotechnologies. A special strategy until 2015 was developed in this regard, while various nanotechnological issues were added to many federal programmes. Nanotechnologies are believed to help in energy and resource consumption areas and provide assistance in relation to human health. Meanwhile, neither Russian nor world environmental circles have elaborated a clear standpoint on nanotechnologies yet.

Information about sector specific best practices related to SC in Russia is unavailable. There is no special database that would list them. Ministries or NGOs dealing with specific sectoral issues might organize competitions on "best enterprise" or "best project", especially within large federal programmes. However, nowadays many people doubt the fairness of these competitions.

Meanwhile, the federal programme *100 Best Products of Russia* implemented since 2001 has gained wide popularity. Best products and services are chosen within five nominations related to services, food products, industrial products for population, technical products for industries, and traditional arts.

Such SC and SD issues as utilization of environmentally friendly materials, human health safety, recycling potential after use, availability of environmental certificate, etc. are taken into account (Programme website, 2008).

The promotion of environmentally sound products and services in RF is mostly carried out through information campaigns which have proved to be ineffective so far. Social surveys show that most people are still not ready to pay more for sustainable goods (Proriv, 2007), although some positive trends have been observed in this respect. A number of special labels dealing inter alia with correspondence to environment requirements (quality performance, recommendation-for-use, voluntary certification) are issued by specially authorized agencies (see also Section 3.3.2). However, surveys reveal that most consumers either do not trust national labels because of high corruption level in the country (Proriv, 2007) or simply cannot interpret the label information.

3.2.5   Waste management schemes

EEA (2007) reports that per capita waste generation in Russia exceeded 18 tons in 2004 and statistics shows this figure has been constantly growing since 2000 (Federal State Statistics Service, 2008). Main types and quantities of waste generated in the country are provided in Table 2. Obviously, industries make the largest contribution, especially the coal, metallurgy and chemical sectors that produce the most part of hazardous waste. In many cases the latter is buried together with non-toxic waste. Nevertheless, in recent years due to the implementation of the Basel and Stockholm Conventions large amounts of toxic waste have been recycled. High potential for scrap metal recycling is predicted by the Russian Council of Scrap Dealers, who anticipate the growth from 28 million tons to 40 million tons within the next eight years (EEA, 2007).

The largest part of generated municipal waste (and rather often industrial waste) is dumped in accordance with outdated techniques. There are just four waste processing plants and 11 incinerators in Russia. However, only two-thirds of their capacities are used because modern technologies practised there cannot deal with Russian unsorted waste (UNEP, 2006). During the Soviet times paper, metal and glass recycling schemes were widely practised. Nowadays they are still in place but the collection sites are very few and usually located in inaccessible places. As a result, only 3-4 % of municipal waste is reprocessed or recycled (Gonopolsky, 2006).

Table 2: Waste generated in Russia in 2004.

Source of waste	% of generation
Coal industry	56
Non-ferrous metallurgy	18
Ferrous metallurgy	16
Chemical industry	5
Power generation	2
Other industries (including gas and oil)	<1
Municipal waste	1-2
Construction materials	1
Food	0,61

Source: EEA, 2007

Several local programmes were initiated to deal with hazardous household and industrial waste: in Samara, Orenburg and Tula Regions, the cities of Cherepovets, Orenburg, Nizhni Tagil, Bratsk. The Russian Urbanization Institute developed the concept of waste management system for Leningrad Region that can be considered the start of a large program on waste minimisation in the territories

located along the borders of the European Union. The Moscow Government also started activities stimulating the recycling of plastic boxes and cans. Unfortunately, these activities are poorly advertised and, therefore, have not been really effective to date.

3.2.6   Standards

Sets of standards related to different aspects of SC and production have been developed in Russia. Some of them are even stricter than in the European Union. However, as already mentioned above, because of the corruption many standards are not respected in practice.
To date a large body of legislation on environmental audit and management has been adopted. EMAS and ISO-14000 standards gain wider popularity among Russian enterprises, especially among those who operate or seek to operate in the western markets (Figure 3). For example, St. Petersburg brewery "Baltica" and Moscow Tire Factory already comply with ISO-14000 requirements (UNEP, 2006).

Figure 3: Number of ISO-14001 certified companies in Russia.
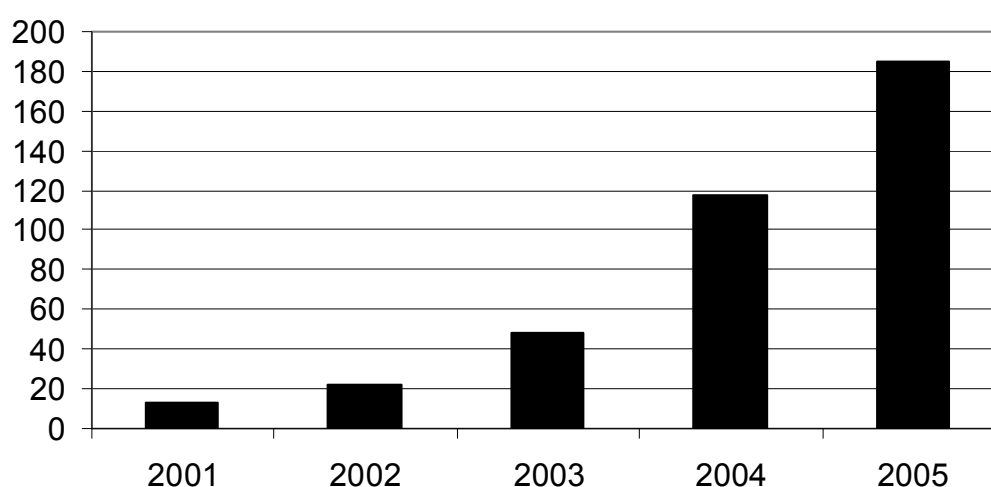
Source of data: EEA, 2007.

In some RF Regions (Tomsk, Nizhni Novgorod, Ryazan, Vladimir, Kaliningrad and the Republic of Bashkortostan) local governments are trying to elaborate systems of benefits for enterprises that decide to implement environmental management schemes.

3.3   Monitoring and assessment

3.3.1   Indicators, methodologies and databases

To date Russia does not have any officially adopted set of indicators that would demonstrate its progress in relation to SD and SC. Attempts to develop such indicators were made several times, especially during preparations for the Johannesburg summit. In 2001 the Centre for Preparation and Implementation of International Projects of Technical Assistance researched possibilities of introducing environmental aspects into the system of macroeconomic development indicators. "Eco-Accord" worked upon the elaboration of public health indicators in the context of SD. In 2001-2003 DFID funded a project on the development of a comprehensive set of indicators that would integrate economic, social and environmental aspects of Russian realities, and on their application at federal and local levels. Tomsk and Voronezh were selected as pilot Regions for this study. The research team identified 25 key indicators and attempted to create a database required for their utilization. Unfortunately, these initiatives did not receive further development (UNEP, 2006).

3.3.2 EIA and environmental testing of products

EIA has been in place since the adoption of the federal law *On Environmental Assessment* in 1995. Besides other successful applications, this document served as a legal rationale for the rejection of the project on the construction of the Moscow – St. Petersburg highway that would have crossed the Valday National Park. In 2003 REC CEE together with the Centre for Environmental Assessment "Ecoline" from Moscow implemented a project on the development of SEA procedures in Russia.

Despite its effectiveness in the field of environment and human health protection, EIA procedure was officially excluded from a number of construction projects in 2006. This was done under the *National Affordable Housing Programme* when it made it enough just to provide a list of environmental protection incentives related to the project proposed. However, as a result of a wide and active environmental campaign, EIA regained its status in May, 2008 and since then it has influenced a number of investment projects. For instance, many proposals and plans related to the construction of the Sochi Olympic sites had to be revised in accordance with EIA recommendations (Say, 2008).

Testing of products is the priority right of two state organizations: Russian Federal Consumer Rights Protection and Human Health Control Service and Russian Centre for Tests and Certifications (RCTC). The former deals with a number of issues related to human health, sustainability of livelihoods, product quality, food safety, consumer rights, etc. The latter provides testing of products quality and their further certification (including voluntary certification). The results of test purchases organized by RCTC are widely publicized in the press and on TV. The two organizations provide reliable product evaluation although sometimes test results can be influenced by Russia's foreign policy (e.g., the ban on import of Polish beef in 2005, of Moldovan wine or Latvian sprats in 2006) and very often consumers do not trust national labels because of high corruption level in the country (Proriv, 2007).

3.3.3 Research on consumer behaviour

Data on consumer behaviour in the context of SC are very scarce. Government is not involved in this type of activities. Research on consumer behaviour is usually carried out at the initiative of private organizations and companies, mostly with the aim of increasing their sales volume.

A detailed and comprehensive study on prospects for marketing organic products in Russia was undertaken by a private agency in 2007. The research team came to the conclusion that currently the demand for organic food is very low in the country but this trend may be reversed in case of wise government policy related to investments in national agriculture, improvements in food certification procedure, provision of relevant legislation and its guaranteed enforcement, etc. (Proriv, 2007).

3.4 Stakeholder involvement and shared responsibilities

3.4.1 Stakeholder participation

RF is still not a party to the Aarhus Convention. However, NGOs have always played an active role in the promotion and implementation of SD and SC ideas. The importance of civil society in Russian environmental movement has been emphasized in the research of foreign and national authors (Oldfield, 2002; Wernstedt, 2002; Yanitsky, 2005). Most environmental legislative acts of RF related to SD were elaborated and adopted with the active participation and under strong pressure of NGOs. Integration of SC and SD matters in social and economic development policies was vigorously lobbied by the Russian environmental circles. Education programmes and campaigns for SD are mostly based on the enthusiasm of non-governmental organizations (see also Section 3.2.3). Civil society influenced ex-President's decision to shift the route of *Eastern Siberia – Pacific Ocean* oil pipeline away from the Lake Baikal watershed. At the same time, in many cases the opinion of civil society is neglected while the participation of stakeholders in strategic decision-making is limited and often formal.

3.4.2 Shared responsibilities

Russian private companies slowly start understanding their role in SC and production network. Despite the fact that currently there is no legislative basis that would encourage enterprises to adopt corporate social responsibility (CSR), ex-President Putin in 2003 appealed to private companies to become "socially responsible". Many enterprises have already taken initiatives in this direction (see also Section 3.2.6). However, the majority of them understand CSR in the sense that they should support vulnerable groups of people through charity or provide financing for professional development of their staff (UNEP, 2006).

The Russian Union of Entrepreneurs and Manufacturers has created the Task Force with the aim of raising awareness among Russian companies about CSR and reporting. Together with the Global Reporting Initiative (GRI) they will work upon the implementation of GRI standards in Russia, the analysis of world's best practices in this domain and the assessment of national experience (Business and Society, 2004).

3.4.3 Government's own example

Government leadership initiatives in the field of SC have been invisible so far. There are federal laws *On Government Procurement* and *On Procurement of Agricultural Produce, Raw Materials and Food Products* dealing with legal and economic principles of purchasing products and services for federal needs. To some extent they address the issues of food security, research and development, social responsibility. However, they do not specify environmental performance standards or environmental requirements for purchased goods (UNEP, 2006). Besides, taking into account the current high level of corruption in the government, it is fair to suppose that environmental issues are not taken into account.

4. Conclusions

The present paper has sought to evaluate Russia's progress in promoting SC policies on the basis of criteria deduced from the UN Guidelines for Consumer Protection expanded in 1999 with a special section on the promotion of SC issues. The main findings of the research are summarized in Table 3.

The obtained scores prompt that in general Russia attempts SC policies but their implementation is in many cases unsatisfactory. The country has got neither an effective SD nor a separate SC strategy, which makes SC policies implementation difficult. Despite the fact that Russia is not a party to the Aarhus Convention, SC issues are mostly promoted by NGOs and environmental circles whose opinion is rather often neglected. Existing variety of instruments for SC policies implementation is scarce and mostly inefficient. Russia has got a developed system of ecological standards. Nevertheless, very often they are not respected in reality. At present, no system of indicators that would allow monitoring SD and SC has been adopted. Research and development in the sphere of new, environmentally friendly technologies lack financial support. Many existing Russian companies start undertaking environmental audit, voluntary certification and are getting involved in CSR activities. However, these are mostly large companies with international sales markets, which have to comply with international environmental standards.

Table 3: Evaluation of Russia's progress in promoting SC policies.

Criteria	Scores	Remarks
PLANNING		
1. SC strategy	E	To date, there is no separate SC strategy. However, SC issues are discussed in all documents related to SD.
2. Sectoral SC policies	E	At present there are no specific sectoral SC policies but

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		SC matters are discussed in most sectoral strategic documents.
3. SC policy integration	C	SC concerns were integrated in many social and economic development policies under strong pressure of environmental organizations.
POLICY MEASURES		
1. Legal instruments	D	SC issues are adressed in various laws on environment and consumer protection. Weak enforcement is very much characteristic of the Russian legislation.
2. Economic instruments	D	Economic instruments are mosty represented by pollution fees and user charges. Both are low and do not cover environmental losses.
3. Educational and awareness raising instruments	C	SD and SC education and awareness raising initiatives take place in various localities. Unfortunately, these are not government priorities.
4. New technologies, best practices, environmentally sound products and services	C	Development of new technologies lacks proper funding. Data on sectoral best practices and environmentally sound products are mostly unavailable. Nevertheless, some initiatives are taken in this direction.
5. Waste management schemes	D	Very little is done to promote waste minimization, separate waste collection and recycling. Awareness raising campaigns on these issues proved to be inefficient so far.
6. Standards	C	A well-developed system of national standards is in place but often they can be violated. At the same time, companies become interested in EMAS and ISO-14000 certification.
MONITORING AND ASSESSMENT		
1. Indicators, methodologies, databases	E	To date there is no officially adopted set of SC indicators that would be publicly available.
2. EIA and environmental testing	C	EIA procedure has regained its importance. Testing is carried out by authorized state agencies. Unfortunately, politics can influence tests results.
3. Research on consumer behaviour	F	Research on consumer behaviour is carried out by private organizations. Government is not involved in these activities.
STAKEHOLDER INVOLVEMENT AND SHARED RESPONSIBILITIES		
1. Stakeholder participation	C	Civil society has certain influence on strategic decisions. However, in many cases participation of stakeholders in decision-making is limited and often formal
2. Shared responsibilities	C	Many companies undertake voluntary certification to environmental norms, environmental audits and get involved in CSR issues .
3. Government's leadership	F	To date, government's leadership in SC matters has been invisible.

In order to improve the situation and further promote SC policies in Russia it is necessary to adopt an effective SD strategy and a comprehensive system of SD indicators that would include SC issues. Stakeholder participation should be more proactive and should start from the initial stages of decision-making. Wider and better advertised campaigns on raising public awareness about SC matters should be organized. It is important to diversify policy instruments and carry out strict and impartial control of their use. In is also highly recommended that incentives for companies and population to reduce their ecological footprint should be provided. Government should give more support for research and development in the sphere of SC technologies and initiate regular studies on consumer behaviour. Further popularization of voluntary environmental certification among companies in required.

Acknowledgements

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The status and review of national Green Public Procurement action plans in the new EU Member States of the Central and Eastern European region and barriers to the use of the EU Ecolabel in Green Public Procurement [1]

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Abstract

Green public procurement (GPP) is a concept according to which public authorities seek to procure goods, services and works that have a reduced environmental impact throughout their full life cycle.

The use of green labels and claims, including the EU Eco-label, is usually considered to be one of the most straightforward ways to define what a "green" product is in procurement tenders.

Some of the EU15 countries (amongst others Austria, Denmark, the Netherlands and the United Kingdom) have started implementing national GPP programmes almost a decade ago and therefore GPP is already in an advanced stage of development in these Member States. However, the introduction of GPP is still in a very initial phase in new EU Member States.

The European Commission has already called for the development of national action plans on GPP in its Communication on Integrated Product Policy (IPP) dated 2003 (European Commission, 2003). A new impetus to the implementation of GPP at the Member State level was initiated by the publication of a Communication on GPP by the European Commission in July 2008 (European Commission, 2008/2).

This paper sets out to provide an update on the status of national GPP action plans in the new EU Member States of the Central and Eastern European (CEE) region as well as to summarise the results of a comparative review of these action plans, initially in three selected countries (work in progress): Hungary (advanced draft action plan, February 2008), Lithuania (August 2007), and Poland (January 2007).

To conduct a comparative review of existing national GPP action plans in the CEE region was inspired by related activities in the framework of a project aimed at promoting the use of the EU Eco-label and/or related criteria when specifying environmental requirements in public procurement tenders in EU Member States.[2] The interim results of this project in terms of the indentified barriers to the use of the EU Eco-label and/or related criteria in public procurement tenders are also presented.

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[1] Findings presented in this paper are the results of work in progress and not to be quoted without prior contact to the authors. Suggestions regarding the improvement of this ongoing work are welcome. Corresponding authors: jszlezak@rec.org ; pszuppinger@rec.org

[2] The project is funded by the European Commission (DG Environment) and being implemented by the European Secretariat of the Association of Local Governments for Sustainability (ICLEI), the Regional Environmental Center (REC), and Bio Intelligence Services (BioIS)

Final results of the project and the full comparative review of already available national action plans in the CEE region are expected to be published in December 2008.

1. Introduction

1.1 The concept of GPP and the setting of environmental criteria

Governments are expected to demonstrate leadership in furthering sustainability, not only through setting policies, but also by setting an example in the public sector by pursuing (more) sustainable consumption patterns. Governments are influential purchasers in a national economy, for they typically spend around 15 per cent of the GDP on a diverse and wide range of goods and services. By adopting environmental and social criteria in their purchasing practices governments themselves can be a main driver of the development of markets for green(er) / more sustainable products and services.

Green Public Procurement (GPP), a concept according to which public authorities seek to procure goods, services and works with a reduced environmental impact throughout their full life cycle, is an effective tool in the hands of governments to set the example and to demonstrate commitment towards sustainability.

Contracting authorities may take into account environmental considerations during the tendering procedure in several ways, including e.g. the identification of needs, description of the subject in the contract, definition of technical specifications or of the way in which a contract is to be performed, but most importantly by setting clear award criteria defining the required environmental characteristics of goods and services.

Reference to green labels and to claims and/or to the use of related criteria can be an effective means in the hands of public procurement practitioners to define such award criteria.

The European Eco-label is the official label of the European Union, certifying that products are greener throughout their life cycle than other standard alternatives. Ecological criteria are already available in all EU languages for 26 product categories, including paper, detergents, paints, IT equipment, etc.

The European Eco-label is one of the most straightforward ways to define what a "green" product is. The Eco-label criteria take into account the main environmental impacts of a product and the possible technical improvements. Using Ecolabel criteria in tender documents is fully compatible with the Internal Market principles.

When issuing a call for tenders for products, the European Eco-label criteria which are relevant to the subject matter of the contract can be directly cut and paste into the technical specifications. The European Eco-label can be accepted as a way of proving compliance with these specifications. Nevertheless, contracting authorities should also accept products complying with the underlying technical specifications even if they do not carry the label.

1.2 GPP in the EU Member States

In some countries, in the EU15 region, the implementation of GPP has been on the agenda for almost a decade, and it is now in a considerably advanced stage of development.

A study conducted during the period 2005-2007, which was aimed at defining the level of GPP across the 25 Member States of the EU, identified a core group of countries that consistently had more tenders with green criteria than the rest of the EU25. Respondents from these countries rated their GPP activities more highly in the relevant surveys of the project (Bouwer et al., 2006). Countries belonging to this group were coined as the 'Green-7' and include Austria, Denmark, Finland, Germany, Netherlands, Sweden, and the UK.

GPP has recently become high on the political agenda of the European Commission and the main milestones in this process have been:

- The Commission's Communication on Integrated Product Policy (IPP) in 2003 (European commission, 2003), which also called Member States to develop national action plans for the enhancement of GPP;

- The adaptation of two new directives in 2004 (European Parliament, 2004), aimed at clarifying, simplifying, and modernising existing European legislation on public procurement;

- The adoption of the Environmental Technologies Action Plan (ETAP) in 2004 (European Commission, 2004) which includes two very important elements related to GPP: promotion of life-cycle costing and the option of performance-based definition of the product/service (market for innovative technologies); and

- The setting of the political objective in the renewed EU Sustainable Development Strategy in 2006 (Council of the European Union, 2006) with regards to bringing the average level of EU green public procurement up to the standard achieved by the best performing Member States by 2010.

On 16 July 2008 the Commission launched its Action Plan for Sustainable Consumption, Production and Industry (European Commission, 2008). As an integral part of this political document, a new communication on GPP (European Commission, 2008/2) aimed at harmonising criteria for GPP across the EU and to provide legal and operational guidance was also published.

While the implementation of GPP has been on the agenda of some countries in the EU15 for almost a decade, in the new EU Member States it is still in its initial stages. Similar to the introduction of other environmental policy tools and measures, the factors influencing the implementation of GPP appear to be specific to the Central and Eastern European region.

2. Success factors and main barriers to GPP – the results of earlier research in the subject

According to the results of the above study, aimed at defining the level of GPP across the 25 Member States of the EU (the so-called TAKE-5 study), all Green-7 countries exhibit some or all of the following traits, which can be considered to be the success factors of GPP:

➢ Strong political drivers, national guidelines and programmes for GPP

➢ Public information resources via websites and eco-labels

➢ Use of innovative tools such as life cycle thinking and green contract variants in procurement procedures

➢ Frequent implementation of environmental management systems (EMS) by purchasing authorities

The findings of this study and of other relevant studies[3] on the subject of barriers to the evolution of GPP are presented below in Table 1. Potential approaches to eliminate these barriers are also discussed.

Table 1 – Main barriers to GPP and potential approaches to eliminate them

Main Barriers	Potential approaches to eliminate them
Perception that environmentally friendlier products would be more expensive.	Information on life-cycle costing
Low awareness of the benefits of environmentally friendly products and services	Coordinated exchange of best practice and information between regional and local authorities
Lack of knowledge about the environment and how to develop environmental criteria	Using Eco-label criteria
Lack of management support (including money and time), strategic focus and organisational policy strongly promoting GPP	National Action Plan with strong commitments from the governments setting examples
Lack of practical tools and information (e.g. handbooks, internet tools)	GPP Toolkit (published in 2008)
Lack of training for public procurement officers	National Action Plans should include training elements

3. Background of research and methodology

The project entitled "*Raising awareness of the EU Ecolabel Brand amongst Procurement Practitioners in the Member States and promoting the use of the EU Ecolabel criteria throughout the procurement lifecycle*"[4] is being implemented by the European Secretariat of the Association of Local Governments for Sustainability (ICLEI), the Regional Environmental Center (REC) and Bio Intelligence Services (BioIS), an environmental consultancy firm based in France.

The project is focused on both public purchasers and their regular suppliers. Its objective is to raise awareness and to promote the use of the EU Eco-label criteria in public procurement, and throughout the supply chain. The project intends to support the ongoing work of the European Commission in the areas of Green Public Procurement and the EU Ecolabel Regulation (the EU Ecolabel scheme).

Amongst other project activities, an update of the status of the GPP action plans was carried out by the project team. This paper was inspired by work related to this project and the preliminary review of already existing GPP action plans from the Ecolabel criteria point of view.

3.1 Methodology

Already existing national action plans have been identified by Internet desk search and direct contact to relevant governmental officials. The review of GPP action plans in the CEE region is being carried out along eight main themes/aspects, which are as follows:

➢ Overall goals of national action plans and defined implementation periods

➢ Responsibilities for the preparation, implementation, and monitoring of action plans

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[3] See e.g. Green public Procurement (GPP) training Toolkit http://ec.europa.eu/environment/gpp/toolkit_en.htm

[4] For more information please visit: http://www.iclei-europe.org/index.php?id=262&act_id=268&project_id=Promotion%20of%20EU%20Ecolabel%20to%20public%20procurers%20&no_cache=1

- ➢ Product groups in focus
- ➢ Indicators and targets
- ➢ Training and dissemination
- ➢ Criteria for GPP and the reference/planned use of the EU Eco-label criteria
- ➢ Involvement of the business sector
- ➢ Financial resources assigned to the implementation of an action plan

Further aspects of the review are: to what extent have the success factors of GPP, the previously identified barriers to its evolution, and the barriers to the use of the EU Eco-label been addressed in the action plans.

To confirm the findings and to fill in the gaps of available information with regards to the above aspects, interviews with relevant governmental officials have been / will be carried out.

Regarding the identification of barriers to the use of the EU Ecolabel criteria, the project consortium has conducted interviews with more than two dozen stakeholders ranging from central and local procurement bodies, to suppliers or potential suppliers of products marked with the EU Eco-label.

4. Status of Green Public Procurement action plans in the new EU Member States of the Central and Eastern European region and the review of selected cases

4.1 Status of GPP action plans

An update on the status of GPP action plans in the new EU Member States of the CEE region has been carried out by the Regional Environmental Center in the framework of the project implemented jointly by ICLEI and BioIS to promote the use of the EU Eco-label in public procurement tenders.

The results of the status update are presented below in Table 2.

Table 2: Status of Green Public Procurement action plans in the new EU Member States of the Central and Eastern European region.

Country	Status of action plan	Date of approval (if applicable)	Implementation period (if applicable)
Bulgaria	No action plan yet[1]	N/A	N/A
The Czech Republic	Under preparation[2]	N/A	N/A
Estonia	Approved by the government[3]	February 2007	2007-2009
Hungary	Advanced draft, under consideration by the government[4]	The draft was presented to the government in February 2008	2008-2012 (planned)
Latvia	No action plan yet[5]	N/A	N/A

Country	Status of action plan	Date of approval (if applicable)	Implementation period (if applicable)
Lithuania	Approved by the government [6]	August 2007	2008-2011
Romania	Advanced draft, under consideration by the government [7]	Expected to be adopted by end of 2008	2008-2013 (planned)
Poland	Approved by the government[8]	January 2007	2007-2009
Slovakia	Approved by the government[9]	November 2007	2007-2010
Slovenia	Under preparation[10]	Draft is expected to be finalised in October 2008	N/A

[1] Information collection on related plans and ambitions to prepare a national action plan is ongoing. Source: e-mail communications with Ms Anna Mitkova of the Bulgarian Public Procurement Agency, September 2008.

[2] A governmental programme on "Sustainable Public Administration" is under preparation by an inter-ministerial working group. Source: *Framework of Programmes on Sustainable Consumption and Production in the Czech Republic.* Czech Environmental Information Agency, Prague (November 2005) and telephone communications with Mr Daniel Hajek of the Czech Ministry of the Environment in June 2008

[3] *Estonian Environmental and Sustainable Public Procurement priorities 2007-2009*, Decision No 2/25.01.2007. Ministry of Environment, Tallinn, Estonia (February 2007)

[4] *Working document for the Government on the National Action Plan on Green Public Procurement. KVVM/KJKF/66/2008* Ministry of Environment and Water, Budapest, Hungary (February 2008)

[5] Several paragraphs that deal with GPP in the National Environmental Policy Plan for 2004–2008 under chapter 1.11 Environmental Technologies. Source: *National Environmental Policy Plan for Latvia for 2004-2008.* Latvian Environment, Geology, and Meteorology Agency, Riga, Latvia (2004)

[6] *National Green Procurement Implementation Programme with its action plan,.Gov. Resolution No 804, 08 08 2007.* Ministry of Environment, Vilnius, Lithuania (August 2007)

[7] *National Action Plan for Green Public Procurement in Romania*, Ministry of the Environment and Sustainable Management, Bucharest, Romania (September 2008)

[8] *National Action Plan on Green Public Procurement for the period 2007-2009*, Polish Public Procurement Office (UZP), Warsaw, Poland (January 2007)

[9] *National Action Plan for Green Public Procurement in the Slovak Republic for 2007 – 2010*, Slovak Environmental Protection Agency, Bratislava, Slovak Republic (November 2007)

[10] E-mail communications with Mr Bojan Ojsteršek of the Ministry of Finance, Department for Public Procurement System in October 2008

5.   Review of the action plans of Hungary, Lithuania and Poland

While the review of already existing national GPP action plans is ongoing, this paper presents some preliminary results based on the review of action plans in Hungary, Lithuania and Poland. Findings of the reviews are presented according the themes defined in the methodology section. Annex I provides a general characterisation of the three action plans along these themes.

5.1   Overall goals of national action plans and implementation periods

Time planned implementation period of the action plans is between three and five years (five in Hungary, four in Lithuania and three in Poland). General and uniformly referred objectives of the action plans include contribution to sustainable development and to the greening of the public sector.

Contribution of GPP to the development of markets for environmentally friendly products and for the development of environmental technologies / services sector is uniformly acknowledged.

Only Hungary referred to the saving potentials in terms of life-cycle cost amongst its objectives. A further objective that is specific to Hungary's draft action plan is the contribution to the increase of environmental awareness within society. Poland presents its own approach, in which theme-specific objectives, e.g. related to increase in the number of verified EMS, Polish and EU eco-labels etc., are also defined (for more details please refer to Annex I).

5.2   Responsibilities for the preparation, implementation and monitoring of action plans

In two out of the three cases reviewed, in Hungary and Lithuania, the institutions initiating and coordinating the development of a national action plan are the ministries of environment. In Poland this central role is fulfilled by the Public Procurement Office, which is a unique structure.

In Lithuania and Poland the ministry of economy and the relevant public procurement agencies have also been involved. In Hungary, although the ministry of economy has not played a central role, the ministry of justice has. Furthermore, in Hungary and in Poland the eco-label competent bodies have also been involved. For more details please refer to Annex I.

5.3   Product groups in the focus of the action plans

Defined product groups in the three action plans, together with the priority product categories as outlined in the Communication on GPP, are presented in Table 3, below.
Only Hungary and Lithuania defined specific product categories in their national action plans on GPP.[5]

As exemplified in the table, there are several gaps in the prioritised product categories in the reviewed action plans when compared to those defined in the Commission's Communication on GPP. These include the following product categories: food and catering services, energy utilities, clothing, uniforms and other textiles, furniture, and equipment used in the health care sector.

The production consumption categories can be considered as significant gaps, for they have the highest environmental impact in Europe, food and drink, housing and mobility (Tukker et al., 2006). A core group of prioritised product categories, in line with the portfolio defined in the Commission's Communication on GPP include: construction, transport and transport services, office machinery and computers, paper and printing services, and cleaning products and services.

Lithuania included, in addition to the core group of priority product categories, event organisation/services amongst its focuses.

Table 3: Product groups in the focus of the European Commission's Communication on GPP and in the reviewed action plans

Communication on GPP	Hungary	Lithuania	Poland
Construction	X	X (partly)	No priority product groups were defined in the action plan
Food and catering	-	-	

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[5] Although no priority product groups for GPP were defined in the action plan of Poland, these might have been defined elsewhere and information collection in this respect is ongoing

services		
Transport and transport services	X	X
Energy	-	-
Office machinery and computers	X	X
Clothing, uniforms and other textiles	-	-
Paper and printing services	X	X
Furniture	-	-
Cleaning products and services	X	X

5.4   Indicators and targets

Indicators and targets have an important role as effective tools for measuring the progress of the implementation of action plans. Indicators and targets defined in the reviewed action plans and those defined in the Commission's Communication on GPP are presented below in Table 4. Although all three action plans defined a top indicator for GPP, only Hungary and Lithuania defined targets.

Targets were defined with great detail in terms of the product categories in the focus of the draft action plan in Hungary. As the table indicates, while the targets that were set in the draft action plan of Hungary well exceed the targets set in the Communication on GPP, targets set in Lithuania are far below, amounting to only approximately half of the EU target by 2010, i.e. only 25 % by 2011.

Table 4 – Indicators and targets in the European Commission's Communication on GPP and in the reviewed action plans

	GPP Communication	Hungary					Lithuania	Poland6
Indicators defined	Number and value of green contracts*	Number of green tenders					Number of green contracts	Percentage of contracts integrating environmental considerations
Targets defined	2010 50%						2008 10% 2009 15% 2010 20 % 2011 25%	No targets were defined in the action plan

Hungary detail table:

Product	Central		All	
	2010	2012	2010	2012
Construction			30%	45%
Vehicles and fuels	100%	100%	45%	90%
Office papers	60%	80%	45%	67%
IT equip.	100%	100%	45%	90%
Cleaning services*			30%	45%

* According to the Communication on GPP an appropriate measure for this purpose is still to be developed

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[6] In addition to the overall indicator, several theme-specific indicators were defined, mainly referring to the effect of GPP on the economy, including:
- Number of Polish entities registered in EMAS;
- Number of Polish entities holding a PN-EN ISO 14001:2005 certificate;
- Number of Polish products labelled with the Polish Ekoznak;
- Number of Polish products labelled with the European Ecolabel;
- Number of certified environmental technologies;
- Number of persons attending training courses and conferences directly or indirectly related to green public procurement.

5.5   Training and dissemination

All reviewed documents include intensive training activities in various subjects, the majority address the application of environmental criteria in public tenders, other subjects include the national and/or EU Eco-label and life-cycle costing.

In most cases the intended target audience of trainings are public procurement practitioners, but we can also find amongst targeted stakeholder groups, high level decision-makers as well as graduate students. The business sector is also a common target audience for trainings in the action plans.

Other types of common support include, an inter alia guidebook in the national languages, and other various means of information dissemination, particularly via websites.

Poland is currently planning a number of innovative actions, including a catalogue of green products available on the market, examples and good practices from other countries to public procurement practitioners, and an annual national GPP conference. For more details please refer to Annex I.

5.6   Criteria for GPP and the reference / planned use of the EU Eco-label / the underlining criteria

Eco-labels (usually both the national and the EU Eco-label) are generally referred to in the action plans and in some cases criteria development is or will be based on them. The development of criteria in Hungary and Poland is managed by the eco-label competent bodies, whereas in Lithuania the institution in charge of criteria definition will be the Ministry of Environment as such. Interestingly enough, little or no reference is made to the harmonisation of criteria amongst EU Member States, however, in some cases, e.g. criteria by the EU Eco-label it is implied (this is one of the advantages of the EU Eco-label criteria). For more details please refer to Annex I.

5.7   Involvement of the business sector

The planned involvement of the business sector in Hungary and in Lithuania goes beyond the organisation of relevant training and information dissemination and includes the involvement of businesses in criteria development and related workshops. The main focus is on providing training to business representatives in all three cases, however, to a significantly less extent than to public procurement professionals. For more details please refer to Annex I.

5.8   Financial resources assigned to the implementation of action plan

All action plans address the topic of financial resources for implementation. As the draft action plan in Hungary has not yet been adopted, no budget has yet been earmarked. In Lithuania the action plan assigned preliminary funding to the kick-off of implementation action, further budget is to be assigned from central sources at later stages. In Poland the action plan clearly defined the role of different state institutions in implementation and these institutions have to provide the necessary budget from their own resources. Interestingly, only the Polish action plan made reference to the utilisation of external sources (e.g. the World Bank, the EU's TAIEX instrument).

5.9   Findings of interviews on the use of the EU Eco-label

The connection between Green Public Procurement and the use of various green label schemes, such as the EU Eco-label, were already clarified throughout the previous chapters. The objectives of the project on the promotion of the EU Eco-label were to define the barriers to the use of the EU Eco-label brand, define the underlining criteria in public procurement tenders, and to provide recommendations on how to overcome on the identified barriers.

The main findings of the project in this respect include, inter alia:

- The fundamental precondition of widespread success of the EU Eco-label, as indicated by all the suppliers/manufacturer interviewed, is a major increase in awareness of the Ecolabel amongst the general public across Europe – currently this is extremely low.

- There are a number of specific issues regarding the certification process which are seen by many manufacturers as a barrier. The process is considered to be too expensive, complex and time-consuming. As such manufacturers are less willing to take a "risk" in applying for the label, for the market response time, in terms of bringing new products onto the market within rapidly developing market conditions, is compromised.

- Competition with established national and regional eco-labels remains a substantial hurdle, both in terms of companies selecting which label to have for their product, and also in terms of the promotional possibilities for bodies which are responsible for the promotion of both a national eco-label and the European Eco-label.

The recommendations of the project to overcome these barriers are, inter alia:

- Integrating advice on using the European Ecolabel into existing public procurement training schemes within Member States, and/or providing training/workshops specifically on GPP and the European Ecolabel.

- Encouraging effective dialogue between procurers and potential suppliers, and extending dialogue with industry and trade associations.

- Preparation of standardised tender documents and the integration of guidance on the European Ecolabel within existing GPP/procurement guidance at the national level.

- Provision of information on pricing and availability of ecolabelled products.

6.   Conclusions

The majority of countries in the CEE region have already adopted action plans on GPP, or the development of a national action plan on the subject is in an advanced stage of development.
The content and the level of detail regarding the planned action in the three action plans that were reviewed vary country by country. However, the action plans in general seem to focus more on the "low hanging fruits" (REF?), i.e. the removal of main barriers to an early stage development of GPP, than the long term "success factors" of GPP, such as the widespread implementation of certified environmental management systems in the public sector, which then creates a new public administration culture. Nevertheless, given the fact that GPP in the countries in subject is in a very early stage of development, this approach seems to be a valid start. At the same time, however, it cannot be emphasised strongly enough that the actual realisation of relevant ambitions and planned action in the documents will have an equal, if not more significant importance towards the successful implementation of GPP in the region than the preparation of action plans.

In terms of the production/consumption categories that have the highest environmental impact in Europe (food and drink, housing and mobility), there are significant gaps in the priority product groups defined in the action plans: food and catering and energy services were not amongst the priorities outlined.

With regard to the way forward, revised plans for the next periods should focus more on innovative approaches like the application of life-cycle costing and function/performance based definition of requirements (e.g. heating to given level of conformity, according to given environmental criteria, but without specifying the means/sources of providing the service) – these would help achieve the real benefits of GPP. The European Commission should also be more active in this field and provide more guidance and information regarding the more advanced tools of GPP. Regarding focuses in terms of product groups, the action plans should turn their focus towards the production-consumption areas with the highest environmental impact and also incorporate energy services and food and catering services.

Regarding the use of the EU Eco-label or the underlining criteria in public procurement tenders, these are generally referred to in the action plans and in some case criteria development is or will be based on them. Major findings of the project in this respect include the fact that in order for the EU Eco-label criteria to be used effectively, it will be crucial to provide early communication of future environmental requirements (to ensure that the market is able to prepare for these demands). Furthermore the preparation of standardised tender documents and the integration of guidance on the EU Eco-label within existing GPP/procurement training and related activities at the national level are of central importance.

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Annex I – Characterisation of action plans according to predefined themes in focus

	Hungary	Lithuania	Poland
Implementation period	5 years (planned period: 2008-2012)	2008-2011	2007-2009
Overall goals	- contribution to achieving sustainable development - positive effects on the environmental industry, creating market for innovative, environmentally friendly products and solutions - in a life-cycle approach saving resources in the public budget - positive effects on the environmental awareness of the society	- greening of public sector's procurement - to encourage the development of environmental technologies as well as the design of environment-friendly products	- increase the extent to which environmental considerations are integrated into public procurement - develop the market for environment-friendly products and expand the market for technology for the environmental protection industry and the environmental services sector - promote sustainable models of production and consumption 7
Institution initiating the preparation of the NAP	Ministry of Environment and Water	Ministry of Environment	Polish Public Procurement Office

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7 Further to the overall objective several specific objectives were also defined, including

- increase the number of public contract award procedures which integrate environmental tender evaluation criteria, - increase the number of entities with a verified eco-management system, e.g. EMAS or PN-EN ISO 14001: 2005, - increase the number of domestic products which have been awarded the Polish Ekoznak or the Community Ecolabel, - increase the number of entities using certified environmental technology, - raise awareness of green public procurement amongst those involved in public procurement.

	Hungary	Lithuania	Poland
Institutions coordinating and participating in the preparation of NAP	Ministry of Environment and Water + Public Procurement Council; Ministry of Justice and Law Enforcement; Ecolabel Competent Body; Central Purchasing Directorate; experts	Ministry of Environment + Ministry of Economy; and the Public Procurement Office	Public Procurement Office + the Ministry of the Environment, the Ministry of the Economy, the Office of the Committee for European Integration (UKIE) and the Polish Centre for Testing and Certification(PCBC)8
Institutions coordinating and participating in the implementation of action plan	Same as above	Same as above	Same as above
Training elements defined	Training activities are planned for: - public procurers - decision makers, high level public servants - integration of GPP into the curriculum of relevant universities is also planned	The Public Procurement Office starts the training on GPP according to the training programme prepared by the Ministry of Environment. The target group is public procurement officers.	Training courses targeted at contracting authorities and to "economic operators" are planned in various subjects9 and will be organised by the Public Procurement Office

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[8] It is also the national competent body for eco-labels

[9] These include: the application of environmental criteria for the award of contracts; EMAS and environmental management systems conforming to the PN-EN ISO 14001:2005 standard; eco-labels/Polish Ekoznak/EC Ecolabel; environmental technologies, and product life cycle and life-cycle costing

Annex I., cont'

	Hungary	Lithuania	Poland
Other dissemination activity defined	- guidebook in national language - website - workshops and conferences	- information leaflets to purchasing organizations - website	- database of environmental criteria - guidebook - catalogue of green products available on the market - examples and good practices from other countries - website - annual GPP conferences
Criteria for GPP defined	According to the action plan, reference criteria development will be the duty of the Hungarian eco-label competent body	According to the Governmental decree, the Minister of Environment is in charge of development of environmental criteria for specific product groups. Criteria for the product groups in focus have been approved by the Order No D1-697 of December 22, 2007. Every year the list of product groups and their environmental criteria will be revised.	The Polish Eco-label competent body is in charge of the development of criteria The Ministry of Economy is in charge of compiling a database of environmental criteria for individual product groups

	Hungary	Lithuania	Poland
Planned use of the EU Eco-label / the underlining criteria	The Action Plan declares that the best bases for criteria development are the eco-labels as they are based on life-cycle analysis. It clearly defines how the ecolabel criteria could be used in public procurement procedures.	There is no direct reference to the EU Ecolabel in the Lithuanian GPP action plan. However, the EU Ecolabel is mentioned among environmental criteria in the Order No D1-697 of December 22, 2007.	The EU Eco-label, together with the national eco-label and the underlining criteria are amongst the primary reference points for GPP
Planned ways of involving the business sector	Conferences and workshops are planned in order to engage the business sector in the implementation.	The PPO is going to call an open tender for a lecturing on GPP and preparation of information leaflets and other training materials for business sector - the Ministry of Environment is going to involve businesses in the further development of GPP criteria	One of the planned activities in the action plan is the organisation of training courses targeted at contracting authorities and also to "economic operators" (assumingly to the business sector)
Financial resources assigned to the action plan	As the Action Plan has not yet been adopted financial resources have not been earmarked yet.	The Programme with its List of implementation measures provides preliminary funding needs up to 2011. Finances come from the state budget.	Not specified as such (concrete value) in the action plan. The different ministries and institutions with responsibility in implementation will have to assign financial resources from their own budget. External support is also foreseen (e.g. from the World Bank for a guide on GPP to contracting agents and from the EU TAIEX office for the organisation of national GPP trainings).

Sustainable household consumption: the state and perspectives in Lithuania

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Abstract

Unsustainable consumption patterns common for industrialized countries also become a challenge for relatively fast growing countries with transition economies in Central and Eastern Europe. Therefore the aim of this study was to evaluate the main changes of consumption patterns (housing, transport) in the household sector in Lithuania, a typical post-Soviet transition country, with particular attention to consumer attitudes and behaviour.

As the results show, despite positive decrease in household final energy, water consumption and overall household waste generation trends after transitional decline, Lithuania is following unsustainable consumption patterns of the West. Now households have higher incomes, become smaller with increasing per capita living area and with more home appliances. Though household expenditure for housing increased, consumers tend to spend more for leisure and travelling, too. Fast growth of number of cars per 1000 inhabitants contributed highly to personal mobility and to the drop by about 1.5 times in the public transport volumes.

Survey results suggest that despite some environmentally friendly attitudes, consumers tend to ground their behaviour mostly by economic factors (incomes, prices). Increase in incomes would lead to the consumption increase not only for basic (by 30 %), but also for cultural and social needs of respondents. As interrelationship analysis shows, incomes, age and number of children in the household were the main determinants of overall environmentally friendly attitudes and behaviour. Environmental education and information could help to increase the environmental consciousness of consumers and reshape consumption to the more sustainable one in Lithuania.

1.   Introduction

Sustainable consumption has emerged as one of the most challenging and vital policy debates of our time (Jackson, 2006). It is usually described as the use of goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the lifecycle so as not to jeopardize the needs of future generations (Ofstad, 1994). It is argued that sustainable consumption is not about consuming less, it is about consuming differently, consuming efficiently, and having an improved quality of life (UNEP, 1999). Still presumption that growing consumption indicates the increasing welfare (Lintott, 1998; Jackson, 2006) often impedes the decoupling economical growth from the resource consumption and waste generation. Unsustainable consumption patterns especially characteristic of the developed countries have been identified as one of the driving threats for sustainable development (Spangenberg and Lorek, 2002). Therefore increasing consumption and the households' consumption culture make this sector quite problematic from the point of sustainability (European Communities, 2005).

Household consumption is a major cause of increased environmental pressure. As it is indicated (EEA, 2005) food and drink, housing, personal mobility and tourism are the main consumption categories having the major environmental impact. Although the environmental impact of each household is relatively small, but overall household sector contributes to the environmental problems like climate change, air pollution, water pollution, and waste generation (OECD, 2002b; EEA, 2005). Despite the direct impact of resource consumption, households often have indirect influence on energy emissions, pollution of ground and surface waters through the energy use and water consumption.

One of the main drivers of the unsustainable household consumption is considered to be the increase of incomes (OECD, 2002a). Households become smaller with increasing per capita living area and more luxurious, with more home appliances (TV, DVD players, computers, microwave ovens, etc.) (Fuchs and Lorek, 2001; EEA, 2005; European Communities, 2005) that require more and more resources to fulfil daily needs. Dwelling characteristics as dwelling type and age, and insulation determine energy consumption as well. So economy growth results in the increasing demand for energy in daily life (Haas and Schipper, 1998; OECD, 2002a), as D.A. Fuchs and S. Lorek (2001) argue the increase of incomes by 1 % leads to an increase in energy consumption by 0.1-0.4 %.

For household consumption patterns not only economical and environmental aspects, but the social factors like culture, lifestyle, quality of daily life, and sustainable thinking and understanding of "well-being" are very important (Lintott, 1998; Halme et al., 2004; EEA, 2005; Cohen, 2008). Often these are the underlying reasons why eco-efficient goods and services have not been so successful despite the price influence and technological gains (Hass and Schiper, 1998; Jackson, 2006). So consumption patterns are of importance for reaching sustainable development goals.

Transitional countries have some different patterns of consumption to compare to developed countries. Countries with transition economies in Central and Eastern Europe inherited rather developed but not very modern ineffective energy supply systems; experienced the market liberalization and now along with growing economy (Juknys et al., 2005) face the challenge of Western consumption culture impact. On the other hand, the Soviet heritage still persists in the Lithuanian mentality; society is rather passive, lacks awareness and responsibility dealing with environmental issues (Mzavanadzė and Dagiliūtė, 2007) and this makes additional challenges for fostering sustainable development. So the aim of this study was to evaluate the main changes of consumption patterns (housing, mobility) in the household sector and prevailing consumer attitudes and behaviour in Lithuania, a typical post-Soviet country in transition.

2.   Data and method issues

The main findings in this paper are presented in two sections. In first section the consumption in Lithuanian household sector was analyzed from the point of sustainability during the period after transitional decline (1995(6)–2006). Mainly data of Lithuanian Statistical Office, Statistical Office of the European Union (Eurostat) are used in this study. Average data of EU-15 and EU-27 countries are used for comparison in some cases. Total final household energy and thermal energy are presented in oil equivalent, and electricity in GhW, water consumed in volume and household waste in mass units. Incomes are presented in Litas at constant 2000 year prices in order to remove influence of inflation over the time. Most of the data are presented per capita to avoid influence of demographic changes. The year 1995 has been chosen as a base year and data of this year were equalled to 100 % for the more evident time series analyses and comparison of the data.

The second part of the paper deals with consumer attitudes and behaviour. To reveal the main trends in consumers' attitudes and behaviour a consumer survey was conducted. As quota sample survey results often follow the results of representative surveys, the quota sample survey was conducted in year 2006 (May-August). 343 respondents (52.6 % female and 47.4 % male) filled in the questionnaire prepared by the authors. The sex structure and the age structure (with some deviations) of the respondents reveal

that of Lithuania. Though results of the survey do not represent the whole population of Lithuania, some conclusions on prevailing trends of consumers' attitudes and behaviour could be done.

As questionnaire covers wide range of consumption issues, the overall scale of consumers' attitudes and behaviour towards environment was constructed (Crombach α=0.68) and overall score of environmentally friendly attitudes and actions was calculated. The analysis of possible socio-economic drivers of overall consumption patterns was based on the interrelation analysis (Contingency and Kendall's τ-b correlation coefficients).

3.   Household consumption expenditure and main consumption trends

After the collapse of former Soviet Union, changes in political, economical and social life highly influenced the consumption patterns of households in Lithuania. Market liberalization, multiple-choice possibilities, growing incomes highly influenced not only household consumptions patterns but also household expenditure structure (Fig. 1). The presented data show that Lithuanian household expenditure structure is following Western expenditure patterns. After the transitional decline in 1996 the household expenditure for basic needs such as food and drink consisted the biggest share, amounting to more than half (57 %) of total household expenditure (Fig. 1A). The expenditure for housing, which included expenditures for water, electricity, gas and other fuel, furnishings, household equipment and routine maintenance of the house, was amounting to a sixth part of total household expenditure. The expenditure for recreation and culture together with expenditure for hotels, restaurants and cafes were amounting only to 7 % of total household expenditure and expenditures for transport and for health care were the least: it composed only 5 % and 3 % respectively in a total Lithuanian household expenditure structure. In 2006 (Fig. 1B) the structure of household expenditure was completely different. During 10 years the expenditure for food and drink has decreased 1.8 times. Meanwhile the expenditure for housing has increased by 1.2 times, the expenditure for health care by 1.6 times. But the biggest increase of expenditure was observed for recreation and culture as well as for transport by 1.8 and 2.2 times respectively. When comparing Lithuanian and European Union (EU) structures of household expenditures, it is observed that Lithuanian structure becomes more similar to that of EU. For example in EU household expenditure for housing accounted for 23 %, mobility - 22 %. Though consumption for housing and mobility in Lithuania is still smaller than in EU, the households in Lithuania also tend to spend more for housing, mobility, recreation and leisure activities.

Figure 1: The comparison of household expenditure structure in Lithuania in 1996 and 2006
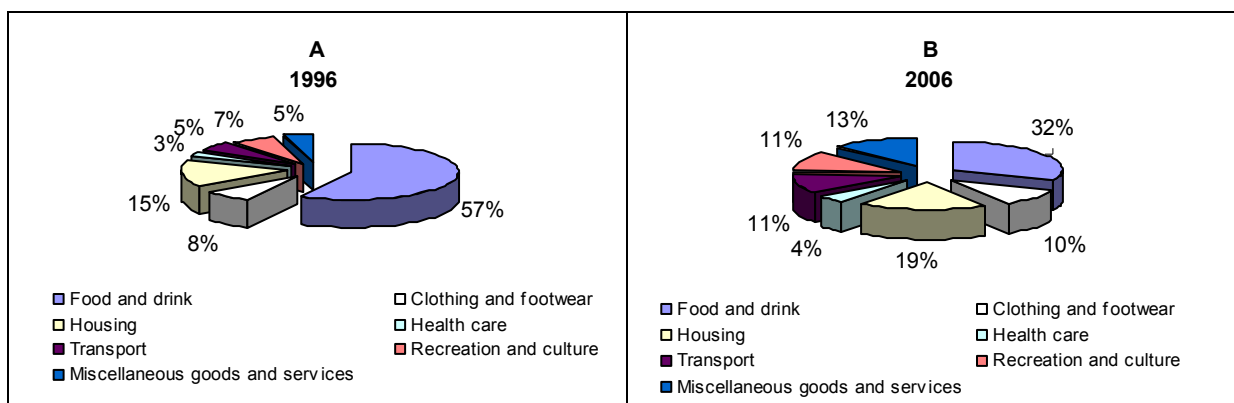
As it was mentioned, after the transitional decline Lithuanian households tend to spend more for housing. But when looking at the energy, water consumption and waste generation (Fig. 2) mostly decreasing trends are observed. During the analyzed period overall final energy consumption

decreased by 7 %, water consumption by 44 %, and waste generation by 9 %. The main drivers for these positive changes were introduction of appropriate metering measures, increased control and fast growing prices especially for the central heating. Only from 1995 the price for centrally provided heating increased about 4 times.

Despite that, positive trends were offset by relatively fast economic growth and respectively higher household incomes. Only from 2000 thermal energy consumption increased by 7 %. And despite overall heating energy decrease during 1995 – 2006, the energy consumption intensity in household sector is still very high. The majority of Lithuanian citizens still live in soviet fashioned block–houses and thermal energy consumption required to maintain the same temperature exceeds EU-15 countries on average about 2-2.5 times (Juknys, Dagiliūtė, 2006). A large part of the centralized heating infrastructure is out-dated and energy losses in heat distribution networks are very high. Renovation of block–houses and improvement of their thermal behaviour, modernization of thermal units, and renovation of heat supply networks create an opportunity to reduce the household energy consumption essentially. Lithuanian Housing Strategy (2004) aims to renovate most of block–houses and to save up to 30 % of thermal energy in Lithuanian household sector. Still the ongoing renovation program is not very active, and until now only 300 projects are performed and more than 400 are waiting for implementation.

Figure 2: Final energy, electricity, thermal energy, water consumption, waste generation (per capita) and number of personal cars (per1000 inhabitants) in Lithuania
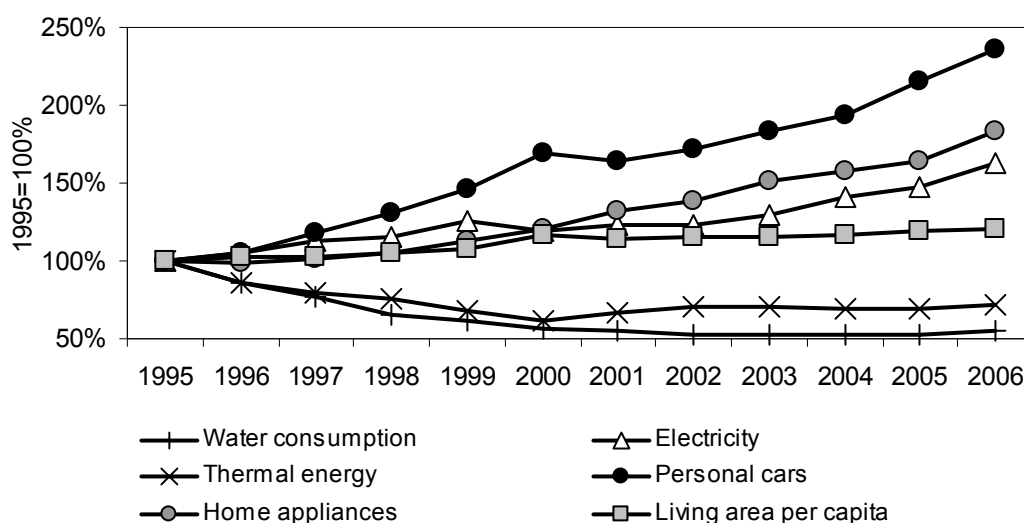
There is an increase in the electricity consumption observed, too. Having in mind that electricity consumption was on increase during all the period under analysis, recent growth by 33 % is challengeable from the point of sustainability. Even more pronounced growth (by 45 %) is observed when analyzing electricity consumption per capita (Fig. 2). This tendency was driven by growing number of households' and respectively decreasing of household size (Fig. 3). From 1995 household size in Lithuania decreased by 15 % from 2.76 to 2.39 persons per household while per capita living area increased by 21%. Also households became more luxurious with more home appliances (increased by 83 %), more electronic and communication tools (increased nearly twofold) that require more and more recourses of electricity to fulfil daily needs (Fig. 2). Despite the fact that the eco-efficiency of these appliances is constantly increasing and their exploitation requires less energy, the number of durable goods is increasing and electricity consumption is growing in Lithuanian household sector. Still as compared to EU-15 there are less home appliances per 100 households in Lithuania. Having in mind discussed drivers, it is estimated that electricity consumption in Lithuanian household sector will tend to grow by 4.1–5 % per year depending on economy growth rates (Miskinis et al., 2004).

Oppositely to the negative trends from the point of sustainability in the household energy consumption from 2000, total water demand was on a decrease during all period under analysis and in absolute terms had significantly nearly twofold decreased from 196 to 101 million m^3 during 1995-2006. Such a decrease resulted that recently water consumption per capita per day amounts only to 82 litres. The increase in resource and maintenance prices, and improved water accounting system resulted in favour for household water consumption sustainability (reduced extraction, depletion and pollution of ground and surface waters (OECD, 2002a) in Lithuania. Household sector consumes nearly 43 % of all water consumed (excluding water demand for energy sector purposes) in Lithuania. And from year 2000 water consumption is quite stable and possibly would increase along with growing economy. Though increase in water consumption is not favourable from the point of sustainability, a slight increase in household water consumption per capita per day until sanitation norms (120 l) are reached still would be acceptable in the case of Lithuania. Of course water extraction and consumption from individually exploited wells should be taken into account as it is not fully represented in the statistics.

Figure. 3. Changes in some drivers of household consumption
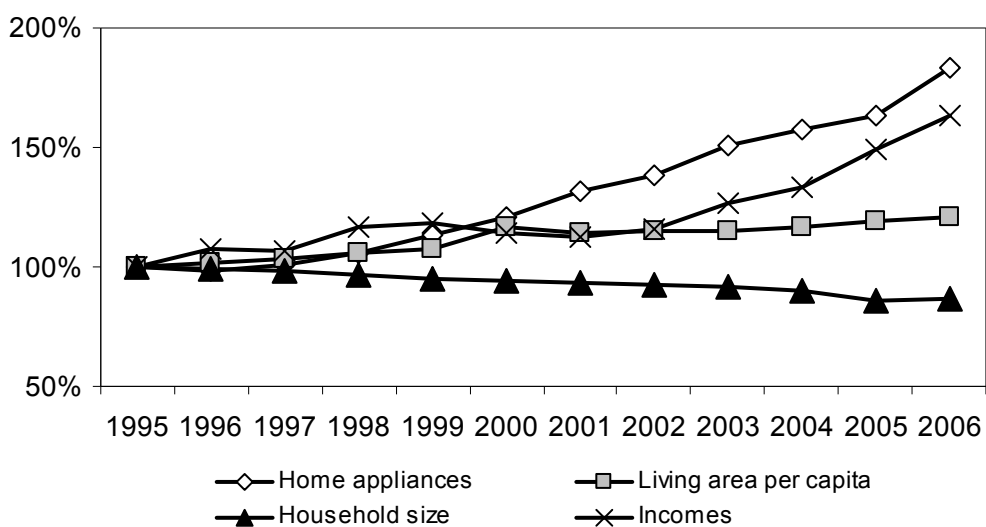
Relatively positive trends are observed in overall household waste generation. Despite recent slight increase by 6 %, the overall household waste generation also dropped by 8 % in absolute terms during the period under analysis. Considering household waste generation, differences in waste classifications and survey methods used should be taken into account. Despite possible inaccuracies, now household waste generation per capita annually in Lithuania is 390 kg and it is less compared to that of about 500 kg/cap (OECD, 2002a) in the Western countries. Still recently waste generation is increasing in household sector especially due the increase of packaging waste and discarded household equipment appliances. These waste generation patterns along with economic growth and spread of consumption culture contribute to establishing unsustainable household consumption in Lithuania as well.

Increasing personal mobility is also one of the challenges for sustainable consumption in Lithuanian household sector. If the share of expenditure for mobility increased by 6 % between 1996 and 2006, the number of personal cars per 1000 inhabitants grew nearly 2.5 times during this period (Fig. 2) and now amounts to 470 per 1000 inhabitants. Though this number is not as high as in EU-15 on average (500 car/1000 inhabitants), fast growth of personal cars ownership and increased personal mobility resulted not only in environmental pressure and drop of public transport volumes by 1.5 times, but also in the increased number of traffic jams, high level of injuries and death in the road accidents. Only in 2006 8252 injuries and 760 deaths were registered.

In conclusion, despite overall decrease of main consumption trends for housing during 1995–2006, recent growth drives Lithuanian households to unsustainable consumption patterns. Households now are responsible for 30 % of final energy and for 43 % of water consumption in Lithuania. Growing final energy demand (especially electricity) and increasing personal mobility are the main challenges mostly contributing to resource consumption and environmental pollution. So the improvement of final consumption efficiency remains one of the main tasks for sustainable development, especially having in mind estimated increase in energy demand and high level of energy dependency from import in Lithuania (Miskinis et al, 2004).

4. Environmentally friendly attitudes and behaviour

For sustainable consumption not only factors like incomes, existing infrastructure and legislation, but also the consumer values and behaviour are of importance.

Transition period and its specific features created possibilities to learn from the best Western practices while keeping the best practices of sustainable consumption inherited from the past. Recent development trends show that despite rapidly changing situation in the labour market and a fast economic growth people still stress the importance of economy and social protection affairs due to experienced economic hardships in the early transition period.

As the results of our survey show the economic growth on average was the most important issue at the national level for the respondents. When ranking personal values (Fig. 4.), the stress was also put on welfare and social security, but not on the education, freedom of speech, cultural identity or environmental protection. This could be explained by still relatively high poverty rate (20.5 %) and high income inequality (S80/S20 income quintile share ratio equals to 6.9) in Lithuania. Growing households' incomes seem to be outweighed by growing prices and high debt rates, and only in couple of last years household incomes per capita exceeded expenditure.

Figure 4. Ranking of personal values (1 – most important, 9 – least important)
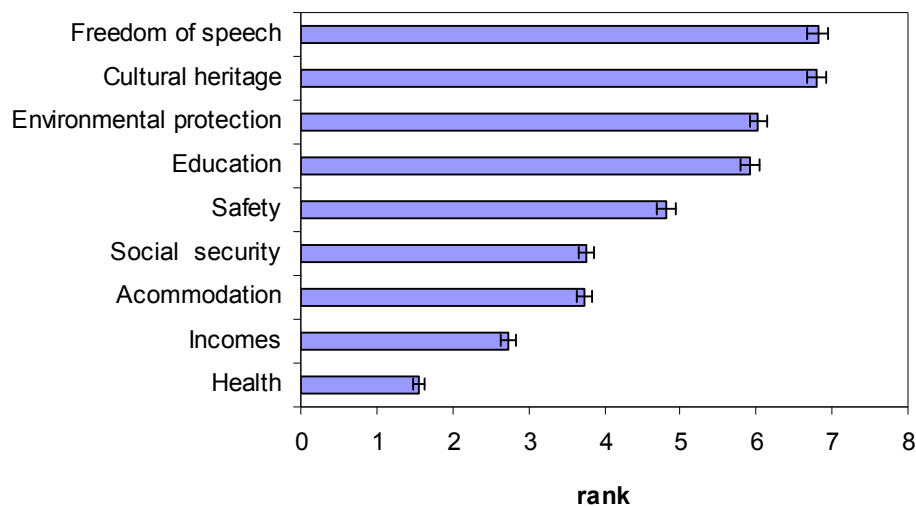
Economic issues were of most important then making decisions and purchasing goods or services (73.2 %) or saving electricity, heat and water (66.5 %). Though more than 55 % of respondents claim to choose eco-product from the same group of products and majority of them are ready to pay up to 10 % of the price more for it, in reality only 13.7 % of respondents pay attention to the environmentally friendly characteristics of the product then purchasing it (Fig. 5). These results correspond highly with the results of V. Liesionis (2006) stating that ecological characteristics of the products have influence on consumer decisions, but they are not the most important ones.

Figure 5. Determinants for purchasing products
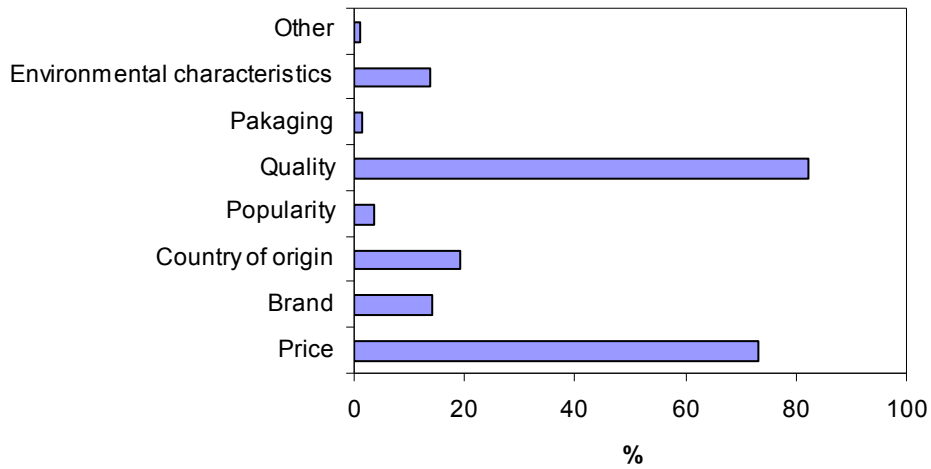
A forthcoming challenge is spreading consumerism and a presumption that growing consumption represents a better quality of life. More than 80 % of respondents of our survey have stated that increasing consumption means a better and higher life quality for them. One of the reasons of this trend could be woeful memories and experiences about limited supply and variety in Soviet times and transitional economic hardships. Today Lithuania still has not reached the levels of consumption in the developed West and still needs economic growth and increasing consumption for everyone to satisfy a certain level of the basic needs. More than a half of respondents declared that in the last five years their consumption increased and the most significant was increase in number of home appliances (81.4 %) (Fig. 6). Still, increase in incomes would lead to the further consumption increase not only for basic (30 %), but also for cultural and social needs of respondents. This correlates highly with presented changes in household expenditure structure. As it was indicated people tend to spend more for leisure and tourism (Fig. 1.).

Figure. 6. Changes in consumption during last five years
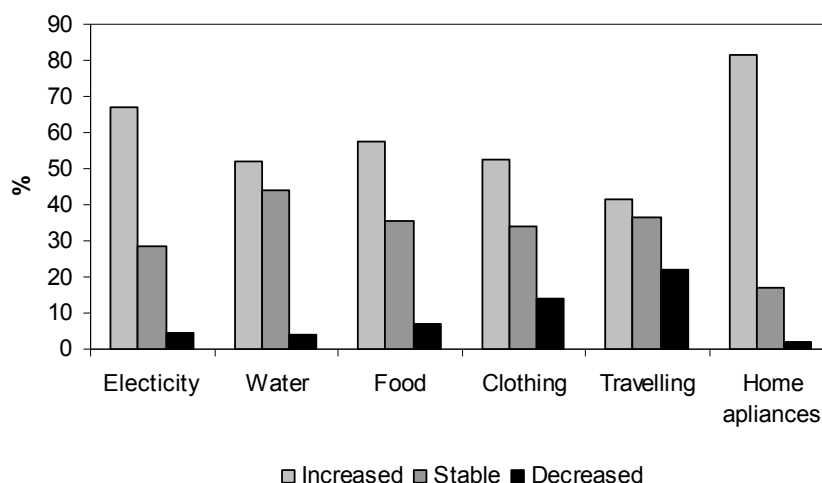
As our study shows respondents not only stress the importance of economical determinants, but also leave the main responsibility for the environmental protection to the government and governmental institutions (74.3 %). On the other hand, the respondents realize the responsibility of their own actions (66.5 %) and claim always or often taking environment into considerations (53 %). Though to express aspirations for environmentally-friendly behaviour into concrete actions consumers need appropriate infrastructure. For example, 27.7 % of respondents of our survey have stated that reliable, punctual and frequent public transport would encourage them to choose public transport for travelling. And even 39.7 % indicated the lack of specific waste containers as the main reason for not separating their household waste.

As survey covers wide range of consumption issues (environmental issues importance, housing, mobility, waste generation, purchasing decisions and so on), the overall scale of consumers' attitudes and behaviour towards environment was constructed (Crombach $\alpha=0.68$). Analysis of interrelationship showed that incomes, age and number of children in the households of the respondents were the main determinants of overall environmentally friendly attitudes and behaviour of respondents (Table 1.).

Table 1. Interrelationship between environmentally friendly attitudes and behaviour and socio-economic factors

Factor	Correlation	
	τ_b	p
Incomes	**0.189**	**0.002**
Age	**-0.225**	**0.000**
Education	0.044	0.46
Children	**0.134**	**0.028**
Household size	0.003	0.96
	c	
Marital status	0.162	0.502
Sex	0.082	0.511
Type of housing	0.207	0.36

Unfortunately, survey results indicated that today majority of respondents would become more environmentally-friendly not because of environmental or sustainability consciousness, but rather because of economic reasons. Respondents with lower incomes seem to have more environmentally friendly lifestyles: travelling less (τ_b =0.171, p<0.05), using public transport (τ_b=0.165, p<0.05), more often saving electricity, water and heat, spending more leisure time at home.

As the results show older respondents tend to spend more time at home; their consumption needs are more or less stable. Due to relative lower incomes older people try to save water, electricity and natural gas more often than younger ones. On the opposite, younger respondents stated increasing consumption, especially for clothing (τ_b=0.245, p<0.05), home appliances (τ_b=0.156, p<0.05) and travelling (τ_b=0.287, p<0.05).

Number of children also influenced the attitudes and behaviour of respondents (τ_b=0.134, p<0.05). Household with relatively higher number of children consumed more electricity (τ_b=-0.188, p<0.05), generate more waste (τ_b=-0.229, p<0.05). And oppositely relatively low number of children positively influenced issues like choosing eco-products or services, saving electricity and water.

It should be mentioned that separate aspects of consumption correlate with socio-economic drivers differently, for example women significantly more often were doing shopping, but not so often were driving a car as men. Therefore dealing with specific consumption issues not only overall socio-economic determinants, but also determinants for separate consumption patterns should be taken into account when choosing the tools and measures for promoting sustainable consumption. In general, along with economical stability much more attention should be paid to reconsideration of system values and to promoting environmentally friendly lifestyles in order to increase environmental consciousness and to reshape consumption behaviour in Lithuania.

5.   Overall conclusions

Household consumption patterns have changed after transitional decline in Lithuania. Though overall consumption trends decreased, from year 2000 final energy, thermal energy and especially electricity consumption is increasing. And further energy consumption in Lithuanian household sector about 4 % per year depending on economy growth rates is estimated (Miskinis et al., 2004). Water consumption and waste generation recently also show slight increasing trends. Together with growing personal mobility these all trends indicate growing environmental pressure from household sector and threaten sustainability goals in Lithuania. Though consumption levels per capita are still lower than in Western countries, Lithuanian consumption patterns are following these unsustainable trends.

Though age, number of children in the household as well as other socio-economic factors should be taken into account then discussing sustainable attitudes and behaviour, survey results indicates that consumption patterns is mostly determined by economical aspects (incomes, prices). So along economic growth and respectively with increasing household incomes consumption possibly will grow, too. Households could reduce their impacts by minimizing resource consumption, by energy and water saving behaviour, and by choosing energy efficient home appliances. In this case, environmental education and information, eco-labelling together with provided infrastructure and appropriate other policy measures could help to increase the environmental consciousness of consumers and reshape consumption to the more sustainable one. The ecological taxations and promotion of "green" energy and lifestyles could be also substantial for the improvement of sustainable consumption patterns (Fuchs and Lorek, 2001; OECD, 2002b; Cohen, 2008). Project of renewed Lithuanian national sustainable development strategy (2007) and development of national action plan for sustainable consumption and production creates possibilities not only to put sustainable consumption to the political agenda, but together with the program of education for sustainable development (2007) to foster environmental consciousness of society in Lithuania.

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Buy or Not to Buy Organic Food? A Case study on Prague's population.[10]

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Abstract

The main objective of this paper is to analyze empirically determinans of organic food consumtion using the data on sample of consumers from Prague (N=350). Specifically, we focus on two questios. First, what factors do influence the switch from non-buying to buying of organic food. Secondly, we look more closely at what constraints, barriers, and other factors cause those who would be otherwise willing to buy not to buy in reality. Conceptually and theoretically, this paper borrows from theory of planned behavior, and from neo-classical theory and methods of stated preferences. The paper proceeds as follows. First we present an overview, albeit not exhaustive, of literature concerning determinants of organic food consumption. Second, based on this review, we develop a set of hypothesises that relate to the two research questions, and we present methodology of our paper. Third, we present results of our analysis. Fourth, we discuss our results and their implications.

1.   Introduction

Household consumption is recognized as one of the key driving forces resulting in increasing environmental burden. Negative impact of food consumption on the environment can be partly reduced by purchasing organic food. Nonetheless, the extent to which consumption of organic food is, *ceteris paribus*, "more environmentally friendly" than consumption of conventional food, is known only partially. For example Stolze et al. (2000) assessed environmental and resource use impacts of organic farming relative to conventional farming systems. The primary source of information for this report was a survey of specialists in 18 European countries using a structured questionnaire. These experts were asked to refer back to their national literature on the subject. The second important source of information used in the report was a literature search in international databases completed by the authors. The indicator categories, such as ecosystem, natural resources, farm input and output, and health and welfare, were evaluated. The review of the relevant literature showed that organic farming performed better than conventional farming in relation to the majority of environmental indicators reviewed. In no indicator category did organic farming show a worse performance when compared with conventional farming.

Consumption of organic food in the Czech Republic has been quite low in comparison to Old EU states, and the Czech organic market has been labeled as emerging market for organic food (CBI 2004). In 2005, for example, average expenditures on organic food per capita amounted only to € 2.65 annually, which was significantly lower than in countries with developed organic food market such as

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Austria (€73), Germany (€ 54), Italy (€ 42), Great Britain (€ 39), or France (€37). Nonetheless, organic market has been growing very fast in the Czech Republic recently. In 2006, the reference year of this study, the organic market grew by 49%. However, expenditures of households on organic food represented still only 0.35% of all expenditures on food. Moreover, imported organic food represented 56% of all organic food consumed (see Václavík, 2007). According to a consumer survey conducted in 2006, only 3% of Czechs bought organic food regularly, while another 25% bought organic food irregularly. According to public opinion research conducted just recenlty by CVVM (2008), only 1% of Czechs buys organic food always, and another 11% buy organic food often. Czech consumers have identified lack of information about organic food as the main barrier to consumption of organic food (32% of respondents). Indeed, some 46% of Czechs have claimed that they did not know organic food. Other important barriers include higher prices (indicated by 31% of respondents), and availability of organic food on the market (19% of respondents) (see Póč, 2006).

Up to now, we have still relatively little information about factors that ifluence organic purchase desion of Czech consumers. In fact, beyond descriptive statistics (see Póč 2007, Václavík 2007, CVVM 2008), there is only a few studies that use the same data set as we use in this stude (see Urban a Ščasný 2007, Nevečeřalová 2006). A larger survey that would look more in depth at organic purchase decisions in the Czech Republic is still missing.

2. Literature review

Now we proceed to an overview of existing empirical evidence concerning determinants of organic food consumption, that has been gathered so far. Although this overview is by no means exhaustive, it can provide necessary starting point for our empirical study. To structure our task somewhat, we follow Stern (2000) in that we group variables that influence organic food consumption into four major types: attitudinal factors, contextual forces, personal capabilities, and habits. We will follow this typology in order to summarize factors influencing purchase of organic food. Further, we add also a fifth category of socioeconomic and demographic variables into this typology. Although this group of variables can be thought of as a proxy for other characteristics of buyers (lifestyles, capabilities, life-cycle etc.) and as such it can be often explained ou by other variables, sociodemographic variables are often used to explain consumption of organic food.[12]

2.1 Socioeconomic and demographic variables

Most studies report that "being female" positively affects purchase of organic food (Boccaletti, 2006; Rimal, 2005; Loureiro et al., 2001; Underhill and Figueroa, 1996). Moreover, Underhill and Figueroa (1996) have found that gender in interaction with knowledge about organic food has a positive effect of buying of organic food meaning that information has a greater positive effect on females than on males in terms of buying.

Empirical studies have often found negative effect of age on probability of buying of organic food (Boccaletti, 2006; Rimal, 2005; Wier and Calverley, 2002; Underhill and Figueroa, 1996). Further, families with children have been often found to have higher probability of buying organic food (Loureiro et al., 2001; Thompson et al., 1998; Davies et al., 1995). Loureiro et al. (2001) have observed that family size had a significant negative effect on the probability of choosing organic apples.[13] On the other hand, Verhoef (2005), and O´Donovan and McCarthy (2002) have found no significant effect of household size on purchase of organic food.

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[12] Importantly, internal dynamics of within-household bargaining between household members concerning purchase of organic food for the household is neglected in the literature. It is questionable to what degree can be intra-household bargaining captured by normative variables.

[13] Although family size and the presence of children under 18 were correlated, the latter variable added some explanatory power in this study.

As to the effect of education, the results are mixed. Several studies conducted in the U.S. have suggested negative effect of education on purchase of organic food (Byrne et al., 1991; Thompson et al., 1998).[14] A propos this relationship, Govindasamy and Italia (1999) suggested that less-educated consumers may exaggerate true risks of pesticide use, and/or higher educated respondents may have higher confidence in safety standards of conventional produce. On the other hand, surveys conducted in Europe and Canada have found often a positive correlation between higher education levels and increasing likelihood of purchasing organic products (Wandel and Bugge, 1997; O´Donovan and McCarthy, 2002;).

Influence of income variables is somewhat unclear as well. Some studies document that household income has positive impact on the purchase of organic food (Rimal, 2005) and that households with middle and higher incomes are more likely to purchase organic food (Verhoef, 2005; Wier and Calverley, 2002;). On the other hand, Thompson et al. (1998) and Zepeda and Li (2007) found that household income does not have necesarilly significant effect on organic food purchase. Generally, however, willingness to pay price premium for organic food has been shown to rise with income (Stevens-Garmon et al., 2007; Govindasamy and Italia, 1999).

Some of the sociodemographic variables might be proxies for lifestyle profiling that has been noticed in case of organic food consumption (Sanjuan et al., 2003; Williams and Hammitt, 2000), while in other cases, sociodemographic variables are proxies for attitudinal factors, or personal capabilities.

2.2   Personal capabilities

Personal capabilities include knowledge and skills, availability of time to act, general capabilities, and resources such money, power and social status. Sociodemographic variables may be indicators of personal capabilities. An important capability variable is knowledge related to organic food. Many organic consumers identify organic products based on the organic logos and/or labels attached to the product. Several studies (e.g., Chang and Kinnucan, 1991; Mathios, 1998; Kim et al., 1999; Wessels et al., 1999; Øystein et al., 2002; Zepeda and Li 2007) have found positive relationship between consumer purchase decisions and organic product labeling. Moreover, consumers often perceive presence of an organic label as assurance that the product is organic (Wessels et al., 1999; Øystein et al., 2002). Another set of capabilities would consist of capacity to overcome obstacles associated often with organic food purchase (such as availability and assortment limitations, higher prices etc.). Further, as theory of planned behavior and other theories conceptually based on it, suggest, perceived constraints have effect both on intention to perform behavior, and on enactment of actual behavior.

2.3   Attitudinal factors

Attitudinal factors in broader sense include norms, beliefs, values and intentions. Both environmental concerns and health concersn have been found to have positive effect on the purchase of organic food. Wier and Calverley (2002) argued, based on existing literature concerning European consumers, that most studies showed that consumers primarily bought organic food because of health considerations. Further, Tarkiainen and Sundqvist (2005) tested the extension of the theory of planned behavior (TPB) in an organic food buying context by applying SEM, and found that intentions to buy organic food can be predicted by attitudes, which, in turn, can be predicted by subjective norms. In addition, they have found that behavioral intentions reliably predict self-reported behavior.

We include into this category of factors broadly termed as attitudinal factors also perceived social norms (as conceptualized e.g. in theory of planned behavior – see Ajzen 1991). Interestingly, influence of perceived social norms on organic food purchase has been largely neglected in spite of the fact that intra-household bargaining between household members may influence buying of organic food.

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[14] We are aware of only one study conducted in the U.S. that reported positive effect of education on probability of organic food purchase (Zepeda and Li, 2007).

Similar, although not identical to attitudes *per se*, are emotions. Emotions have been shown to influence purchasing of organic meat (Verhoe, 2005). Concern about health effects of eating of conventional meat, as well as empathy towards animals have had positive effect on choice of organic meat. However, the two factors did not have any effect on meat purchase frequency, while guilt had weakly significant and negative effect on meat purchase frequency.

2.4   Contextual factors

Contextual forces include interpersonal influences, governmental regulations, monetary incentives and costs, capabilities and constraints provided by technology and the build environment, and various other features of the broad social, economic, and political context (Stern, 2000). Results of a cross-cultural study of organic food consumption in Denmark and New Zealand (Squires et al., 2001) have indicated that level of organic market development has influence on what factors influence organic food consumption. Particularly, the study has found that environmentally-related variables do have more effect on developed organic markets, while health-related factors are more influential on less developed organic markets. One would have found that (e.g. environmental vs. health-related attitudes) priority of factors influencing the quantity of organic foods people consume might be related to the level of organic market development.

2.5   Habit

Habit or routine is a distinct type of causal variable. Behavior change often requires breaking old habits and establishing new ones (Dahlstrand and Biel, 1997). Thogersen and Ölander (2006) have argued that because of ease of repeating past choices (including purchase repetitions), established ways of acting may function as a barrier for new ways of behavior (e.g. purchase of organic food). Thus, past purchase habits may become a barrier for organic products.

3.   Methodology and hypotheses

As we have previously stated, our goal is twofold. First, we would like to analyze factors that have influence on buying vs. non-buying switch related to organic food. Second, we want to analyze barriers that cause people with buying intention that they do not buy organic food in reality.

a) To answer the first question, we build a set of hypothesis based on literature review presented earlier. Specifically, we use attitudinal variables, personal capability variables, and socioeconomic and demographic variables to predict buying/ non-buying switch. The hypothesis are as follows (for variable description see appendix):

H1: Presence of small children (*kids06*), and/or older children (*kids618*) has positive effect of probability of buying organic food.

H2: Housold income (*hinc*), and/or household income per household member (*hincstd*) has positive effect of probability of buying organic food.

H3: Being male (*male*) lowers probability of buying organic food.

H4: College education (*college*) and highschool education (*highschool*) have positive effect on probability of buying organic food.

H5: Attitudes related to the environment – i.e. cognition of environmental problems (*fact_ev_cogn*), verbal pro-environmental attitudes (*fac_ev_at*), pro-environmental attitudes revealed in behavior (*fac_ecoactivist*) – increase probability of buying organic food.

H6: Attitudes related to health-effects of organic food (*bio_health*) increase probability of buying organic food.

H7: Perceived social pressures – i.e. from partner (*soc_partner*), mother (*soc_mother*), father (*soc_father*), children (*soc_kids*), friend (*soc_friends*) – to buy organic food, increase probability of buying organic food.

H8: Knowledge of organic logo (*knw_rightlogo*), and/or knowledge of the fact that such a logo exists (*knw_existlogo*) increases probability of buying organic food.

H9: Perceived barirers to organic food consumption – i.e. perceived problems with availability of organic food on the market (*bar_available*), and/or perceived problems with sufficient assortment of organic food on the market – decrease probability of buying organic food.

In order to test these hypothesis about influence of the factors on buying of organic food, we run binary logistic regression. In the model, the dependent variable takes on two values 0 (for non-buying), and 1 (for buying). The logit of probability of buying organic food is then linear combination of explanatory variables,

$$\text{logit}[\pi(X)] = \alpha + \beta X \qquad (1)$$

where X is vector of explanatory variables, α is a constant, and β is a vector of estimated coefficients. Further, we use ML method to estimate the models. Results are reported in the following section.

b) To answer the second question, what are barriers that prevent people from buying organic food in spite of their buying intntion, we borrow conceptually from the theory of planned behavior (see Ajzen 1991 for its classical formulation). Specifically look at the relationship between behavioral intention (proxy is stated marginal willingness to pay for currently consumed basked of food if it was 100% in organic quality), and behavior (real mothly expenditures on organic food).

Combining information about respondents stated (marginal willingness to purchase, WTP) and revealed (expenditures) preferences, we can arrive at four possible combinations:

(i) stated WTP is zero but expenditures are positive: here we have a consumer that is saturated in that s/he perceives his/her "organic" basket as optimal.

(ii) stated WTP is zero and expenditures are also zero: the consumer behaves consistently and does not buy any organic food because it does not increase his utility.

(iii) stated WTP is positive but expenditures are zero: this is actually the most interesting category, for such a respondent would actually spend money on organic food if certain barriers were removed (unit price would decrease, the buyer would have better knowledge of organic food, or organic food would be more easily available and in sufficient assortment etc.).

(iv) stated WTP is positive and expenditures on organic food are also positive: this respondent also behaves consistently.

Apart from looking at proportion of each type of the consumers, we might be also interested in knowing which factors do, apart from behavioral intention (stated WTP), have influence on actual expenditures on organic food.

Specifically, we are interested in the role of the following factors: available financial resources, knowledge of organic logo, and availability of the organic products. We propose following set of hypotheses:

H10: Household income (*hincome*) has positive effect on actual expenditures on organic food when controlling for stated WTP for organic food.

H11: Knowledge of existence of organic logo (*knw_exist*), and/or knowledge of the organic logo (*knw_right*) has positive effect on actual expenditures on organic food when controlling for stated WTP for organic food.

H12: Insuficcient availability of organic food (as indicated by proxy of perceived insuficient availability – *bar_avai*) will have negative effect on actual expenditures on organic food when controlling for stated WTP for organic food.

To test the hypothesis, we run two linear regression models specified as:

$$y = \alpha + \beta X \qquad (2)$$

where y is dependent variable, X is vector of explanatory variables, α is a constant, and β is a vector of estimated coefficients. Further, we use ML methd to estimate the models. We run two models, one that explains intention (stated WTP), and the other that explains actual expendtures. The models are interlinked through intention (WTP) that is dependent variable in one model, but independent variable in the other. Results are reported in the following section.

4.   Results

The data were collected from May to September 2006 using standardized structured interviews.[15] The survey targeted population of Prague aged 18 to 65. Quota sampling has been used to get small (N=351), yet representative sample of Prague's population using quotas for age, gender, education and living area within Prague. In the sample, there were 47% of males. Around 13% of respondents lived in the city center (Prague 1 to 3), 52% lived in larger city center (Prague 4 to 10) and 32 % lived on the outskirts (Prague 11 to 22). There were 14% of respondents in the sample who reported only elementary level of education, other 29% attended only technical schools without state leaving exam, 39 % reported high-school degree (maturita) and some 18 % reported university degree. Other socioeconomic and demographic characteristics of the sample are displayed in the appendix.

Importantly, only those respondents who had "significant" experience with purchase of food (i.e. were buying at least 25% of groceries for the household) were included in the sample).[16]

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[15] The data were collected through classical P&P, face-to-face standardized interviews. Order of the questions in the questionnaire has not been randomized. First, information about actual purchase of conventional and organic food was gathered. Next, stated WTP for organic food was elicited. Finally, attitudinal and socioeconomic information about respondents and their households was collected.

[16] This might have surely weakened the representativeness of the sample for the population of Prague but as far as we are aware there is no statistical data that would allow us to construct sampling frame for quota sampling of respondents who have significant experience with purchase of food for their household. For this reason we assume that that there is no relationship between "purchasing experience" and quota variables. However, in reality, especially gender might be associated with the actual purchasing of food for the household.

In order to corroborate the data, we compared socio-economic and demographic characteristics of the sample (for details see the appendix) with those of the target population. The χ^2 test shows that the structure of the sample is similar in terms of quota characteristics to the one of Prague's population according to the data from national census (CSO, 2003). Indeed, our sample is not statistically different from the target population in terms of household income groups (CSO, 2007). However, we found that our sample differes significantly in terms of personal income. Indeed, we found that respondent in our sample had higher food expenditures than the target population (CSO, 2006). Especially expenditures on diary products, cheese and eggs were biased significantly upward. This means, above all, that the sample should not be used to provide infer levels of food consumption in the target population. However, results of corroboration of our data do not suggest that the sample cannot be used to infer trends in the population, or relationships between variables characterising the population.

Most of respondents (96%, 337 respondents) stated that they have already heard about organic food. However, only 60% of respondents (211 respondents) knew that there exists official organic food label. Indeed, only 18% of respondents (64 respondents) identified correct organic food logo.

Interestingly, 51% of our respondents (180 respondents) stated, their household bought organic food within the past 6 months. Households' monthly expenditures for organic food for those households that buy organic food are displayed in the table bellow. Non-parametric lower-bound estimate of mean equals to 7.2€ per month.

Table 4: Monthly expenditures of households on organic food

	Freq.	Rel. freq. [%]
1 – 99 CZK (3.3 €)	62	34.1
100 - 499 CZK (16.6 €)	85	46.7
500 - 999 CZK (33.3 €)	21	11.5
1000 - 1999 CZK (66.6 €)	8	4.4
2000 CZK + (66.6 €+)	6	3.3
Total	**182**	**100**

Now we can proceed to the hypotheses testing. The results of estimation of the logit model for the binary switch between buying and non-buying of organic food are displayed in the table bellow. Model 1 is a model with socioeconomic and demographic variables only.[17] Model 2 is a model from which we have removed those sociodemographic variables that were insignificant in the previous model, and we added there some"soft" variables. Loking at the two models, we can see that soft variables can explain out most of the effects of socioeconomic variables. Indeed, we see that adding "soft" variables in the model increased signficantly predictive power of the model.

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[17] We did not include age, because age correlated with education in our sample, causing thus problems with collinearity.

Table 5: Buying of organic food (binary logistic regression, unstandardized coefficients)

Variables	Model 1			Model 2		
	B	S.E.	Sig.	B	S.E.	Sig.
hhsize	0.459	0.215	*	0.119	0.131	
kids06	1.025	0.545	#	0.362	0.650	
kids618	1.165	0.467	*	0.287	0.542	
hincstd	0,341	0,161	*	0,086	0,092	
hinc	-0,105	0,065				
male	-0.319	0.253				
single	0.098	0.264				
college	0.829	0.358	*	0.573	0.434	
highschool	0.509	0.285	#	0.061	0.333	
fact_ev_cogn				0.274	0.161	#
fac_ev_at				0.664	0.179	***
fac_ecoactivist				-0.173	0.138	
bio_health				0.932	0.308	**
soc_partner				0.119	0.032	***
soc_mother				-0.091	0.046	#
soc_father				0.102	0.054	#
soc_kids				0.009	0.038	
soc_friends				0.057	0.043	
knw_rightlogo				0.572	0.444	
knw_existlogo				0.965	0.327	**
bar_available				0.270	0.323	
bar_sortiment				0.436	0.404	
Constant	-1.820	0.638		-2.105	0.615	
Log likelihood	-203.440			-153.850		
Cox and Snell R2	0.089			0.323		
Negelkerke R2	0.119			0.430		

Sig. Level of significance: # $p < 0.001$;*** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.

Based on the model estimates, we can partially confirm H1: presence of children in the household increases probability of buying organic food (model 1), but this effect becomes insignificant when we introduce soft variables. We can also partially confirm H2: per capita household income increases probability of buying organic food. Importantly, overall hosehold income is insignificant predictor. Again, income effect dissapears as soon as we put soft variables in the model. Further, we can reject H3: being male has no effect on buying of organic food. In contrast, education has significant effect on purchase of organic food but only for the highest level of education. Thus we can partially confirm hypothesis H4. In addition, we have found that household size has positive effect on buying of organic food in the first model.[18]

Now we get to the soft variables. Here we can mostly confirm H5: both pro-environmental atttitudes and environmental cognition have positive significant effect. Interestingly, enacted pro-environmental attitudes do not have significant effect on probability of buying of organic food. On the other hand, H6 can be confirmed: positive attitudes towards health impacts of organic food have positive significant effect on probability of buying of organic food.

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[18] We have not found any support or explanation for this fact in the literature. However, we are grateful to Marton Herczeg who suggested to us that positive effect of household size might be explained by lower marginal costs of food preparation in terms of time spent on food preparation per additional household member. However, we are not able to test the hypothesis with the present data.

Interesting part of our analysis comes with social norms. We see that H7 can be confirmed for social influence of the partner, and parents, but not for children, or friends. Also interesting are results for knowledge of organic logo (H8): while knowledge of the organic logo is insignificant, mere awarenes of the existence of organic logo increases probability of buying organic food. Quite surprising is the result for factors indicating percieved barries (H9). We have to reject the hypothesis: perceived insuficient availability and perveyed insufficient assortment do not have any significant effect on probability of buying organic food.

This brings us to the second part of the results that seeks to answer the question what factors are responsible for the discrepancy between purchase intention and purchase behavior. The table below illustrates the problem.

Table 6: Cross table of WTP for organic food and actual expenditures on organic food (counts and adj. res.)

			Bought		Total
			NO	YES	
WTP for org. food [CZK]	0	Count	56	26	82
		Adj. res.	3.95	-3.95	
	1-499 (16.6 €)	Count	47	35	82
		Adj. res.	1.68	-1.68	
	500-999 (33.3 €)	Count	33	44	77
		Adj. res.	-1.25	1.25	
	1000-1999(66.6 €)	Count	26	52	78
		Adj. res.	-3.16	3.16	
	2000+ (66.6 € +)	Count	13	24	37
		Adj. res.	-1.80	1.80	
Total		Count	175	181	356

The first thing that we notice is that non-buyers do generally exhibit lower stated WTP, which is intuitively correct result. Only 7% of respondents who are buying organic food stated zero WTP (group (i)). As we have said, according to economic theory, these respondents should be saturated by currently consumed basked of organic food. Another 15% of respondents do not buy organic food and stated zero WTP (group (ii)). These respondents behave consistently in that they do no prefer to consume organic food and they, in fact, consume none. Importantly, we have some 33% of respondents who do not buy any organic food but stated that they would be willing to buy some (iii). Fraction of them might have exhibit "warm glow effect", but remaining respondents in this group are those that would start buying organic food, should some of the barriers be removed. Lastly, we have respondent who are buying organic food and who state positive WTP (group (iv)). Also these respondents behave consistently. But still, even in their case, the question might be whether marginal stated and revealed WTP of these respondents is simmilar, and if not, what factors do cause the discrepancy.

To uncover factors that are responsible for discrepancy between purchase intention and purchase behavior, we could proceed to estimates of two models represented in the following path diagram.

Fig. 1: Path diagram (standardized regression coefficients)
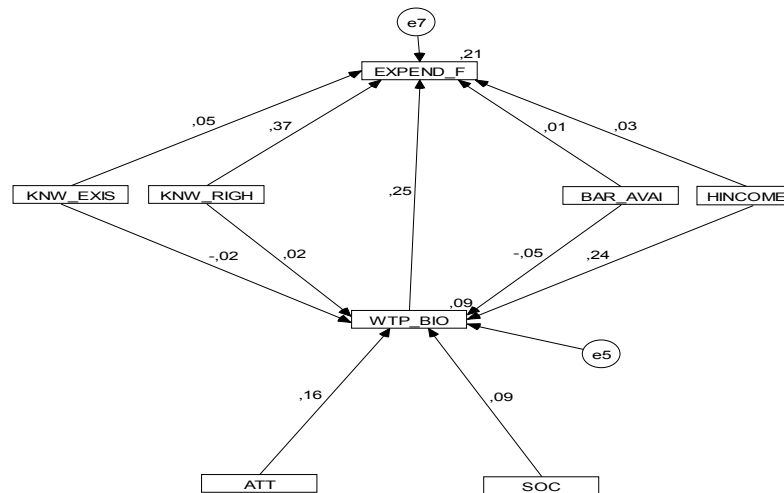
The first model explains behavioral intention, here indicated by stated WTP to pay extra for currently demanded food basket if it was in organic quality. The second model explains monthly expanditures of the household on organic food. The models are interlinked by the influence of the intention of the behavior.

Looking at the estimates, we can confirm H11: knowledge of the existence of organic logo and knowledge of the right logo have significant effect on expenditures when controlling for intention. However, knowledge of the right logo is stronger predictor. In fact, it is the most influential predictor of purchase behavior.

H12 cannot be confirmed: perceived availability barriers do have significant negative effect on purchase intention but its effect actual expenditures is minimal. Importantly, we can also reject H10: financial resources available for the household do have positive significant influence on intention, but its effect on purchase behavior is negligible.

5.   Discussion

The present study provides first, albeit very limited insight into factors that have impact on purchase of organic food in the Czech Republic. The size of the sample and the fact that the sample is representative only for the population of capital Prague should warn us against bold generalization. However, since we do not have any similar results for the Czech Republic, we would like to re-iterate some of its most important findings.

First, we have found that soft variables, such as attitudinal and normative characteristics of respondents, do explain out influence of "hard" sociodemographic and economic variables. Specifically, we have found that environmental attitudes, health-related attitudes, perceived social norms, and knowledge of the existence of organic logo do predict binary switch to purchasing of organic food quite well.

Second, there is significant discrepancy between intention to buy organic food and actual purchase behavior. Roughly one third of the target population might be willing to pay for organic food, but in reality does not buy organic food due different types of barriers.

Third, the single most important barrier to purchase of organic of food is poor knowledge of the right organic logo. On the other hand, perceived insuficient availability does have only minimal effect on actual expenditures on organic food when controling for purchase intention.

If we were to suggest one and only one measure that would promote consumption of organic food in the target region and population, it would certainly be dissemination of information about organic food, and especially about organic food labeling. On the other hand, results suggest that removing other barriers (i.e. insufficient assortment, availability, price) would have relatively less impact under present conditions.

For policy purpose, it is also important to stress that impact of information campaigns might be exponential due to the fact that social factors do, indeed, influence buying of organic food. Thus information campaing might address the audience in its double role of buyers and those who have influence on buyers.

Further, it seems that it would be economical to target with the informational campaign particular segments of population that have relatively more unfavorable attitudes and perceived social norms towards the organic food. Among these, smaller households, households with lower per capita incomes, males, and consumers with lower education should be prioratized.

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Appendix 1: Characteristics of the sample and target population

	Sample (Abs.)	Sample (Rel.)	CSO 2003 (Prague) (Rel.)
WHOLE SAMPLE	351	100	
GENDER			
male	166	47.3	47.8
female	185	52.7	52.2
AGE			
15-34	138	41.9	36.9
35-54	106	32.2	34.7
55-74	85	25.8	28.4
EDUCATION			
element. +technical	133,0	40	43.5
highschool	135,0	40.6	35.7
university	64,0	19.3	18.8
AREA OF PRAGUE			
P 1-3	44	13	13
P 4-10	181	53.6	53
P 11-22	113	33.4	34
NET PERSONAL MONTHLY INCOME			**CSO 2007 (Prague)**
0-5,500 CZK (0-183,3 €)	66	20.6	9
5,501-7000 (183,4-233,3 €)	24	7.5	5.3
7,001-8,500 (233,4-283,3 €)	25	7.8	14.8
8,501-10,000 (283,4-333,3 €)	45	14.1	8.9
10,501-13,000 (333,4-433,3 €)	36	11.3	14.9
13,001-15,500 (433,4-516,6 €)	37	11.6	11
15,501-18,000 (516,7-600 €)	29	9.1	9
18,001-24,000 (600,03-800 €)	26	8.1	14.3
24,001-35,000 (800,03-1166,6 €)	20	6.3	8.4
35,001 and more (1166,7 € and more)	12	3.8	4.4
NET HOUSEHOLD MONTHLY INCOME			**CSO 2007 (Prague)**
0-9.000 CZK (0-300 €)	24	7.7	13
9,001-13,000 (300,03-433,3 €)	27	8.7	8.8
13,001-15,500 (433,4-516,6 €)	28	9	9.8
15,501-18,000 (516,7-600 €)	32	10.3	9.7
18,001-23,000 (600,03-766,6 €)	47	15.1	10.8
23,001-29,000 (766,7-966,6 €)	45	14.5	15.9
29,001-35,000 (966,7-1166,6 €)	39	12.5	9.6
35,001-45,000 (1166,7-1500 €)	35	11.3	12
45,001-55,000 (1500,03-1833,3 €)	20	6.4	4.8
55,001 and more (1833,4 € and more)	14	4.5	5.5

EXPENDITURES ON FOOD	Abs. (CZK)	(€)	Abs. CSO 2006 (CZ)
All	4137	137.9	3,377 (112.6€) [19]
Diary products	327	10.9	108 (3.6€)
Cheese	525	17.5	225 (7.5€)
Fruit and vegetables	732	24.4	520 17.3€)
Meat	979	32.6	929 (31€)
Eggs	130	4.3	52 (1.7€)

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[19] For Prague only: 3,823 CZK (127.4€).

Appendix 2: Description of variables used

Variable	Description	Type	N	Mean	S.D.
bought	1 = if the household has bought organic food over the last 6 months	dummy	356	0.508	0.501
hhsize	Number of household members living in the household	continuous	355	2.614	1.193
kids06	1 = if there are any children aged 0-6 in the household	dummy	356	0.070	0.256
kids618	1 = if there are any children aged 6-18 in the household	dummy	356	0.101	0.302
hincstd	Net monthly household income per household member/ 1 000 €	continuous	315	0.357	0.187
hinc	Net monthly household income/ 1 000 €	continuous	316	0.86	0.508
male	1 = if respondent is male	dummy	356	0.472	0.500
single	1 = if respondent is single	dummy	356	0.402	0.491
college	1 = if respondent has college education or higher	dummy	356	0.185	0.389
highschool	1 = if respondent has high school education	dummy	356	0.388	0.488
fact_ev_cogn	Principal comp. anal. score for cognition of environmental problems	continuous	356	0.000	1.000
fac_ev_at	Principal comp. anal. score for attitudes towards the environment	continuous	356	0.000	1.000
fac_ecoactivist	Principal comp. anal. score for environmental activism	continuous	356	0.000	1.000
bio_health	1 = if (s)he thinks that organic food is healthier than conventional food	dummy	356	0.416	0.494
soc_partner	(-10,10); where 10 = respondent perceives xx's social influence	summed score	356	2.197	5.192
soc_mother	(-10,10); where 10 = respondent perceives xx's social influence	summed score	355	0.834	4.135
soc_father	(-10,10); where 10 = respondent perceives xx's social influence	summed score	353	-0.513	3.229
soc_kids	(-10,10); where 10 = respondent perceives xx's social influence	summed score	355	0.682	4.195
soc_friends	(-10,10); where 10 = respondent perceives xx's social influence	summed score	355	0.166	3.578
knw_rightlogo	1 = if respondents knows the right organic logo	dummy	356	0.180	0.385
knw_existlogo	1 = if respondent knows that organic logo exists	dummy	356	0.593	0.492
bar_available	1 = if important barrier to purchase org. food is product availability	dummy	356	0.360	0.481
bar_sortiment	1 = if important barrier to purchase org. food is product assortment	dummy	356	0.199	0.400
wtp_bio	household's monthly WTP for organic food (midpoints)/100 €	continuous	309	0.281	0.312
expend_bio	household's monthly expenditures on organic food (midpoints)	continuous	356	6.283	13.719
att	(-5,5); 5 = if respondent has favorable attitudes towards organic food	summed score	356	1.135	1.459
soc	(-20, 20); Summed score (soc_partner+soc_kids)	continuous	365	2.901	7.323

<div align="right">Chapter 6</div>

Alternative Agro-Food Networks in Hungary
Policy environment and socio-historical context

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Abstract

This paper is the first attempt to summarise the regulatory context of „alternative agri-food networks" (AAFNs) in Hungary looking at how various policies and regulatory frameworks on the national level shape or limit AAFN-s' development. The policy analysis extended to different stakeholders' perspectives, representative statements on alternative production processes linked to quality, territorial origins and ecological advantages of food. The literature review revealed that the development of fragile and ambiguous AAFN-s is being shaped by a politically contested terrain with conflicting interests around CAP, hygienic regulations and trading laws. While successfully retains as much funds as possible for the country, the national-level application of the CAP basically marginalises environmental concerns, alternative agriculture and regional development strategies. Rather than accommodate smallholder agriculture, hygiene regulations aim to ensure a maximum level of food safety, whereas trading laws impose a requirement to provide invoices for any sale. This suggests that the emergence, self-organisation and further development of AAFNs may easily be blocked by the current regulatory contexts, institutional arrangements and problem perception of various stakeholders.

1.   Introduction – what are AAFNs?

Alternative agro-food networks (AAFNs) are characterised by economic relations, which differ from market relations most importantly by the social cooperation or partnership among producers, among consumers, and between those two groups. Producers enjoy economic independence from the mainstream agri-industrial system, as a basis for production methods, which may be more benign in the social, economic and/or environmental senses. At the same time, consumers commit to active citizenship valorising food products and production as a political-ethical commitment. They both strive for public goods such as social justice or solidarity between producers-consumers, environmental improvement via alternative production methods, regional development via local economic benefits and local heritage. Through these fragile and ambiguous extra-economic characteristics AAFNs promote alternative products and production processes, linked to quality, territorial origins and ecological advantages of food. AAFNs can take various forms, including sustainable public food systems, consumers as producers (e.g. community gardens), producer-consumer partnerships (e.g. community-supported agriculture), direct marketing (e.g. farmers' markets, regular box schemes) and agro-eco-tourism (Levidow, 2008).

The paper will analyse how current policies facilitate or impede the development of AAFNs in Hungary. Beyond national applications of CAP the paper will also provide a preliminary overview of how other relevant policies, such as trading laws (i.e. taxing regulations and special exemptions for smallholders) as well as health and safety, food hygiene, and sanitary regulations for on-farm direct marketing may facilitate, impede or shape AAFNs, sometimes revealing the discrepancies between the national system and EU policies. The findings presented are based on literature review drawing on

different stakeholders' perspectives (i.e. official governmental discourse, academic research, small-scale family farmers' opinion, civil society organisations' and conscious consumer and citizen-based groups' statements).

The results of the policy analysis are coming from the EU FP7 project entitled „Facilitating Alternative Agro-Food Networks: Stakeholder Perspectives on Research Needs (2008-2010)" which is designed in terms of engaging civil society organisations (CSOs) in a "co-operative research" activity and in future research agenda setting on AAFNs[20]. Hungarian members of the 5 country cooperative research consortium are the Environmental Social Science Research Group at the Szent István University of Gödöllő as the academic actor and Protect the Future (Védegylet) as the CSO partner. In the project's second phase, field research and interviews will be carried out to refute, validate or clarify findings based on the literature review. Additionally, the comparative analyses of legislation from participating countries will shed light on the exact requirements made at the European level and identify the areas where national governments do have a leaway for introducing agricultural policies that facilitate the development of alternative agro-food systems. These clarifications and the positive practices implemented in other EU countries will constitute a powerful lobbying tool in Hungary in demanding a fair legislation that takes into consideration the needs of proximity, local agricultural and food systems (Karner et al., 2008).

2.   Socio-historical context of AAFNs in Hungary

Alternative Agro-Food Networks as such constitute a relatively new issue in Hungary. There exist no databases on such networks nor studies, whether minimal or extensive, that would provide an insight into the factors influencing the creation, functioning, failures and successes of such initiatives. The initiatives are confronted with Hungarian and CEE specific challenges linked to the particular social, economic and cultural context of the region. During the state socialist period the process of forced collectivization and economic centralization has contributed to the loss of farmers' skills in managing the "marketing" side of agricultural activities and the direct contact with consumers. The sudden introduction of extremely strict processing and direct marketing rules following accession to the European Union exacerbated this trend as many farmers have chosen to sell their unprocessed produce to large-scale retailers and supermarkets rather than transforming their products and develop direct links with individual or groups of consumers. Others still market their products on farmers markets, but they have not managed to develop alternative distribution channels, which might maintain a partnership and solidarity with consumers, while ensuring a better livelihood through increased stability and financial security.

In Hungary, as in most parts of Central and Eastern Europe, where citizen participation is relatively limited the existence of alternative networks is key in making alternative food products and processes a reality. Consequently, alternative consumption habits may exist at the individual level, for instance, an increasing number of people will choose to buy organic vegetables or purchase fair trade coffee, but their motivation is highly individualistic and can only partly qualify as an attitude of "active citizenship".

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[20] This project is funded by the EC within FP7, Science in Society: Area 5.1.2.1. Developing governance on science-related questions, SiS-2007-1.2.1.2 – Co-operative Research Processes. Coordinated by IFZ - Inter-University Research Centre on Technology, Work and Culture, Austria, Partners: Via Campesina Austria, Open University Milton Keynes - Faculty of Technology, UK, GeneWatch UK, Szent István University - Environmental Social Science Research Group, Hungary; Védegylet - Protect the Future, Hungary, Agrocampus Rennes - Rural Economy and Public Policy Department, France, FRCIVAM - Fédération Régionale de Bretagne des Centres d'Initiatives pour Valoriser l'Agriculture et le Milieu Rural, France, Nicolaus Copernicus University - Institute of Sociology, Poland, Polish Rural Forum, Poland. Duration: 2008-2010.

Moreover, given the relatively low levels of income[21] customers are not always in a position to afford organic products (often considered a "luxury"), nor make a long term commitment for regular purchase of larger quantities from a farmer. In the case of "organic box schemes", as there is a strong market tradition, people are simply not used to receiving "surprises" in their baskets and not having the possibility to touch and choose the desired product. In addition, these initiatives require a critical level of collective self-organisation, which has been discredited during the communist period.

Nevertheless, several factors have positively influenced the emergence of AAFNs. There is a strong anti-GMO position in Hungary, which has lead to the adoption of a moratorium on MON 810 maize in 2007. The main argument for this position has been an economic one, namely that consumers in Hungary and the EU (the main export market for surplus Hungarian cereals) refuse GMOs in their plates. Recent food scandals (i.e. paprika, guar gum and the re-labelling scandals) traced back to multinational corporations have clearly influenced an increased demand for "local" or "Hungarian" products. The observable trend of young urban generations doing their weekly shopping in local markets proves that there are emerging consumer interests for non-conventional production, and seasonal products. The environmental movement also played an important role in creating a desirable image of social engagement, which has also influenced younger generations, and inciting the Hungarian population to adopt an ecologically friendly lifestyle. Thus, we are currently witnessing attempts to develop alternative and creative ways of organising adapted to Hungary's historical and cultural background and adapted on its economic reality. In this respect, our research arrives at a timely and an extremely exciting period of social experimentation and transformation in Hungary. These experiments indicate that there is a slow shift from individual initiatives based on alternative lifestyle towards a more collective approach based on larger social considerations and active citizenship.

Some types of AAFNs have survived the state socialist period: *local markets* where primary and small-scale family farmers sell their produce in limited quantities and varieties are still common throughout the country. The habit of getting one's groceries on the market is deeply rooted in the Hungarian culture, albeit regular market-goers are mostly elderly people. A new trend has been emerging in the past years with younger generations (students, families with small children, activists, etc.) adopting this practice, as markets are increasingly being perceived as alternative sources for healthy and local food. Some groups, such as "Our Treasure – The Market" (Kincsünk a piac – Hunyadi tér) in Budapest 6th district, have actually launched and built up campaigns for the safeguard of local markets threatened by real estate developments and managed to mobilise local communities in solidarity with farmers.

Local food festivals linked to a particular geographic region, for instance the squash festival of Nagydobos or the plum jam and spirit (*pálinka*) festival in Tarpa and its surroundings, both in North-eastern Hungary, are gaining increasing public attention and they are aiming at perpetuating local traditions in gastronomy.

At the same time, new trends of *direct marketing* initiated by either farmers or consumer groups are slowly emerging in Hungary. Several farmers have started experimenting with "*grocery box schemes*" (for instance, the "Bioéléskamra" (Organic Pantry) around Miskolc, a former industrial city in North-eastern Hungary) involving orders by customers based on the season's availabilities. Several "*buyers' groups*", including the "Szatyor" (Shopping Bag) initiative in Budapest and the "Csiperke Circle" in Western Hungary, mostly launched by students, activists and families with small children have also appeared in urban areas. They operate as a collective that orders from a changing list of available products from different producers, albeit without the engagement of regularly ordering a fixed quantity of products for a well defined period.

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[21] An average Hungarian family spends more than 30% of its income on food. In 1997, 38.8% of all personal spending of Hungarian households were sent on food and beverages as opposed to the 20% average of the EU15. (see Misz, 2003)

Agro-eco-tourism has spread after EU accession when the concentration of milk quotas, the closing down of small slaughter houses and the introduction of strict hygiene norms have signalled the arrival of an increasingly difficult future for small-scale family farming. Although agro-eco-tourism does constitute hope for creating alternative livelihoods via value-added products and services, it is also subject to divergent opinions among farmers, some of whom would rather pursue traditional farming activities if they had the possibility rather than switching to tourism.

3.   Policy Environment of AAFNs

In such a context, agricultural policy constitutes a key factor in facilitating or impeding AAFNs. In Hungary regulations are still shifting or are not sufficiently transparent and easily accessible, which keeps farmers and citizens' groups in a state of uncertainty as to what their rights are. The confusion in turn can block the emergence of "alternative" initiatives based on self-organisation.

Several cases and anecdotes circulate among producers and social movements about witnessing examples of agricultural and food production/marketing practices in old member states, which back in Hungary were deemed to disappear because local authorities regarded them as "non-EU-compatible." These cases give cause for suspicion that national governments often use the authority of the distant Brussels-based institutions as a tool to impose policies created in fact by other motivations, and communicating them as direct implementations of EU laws. In this respect, it is an extremely exciting policy research theme to examine and identify to which extent certain food and agricultural policies are defined on the Community level and which parts are then further defined by institutional self-interests (budget issues, political preferences, complying with pressure from local stakeholders groups, the psychological need to comply with EU expectations) of national and local authorities. This paper limits its analysis to Common Agricultural Policy (CAP) direct payments, national rural development programmes, hygienic measures and trading regulations. However, further research could explore several other policy areas, such as environmental regulation for biodiversity protection, public procurement laws, slaughterhouse regulation, hygiene and food safety standards for markets, or territorial branding issues.

3.1   1st pillar of the CAP

Hungary became a member of the European Union on 1 May, 2004. The accession conditions of the Hungarian agricultural sector were defined in the Copenhagen agreement in December 2002. According to the agreement, Hungary with the accession instantly became full beneficiary of the market support measures (intervention, storage support, export support) of the first pillar of CAP. In the EU accession deal, Hungary's priority was to gain the most money possible. As a result, for the direct support, Hungary along with the majority of the new member states, applied the SAPS system, a simplified area based support scheme. This payment is to 90 percent decoupled, starting with 25% of the old member states' payment level and gradually increasing to reach the EU15 level by 2013. A 30% top-up payment from national sources was allowed.

With regard to the first pillar, in theory the exercise of modulation (the optional 10% shifting of funds from the direct payments to rural development programmes) could be relevant for AAFNs, respectively that it would mean the possibility of increased funding for local transformation capacities, markets, training, etc. Because of the low direct payments received, the government did not wish to decrease the 1st pillar by modulation to the 2nd. Also, with regard to the post-2013 CAP debate, the Hungarian government rejects the idea of shifting funds from producer support to the quality and marketing of agricultural products. The main argument is that it would not be logical to decrease payments just after they finally reached the old member states' level. In 2008 the support for producers reaches (at best) only 80% of the amount in EU-15 countries. Another claim is that around 30 thousand Hungarian farmers would be touched negatively by this measure, since modulation shifts the funds by putting a cap on the payments receivable by a single farm – therefore affecting the largest producers negatively). Thirdly, rural development needs national co-funding while direct payments do

not, therefore in Hungary's current budget situation the change would not be desirable at all (FVM, 2008).

In terms of relevance for AAFNs, more analysis is required in relation to the ways different sized farms and various farming structures (mixed culture vs. only animal husbandry vs. only cereal) benefit from different subsidy systems (e.g. conversion to the SPS system). Another issue which might be relevant is the indirect effect of common market organisation measures on AAFNs, for instance the distribution of production quotas (such as the direct marketing quota in the dairy sector).

3.2   2nd pillar of the CAP

In the period 2004-06, the government's rural development strategy was outlined in the National Rural Development Plan (NRDP) and the Agricultural and Rural Development Operational Programme (ARDOP) of the National Development Plan. In these programmes some measures could facilitate AAFNs by improving local product development. However, both programmes have been widely criticised for the details in the executive phase, which contradicted the argued priorities of supporting local food systems and added value. NDRP has been widely criticised on several grounds – e.g. because the details contradict the supposed priorities of helping rural employment; and the limited funds generate a competition between agricultural modernisation and measures to deal with rural poverty.

For the 2007-13 EU budgetary period, the Hungarian national rural development framework is provided by the New Hungary Rural Development Programme (NHRDP). The strategic document's argumentation seeks coherence with the 1698/2005/EC Regulation, the Community Strategic Guidelines and the National Strategy Plan. In the document itself, the priorities are not as clearly defined as in the NRDP (National Rural Development Programme) for the years 2004-06. However, the striking difference that there is no mention of AAFNs (direct marketing, local processing capacities, local product development). According to the government's reasoning, the key to the economical development of Hungarian rural areas is to provide more capital to the agricultural sector, in order to make Hungarian producers competitive on the increasingly liberalised world market. This would be the most effective way of increasing the income-generating and thus population-retaining capacity of rural areas (Ficsor, 2006). Accordingly, the priority areas of funding will be assisting producers in improving their physical capital. As for the minister's communication, the main priorities for 2007-13 are (FVM, 2007):

- animal husbandry, especially providing producers with modern technology in order to achieve competitiveness;
- horticulture because of its high added value and increasing role in rural employment, especially with reference to Hungary's climatic and soil conditions;
- cereal production, to be directed to bio energy uses, with investment in the necessary infrastructure.

Thus, with regard to AAFNs, the 2007-13 NDRP is criticised for not even mentioning such alternatives but only favouring a greater capacity for mass production (mostly by foreign investors), while excluding four-fifths of the 220,000 registered professional agricultural farms from applying for funds. National Association of Hungarian Farmers' Societies and Co-operatives (MAGOSZ) has criticised the 2007-13 NDRP for offering less support to local and regional markets, as well as less economic independence for regions and sub-regions[22]. A study criticises the allocation of resources for co-operational development of new products, procedures and technologies securing quality products as disproportionately low (Ángyán, 2007). Procedural criticisms mention that before the 2005 EC

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[22] See for instance statement of MAGOSZ (The National Association of Hungarian Farmers' Societies and Co-operatives) (MAGOSZ 2006)

regulation on RDPs, the preparation of the new NRDP lacked publicity, transparency and genuine public debate at the drafting of the programme. Concerned social groups were informed only after the prepared documents and decisions were leaked from the Monitoring Committee. Details of the financial framework remained secret before its submission to Brussels.

3.3   Hygienic regulations

Although Hungary entered the European Union in May 2004, measures facilitating small-scale food production and direct marketing were introduced only in 2006.

In 2005 a special decree of the Hungarian Ministry of Agriculture, jointly with the Ministry of Health and the former Ministry of Economic Affairs and Transports (83/2005., IX. 17.) allowed an exemption for the stamping of eggs which are sold on local markets. The decree stipulates that farmers holding up to 50 laying hens and marketing the eggs within the territory of their region of production are exempt from marking the eggs with the producer's registration number and the code pertaining to the egg's production method, if the farm's name and address are indicated at the venue of marketing.

In 2006 the Hungarian Ministry of Agriculture in collaboration with the Ministry of Health and the Ministry of Social Affairs and Employment issued a joint decree (14/2006, II.16) on food production, processing and marketing by small-scale family farmers which makes a crucial differentiation between small-scale farmers and food producers by allowing small-scale producers to sell their own products on the local markets. HACCP is not required, though registration with the local animal health and food control authority is compulsory. The joint decree was later modified and extended (68/2007., VII. 26) to include food hygiene and control issues.

The government does not fully use the flexibility of Regulation 852/2004 EC for facilitating the continued use of traditional methods at any stage of production, processing or distribution of food, especially in relation to structural requirements for establishments[23]. The national rules could more lightly regulate all issues relating to the small-scale production, manufacturing, hygiene, trade, control, and certification.

Compared to other policy areas there is little policy literature about hygienic regulations as an obstacle to small-scale food processing and direct marketing.[24] Official discourse tends to refer to hygiene regulations as an important measure for ensuring food safety and traceability and to some extent offering a possibility for higher value added products. For instance, if traceability had been applied during the 'paprika scandal', only certain producers' paprika would have had to be removed from the shelves. According to statements made by Ministry officials, the hygiene package (the EU directives) also allows producers to have a simpler, more calculable basis for their food production, in turn enhancing their competitiveness. Policy literature or media attention referring to existing hygienic regulations as an obstacle to small-scale food processing and direct marketing are rather sporadic. According to stakeholder groups (small-scale family farmers, civil society organisations, collective buyers' groups), the 2006 decree clarified the conditions for production, processing and marketing by

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[23] This principle of *flexibility* in paragraph 16 states that flexibility is also appropriate to enable the continued use of traditional methods at any of the stages of production, processing or distribution of food and in relation to structural requirements for establishments. Flexibility is particularly important for regions that are subject to special geographical constraints, including the outermost regions referred to in Article 299(2) of the Treaty. However, flexibility should not compromise food hygiene objectives. Moreover, since all food produced in accordance with the hygiene rules will be in free circulation throughout the Community, the procedure allowing Member States to exercise flexibility should be fully transparent. It should provide, where necessary to resolve disagreements, for discussion within the Standing Committee on the Food Chain and Animal Health established by Regulation (EC) No 178/2002.

[24] Interestingly, MAGOSZ, the Hungarian family farmers' trade union, has also remained silent about the specific impacts of hygienic regulations and has been generally more preoccupied about CAP funding and the introduction of the SPS system. This could be partly explained by the diverging political currents within MAGOSZ, the mainstream approach supporting an industrial type of agriculture and the promotion of Hungarian agricultural produce for export on the EU market.

small farmers, but it contains several deficiencies or obstacles that need to be resolved. The 2006 decree's problematic aspects include the following:

- Processed dairy or meat products can only be sold directly to the consumer from home, at a market or a temporary market (i.e. a fair), but they cannot be sold to local shops, restaurant or public institutions, schools/kindergartens/hospitals, etc. This aspect clearly prohibits the introduction of such products in public food systems or distribution channels that might offer a certain financial security to small farmers. In the case of poultry and rabbit, the slaughter may take place on the farm. However, in the case of goat, pork, sheep and beef, the slaughter must take place at an officially accredited slaughterhouse. Transporting the animals to such slaughterhouses can be expensive, especially since in some rural areas. In addition, some farmers feel that conditions in slaughterhouses might stress out animals much more than if this activity would take place on the farm. Again, while in the case of poultry and rabbit the commercialisation of fresh meat is possible, in the case of goat, pork, sheep and beef, the small farmer can only market processed meat products. Fresh milk produced by small-scale family farmers cannot at all be sold within the public food systems.

- Small-scale family farmers can only markets products originating from their own farms, which to some extent is understandable if we consider that the „personnel relationship and trust" are important dimensions of AAFNs and direct marketing. On the other hand, this prohibits small farmers in the same village or region from collectively organising the marketing of their products (for instance taking turns in selling each other's produce on the market).

Another difficulty is that there exists a contradiction between the decree on the production, processing and marketing of agricultural products by small-scale family farmers and the current regulation on the organisation of markets and fairs (35/1995, IV.5). In its current version this regulation only allows the marketing of fresh fruits and vegetables produced on farm, processed (not heated) sour products (for instance pickles), honey, fresh milk and dairy products, eggs, poultry and processed pork products (i.e. smoked meat, lard, etc.). The product which the 35/1995 regulation does not mention, but the 14/2006 does refer to is cooked (heat-treated) vegetable and fruits products (i.e. jams and juices). The Ministry of Agriculture is now working on a bill, which would normally correct this problem as it now refers to decree 14/2006. However, it is unclear when this bill will be accepted and become an official rule.

Several stakeholders also referred to problematic hygienic regulations originating from incorrect translation of EC directives into Hungarian. One frequently cited example is the obligation of stainless steel surfaces (rather than surfaces exempt from rust, which allow plastic for example) for the processing of milk and meat products.

The delay in introducing such measures (however deficient) demonstrates the government's unpreparedness in managing the EU accession process with regard to family agriculture. Unsurprisingly, this transition period hit particularly hard smallholders and food-processors, especially in the dairy and the meat sector. According to specialised magazines for small-scale family farmers, between 2004-2006 the marketing of processed foods by small farmers was carried out informally, because the only other possibility was through a legal status other than small-scale family farmer.

3.4   Trading Laws

Trading rules for low- income, small-scale family farmers (őstermelő ~ primary producers) have become controversial. From January 2008 the VAT law prescribed that such producers need a tax number by registering with the tax authority. This must be announced to the Agricultural and Rural Development Authority to claim financial support. For every transaction – even the smallest amount of foodstuffs – small scale farmers have to give customers an invoice. Exemptions have been obtained for small-scale producers under 300 hectares, such as being tax-free if under 600,000 HUF (€2300) annual revenue. Because of the extra costs in taxpaying, social insurance and sales invoices, the őstermelő

issue became highly politicised. Institutional stakeholders claim that many merchants are hiding beyond this 'primary producer' status to take advantage of tax allowances.

According to the 1995 regulation on the organisation of markets and fairs (35/1995, IV.5), registered primary producers are allowed to sell their own foodstuffs, except for heat-treated vegetables and fruits products (jams and juices).

4. Conclusion

In Hungary the national-level application of the CAP is orientated to the productivity and competitiveness of agriculture, in both the EU and international market. This priority involves an assumption that Hungary's problems of rural economy arise from inadequate capital investment and physical infrastructure of agricultural units. These priorities marginalise environmental concerns, alternative agriculture and regional development strategies. These policies also aim to retain as much CAP funds as possible for the country. Funds have not been shifted within pillar 1 to 'the quality and marketing of agricultural products'.

Institutional stakeholders regard smallholder agriculture as inefficient, relevant (at most) for tourism. Rather than accommodate such agriculture, hygiene regulations aim to ensure a maximum level of food safety, which would supposedly benefit producers through a predictable policy environment. Trading laws impose a requirement to provide invoices for any sale; exemptions for small-scale producers have become controversial. The dominant arguments in agri-food issues focus on health benefits and product quality (e.g. freshness, flavour), with hardly any attention to locality, social/community issues or rural development. Some traditional farmers' markets continue, but alternative agri-food marketing systems (e.g. farm shops, box schemes) are relatively new. Organic ingredients or quality foods in restaurants are rare experiments. Public debate about these issues is polarised: smallholder, environmental and food movement groups strongly criticise the government's policy, accusing them of using their power to serve the interests of the agri-industrial lobbies. This suggests that the emergence, self-organisation and further development of AAFNs may easily be blocked by the current regulatory contexts, institutional arrangements and problem perception of various stakeholders.

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Title: System archetypes to diagnose challenges of sustainable consumption and production in the food sector

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Abstract

The conference paper is aiming at demonstrating some of the relevant findings of the SYSCONS[25] research project carried out in year 2007. In order to describe the causalities in the consumption and production system the researchers have used causal loop diagrams, behaviour over time graphs and system archetypes since policy making is part of a complex system where various components are in a non-linear, complex interrelationship, Archetypes are characteristic system patterns, which have been identified and applied in the organisational management literature. These archetypes result in typical system behaviours and are useful to diagnose or prospect potential problems in the operation of a system. This conference proceedings paper is aiming at presenting a case study to exemplify the use of system archetypes on the food sector, an area of the production and consumption system, which is identified as one of the sectors with the highest impacts on the environment.

1. Using system dynamics and archetypes to analyze patterns of consumption and production

1.1 System thinking approach

The system of consumption and production is a complex adaptive system comprising needs, culture, market, regulation, ecosystems, and physical environment, which continuously co-evolve. Policy making is happening in this complex system, policy making itself being part of it, where various components are in a non-linear, complex interrelationship. This arrangement causes balancing and reinforcing feedback loops among different system components. Thus policy intervention can only be assessed, if we can understand the long range of changes it evokes through the various causal chains, often including the practice of policy making itself.

Already in the early years of the wider international recognition of environmental issues, the necessity of a casual framework for studying environmental problems has emerged. A widely used adaptation of Rapport and Friend (1979) "stress-response" model is the OECD's "Pressure–State–Response" (PSR) framework (OECD, 1991), (OECD, 1993).

In the DSR framework, "pressure" has been replaced by "driving force" to integrate better social, economic, and institutional indicators. The use of "driving force" allows the indication of both positive and negative impacts. The DSR framework is a matrix of three indicator types and the social, economic, environmental, and institutional dimensions of sustainable development (OECD, 1996).

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[25] SYSCONS stands for <u>System dynamics to diagnose and devise sustainable consumption and production patterns</u>; a study conducted for the Swedish EPA, in the framework of the FLIPP Research Programme. This conference proceedings consist of a shortened and slightly altered text from the relevant chapters of this study.

In recent years, the EEA has broadened its perspective dealing with environmental issues from focussing on pressures, states and impacts, to involving drivers and the potential responses as well, developing the DPSIR methodology (EEA, 1999).

While the original PSR model had distinct components for pressures (human behaviour), state (state of the environment) and responses (regulation), in DPSIR, society, environment, and economy have got integrated across the model as the three different dimensions of sustainability. Certain processes of these subsystems are now tagged as problems, or causes of problems, or solutions to problems, though the same process might be related to more than one of these places, e.g. cause and effect or pressure and response. Along this method some intricate systemic relationships and causalities might get lost. Thus, while DPSIR is now able to handle many sustainability dimensions (mainly for the sake of comprehensive reporting), putting same processes or trends to separate analytical categories have weakened its ability to correctly identify causal interactions among those processes. Thus, instead of these categorisations, the interrelationships of the many system processes should be studied, and their effects on the changes, adaptations, and evolutions in the various subsystems better understood. Only then could we decide whether we face a problem or not, and what kind of problem we really face.

Figure 1: The DPSIR framework for reporting environmental issues (EEA, 1999)
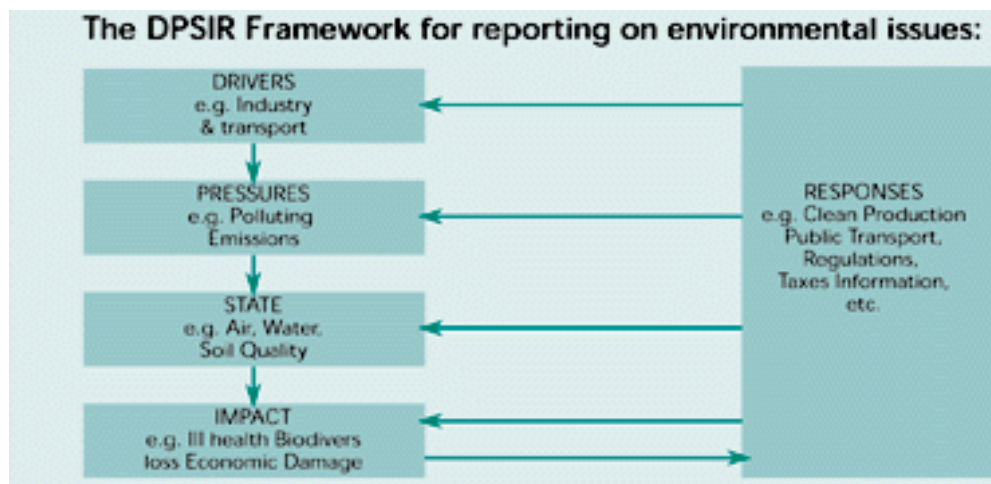
Contrary to the DPSIR approach, in system thinking components are not defined as drivers or impacts in relation to one selected element, but cause and effect relationship is extended to all elements.

In fact, the system is better described as a web of relationships, where different components can have multiple causal roles, than some sort of hierarchical structure. For example, a tendency might be the result of another one and in the same time the cause of a third one. Even regulation is not an external, independent "responder", but also is effected by many of the system components, it is intended to be regulating. In order to describe the causalities in the consumption and production system we have used causal loop diagrams, behaviour over time graphs and system archetypes.

1.2   Causal loop diagrams, system archetypes and behaviour over time diagrams

1.2.1   Causal loop diagrams

In order to describe the causalities in the consumption and production system the researchers have used causal loop diagrams, behaviour over time (BOT) graphs, and system archetypes according to the above described considerations.

To illustrate causal loop diagrams, we take the general example of how the number of potential adopters of a new product on the market is decreasing with the increase in rate of adoption, causing market saturation. The example assumes that with the increased number of adopters, the product is increasingly adopted by others after hearing others word of mouth. In Figure 2 below, the + arrows indicate that if one element has higher value, the other will have higher value, - arrow indicates opposite relationship, meaning that the increase in the parameter will cause a decrease in the other.

A loop can be reinforcing, (marked by R) or balancing (marked by B).

Figure 2: Example for a causal loop diagram
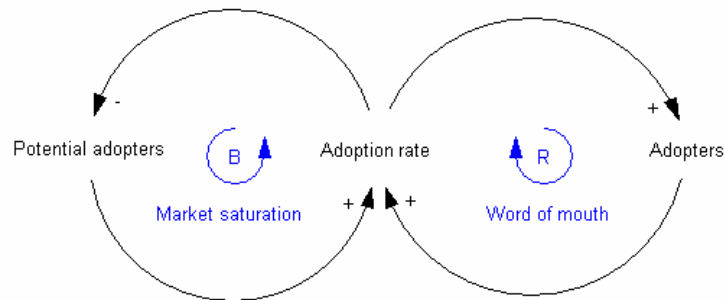
1.2.2   Behaviour over time diagrams

Causal loop diagrams describe the causalities among system elements. If initial values and relationships are quantified the model is able to simulate the behaviour over time for the various elements. Figure 3 demonstrates the outcome of a simulation from a causal loop model resulting in characteristic behaviour over time (here the well-known S-curve of innovation) for the above presented causal loop diagram.

Figure 3: Example for a behaviour over time diagram.
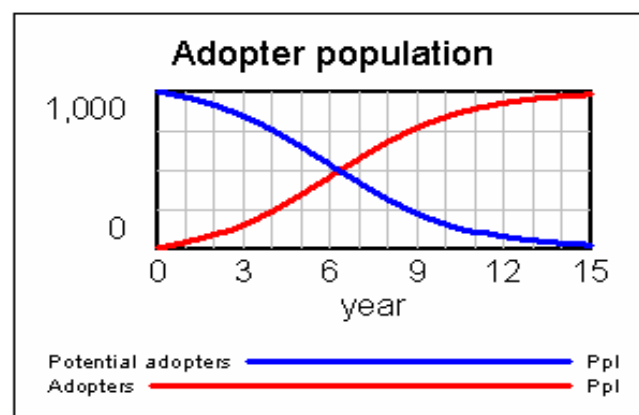
1.2.3   System archetypes

There are characteristic system patterns, which have been identified and applied in the organisational management literature, called system archetypes. These archetypes result in typical system behaviours that can be illustrated by typical causal loop diagrams. These are useful to diagnose or prospect potential problems in the operation of a system. In other words, these system archetypes can help understanding the characteristics of typical problem symptoms. In the system dynamics literature ten

main system archetypes and their variations have been identified to describe patterns of behaviour in systems (Braun, 2002) by different researchers:

1. Limits to Growth (also known as Limits to Success)
2. Shifting the Burden
3. Eroding Goals
4. Escalation
5. Success to the Successful
6. Tragedy of the Commons
7. Fixes that Fail
8. Growth and Underinvestment
9. Accidental Adversaries
10. Attractiveness Principle

Most of the typical system behaviours can be characterized with one of these archetypes or a combination of those. These archetypes result in typical system behaviours and are useful to diagnose or prospect potential problems in the operation of a system.

As an example, we demonstrate the probably best known, the so called Limits to Growth system archetype. As Braun (Braun, 2002) describes, the "Limits to Growth archetype was introduced in 1972 introducing "World" models that critically examine the policies that deplete natural resources over long periods of time, arguing that we are sowing the seeds of our own future destruction (Meadows, Meadows et al., 1972). In simple terms, the lesson from Limits to Growth is that there is no such thing as unrestricted positive reinforcing behaviour. There are always limits that eventually make themselves known and felt".

Figure 4: The general (Braun, 2002) causal loop of diagram of Limits to Growth system archetype and it's demonstration on limiting natural resource renewal rates.
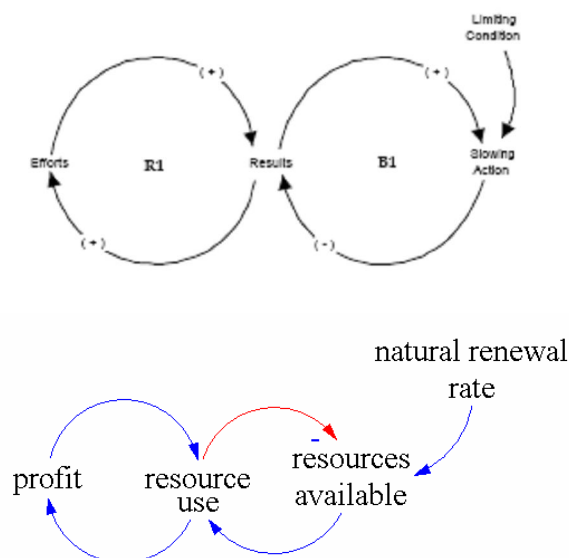
Wherever problems in the operation of the system can be identified by system archetypes, there exists a wide range of solutions in the organisational management literature. Certainly, their application to other type of systems requires some level of reinterpretation.

In case of the Limits to Growth archetype links between the growth processes and the limiting factors are crucial in order to determine ways to manage the balance between the two. Although, we approximately know the drivers of the growth engine, and the doubling time of these processes, the clear limits need to be identified explicitly in order to potentially intervene in the system (Braun, 2002).

Unfortunately, there is also a discrepancy between the doubling time of the growth loop and the changes required to avoid running into the limits. The growth itself seems to be more rapid then the ability to change the system.

After all, these archetypes prove that the continuous growth of the economy should not overuse environmental resources, because those are external limiting factors (or conditions) of the system. This limiting effect can be weakened by e.g. the increased resource efficiency, but it should not be exceeded. For the sake of avoiding running into the limits, the engines driving towards the limits should be removed. In our case the engines behind exceeding the renewal rate of the nature are the drivers behind economic growth. Therefore, ways of balancing the growth and strategies to effectively deal with the identified limits need to be identified and implemented.

1.2.4   *Finding leverage points in a system*

Besides the solutions for specific system archetypes, there are more general guidelines how to achieve a high leverage intervention in a complex system. Meadows (1997) have identified the following sets of leverage points. The list is in the order of increasing strength to intervene, what Meadows indicated by decreasing numbers:

12. Constants, parameters, numbers (such as subsidies, taxes, standards)

11. The size of buffers and other stabilizing stocks, relative to their flows

10. The structure of material stocks and flows (such as transport network, population age structures)

9. The length of delays, relative to the rate of system changes

8. The strength of negative feedback loops, relative to the effect they are trying to correct against

7. The gain around driving positive feedback loops

6. The structure of information flow (who does and does not have access to what kinds of information)

5. The rules of the system (such as incentives, punishment, constraints)

4. The power to add, change, evolve, or self-organise system structure

3. The goal of the system

2. The mindset or paradigm that the system – its goals, structure, rules, delays, parameters – arises from

1. The power to transcend paradigms

2.   Case study: Applying the approach on the food sector

The aim of this case study is to exemplify the general system thinking approach on the food production and consumption system which is one of the sectors with the highest impacts on the environment.

Based on the model with generic causal loops describing causalities in the current consumption and production system developed by the SYSCONS project, some case studies were also conducted. While this method is unable to predict the future evolution of such systems, it is nevertheless useful for indicating problematic tendencies in the current framework.

The original SYSCONS study analyses the food and drink, housing and mobility sectors. The selection of specific case study areas are built on the suggestions of the joint conference paper named Action towards Sustainable Consumption and Production in Europe (CSCP, EEA et al., 2007), which summarises the pressures, drivers, impacts and proposed responses in the consumption and production system. That conference paper is an important contribution to the SCP discourse in Europe, and to the international process towards sustainable consumption and production – the Marrakech Process.

Within each area the main problematic trends have been identified. Among these trends one trend have been selected and used to exemplify the system thinking approach and for which a case specific model was built and explained.

Casual loop diagrams, system archetypes and behaviour over time graphs have been applied on the sector level. The results have been integrated into recommendations.

In the three case studies, the selected problematic trend is disaggregated with the objective to identify important causal relations in the underlying structures behind the problematic trend on the surface. This way provides better understanding of the drivers and the causal interrelationships and interdependences among the different elements of the drivers.

Finally, the results have been integrated into the final recommendations and the generic causal loop model has been improved where, the sector level application has provided new insights.
The procedure had the following consecutive steps:

1. Selecting problematic trend
2. Disaggregating and analysing the trend selected
3. Identifying system archetypes in the problematic trend and comparing general BOT to statistical data
4. Formulating recommendations for designing policy intervention

The following sections are to present the relevant findings of the study only in the food sector.

2.1   Selecting the problematic trend

Food provides different material functions (nutrition, homeostasis, water, etc.) and serves as a basis for individual survival. In addition consumption of food has several clearly non-material services, such as pleasure (taste), symbol of social status or gives a chance to gather new experiences, e.g. exotic food.

A problematic trend from the food sector is investigated with the objective of clarifying causal relationships among the main elements of the socio-economic system, thus contributing to the design of effective policy interventions in the food sector.

The goal of this case study is to enrich the on-going work with a systemic perspective, which is to contribute to the planning of effective intervention in the food sector.

CSCP, EEA et al. (2007) have identified the following key problematic trends in the food sector:

- *Intensive farming and heavy land use.* The most significant environmental impact related to food consumption comes from agriculture and processing in Europe and in other regions of the world (EEA, 2005b).

- *Centralisation and concentration of sales.* There is a trend towards centralisation and concentration of sales in supermarkets, with a switch from frequent food shopping (on foot) at small local shops to weekly shopping by car at large out of town supermarkets. (Watkiss, 2005)

- *Increasing packaging waste.* More than two thirds of packaging waste is related to food consumption (EEA, 2005b). Packaging waste could further increase by about 50% between 2000 and 2020 (EEA, 2005a).

- *Increasing food-miles.* Increasing demand for non-seasonal food and exotic food is leading to a large increase in the distance food travels from farm to fork, known as 'food miles'.

- *Increasing demand for high impact processed food.* There has been increasing demand for processed and imported food, individual portions, and packaging (Kristensen, 2004).

In this case study we have chosen to analyse the problematic trend of "Increasing demand for high impact processed food". However, when applying the system dynamics approach, some of the other problematic trends will also be touched upon.

In the last thirty years sales of processed food have increased tremendously – now 3.2 trillion USD, or about three quarters of the total world food sales (Amber Waves, 2005). The demand for pre-prepared and processed food could continue to rise, driven partly by the trend to individualism, smaller households and more double income households (EEA, 2005b).

2.2 Analysis of the trend selected

Increasing demand for high impact processed food, as an observed tendency, is the result of several factors. To analyse the causal relationships first we need to disaggregate the problematic trend to the factors, which are less complex, and thus assist in determining the underlying structures of the observed trends.

While processed food has been developed in order to improve preservation and transportability (originally in the beginning of the 19th century for military purposes, later increasingly for market purposes), the biggest consumer advantage of consuming processed food is the convenience factor, i.e. it needs much less time to prepare and consume. The average time allocated for food preparation and consumption decreases, as household sizes shrink, the number of single-person households is growing and full-time employment of women becomes widespread. Secondly, the total food demand increases not just in societies, where under-nourishment is widespread but also in affluent societies. The third factor is the price of the processed food, which has slightly decreased in affluent countries.

These functions can be empirically checked against different statistical data demonstrating the identified trends. Due to the limitations for this proceedings paper, only some facts supporting are listed here from the SYSCONS study without presenting the relevant statistics:

1. Food demand (consumption) is increasing.
2. The same time under-nourishment remains high.
3. Food wasting is increasing in the western countries.
4. Time allocated for food preparation is decreasing.
5. Number of persons per household is decreasing.

6. While relative food prices (as percentage of household consumption) are slightly decreasing in rich countries, it is increasing in less affluent countries.
7. Adverse health effects of processed food and food additives are increasing.
8. Environmental impacts from food production are increasing.
9. Environmental impacts from processed food production is increasing.
10. Food miles and environmental impacts of food transportation are increasing.

2.2.1   Underlying structures of the observed trends

The major function of processed food for consumers is convenience. With a growing number of small-size households, as well as the increasing employment of women (the latter becoming widespread in developed countries already in the 1950s), a growing demand for convenience food resulted. Certainly the increase in money budget and decrease in time budget, leads to faster and potentially more expensive choices of food.

It is difficult to judge whether the above mentioned demographic factors are positive or negative. For example, many people actually chose single living. According to Bennett and Dixon (2006) 84% of people living alone answered they have chosen to do so. Nevertheless, when asked in detail about the causes, it has turned out that for the majority it was an adaptation step after adverse events. Only 27% answered that they want to live alone indefinitely. Among the causes for "elective" single living were affluence, more independent values and availability of housing, while causes for "forced" single living included leaving parental home, relationship breakdown and in higher age-groups children leaving home and bereavement. Job mobility is listed by Bennett and Dixon (2006) as a cause for elected single living, but according to the authors' opinion it can be at least as much an external forcing factor.

Figure 5. Causal loop diagram of shifting preferences due to more income and less leisure time
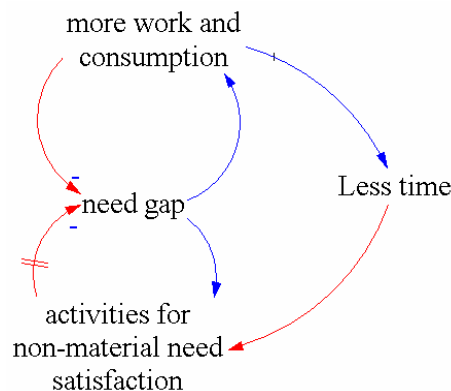
Thus the general tendency of increasing material, individualistic and independent values on the cost of family values and social capital is leading to the fragmentation of living patterns. Consequently smaller households have less time for food preparation and consumption on a per capita basis. Furthermore, time allocated for career building including the increase in working hours and increased job mobility is a factor leading to both less time for social network and less time for food-related activities.

The tendencies leading to the spatial clustering of different functions also strengthen consumption of processed food. The increasing share of purchases made at shopping malls are purchases of processed

food that is very much overrepresented, due to its transportability and longer shelf-life, as well as due to the high costs of self-space and related marketing affordable for only larger food corporations.

Other functions for consumers include social status, health and taste. Many brands are strongly promoted and become a symbol of status. For groups in society, especially among easily influenced children, some well known soft drink and fast-food chain brands are not just brands for beverages and foodstuff, but signifiers of values and signifiers of belonging to groups sharing those values. This impact is not independent from the problem of child-directed advertisements for junk food.

Health functions include the availability of seasonal fruits and vegetables throughout the year. While many adverse health effects of processed foodstuff are heavily criticised and the loss of nutritional values, vitamins, minerals and fibres are also a frequent critic, the possibility to be able to access at least some of these values throughout the year is a positive health effect. In some cases the hygienic packaging could be an advantage, for example bottled water, where drinking water is otherwise not safe. However, with the lengthening of the supply change information on the product is less and less available, not just for the consumer, but sometimes even for the producer.

A third probable function for consumers is that some simply like the taste of certain processed food products. Certainly one of the most obvious characteristic of a foodstuff is taste, where, as opposed to long-term health impacts, the feedback is immediate. Thus competition in the food-processing sector is very strong for developing well-selling flavourings. Often the main task of flavourings is to cover bad side-flavours caused by other additives (preservation agents, thickening agents, emulsifiers, sweeteners, etc.) or to achieve similar taste with less food content. Many types of flavourings, flavour enhancers and sweeteners potentially pose a risk to health at least for some people (e.g. acesulfame-K, aspartame, cyclamate, hydrolysed vegetable protein, monosodium glutamate, saccharin, stevia). Furthermore the use of flavourings might be an indicator of other additives, as well as of the reduced raw food content.

Based on the identified consumer functions we might conclude that the increasing share of processed food could be due to the growing demand caused by changing demographic factors, time budget and tastes. However, as we have seen, neither factors are entirely a free choice of consumers. Socio-economic and market processes have a high influence on their possibilities. Also a report prepared for industry professional on consumer attitude towards processed food in the UK (MINTEL, 2005) demonstrates that:

- 27% of consumers feel that additives in food are an area for concern
- 24% of consumers claim to try to avoid tinned fruit or vegetables in favour of fresh produce.
- 71% of people sampled bought ready meals despite 70% also saying that they try to buy as much fresh quality produce as possible.

Thus most people buy processed food despite their attempts to avoid it.

While originally industrial food-processing technology has been developed for military purposes (especially in early 19th century France, the Second World War, as well as later in the Space Race), its market advantages soon become obvious. Through preservation the transportability and durability of food products have improved significantly, which have led to a decrease in costs and the potential to serve further markets.

Today the potential to preserve and transport ingredients and foodstuff has tremendous importance in the shaping of world markets. Intra-industry trade favours processed ingredients as standardised commodities and also it means cost saving for highly intensive agriculture. Processed food has the advantage of providing possibility of better product differentiation and thus segmentation for companies. However, probably the most important impact of the processed food is access to low-income labour and high-income consumer markets. In China and India food processing industries are

sky-rocketing and while European policy-makers discuss how to decrease the share of high-impact processed food and food-miles, India has a Ministry of Food Processing Industries with the goal of doubling India's share in global processed food trade in 8 years. And this ambitious goal is set after a 194 % export jump just in four years (KPMG-FICCI, 2007).

Meanwhile, in developed countries policy-makers are struggling with finding balance among environmental goals (decrease high-impact processed food), social goals (ensure low-price foodstuff, while protecting national food-production) and economic goals (liberalise global trade). On the other hand, representative of business interests, the Confederation of the Food and Drink Industries of the EU (CIAA – from French abbreviation) criticises the "discrimination between 'good' and 'bad' products on purely environmental grounds", refuses the application of eco-taxation on the same ground and opposes the mandatory labelling of food products based on the considerable costs of life-cycle assessment (CIAA, 2007). Finally, CIAA (2007) does not support the implementation of eco-design and product standards in the food industry, as they argue that the food industry works largely with given and very diverse raw materials, production methods and products, which makes standardisation unfeasible. Certainly CIAA's task is to represent the interest of the food and drink industries and in this role it supports only those policies, which does not hamper the competitiveness of its members.

This example serves to indicate how an industrial sector developed in the current market framework (where external costs are not reflected in prices) is protecting its interest against attempts to change that market framework. The fact that today food industry prefers highly energy and material intensive processes and products created in a global product chain characterised by high income inequalities is not the fault of the food industry, but the result of the market evolution based on short-term paybacks and possible externalities. CIAA and other lobby groups are the natural institutional result of such a development.

We might conclude that changing consumer demands is the result of changing demographic factors due to market and technological trends, which drives market evolution more and more towards the production of high-impact processed food influencing technological and cultural trends.

2.3   System archetypes identified at the sector level

In the following section we discuss the archetypes identified in the example of increasing consumption of processed food. For the archetypes identified, we present a diagram of the general behaviour over time, which is then compared to relevant statistical data. This serves as a basis for identifying underlying structures, from which behaviour over time and discrete events develop.

2.3.1   Escalation

An Escalation archetype can be observed between the trends of personal income and consumption of processed food. The correlation between:

1. the trends between GDP and the amount of packaging waste generated;
2. the level of GDP per capita and processed and fast-food consumption;
3. and the number of single households and processed and fast-food consumption.

All the above listed examples show, that and increase in one trend will cause an increase in the other which will again reinforce the increase of the other one which is alike the Escalation archetype.

Figure 6: The general (Braun, 2002) escalation archetype and the application for food sector.
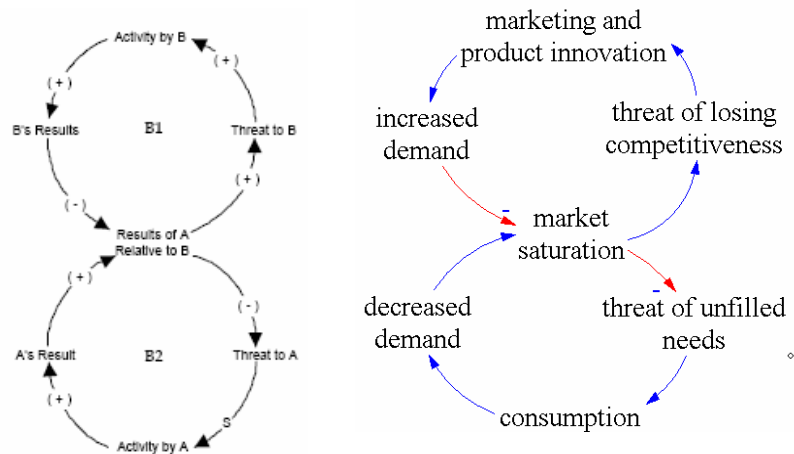
According to (Braun, 2002), "a commonly held belief of competition is mounting an appropriate response to the actions of competitors to sustain own competitive advantage, to maintain momentum toward gaining competitive advantage, or because that is what managers are supposed to do. The archetype also presents an opportunity to think expansionistically, the behaviour described by the archetype itself being the result of reductionist thinking. The Escalation archetype occurs when one party's actions are perceived by another party to be a threat, and the second party responds in the similar manner, further increasing the threat. It hypothesises that the two balancing loops will create a reinforcing figure-8 effect, resulting in threatening actions by both parties that grow exponentially over time".

This archetype suggests that the nature of threat is often distorted by the delays in the system. Also, in order to break such kind of archetype, one should identify broader goals for a system, which meets the goals of both parties or subsystems. An important conclusion from this archetype is that there is a need to find the reasons (the variables) for the escalation and the significant delays, which might cause a feeling of threat. Of course these could be multiple reasons for the different actors in the system. Also, it is important to identify the main actors in the system. For example, losing profit is a major threat for companies. Therefore their interest is to keep the system based of growth in a continuous disequilibrium via product innovation and marketing. One potential point of intervention in the system is to create collaboration to avoid the trap of Escalation.

The typical BOT diagram (Braun, 2002) of this archetype can be recognised on the example of the effect of GDP on the consumption of processed, ready-made and fast-food. The figure below show clearly that the increased GDP contributes to increased consumption of fast-food and generation of packaging waste similarly to the characteristics of the general BOT diagram.

Figure 7: The typical BOT diagram (Braun, 2002) of escalation archetype compared to the generation of packaging waste and GDP in the EU-15 (EEA, 2007c)
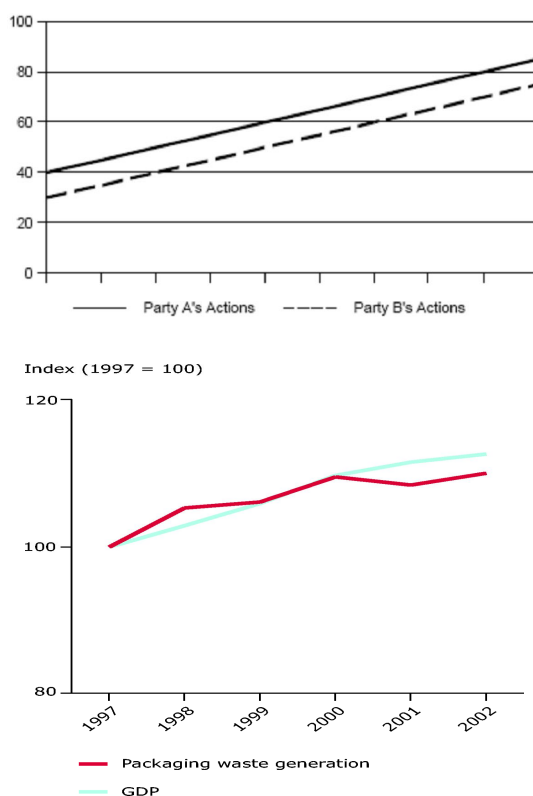
There are numerous factors behind these trends: increased GDP, which is in a close correlation with the number of single households, and money available for convenience, which all contribute to the increase in per capita consumption of processed and fast-food. It is difficult to judge, if the pleasure or economic value of preparing food at home could be re-established via simple policy tools. It is very likely, that only higher points of leverage in the system (e.g. strengthening family values) could contribute to breaking these trends.

2.3.2   Success to the Successful archetypes

One of the most important feature of processed food is saving time. People have to allocate less time to get satisfied with the food they consume. The amount of time allocated to prepare normal food is higher compared to the time demand of preparing meal from processed food or the time demand to have access to fast-food is due to the fact that time is an extremely important factor when making a choice between different raw materials for food preparation.

Figure 8: The general (Braun, 2002) Success to the successful archetype and the application for food sector
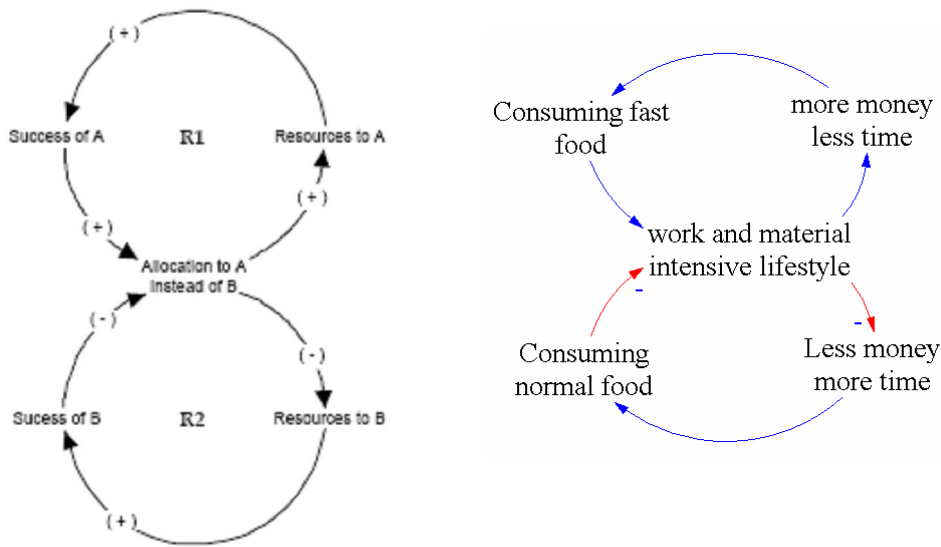
"The Success to the Successful archetype describes the common practice of rewarding good performance with more resources in the expectation that performance will continue to improve. The potential downside of this assumption is the continued under-performance of people, departments or products that perform at their current level through no intrinsic lack of skills or capability. In other words, current performance may be a better reflection of the initial or starting conditions than they are of … *[their current ability to perform well]* … One may discover that current performance is more a matter of initial conditions and, with sound planning, careful resource allocation and good execution, underperforming people, departments or products can be transformed into winners" (Braun, 2002).

When dealing with this archetype, evaluating alternatives is an important measure. It is likely that the current system is judged according to values, which developed much earlier, and this criterion favours established practices over other alternatives. A potential way out from this archetype is to identify goals or objectives that will refocus the definition of success to a broader system. It is important to investigate the historical origins of success and reasons for favouring one solution over another. It is also likely that the initial conditions and the origin of the rules do not favour other options. In addition, measurement systems are often designed for and suited the current systems. Often, there must be space for experiments and innovation to break out from this system archetype. It is typical that the existing system excludes or limits the spirit of experimentation that could lead to the development of a new alternative.

The typical BOT diagram (Braun, 2002) of this archetype can be recognised at the amount of time allocated to prepare food. Unfortunately such data directly is not available. However total time per household for food preparation is decreasing with the number of persons per household and causes an increased demand to the less timely forms of consumption as seen in Escalation. The successful innovations in the food industry provide convenience and comfort to people.

Figure 9: The typical BOT diagram (Braun, 2002) of Success to successfulness archetype compared to the number of persons per household (EEA, 2007c) VS number of McDonalds restaurants per capita (Nationmaster.com, 2007)
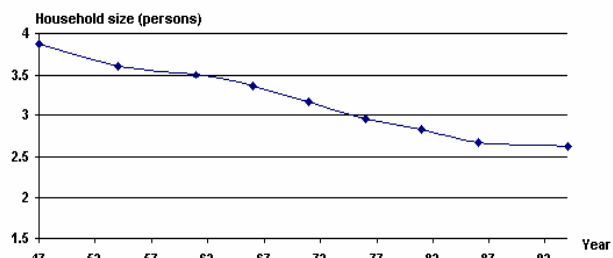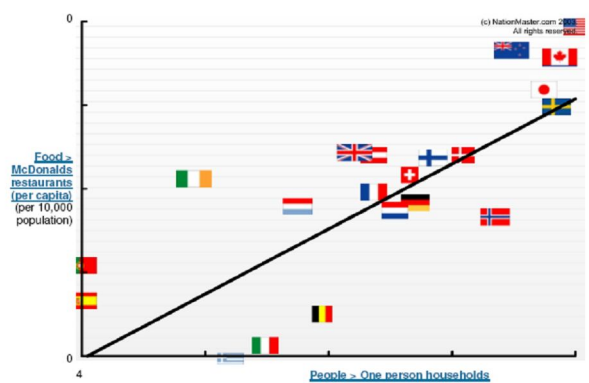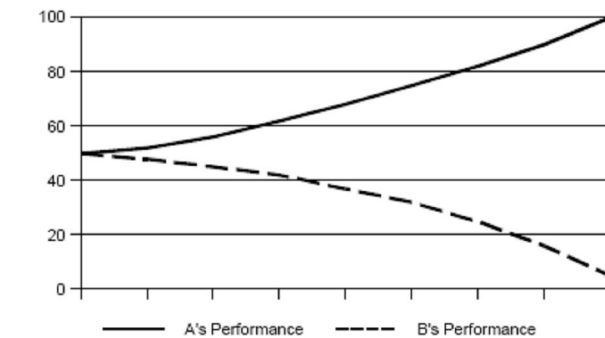
Unfortunately this archetype suggests very little space for intervention. Time demand for normal food preparation cannot compete with that of the processed food and fast-food. It is likely, that the current time demand for food preparation is one of the most important judgement criteria which clearly favours processed food consumption. A potential way out from this archetype could be to have find ways to increase free time with partners and friends, which might increase the time allocated to more time demanding forms of food preparation.

Another potential point of leverage would be to engage people in enjoying cooking and discover the creativity in food preparation. In the case of this archetype, the current system (way of living) seems to exclude or substantially limit the potential to shift to the old-new alternative of home-cooking.

2.4   Other system thinking based leverage points

Besides the specific solutions arising from leverage points of specific system archetypes, we exemplify some leverage interventions in the system based on the intuitive leverage solutions identified by Meadows, D. (1997). Again, the points are in reversed order on purpose, and only some points are listed as examples.

12. Constants, parameters, numbers (such as subsidies, taxes, standards)
Eco-taxation of food products or at least the removal of adverse subsidies seems to be obvious solution for regulation. Certainly, as far as possible it should be implemented. However, social affects (on food price), as well as market affects (on the global competitiveness of food industry), hinders the possibility of implementation.

9. The length of delays, relative to the rate of system changes   Supporting eco-innovation, eco-design
A financial support of the development of more environmental sound processes and products (e.g. organic production, local distribution schemes, permaculture) can decrease the payback period of such innovation and can lead to a decreased delay in positive reinforcement. However, such developments will not penetrate the market extensively until the market prices truly represent values. In cases where economic gain can be realised already in the current market situation (such as high added value organic products in certain market segments), the penetration is possible, but in this case a financial support is not necessary. While energy prices are increasing (and thus, gradually expected to discourage energy intensive agricultural practices), but are still far from "sustainable" figures, there is a risk that the continuous adaptation to current price levels (maybe assisted a bit by financial support) will only lead to a long iteration of technology improvement requiring complex infrastructural background and a very high cumulative environmental impact. Thus, instead of continuous improvement, policy making should focus on immediate implementation and protection of best known production methods.

6. The structure of information flow (who does and does not have access to what kinds of information)
Various types of labelling are widely used in the food sector. While environmental information is important, it has become clear that even consumers having preferences towards the environmental performance of products are not able to purchase according to their preferences because of time limits and spatial access. It has been also proved, e.g. Clift et al. (2005) that negative labels (e.g. the high-salt label or GMO) have much bigger impact on consumer choice than positive labels (such as "free-range" or "organic"). Positive labels do not approach consumer demand and approach only a small fraction of the consumers. The assessment of products is very complex, costly and not even justified well. In case of negative labelling pointing out the most serious negative impacts of the products assessment is easy and a wide range of consumer is interested (a successful example from the processed food sector is Finland's "high salt" label).

4. The power to add, change, evolve, or self-organise system structure
Community or local food initiatives contribute to a sustainable food supply. These are usually of voluntary nature, and thus a regulator can only stimulate the spread of such initiatives. Unfortunately the major driver of the processed food consumption, i.e. little time budget for food issues, makes it difficult for many to enrol in such schemes. Nevertheless, if such initiatives cover other functions (community, entertainment, some distribution of work, etc.) assisting in time-saving, they could be more successful. Local agriculture in affluent countries is largely uncompetitive in today's global food market. Subsidies have managed to keep it (and especially the industrialised forms) alive, and there is even a growing organic food production with high price premiums.

In case of all the above listed intervention modes one can experience that the general socio-economic framework is limiting the potential for effective intervention. The main strength of system thinking is however, that causalities can be identified outside of problematic subsystem. We have seen that all

leverages operating only in the sector levels have limitations and policy measures should consider broader perspectives and goals of the system.

## 3.	Overall conclusion

System thinking provides a general approach for understanding the complexity of the consumption and production system, for identifying the leverage points for changing the system and for providing insights into possible actions.

This paper suggests, that system archetypes may provide a better understanding of the challenges and contextual analysis of different policy intervention points in the complex system of production and consumption sectors. While this method is unable to predict the future evolution of such systems, it is nevertheless useful for indicating problematic tendencies in the current framework.

The cases presented for the food sector highlights the importance of solving problems at potentially the highest points of interaction, which are often outside the scope of a single sector.

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Rootless and clustered environmentally significant consumption

A case study from Cluj-Napoca (Romania)

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Abstract

The paper presents the results of a 2007 survey undertook among Cluj-Napoca's citizens with the aim to determine the way and how sustainable consumption is endorsed by the public, which are its social-demographic and axiological determinants, respectively if and how behaviours can be embedded into an environmental belief system. In this latter regard a number of environmental attitude items and scales were included in the questionnaire, among which the shortened, six-item version of the *New Environmental Paradigm Scale.* Results indicated the existence of two clusters of these consumption patterns. One of these is a 'constraint-based cluster' (sustainable water use, preference for local goods, buying from second hand shops) wherein behaviours are the result of households' economical shortage and are endorsed by lower educated and materialist citizens. The other is an 'elitist cluster' (buying eco-efficient domestic goods, selective household waste collection), wherein the consumption is the result of households' economical welfare and is characteristic for better educated and postmaterialist citizens. In terms of environmental belief systems' coherence, both clusters appear as rootless, i.e. consumption is not the result of a general eco-conciseness, but of economical constraint, respectively welfare.

1.   The aim of the research and theoretical grounding

The aim of the present research was to bring some preliminary data regarding the case of environmentally significant behaviours and environmental attitudes in a very specific, local context, that is the city of Cluj-Napoca (Transylvania, Romania). The fundamental objective was to assess the case of some concrete environmentally significant behaviours from the domestic space both in terms of frequencies, social-demographic and axiological determinants, and both in terms of environmental embeddedness. This last purpose meant that items and instruments through which specific and more general environmental attitudes were assessed were included in the questionnaires: items concerning the evaluation of the seriousness of certain local environmental problems and the shortened, six-item-based version of the *New Environmental Paradigm Scale* (Dunlap and Van Liere, 1978; Dunlap et al., 2000). Through the use of the *New Environmental Paradigm Scale* (NEP) which is considered to measure general or so called primitive beliefs towards human – nature relationship we practically followed the quintessence of some specific theories and models regarding the roots of environmentally significant behaviours, namely the value – belief – norm theory (Stern et al., 1999; Stern, 2000) and the schematic causal model of environmental concern (Stern et al., 1995) according to which specific environmental attitudes and behaviours are embedded into or are consequence of a more general environmental belief system or worldview, namely the NEP.

Both the value – belief – norm theory and the schematic causal model may be conceived as necessary reactions towards the classical models of attitude – behaviour relationship. The theory of reasoned action (Fishbein and Ajzen, 1975) and its further development, the theory of planned behaviour

(Ajzen, 1985) however serve as important explanatory frameworks for the occurrence or non-occurrence of attitude–behaviour convergence[26], they were criticized for overemphasizing the role of the rationality and neglecting the role of emotions (e.g. Kaiser et al., 2005). Thus, the value–belief–norm theory enriches the classical framework of attitude – behaviour relationship by including other core-variables like: values (e.g. egoistic, altruistic, biospheric[27]), beliefs (e.g. NEP, awareness of the positive or negative consequences of the behaviours, awareness of responsibility) or personal norms. According to the theory, among the variables exist a causal, direct linkage, and thus, the NEP or an other pro-ecological worldview is essential for the occurrence of the pro-environmental behaviour. Similarly, the schematic causal model of environmental concern presupposes a complex of essential factors for a pro-environmental behaviour to occur: social structure is the most general context which influences behaviours because provides specific values; such values then influence and generate specific belief systems or worldviews (e.g. NEP); which then are the roots of specific attitudes and beliefs; these in turn may serve as important motivational forces for certain pro-environmental behaviours.

Constructed like this, the research design is very much rooted within the classical environmental attitude and behaviour literature, and aims to explore the hypothesis regarding the broader environmental embeddedness of the considered environmentally significant behaviours. More concretely, a *general hypothesis of the research is that there exist a positive influence of the NEP on the specific environmental behaviours*.

The motivation for the use of the NEP is empirically implicit. As far as both of the used theoretical frameworks are based on the NEP as a core belief system, the option was no far to seek, albeit should be accentuated that the two theoretical models serve much more as guiding frameworks than as rigid theories.

The *New Environmental Paradigm Scale* (Dunlap and Van Liere, 1978) was initially designed to empirically measure an ecological view of the human–nature relationship, which presupposes that humans are not the dominant species of the biosphere but are connected to plants and animals together with which form an interdependent system. Such a way to look at the world (paradigm) was conceptualised as opposite of the *Human Exceptionalism Paradigm* (HEP) which considers that human society, due to its particular and superior characteristics (e.g. culture, technology) is not the subject of the environmental degradation (Catton and Dunlap, 1978 a, b; Dunlap et al., 2000). This first version of the NEP scale consisted in 12 general affirmations with Likert-type response variants about the human–nature relationship, humans rights to influence the natural environment, natures' equilibrium, etc. Later – as a response to some critical arguments regarding the dimensionality of the scale a 'revised' version was developed (Dunlap et al., 2000), consisting in 15 affirmations, but a shortened six-item version (Pierce et al., 1987; Gooch, 1995; Bostrom et al., 2006) became also used. The NEP items due to their un-dated and un-localized, very general character were considered – based on Rokeach's (1986) conceptualisation – 'primitive beliefs' which occupy a central place within individuals' belief-system, represent basic truths which then influence or serve as a capsule for a huge series of specific environmental attitudes, dispositions and behaviours (Dunlap et al., 2000). This generalist orientation of the scale is responsible for its success: albeit criticized for its rigorous HEP-NEP dichotomy (Corral-Verdugo et al., 2008), weak anchor in the environmental ethics (Lundmark, 2007), inadequacy to describe the case of environmental attitudes in post-communist, transitional

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[26] In this regard especially important is the theory of planned behaviour which introduces the role of perceived and effective behavioural control – variables which very much intervene also in the case of environmental attitude – behaviour congruency. For instance, difficult and costly environmental behaviours, e.g. selective waste collection or bought of an eco-efficient, but expensive car, may be hindered if a person beliefs that he/she is not able to execute the behaviour (perceived behavioural control) or there are important external forces which limit the proper execution of a behaviour (actual behavioural control), e.g., there are no external facilities for selective collection begun in the household.

[27] The approach is thus a further development of the theory of human values (Schwartz, 1994) and the value basis theory (Stern and Dietz, 1994; Stern et al., 1995).

contexts (Bostrom et al., 2006), etc., constitutes a worldwide used, *sine qua non* instrument of environmental concern studies. Except a small scale study which tested the case of the NEP among Romanian students (Ilin, 2002), the instrument was not previously used in Romania, so that besides the arguments above, its use is motivated also by the aim to investigate its endorsement among adult urbanites in Romania.

A second hypothesis of the research is that more specific environmental attitudes are positively influenced by the endorsement of the NEP view, respectively a third one, according to which general beliefs (NEP) positively influence the occurrence of environmentally significant behaviours not directly, but through the specific environmental attitudes. For the confirmation of the latter hypothesis the approach of Baron and Kenny (1986) was used: in order to demonstrate that a relation between two variables (X and Z) is mediated by Y, three conditions must be fulfilled: X (=NEP) must significantly influence Z (behaviour); Y (=specific attitudes) must significantly influence Z; and when X and Y together are introduced in a regression analysis on Z, Y must continue to significantly influence Z, while X is no longer a significant predictor (for a similar approach from environmental sociology see Kemmelmeier et al., 2002).

As variables for the specific environmental attitudes, evaluations of the seriousness of eight local environmental issues/problems were used. Based on both the essential of the objective problem and subjective value aspect of the postmaterialism thesis (Inglehart, 1990) we expected that problems might be judged in terms of seriousness either because they really exist, or because citizens are very committed to a high level life quality and thus provide a critical assessment of the not so urgent problems. With other word, such a rationale meant that – however on different grounding – more environmentalist were considered those responses which tend towards the very serious evaluation of the problems.

2.   Methodology of the research

2.1   Questionnaire design

Items of the used questionnaire can be divided in three groups: social and demographical variables like age, gender, education, average monthly income of the respondents' household, ethnicity; items exploring respondents' axiological orientations like materialism/postmaterialism, traditionalism, liberalism and egalitarianism; respectively items and instruments concerning environmental beliefs, attitudes and behaviours, like the NEP Scale, the items regarding the evaluation of the seriousness of the local environmental problems and the five behaviour items[28].

Postmaterialism was measured through the classical four-item question of Inglehart (1990): *Which of the followings should be the first goal of the country? And which should be the second? a) Maintaining order in the nation b) Giving people more say in government decisions c) Fighting rising prices d) Protecting freedom of speech*.

Response variants a) and c) correspond to materialist value orientation and in the database got the code value of 0, while b) and d) correspond to postmaterialism and were coded with the value of 1. Thus, a person could total a sum of 0 (materialist), 1 (mixed), or 2 (postmaterialist)[29]. Albeit very much criticized because of its incapacity to cover the inner complexity of the materialism/postmaterialism

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[28] In this part of the questionnaire other items directed towards other specific aspects of environmental attitudes and dispositions (like the attitude towards the best level of environmental decision-making, dispositions to financially contribute for pollution prevention, etc.) were also included, which however do not constitute the object of the present paper and will not be detailed here.

[29] Regarding value-orientations Cluj Napoca's citizens proved to be in equal percents materialists and mixed (45% each), and only 4% of them appeared as postmaterialist. The rest of responses were *don't know*. With this percent practically the Romanian pattern is confirmed, Romania being a highly materialist culture.

axiology (e.g. Brooks and Manza, 1994; Davis and Davenport, 1999), the questions constitute a widely used instrument for tapping these values, inclusively among environmental sociology literature. Thus, their use enables us – as the NEP does as well – to bring our study relatively close to the international practice.

Regarding traditionalism, liberalism and egalitarianism respondents were asked to choose the affirmation which is most closed to their preference: *Belief in God is very important, more important than freedom of the individuals or equality of the individuals (1=yes, 0=not); Freedom of the individual is very important, more important than equality of the individuals or belief in God (1=yes, 0=not); Equality of the individuals is very important, more important than freedom of the individuals or belief in God* (1=yes, 0=not). Respondent was categorized as traditionalist if he/she opted for the first affirmation, liberal if chose the second affirmation and egalitarianist if chose the third affirmation[30].

The NEP scale was used in its shortened version as appeared before at Pierce et al. (1987), Gooch (1995) and Bostrom et al. (2006). The six items which compose the instrument are the following: a) *The balance of nature is very delicate and easily upset by human activities; b) The earth is like a spaceship with only limited room and resources; c) Plants and animals exist primarily for human use; d) Modifying the environment for human use seldom causes serious problems; e) There are no limits to economic growth for Romania; f) Humans were created to rule over the rest of nature.* Response categories for each of the items form a Likert scale in 5 steps: strongly agree – agree – undecided – disagree – strongly disagree. Due to the pro-environmental orientation of the scale, response variants are coded with the numbers 5, 4, 3, 2 and 1, in case of the first two items and with 1, 2, 3, 4, 5 in case of the 3-6 items, in these latter cases the movement towards the do not agree dimensions indicating the rising intensity in the NEP view[31].

Concerning specific environmental attitudes, eight local environmental problems were selected as attitude objects. The selection was based both on the rationale to cover a complex of possible environmental problems from the city, and both on other studies which used to study the level of satisfaction with such issues, e.g. Eurobarometers. The question sound as follows: *Please indicate in case of each of the following issue the degree in which they represent a problem within your quarter/neighbourhood*: a) *waste collection and disposal; b) availability of green spaces; c) availability of public transport facilities; d) noise; e) agglomeration due to traffic; f) quality of the air; g) quality of the drinking water; h) quality of the sewage system.* Response variants formed a Likert scale in 4 steps: very serious – serious – not serious – not a problem at all, which were coded with the numbers 4, 3, 2, 1 based on the rationale discussed already in the first chapter of the paper.

In selecting the items for the environmentally significant behaviours we started from Stern's (2000) typology which makes distinction between behaviours from the domestic/private sphere and public sphere and differentiates between behaviours based on their environmental impacts. We followed also the position of Takács-Sánta (2007) and environmentally significant nature of a certain behaviour was judged based on the impact of the behaviour, i.e. limits the use of resources, prevents or lowers the generating waste, etc. We intended to investigate environmental behaviours from the domestic space and based on a pilot study in which relevance and understanding of certain environmentally significant behaviours were investigated as well as on items included in other studies (e.g. Stern et al., 1995; Stern, 2000; Wackernagel and Williams, 1996) and surveys (e.g. Special Eurobarometers) finally decided to work with five items which all cover the consumption side of environmentally significant behaviours from the domestic space in terms of buying, using and disposing. *Please state which of the following activities are characteristic for your household? a) When it happens to buy a certain electric*

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[30] The obtained frequencies are as follows: 39% - traditionalism, 36% - liberalism, 22% - egalitarianism.

[31] Option for this variant of the original scale was motivated by the facts that it was proved to be representative for the original version (Pierce et al., 1987), it was used in this form within two important studies undertook in urban regions from the post-communist contexts (Gooch, 1995; Bostrom et al., 2006) – thus comparability being favoured. Equally important is that in this way we wanted to avoid possible non-responses due to a larger set of items.

good (i.e. washing machine), we choose the eco-efficient variant even it is more costly that the normal type; b) We collect selectively the generated waste; c) We are very attentive regarding our water consumption and use the less water we can; d) We use to buy clothes from second-hand shops; e) We prefer to buy goods which are produced locally or in our country instead of goods which come from the import. For each affirmative response, the code of 1 was added, negative answers were noted with 0.

2.2 Methodology of the field research[32]

The research was based on quantitative methodology (questionnaire-based survey) and was undertook in the summer of 2007. In constructing the sample we've used the combination of the zone strategy with that of itineraries (Rotariu and Iluţ, 2006): the surface of Cluj-Napoca was delimited in 10 zones which more or less were corresponding to the quarters of the city and were clearly delimited by the most important streets and boulevards. For each of the selected quarter, with the help of the election lists, the number of the adult population was calculated. Then, based on the consideration that for the aim of the study a sample consisting in 605 persons can be sufficient, a certain number of subjects to be contacted (quotas) was established, in accordance with the dimension of the zones. Respondents were contacted based on the following rules: in every of the ten zones several itineraries were established (corresponding to starting points situated in the centre of the zone/quarter, respectively in the periphery of the zone/quarter), alongside of which the first point of sampling was established as the flat or house with the 3rd number, after which interview operators followed the step of 5, albeit respecting the rule that in case of flats not to question more than 4 apartments in a flat. Subject selected for interviewing was that person from a certain apartment/house who celebrated most recently his/her birthday. Non-responses meant the jump to the following address, in accordance with the established steps. In this way, we succeeded to complete 586 questionnaires and the whole sample is characterised by an r = +/- 4,3% and P=0,95.

3. Environmentally significant consumption behaviours from the domestic space. Results and discussions

3.1 Frequency, dimensionality and socio-axiological influence

The first aim of the research was to investigate the frequency of certain environmental consumption behaviours from the domestic space, to determine their dimensionality and those social and axiological variables which influence the occurrence of them. As appears from the Figure 1, the most popular behaviour is that of buying local/national goods instead of goods from import (73%) which is followed by the preference for buying eco-efficient electric goods instead of normal ones (49%), buying cloths from second hand shops (46%) and economical use of water (42%). Selective waste collection constitutes the less popular behaviour, only 11% of the respondents have declared that they regularly do this activity, which is completely understandable from the perspective of perceived and effective behavioural control (Ajzen, 1985): in Romania and in Cluj-Napoca as well there still are not extensive facilities for selective waste disposal, for this chapter of the environmental *acquis communitaire* Romania got a transition period from the EU.

Figure 1: The frequency of yes/no answers for each of the five environmentally significant behaviours
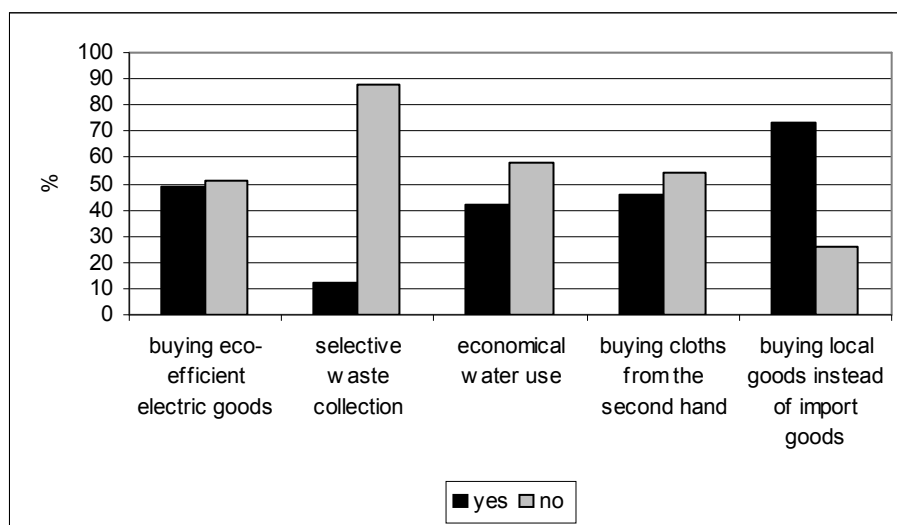
In the following we've been interested in the dimensionality of the studied behaviours and for this purpose principal component analysis was used through which two factors have been extracted: a first – explaining 30%, respectively a second – explaining 25% of the variance. In order to create orthogonal dimensions varimax rotation was uses which results are presented in the Table 1.

Table 1: Principal component analysis through varimax rotation of the considered behaviour variables

	Factors	
	1	2
Eco-efficient electric goods		0.61
Selective waste collection		0.74
Economical use of water	0.60	
Cloths from the second hand	0.69	
Preference for local goods	0.76	
Explained variance	30%	25%
KMO	0.499	
Significance of the Bartlett test of sphericity	p<0.001	

The results clearly indicate that the considered five behaviours can be separated in two major factors, the first corresponding to economical water use, buying cloths from the second hand shops and preference for buying goods which are locally produced and the second corresponding to the use of eco-efficient domestic goods and selective waste collection. Thus, our results are in fact in accordance with those signalled for instance by Black *et al.* (1985) and Bratt (1999 – quoted by Stern, 2000) according to which environmentally significant behaviours from the domestic space are various and in the most of the cases can be grouped in specific clusters, as a function of their impact and difficulty. Moreover, these researchers accentuate also the fact that usually the clusters reflect not only the different frequency of the effectuated behaviours, but also correspond to different social, demographic and axiological backgrounds, i.e. different types of behaviours are characteristic of specific social strata, i.e. age groups, professions, residence, etc.

We were then interested in investigating if these socially grounded specificity of the two groups/clusters of behaviours proves to be valid in our case as well. For this aim regression analysis was used, within which the dependent variables were, in turn, represented by the two different factor

scores of the considered behaviours, while social and demographical independent variables were represented by age (defined as continuous variable), gender (dummy variable, 1=man, 0=woman), education (continuous), income (average monthly earning of the respondents' household, measured as continuous) and ethnicity (dummy, 1=Romanian, 0=other ethnicity). Concerning the role of different axiological orientations in the second model of the regression analysis we've investigated the possible role of the postmaterialist value orientation while controlling for each of the independent variables of the previous model. Table 2 and 3 present the results of the regression analysis for the two dependent variables, namely type 1 (economical use of water, cloths from the second hand, preference for local goods) and type 2 (preference for buying eco-efficient electric goods, selective waste collection).

Table 2: Regression analysis for the type 1 behaviour

	Model 1	Model 2
Age	-0.028	-0.042
Gender (man)	0.003	0.033
Education	-0.087*	-0.090*
Income	-0.095*	-0.106*
Ethnicity (Romanian)	0.081*	0.033
Postmaterialism		-0.091*
R^2 (adjusted)	0.018	0.024
R^2 change	0.027	0.007
Significance F change	p<0.05	p<0.05

*p<0.05; coefficients from the table are standardized (Beta).

Table 3: Regression analysis for the type 2 behaviour

	Model 1	Model 2
Age	0.181***	0.181***
Gender (man)	-0.068+	-0.076+
Education	0.367***	0.378***
Income	0.107***	0.102***
Ethnicity (Romanian)	-0.156***	-0.125***
Postmaterialism		0.090*
R^2 (adjusted)	0.171	0.177
R^2 change	0.179	0.007
Significance of F change	p<0.001	p<0.05

***p<0.001;*p<0.05; +p<0.1; coefficients from the table are standardized (Beta)

Results of our analysis are in accordance with the facts previously mentioned: the two clusters of behaviours have different social and axiological backgrounds. Type 1 behaviours go hand in hand with lower education, lower income and materialist value orientation. With other words, this cluster of behaviours seems to have an economical constraint based motivation and indicates a cheaper choice in front of a more costly option, i.e. less water costs less, cloths from the second hand shops cost less, local goods are cheaper. As a consequence, in case of this social category, behaviours from the type 2 group are limited by the respondent's lack of control (Ajzen, 1985), i.e. resources.

On the contrary, type 2 behaviours appear as an 'elitist' cluster as far as they are effectuated by people with higher education and income, who concerning their ethnicity are Hungarians (by treating ethnicity as a categorical variable, an alternative analysis indicated that the value of the Beta coefficient for Hungarian self-identification and performance of such behaviours is 0,129 at p<0,01 and such a significance could not be signalled in case of Roma, the other ethnic category of the survey) and have postmaterialist value orientation.

It is obvious, that in both of the cases the money factor underlines the behavioural options. While in the first case people are doers of the specific behaviours because they cannot afford a more costly alternative, in the second case they are doers because they can afford the purchase and usage of a good which on the short term usually overwhelms the budget (eco-efficient electric goods) or that is relatively costly and difficult (selective waste collection). However, besides the money factor there are other important intervening variables as well. Education and axiological variable are both significantly present in each of the cases. In the case of the type 1 behaviours, the importance of the money factor is significantly underlined by the influence of the lower education and materialist value orientation, which role should be judged not only in terms of enhancers of the considered cluster, but also in terms of hinders of the second one. For instance, in case of doers of the type 1 behaviours, lower education may be an explanatory variable both understood as a *proxy* of the income variable and both as a variable *per se*. In the first case it is about the fact that people with lower education usually earn less, and in consequence are reticent in engaging into a behaviour which profit outcome is uncertain, while in the second case explanation requires the so called enlightenment hypothesis (Gelissen, 2007): people with lower education know less about environmental problems and about their solution. Moreover, the situation is also in accordance with the approach of Inglehart (1990): people with less material wealth are oriented towards values related to economical surviving and thus are hindered to be open-minded towards higher level life-quality options, or choices which on the short term are costly, but on the long term may bring improvements concerning quality of life (e.g. buying eco-efficient electric goods).

Regarding type 2 behaviours, the positive role of the money factor (affluence) is further accentuated by the positive and significant effect of the enlightenment factor (positive influence of the education) and postmaterialism. Seems that people engage in these more costly and difficult environmentally significant behaviours because they are aware about the long term positive outcomes of these choices on their whole life quality.

It is however important to mention that as far as within the regression models above were not included any kind of environmental belief or attitude variables, remarks concerning the ecological enlightenment or consciousness of the type 2 doers is rather speculative than effective. As a consequence, we turned to study the influence on the two dependent variables of the NEP and of the evaluations of the seriousness of local-level environmental problems.

3.2   Environmentally significant behaviours and their environmental embeddedness

3.2.1   The NEP

As mentioned before within the first chapter, the NEP view is considered as a very general belief about human – nature relationship which serve as a framework for more concrete environmental attitudes and behaviours. Such an approach is characteristic for the value–belief–norm theory (Stern et al., 1999; Stern, 2000) and for the schematic model of environmental concern (Stern et al., 1995) which serve as guiding theories of the present research and according to which we formulated the three hypothesis of the research. Let's turn now to the examination of the first hypothesis, but not before noting some aspects concerning the endorsement of the NEP within the studied population.

As appear from the Figure 2, except the 5th item of the scale, in every other cases the majority of response variants correspond to pro-NEP attitudes (the agreement dimension in case of the items no. 1 and 2, respectively the disagreement dimensions in case of items no. 3-6). Simply put, the majority of respondents accept the idea that the balance of nature is delicate and the spaceship metaphor, reject the idea of human dominance over the nature, respectively the idea that human interventions in nature only rarely present negative consequences. The situation changes however in case of the 5th item where the majority of respondents express the view that limits to grow do not apply in case of Romania. This is in fact the most important conclusion regarding the endorsement of the NEP in Cluj-Napoca: while generally speaking respondents are in accordance with the existence of limits to growth – the case of the 2nd item which is considered to measure this aspect or facet (Dunlap et al., 2000) –

their position is basically changed when it comes about Romania. Such a finding signals not only an attitudinal ambivalence alongside the global – local distinction, but also a particular way in which the public understands the idea of human exceptionalism (HEP), the concurrent view of the NEP: while on a general-abstract level accept the idea that humans society seriously abuses the environment, on the concrete-local level (Romania) think that our country should get a transition period or an abolition regarding her limits to growth. It is however equally important to mention that in case of both the 5th and the other items the percentage of those who are not sure about their position towards the NEP is quite high, so that ambivalence goes together with attitudinal ambiguity.

Figure 2: The frequency of different attitudes towards the six items of the NEP Scale
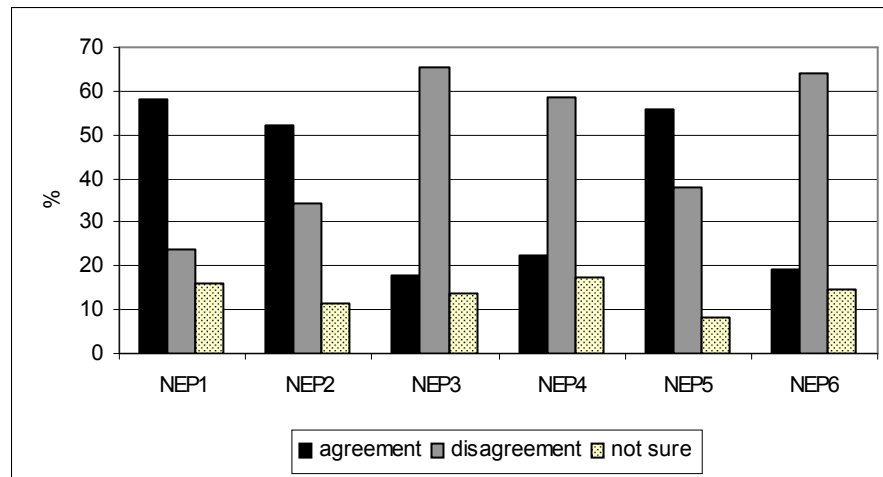
Regarding the so called construct validity of the NEP scale (Dunlap et al., 2000) the following regression analysis was used in order to determine which are those social and axiological variables which are favourable towards the NEP view. In the first model independent variables like age, gender, income, ethnicity were included, while in the second model the role of the postmaterialism, respectively traditional, liberal and egalitarian value preferences were investigated while controlling for the previous.

Table 4: Regression analysis on the NEP scale

	Model 1	Model 2
Age	0.029	0.027
Gender (man)	-0.042	-0.070+
Education	0.480***	0.431***
Income	0.059	0.074+
Ethnicity (Romanian)	-0.164***	-0.121***
Postmaterialism		0.086*
Preference for traditionalism		-0.029
Preference for freedom		0.059
Preference for equality		0.033
R^2 adjusted	0.231	0.239
R^2 change	0.238	0.013
Significance of F change	$p<0.001$	$p<0.05$

***$p<0.001$; *$p<0.05$; +$p<0.1$; coefficients from the table are standardized (Beta).

Results from Table 4. indicate that the strongest effect on the NEP is exercised by the education variable followed by ethnicity. On the level of this control variable the positive influence of the other than Romanian ethnicity was revealed, and further analysis (t test) indicated that the effect is

localizable on the level of the Hungarian population among which the media of the NEP score (m=22.15) was significantly (t=-3.429; p<0.001) higher than the media revealed on the level of the Romanian population (m=20.67) and such a significant difference cannot be revealed between the Romanian and the Roma population, the second most frequent other ethnicity mentioned besides the Hungarian. Among the variables introduced in the 2nd model, only postmaterialism influences the endorsement of the NEP view, albeit is important to note that the value of the statistically significant coefficient is very low. Not less important is that in the final model gender and income appear as marginally significant predictors of the NEP, which implies the conclusion that within the studied population, Hungarian women with higher education, from relatively wealthy households and who prefer postmaterialist values are those who are the most favourable towards the NEP view.

With these results we can only partially subscribe to the conclusions provided by other research, particularly those which studied the NEP within post-communist contexts. For instance, age in our case is positively related to the NEP, while Bostrom et al. (2006) signal the negative effect of the age variable on the NEP in Bulgaria. Postmaterialism in our case exercises a weak, but positive and significant influence on he NEP, while Gooch (1995) albeit hypothesizing so, could not provide a clear evidence in this regard from a Baltic sample. The three variables of value preference – traditionalism, freedom and equality – do not influence statistically significantly the dependent variable, however their direction of influence confirms the facts listed in the literature (Dunlap et al., 2000; Stern et al., 1995): both preference for freedom and equality are positively related to the NEP view.

For exploring the first hypothesis – *there exist a positive influence of the NEP on the specific environmental behaviours* – previous regression analysis on the two behaviour variables were further developed in a 3rd model by introducing the NEP among the independent variables while controlling for all the other variables as shown in Table 5 and 6.

Tabel 5: Regression analysis for type 1 behaviour – investigating the effect of the NEP

	Model 3
Age	-0.041
Gender (man)	0.031
Education	-0.100*
Income	-0.104*
Ethnicity (Romanian)	0.030
Postmaterialism	-0.094*
NEP	-0.024
R^2 adjusted	0.023
R^2 change	0.001
Significance of F change	p>0.05

*p<0.05; coefficients from the table are standardized (Beta)

Table 6: Regression analysis for type 2 behaviour – investigating the effect of the NEP

	Model 3
Age	0.182***
Gender (man)	-0.077+
Education	0.379***
Income	0.095*
Ethnicity (Romanian)	-0.127*
Postmaterialism	0.088*
NEP	-0.016
R^2 adjusted	0.176
R^2 change	0.001
Significance of F change	$p>0.05$

***$p<0.001$;*$p<0.05$; +$p<0.1$; coefficients from the table are standardized (Beta)

Results of the regression analysis clearly refute the first hypothesis. *The NEP does not exercise a positive influence on any of the two types of environmentally significant consumption variables*, with other words in case of the studied population, albeit generally positively endorsed, the NEP does not appear as a capsule or as a motivation for specific pro-environmental behaviours. This 'rootless' character of the behaviours may be due to at least two possibilities. One of these is more specific and has to do with the lack of moderator effect of more specific environmental attitudes which according to both the value–belief–norm theory and the semantic causal model intervene between the NEP and concrete environmental behaviours. Such a possibility becomes plausible as far as through the analysis above we practically missed the first necessary condition according to Baron and Kenny (1986) for a mediator effect of specific attitudes: X (=NEP) should significantly influence Z (behaviours). *Such a fact practically cancels one of the essential requirements for the confirmation of the third hypothesis.* The other possibility is connected to the former, is more general and supposes that among the studied population, environmental consciousness is multi-dimensional and is organized alongside a more general and more concrete dimension which do not have very much in common, such an aspect being in fact signalled by the different attitudes towards the issue of limits to growth in case of the world and Romania.

3.2.2   *Attitudes towards the seriousness of local environmental problems*

As mentioned previously, specific environmental attitudes were investigated through the evaluation of the seriousness of eight environmental issues/problems from the respondents quarter/neighborhood. By choosing a concrete frame of reference we intended to investigate the role of the so called 'bedroom window effect' (Carman, 1998) on the considered behaviours, i.e. environmental awareness and in turn environmentally significant behaviours are influenced by the quality of the closest environment.

Figure 3: Frequencies of different response variants regarding the seriousness of the eight environmental issues
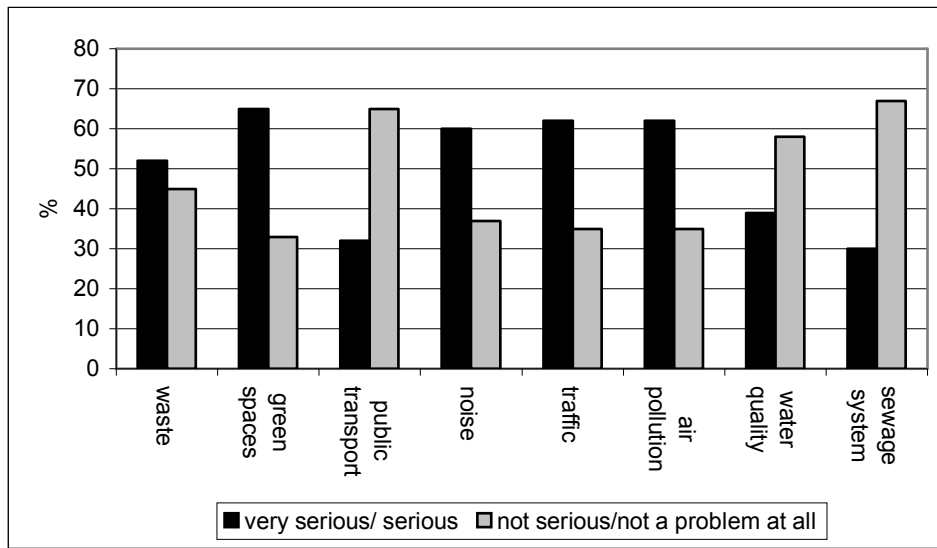
From the total of the eight studied problems, five are considered in terms of very serious and serious, and only the availability of public transport, quality of drinking water and quality of the sewage system is viewed in a satisfactory way, in concordance with data of the *Urban Action* survey undertook in the same year in Cluj-Napoca (European Commission, 2007).

Through the analysis of the inner structure of the eight items, we succeeded to create an index of factorial score (Table 7) which explains 84% of the variance. This is the index with which will operate as an independent variable within the regression analysis on the two behavioural types. Furthermore, it will constitute the dependent variable of the regression analysis presented in the table right below within which in 3 models we tried to establishe which are those structural, axiological and environmental variables which influence the attitudes towards the seriousness of local environmental problems.

Table 7: The calculation of the index of evaluation of the seriousness of local environmental problems

	Communalities	Saturation
Waste	0.579	0.761
Green spaces	0.792	0.890
Public transport	0.787	0.887
Noise	0.940	0.969
Traffic agglomeration	0.940	0.970
Air pollution	0.944	0.971
Drinking water quality	0.856	0.925
Sewage system	0.856	0.925
Explained variance	83.67%	
KMO	0.877	
Significance of the Bartlett test of sphericity	$p < 0.001$	

Method of extraction: *Principal axis factoring*

Table 8. Regression analysis of the evaluation of the seriousness of local environmental problems

	Model 1	Model 2	Model 3

Age	-0.037	-0.036	-0.036
Gender (man)	0.069	0.073	0.071
Education	-0.031	-0.019	-0.006
Income	-0.057	-0.060	-0.057
Ethnicity (Romanian)	0.065	0.053	0.049
Postmaterialism		-0.023	-0.020
NEP			-0.030
R^2 adjusted	0.012	0.012	0.013
R^2 change	0.012	0.001	0.001
Significance of F change	$p>0.05$	$p<0.05$	$p>0.05$

Coefficients from the table are standardized (Beta).

From the low explanatory value models two important and interesting conclusions can be shown out. Firstly, none of the independent variables exercise statistically significant influence on the dependent variable and the influence of the NEP is not only statistically insignificant but the direction of influence is negative, with other words the second hypothesis of the research is in turn infirmed: *there is no positive, influence of the NEP on specific environmental attitudes,* i.e. people are not critical towards the quality of environmental issues and problems from their neighbourhood because they hold a pro-NEP view. Moreover, the lower value and statistically insignificant coefficients of the other used independent variables do not entitle us to draw any kind of certain structural or objective source of these evaluations, which thus appear as rootless and fuzzy.

As shown above, the mediator effect of the attitude variables between the NEP and the behaviours could not been demonstrated, as far as the first of the necessary statistical condition was not fulfilled. We may go however further and investigate some direct influence of the environmental attitudes on the behaviours. Thus, two final models of regression were added to the previous, by introducing the attitudes towards local environmental problems as independent variables, while controlling for all the previously introduced variables (Table 9 and 10).

Table 9: Final regression analysis of type 1 behaviour

	Model 4
Age	-0.042
Gender (man)	0.033
Education	-0.100*
Income	-0.106*
Ethnicity (Romanian)	0.031
Postmaterialism	-0.093*
NEP	-0.025
Local environmental problems	0.030
R^2 adjusted	0.022
R^2 change	0.001
Significance of F change	$p>0.05$

*$p<0.05$; coefficients from the table are standardized (Beta)

Table 10: Final regression analysis of type 2 behaviour

	Model 4
Age	0.180***
Gender (man)	-0.073+
Education	0.377***
Income	0.095*
Ethnicity (Romanian)	-0.125*
Postmaterialism	0.089*
NEP	-0.017
Local environmental problems	0.048
R^2 adjusted	0.176
R^2 change	0.001
Significance of F change	p>0.05

***$p<0.001$;*$p<0.05$; +$p<0.1$; coefficients from the table are standardized (Beta)

Results indicate, that attitudes towards local environmental issues and problems has a weak, positive, however statistically not significant influence on the two behaviour items. With other words, while every of the three hypothesis of the research is refuted, the possibility of an alternative approach appears. According to this, the direction of influence of the attitudes towards local environmental issues indicate that low quality environmental facilities may be considered as direct and not mediator sources of concrete pro-environmental behaviours. Such an affirmation needs however further studies in order to verify and to determine certain tendencies in this regard.

All in all, seems that neither specific environmental attitudes, nor the specific behaviours can be embedded within the general framework of the NEP. As far as every of the two guiding theories of the present research consider the NEP as a necessary core-view for specific pro-environmental attitudes and behaviours, in our case the lack of linkages between the NEP on the one hand, and attitudes and behaviours on the other, entitle us to conclude that besides the fragmented, clustered character of the behaviours, there is also a rootless pattern of them, concerning their non-dependency on the NEP. The source of this missing link should be however located not in the non-endorsement of the NEP, but in the fuzzy, non-cohesive nature of the environmental belief system of the studied population, wherein global and abstract environmental beliefs are clearly separated from the concrete environmental problems, attitudes and behaviours.

The path-analysis below summarizes the results of the study, alongside the logic of the schematic causal model of environmental concern (Stern et al., 1995). The majority of the influences regarding the two types of the behaviours have social contextual origin (education, income, age); postmaterialism is an other variable with a weak influence, while the zone from the NEP below constitutes the zone of the missing links. Dotted lines between attitudes and behaviours signal that coefficients albeit positive in both of the cases are not statistically significant.

Graph 4: The causal model of environmentally significant behaviours
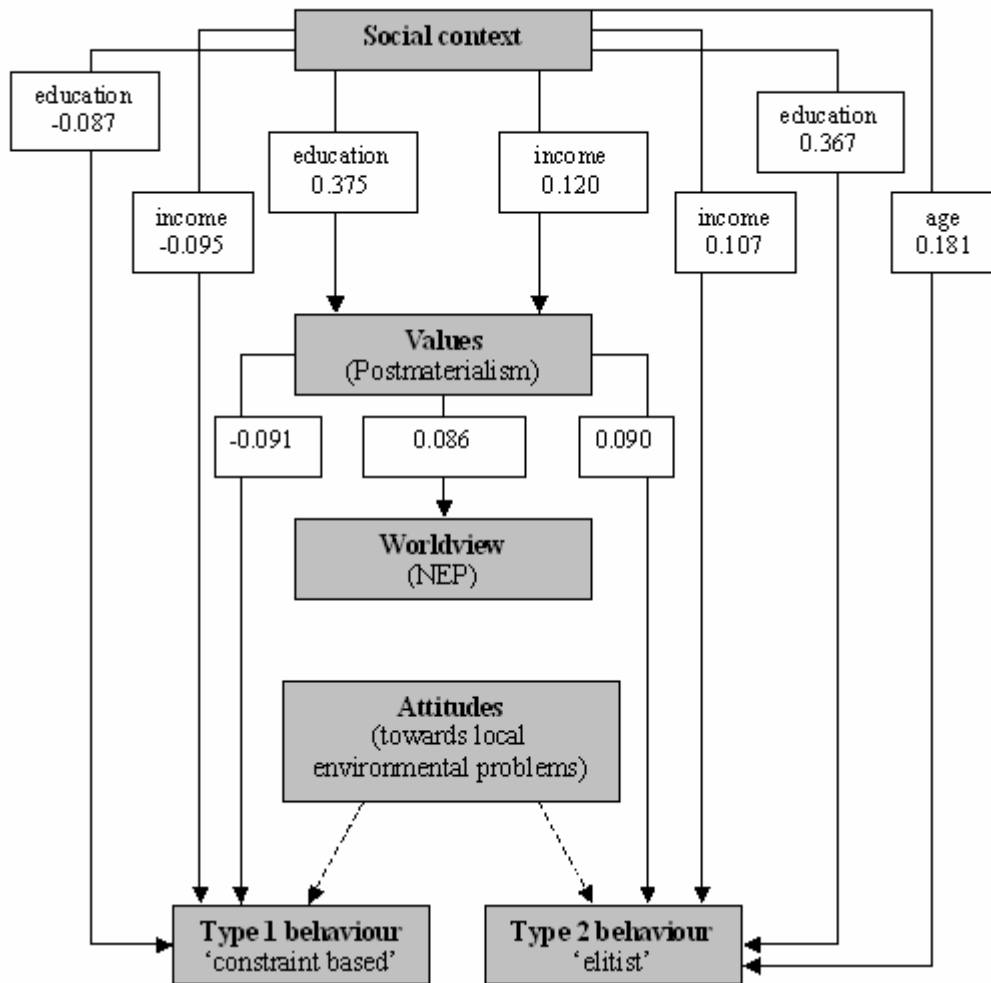
4.   Overall conclusion

The evidence above suggest that the considered environmentally significant behaviours have a very much social structure based origin. The negative influence of education and income on the behaviours from the first group (economical use of water, buying cloths from the second hand shops, preference for buying goods with local origin) underline the economical constraint motivation of the performance of them, which then is further accentuated by the weak, but statistically significant, negative influence of the postmaterialism On the contrary, performing of the more costly and difficult behaviours from the second group is enhanced by social-structural variables like higher education, higher income, higher age[33] and postmaterialism. Such results indicate that in case of the studied population both the affluence approach and both the postmaterialism thesis (Inglehart, 1990, 1995) may serve as relevant explanations regarding the motivational source of the behaviours.

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[33] This is however a surprising evidence, as far as usually young people are considered the source of environmental attitudes and behaviours. Explanations may be located in the environmentally 'un-rooted' nature of the considered behaviours, which are thus much more the consequence of an economical well-being - which probably is not reached at so young ages – that of ecological consciousness.

None of the three hypotheses regarding the influence of the NEP and specific environmental attitudes on the behaviours was confirmed. This fact indicates that behavioural motivations are neither rooted in a general environmental belief system (NEP), nor the influence of the NEP is mediated by specific environmental attitudes. Regarding the latter is however important to accentuate, that critical attitudes towards local environmental problems exercise a direct positive influence on the behaviours. Albeit coefficients are weak and statistically not significant, the direction of influence signals that behavioural motivations are not fully rooted neither in local environmental problems, but certainly are closer to them than to the general beliefs (the negative influence of the NEP).

Given the fact that the population is not reluctant towards the NEP, source of missing links should be located in the multidimensional nature of the population's environmental belief system which is fragmented alongside the global – local dimension and which then determines that widely used instruments (NEP) and theoretical models (value–belief–norm theory, schematic causal model of environmental concern) do not serve as enough comprehensive in case of the studied context and population. This finding is in accordance among others with those mentioned by Bostrom et al. (2006) and confirmed also recently in Romania as well (Nistor, 2008): in case of transitional or post-transitional societies, environmental attitudes and behaviours seem to be multidimensional and are not motivated by a sole, particular ecological worldview, but are much more rooted in economical aspects, reflecting the still in conflict relationship between economical constraints and environmental protection.

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Environmentally Friendly Behaviour: Consistent or Not?

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Abstract

This paper is trying to answer three research questions: (1) what are the main psychographic differences between those who behave environmentally friendly and those who do not (2) which variables differentiate environmentally conscious/non-environmentally conscious respondents the most and (3) those who behave in an environmentally friendly way, do it for the sake of the environment or for other reasons? In order to find out the answers for these questions, an empirical study has been conducted among adults (200 respondents). We gathered data on their actual frequency of different environmentally friendly behaviours and their several psychographic attributes. The discriminant analysis showed that behavioural groups differ the most in their ecological world-view, in their perceived irrelevance of their pro-environmental actions and in their acceptance of environmental norms.

Based on the psychographic variables as antecedents of behaviour, by using cluster analysis respondents were divided into two groups called environmentally conscious and non-conscious respondent groups. Environmental consciousness meant more ecological world-view, higher level of acceptance of environmental norms and lower perceived irrelevance of individual actions.

Afterwards, environmental consciousness was compared with the level of environmentally friendly behaviour. Therefore, four different groups of respondents were distinguished: consistently non-green and green respondents, those who "do not practice what they preach", and self-seeking environmentally friendly respondents. Among respondents with environmentally friendly behaviour, we also made a discriminant-analysis to find those psychographic attributes, which can prevent them to realize environmentally friendly attitude into actions.

1. Necessity of deep understanding of motivations of environmentally friendly behaviour

As the starting point of this article I accept the fact that our epoch faces such serious environmental problems at both national and global level that the solution thereof permits no delay in sustaining the existence of humanity as well as improving the individual quality of life.

The anthropomorphic root of recent environmental problems is a widely shared view. The current economic system and the typically applied corporate marketing – inter alia - are often considered as the roots of the problems. Green marketing is one potential answer for this environmental challenge – within the recent social-economical paradigm. However, the unquestionable base of green marketing is the existence of green consumers and their active participation on the market.

The research has been motivated by the fact, that though consumers have typically positive attitude toward nature, their purchase behaviour is not parallel with it: they do not buy environmentally friendly products to a socially desirable extent. This phenomenon needs a deeper understanding in

order to help experts to apply more effective marketing mix – by taking the interest of nature also into consideration.

1.1 The research questions

In short, here we are looking for the answers for three research questions:

1. What are the main psychographic differences between those who behave in an environmentally friendly and those who do not?
2. What are those variables, which separate environmentally conscious and non-environmentally conscious respondents the most?
3. Whether those who behave in an environmentally friendly way do it for the sake of the environment or for other reasons? Therefore, how can we differentiate consistent greens from non-consistent greens?

1.1 Definition of environmentally friendly behaviour

Answering these questions requires a clear definition of environmentally friendly behaviour and the specification of variables alongside where we may find significant differences between behavioural groups.

Defining environmentally friendly behaviour is not as easy and unambiguous as it seems. Basically, two different interpretations of environmentally friendly behaviour can be found. One of them contains those definitions, which examine green behaviour in its complexity, so they can give a broad picture of consumers' behaviour – not only as a consumer. In the other group, we can find definitions which focus mainly on one dimension of behaviour - especially in marketing related studies – typically buying intention and willingness to pay for green products. In this article I focus on the former, the complex approach of green behaviour.

Stern (2000) defined environmentally significant behaviour in two different ways. The first approach emphasises the impact of the behaviour: „the extent to which it changes the availability of materials or energy from the environment or alters the structure and dynamics of ecosystems or the biosphere itself". (p. 408.) This behaviour can come into display in a direct and in an indirect way: an example for the former is a person who uses his car less often and due to this, environmental pollution has decreased but the extent of it cannot be detected, as it is relatively small. Another example for the indirect effect is the voting of introducing new environmental taxes, in consequence of it environmental pollution of firms can decrease visibly. This impact-based approach does not take into account the intention behind these behaviours. Referring back to the case of a person who uses his car less often and rides a bike instead, motivation behind this action may be that he loves to cycle or fuel has become more expensive so he does not do that for the sake of the environment, it still has a positive effect on the state of the environment. Operacionalization of this variable needs a lot of pieces of information about relative effectiveness of different actions.

According to the intent-oriented definition, environmentally significant behaviour „can be defined from the actor's standpoint as behaviour that is undertaken with the intention to change (normally, to benefit) the environment" (Stern, 2000: 408). This description focuses on the motivation behind the action independently of the result and efficacy of the behaviour. In this point of view behaviour is evaluated based on the intention behind, therefore examination of attitude is in the focus.

In my opinion, the impact- and intent-oriented approaches are partly related to each other, because if somebody does not believe that his/her behaviour may have positive effect in solving an environmental problem, probably has lower intention to do this action. That is why perceived consumer effectiveness - which is going to be introduced later in this dissertation-, has outstanding role in forming the behaviour. Moreover, environmentally conscious behaviour should be examined because „ the definition of environmentally conscious behaviour expresses to what extent consumers

know the effect of production, distribution and consumption on the environment and being aware of this, what kind of behaviour they show." (Vágási, 2000: 42) This approach combines the motivations and effectiveness of actions.

Stern (2000) can differentiate four different types of environmentally significant behaviour: (a) environmental activism, (b) non-activist behaviour in the public sphere, (c) private-sphere environmentalism, and (d) other environmentally significant behaviours such as decisions as an employee at workplace which can also influence the state of the environment. Environmental activism means membership and active involvement in green organizations. Non-activist behaviour cloaks petitioning on environmental issues and support of public policies (environmental acts or higher taxes). Private sphere behaviour consists of buying behaviour, lifestyle, waste disposal, maintenance of household equipment and so on. As it can be seen, purchase behaviour is again only one aspect of the complex environmentally friendly behaviour.

1.2 Antecedents of environmentally friendly behaviour – components of environmental consiousness

The other dimension of the first research question is that what kinds of variables are used for explaining the behavioural differences. Which variables could be good predictors of environmentally friendly behaviour? Many researches from the '70s to the '90s tried to identify demographic patterns in connection with pro-environmental behaviour, but their results were controversial. Usually the more educated people with higher income, and mostly women behave in a favorable manner, but age, marital status have proven to be moderate or weak predictor of green behaviour (e.g. see the summarizing study of Diamantopoulos et al., 2003). For this reason, emphasis has been taken to non-demographic variables such as values, environmental knowledge, attitude, perceived consumer effectiveness, political orientation and so on.

Among psychographic variables which have definitely reliable correlation with green behaviour I choose those, which played the most unambiguous and most significant role in forming environmentally friendly behaviour. These are the following:

- ecological world-view as measurement of values,
- attitude toward environmentally friendly behaviour,
- groups of environmental knowledge suggested by Kaiser and Fuhrer (2003),
- perceived importance of environmental problems,
- perceived consumer effectiveness.

Figure 1: Variables included in the analysis and their hypothesised relationship
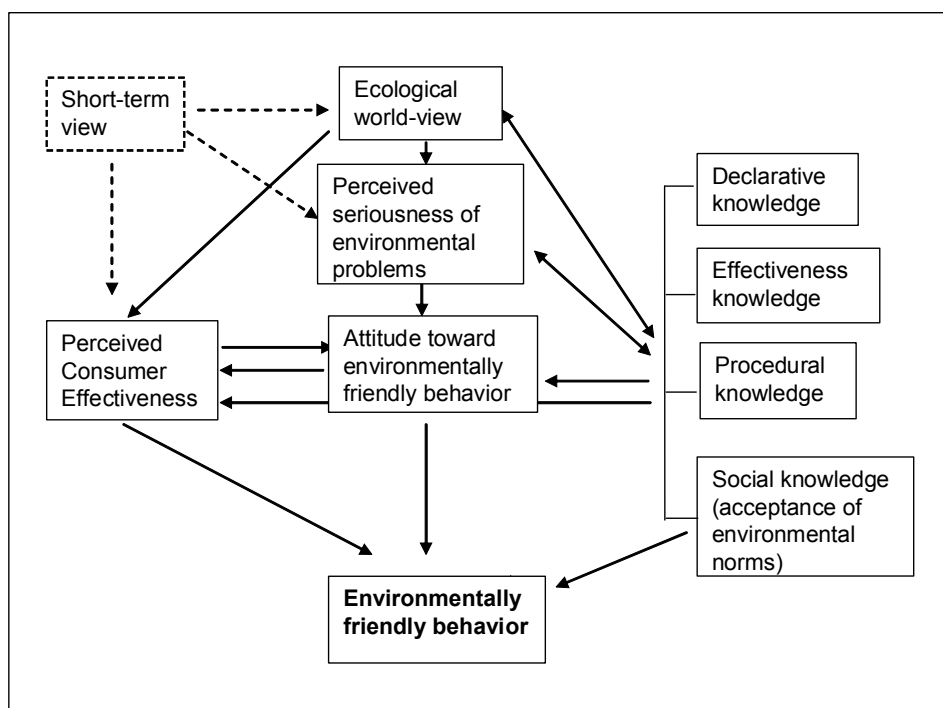
This model is based on some former green behaviour-models. Environmental values play substantial role like they had in the models of Stern (2000), Dembkowski and Hanmer-Lloyd (1994), and Kaiser, Wölfing and Fuhrer (1999). Ecological world-view consists of values related to nature and to the relationship of men and nature. Dunlap and his colleagues have developed reliable scale of measuring ecological world-view called NEP (New Environmental/Ecological Paradigm – Dunlap et al., 2000).

The rational, planned behaviour needs environmental knowledge - being homo economicus we believe that knowledge is the most important variable in predicting someone's behaviour. Researches on the domain of marketing and psychology have shown that there are lots of pathways in which knowledge has an impact on behaviour, but almost never has a direct impact on it. Relying on the work of Kaiser and Fuhrer (2003), I used the terms of declarative, procedural and effectiveness knowledge as kinds of environmental knowledge. Understanding of how environmental systems work is called declarative knowledge. Procedural knowledge "addresses the issue of how to achieve a particular conservational goal" (p. 601), effectiveness knowledge is "knowledge about the relative conservation effectiveness of different behaviours".(p. 602) Although these authors defined social knowledge, as the fourth type of knowledge, in my opinion it is much more related to social and moral values, than factual knowledge. Kaiser and Fuhrer argue that these types of knowledge "must work together in a convergent manner" (p. 598.) in order to form environmentally friendly behaviour. At this level I rely on the theory of Kaiser and Fuhrer, however, in contrary to their approach, I do not emphasise the interrelation of different kinds of knowledge. Instead, I suppose that the level of knowledge is not only the function of ecological world-view but as we gather information – partly unintentionally - during everyday life, it can form our disposition towards nature, therefore new information can influence our world-view.

Knowledge and ecological world-view determines how serious people perceive environmental problems – examining their affectedness by them at the same time.

Attitude – in the forms of feelings and concepts – is strongly related to behavioural intention and behaviour itself. This connection is well-explored in the marketing-domain, so it is not a surprise, that environmental attitude is a powerful predictor of environmentally friendly behaviour and intention in

most of the studies (Ellen et al., 1991). Attitude can refer to the environment itself (it is often called environmental concern) or to the environmentally behaviour. I preferred to measure the latter, which is more concrete and has no overlap with ecological world-view at theory level. Nevertheless, strength of the relationship between environmental attitude ranges from moderate to nonexistent in the articles.

Several researchers have studied PCE as a significant predictor of environmentally friendly behaviour (e.g. Ellen et al., 1991; Roberts, 1996). PCE often correlates with attitude but it is a different construct in resent researches. "Attitude represents a summary evaluation of an individual's beliefs or feelings about an issue", in contrary to PCE which is defined "... as an estimate of the extent to which personal consumption activities contribute to a solution to the problem" (Berger and Corbin, 1992: 80). In other words, this is the extent to which the consumer believes that his/her efforts alone can make a difference. Berger and Corbin (1992) argues that if PCE is treated as a part of concern then its role is likely to be understated, so I handle them as different concepts.

1.3   *Matrix of environmental consiousness and environmentally friendly behaviour*

From the practical point of view, when marketers would like to increase their market share, the way and effective tools of conviction of potential consumers must fit to their motivations. However, they must take into consideration that several elements of environmentally friendly behaviour are not unambiguously taken in the interest of nature: financial interests can motivate saving energy, buying bioproducts can be a means of protecting health. Even in the case of selective waste disposal, the motivation can be the lower fees of rubbish collection. That is why during identification of green behaviours the aim was to cover both impact and intent-oriented aspects of behaviour defined by Stern – and introduced earlier in detail.

Therefore, it must be underlined that environmentally friendly behaviour can occur as a result of other motivations (such as energy and water saving for financial reasons or as routine rooted in socialization process and therefore practically unconscious), so not only environmentally conscious behaviour can be environmentally friendly. Therefore, my aim was to categorize consumers based on both their behaviour and environmental consciousness and to explore the main characters of consistent and inconsistent consumer groups. The distinction is vital: they mean very different marketing strategy – however we must understand that only consistent (conscious) environmentally friendly behaviour may serve long-term interest of nature and society.

Finally, my intention was also to create and test reliable and valid scales to measure these psychographic and behavioural items – partially based on the results of international studies.

Figure 2: The matrix of environmentally friendly behaviour and environmental consciousness
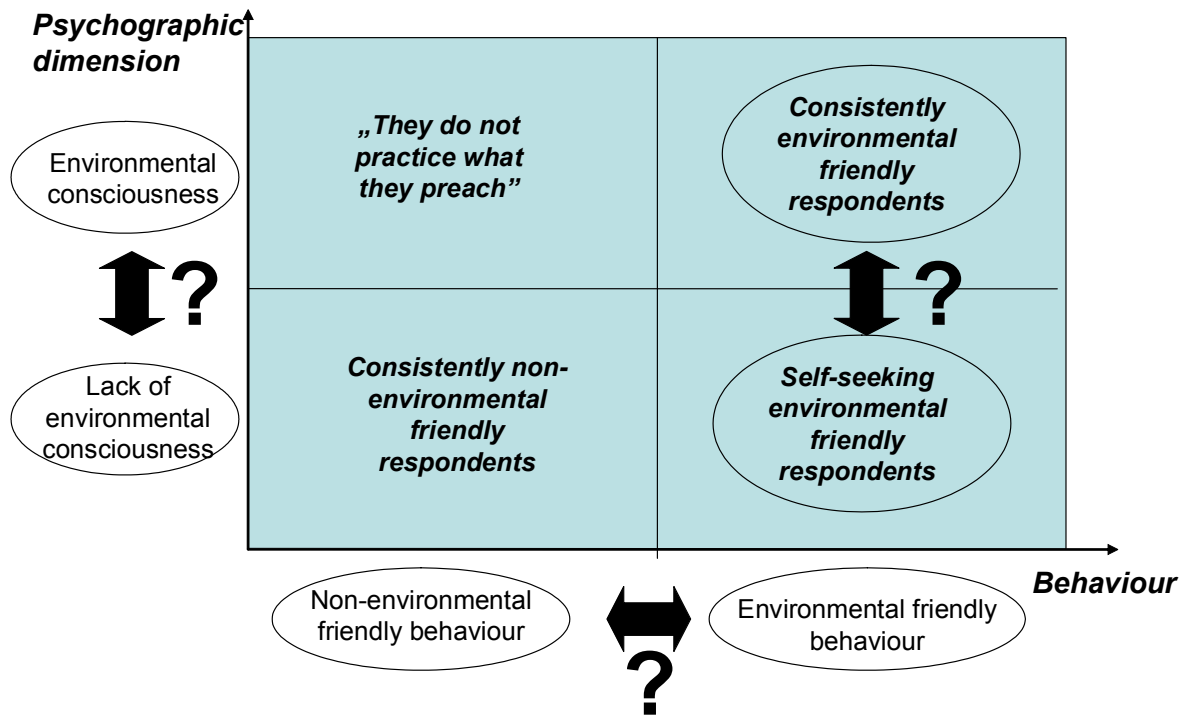
1.2 Research method

How can we identify consistent environmentally friendly consumers? To know this, my aim was to separate respondents firstly based on their behaviour and afterwards, based on their psychological background included their ecological world-view, environmental attitude and –knowledge and perceived consumer effectiveness inter alia. Behavioural groups were based on the self-reported frequencies of wide range of environmentally friendly behaviour types and this measurement was the base of screening.

In order to be able to answer for the first research question, behavioural groups were submitted to a **discriminant analysis**, which could extract those psychographic variables, which differentiated the two groups the most effectively.

Afterwards a **cluster-analysis** were made to separate environmental conscious respondents from non-environmental conscious ones based only on psychographic variables. Then the respondents were classified both by their level of consciousness and by their green behaviour, which has resulted a 2x2 matrix, in which we can identify consistent and non-consistent respondent groups.

Afterwards, our attention was paid only on respondents with environmentally friendly behaviour. Results of another **discriminant analysis** gave us indications, which psychographic variables showed significant difference between consistent and non-consistent greens – therefore which ones should be influenced in the future.

1.2.1 Sample description

Respondents were selected by birthday-key. The sample size is 200, of which:

  - 100 respondents were environmentally friendly,

- 100 were non-environmentally friendly based on their behaviour, (measurement of it can bee seen in detail in the next part)

The other characteristics of them:

- Budapest-dwellers,
- 18-65 aged men and women,
  - they or their relatives don't work in paper industry or commercial, or by advertising agency, they don't deal with marketing, market research or environmental protection,
- they did not take part in market research in the last 6 months.

Interviews were conducted between 10-16. September, 2007.

1.3   Measurement of environmentally friendly behaviour

Who are environmentally friendly consumers in this study? For me it was very important during designing the research, to screen respondents based on the complex meaning of green behaviour, because special features of different green behaviour forms can correlate with different psychographic variables (for example people may support green civil organizations just because they suppose their consumer effectiveness is low in buying green products). On the other hand, my intention was to measure actual behaviour instead of behavioural intention, because though intention is the best predictor of behaviour, it systematically overestimates the actual behaviour.

Because of the aspects mentioned above, a 25-item scale referring to the frequency of different behaviours was used to identify environmentally friendly consumers (4 degrees: 1-never, 2-sometimes, 3-often, 4-always).

The following different environmentally friendly behaviour forms were included in the screening questionnaire:

1. Selective waste disposal (4 items),
2. Reducing consumption (3 items,)
3. Purchase (5 items),
4. Saving energy (5 items),
5. Water saving (4 items),
6. Environmental citizenship (4 items),
7. Transportation (2 items).

To the formation of behavioural groups, the answers of respondents were transformed to dichotomous variables: high frequency (often or always answers) were coded as 1, low frequency answers (sometimes or never) were coded as 0. Afterwards, dichotomous frequency codes were added up for the 25 items.

During the pilot interviews the boundary of environmentally and non-environmentally behaviour were pulled at 14 points: those respondents who had maximum 13 points were identified as non-environmentally friendly respondents based on their behaviour, and those who had at least 14 points were called as environmentally friendly ones. (Cronbach alpha=0.824). The distribution of recoded behavioural answers of the total sample is shown below.

Figure 3: Distribution of total recoded behavioural scores of broader sense of environmentally friendly behaviour in the total sample
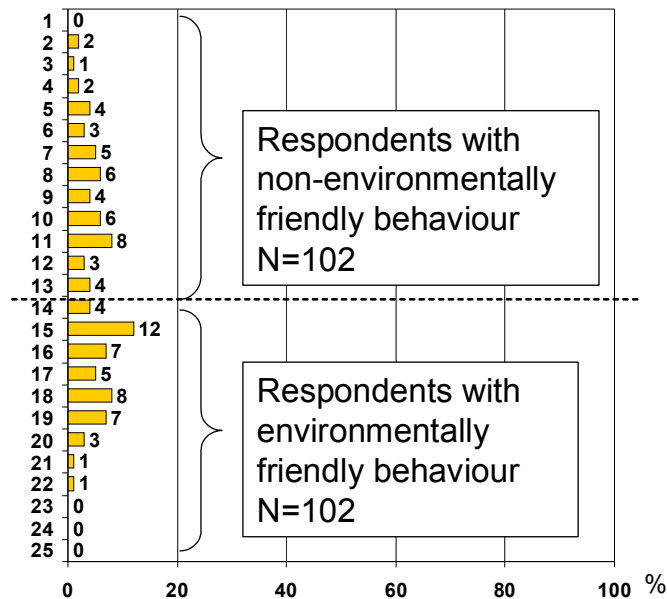
As it can be seen, creating two groups is not unjustified: criterion used for separating green respondents from the others is appropriate – especially if the not symmetrical distribution of scores is taken into consideration.

1.4   Measurement of psychographic variables

Scales used for measurement of psychographic variables mainly based on the method used by international literature. **Ecological worldview** was measured by NEP (New Ecological Paradigm, Dunlap et al., 2001) because this 15-statement list has been revised and its reliability has been proven by many experts (in this research Cronbach alpha= 0.803).

For measuring **ecological knowledge**, I mainly relied on the article of Kaiser and Fuhrer (2003), because they identified four different types of knowledge, which are in interaction of each other and all of them need to be present to help forming environmentally friendly behaviour, namely: declarative, procedural, effectiveness and social knowledge. The former three were measured by a 17-statement list where respondents had to judge the statements based on their truth content, so number of right answers were summarized into one variable. Social knowledge reflects to the social and subjective norms, which have forcing power even if the person is not convinced of the advantage of the given action. This social knowledge was taken into consideration by a variable based on a 6-statements list related to normative and descriptive norms (Cronbach alpha= 0.823).

Respondents were asked to evaluate the seriousness and their affectedness related to 12 different environmental issues (e.g. global-warming, water- and air pollution, waste disposal, injurious chemicals in products). **Seriousness of environmental problems** were measured on a 10 point scale: 1 meant: not a problem at all, 10 meant: very serious problem; environmental knowledge scale ranged between 0 and 17 according to the number of right answers. These environmental topics have been divided successfully into two groups by factor analysis: problems that affect the respondents directly and problems, which have only indirect effect as they are far from the respondents in time or in geographical terms (Cronbach alpha=0.79 and 0.88).

Short-term view refers to the main focus of the respondents' thinking: in general (s)he takes care of only today and doesn't think of the future. Two statements were used to identify this variable (Cronbach alpha=0.73).

Perceived consumer effectiveness (PCE) is a belief that individuals can positively influence the outcome of problems – in the recent context the environmental ones. If an individual is concerned about the seriousness of environmental problems but believes that only governmental or global actions can handle these problems, (s)he will fail to carry out environmentally friendly actions. Findings have proven the definite role of PCE in forming environmentally friendly behaviour (Ellen et al., 1991; Roberts, 1996). In this study PCE was measured by two negatively-formulated statements which reflects to the feeling of irrelevance of the individual actions in solving environmental problems (Cronbach alpha=0.73).

Finally, yet importantly, the **perceived inconvenience of environmentally friendly behaviour** was taken into account by a three-statement scale that described the level of inconvenience of making sacrifices for the state of environment by everyday activities (Cronbach alpha= 0.802).

.Table 1: Comparison of the means of independent variables between the two respondent groups

Independent variables	Non-environ-mentally friendly respondents (N=102)		Environmen-tally friendly respondents (N=102)		Comparison of Means (T test)		
	Mean	SD	Mean	SD	t	DF	Sign.
Ecological world-view	3.5	0.52	3.8	0.52	-3.68	167	0.000
Environmental knowledge	7.99	3.09	9.13	2.79	-2.75	202	0.006
Acceptance of environmental norms	3.63	0.67	3.86	0.86	-2.20	202	0.030
Perceived seriousness of environmental problems with direct effects	8.57	1.39	8.90	0.95	-1.98	197	0.049
Perceived seriousness of environmental problems with indirect effects	7.76	1.58	8.48	1.34	-3.46	198	0.001
Short-term view	0.20	0.93	-0.19	1.03	2.81	198	0.005
Perceived irrelevance of individual actions (PCE)	2.83	1.04	2.10	0.95	5.28	202	0.000
Perceived inconvenience of environmentally friendly behaviour	2.75	0.72	2.17	0.65	6.10	202	0.000

Data in Table 2 below show that alongside each independent variable respondent groups differ significantly, however the aim here is to identify variables, which can divide the respondents the most effectively, and therefore a discriminant-analysis was conducted.

The main aim of creating a discriminant function is not the best estimation of the value of the dependent variable, but to find the best combination of the independent variables which can separate the respondents groups as much as possible.

All those psychographic variables were included in the analysis alongside which we were able to experience statistically significant differences between green or non-green respondents. Stepwise method had been used in the analysis, because its great advantage is that it includes only those variables which have considerable effect in discrimination. In order to test the validity of the model, the sample has been divided into two subsamples – taking the screening quota into consideration. 80%

of the original sample has become estimation sample, and the other 20% has become validity sample, while the 50-50% proportion of environmentally and non-environmentally respondents has remained.

The output of the analysis was a discriminant function with two variables: perceived inconvenience of environmentally friendly behaviour and perceived irrelevance of individual actions. The function is adequate as it creates significant differences between respondent groups. (Wilks' lambda=0.748, Chi square: 42.63, which is significant at this degree of freedom.) The eigenvalue of the function is 0.336, which means that the disriminant function can explain 34% of the heterogeneity of the values; moreover, the strength of the relationship is quite high (canonical correlation is 0.502).

Beside these numbers, tolerance level of these two variables is 0.841, which indicates that they do not cause multicollinearity.

Coefficients of the discriminant function express partial effects, while the coefficients of the structural matrix show simple, correlation means between the given variable and the function. To the interpretation of the discriminant function the coefficients of the structural matrix must be used, because these have not been already influenced by the deviation of the independent variables therefore these coefficients can indicate their relative power. On the other hand, the contribution of the independent variables to the function can be measured by the coefficients of the function.

Table 2: Structural matrix and the standardized coefficients of canonical discriminant function

Independent variables	Structural matrix Function 1	Standardized coefficients of canonical discriminant function
Perceived inconvenience of environmentally friendly behaviour	0.895	0.702
Perceived irrelevance of individual actions	0.765	0.485
Short-term view	0.357	
Ecological world-view	-0.259	
Seriousness of environmental problems affected respondents directly	-0.226	
Acceptance of environmental norms	-0.186	
Seriousness of environmental problems affected respondents indirectly	-0.179	
Environmental knowledge	-0.164	

It can be seen, that the partial effect of perceived inconvenience of environmentally friendly behaviour contributes to the discrimination of respondents group to a higher extent than perceived irrelevance of individual actions. However, this difference is less remarkable in the structural matrix: high correlation scores show that relationship between variables included in discriminant function and respondent groups are strong, while in the cases of the other variables' correlation coefficients are much smaller.

Validity of the model can be tested by the comparison of the membership of the original respondent groups to the groups created by the discriminant function. 67.5 % of the respondents of estimation sample have been classified properly by discriminant function, the same proportion is 69.8% in the case of validity sample. These results are worth to be compared to the apriori probabilities, because the increase in this probability by using the function can express whether proportion of correct classification has increased significantly or not. While in the original sample the apriori probabilities were 50-50%, in the estimation sample it has improved to 67.5% by the usage of discriminant function, which means 17.5% increase which is statistically significant. (Chi square=10.79, degree of freedom=1, critical value of Chi square is 3.84 at 95% of reliability.)

The result of discriminant analysis has strengthened our hypothesis that the perceived effectiveness of the action of the individual is critical: people with more intensive feeling of irrelevance and inconvenience carry out environmentally friendly behaviour with less probability. Of course, these factors are not independent from each other: if people feel that their actions have no significant effect on the state of the environment they will not behave in an environmentally friendly way – even if it will not need remarkable efforts from their side.

1.5   Creating clusters based on psychographic variables

To identify intentional, namely environmentally conscious respondents I created the clusters of the respondents based on the psychographic variables showed in detail in the first part. I used K-Means method, and variables were standardized. All of those variables were used in the cluster analysis, which showed significant difference between respondent groups. I would like to highlight that clusters were created only alongside psychographic factors – independently of the behaviour of the respondents.

In accordance with our expectations, the interpretation of the clusters does not cause difficulties, as the cluster centers define the profiles of a very environmentally conscious and a far less conscious respondent group. Members of the environmentally conscious cluster have more ecological worldview, they accept environmental norms more, they perceive environmental problems more urgent and they know more about them and perceive individual actions more effective and less inconvenient than respondents in the other cluster.

It is not surprising that cluster memberships are not of the same size and furthermore, they are not parallel with the membership of behavioural groups, as the experience of inconsistence between theory and practice encouraged me to write this paper. In the sample, 54% of the respondents are environmentally conscious while only 50% of the respondents were environmentally friendly based on their behaviour (however the latter is not automatically part of the former).

Table 3: Cluster centres based on psychographic variables

Psychographic variables used in the analysis (standardized scores)	Final cluster centres	
	Non-environmentally conscious cluster (n=86)	Environmentally conscious cluster (n=101)
Ecological worldview	-0.370	0.552
Perceived inconvenience of environmentally friendly behaviour	0.424	-0.404
Perceived irrelevance of individual actions	0.729	-0.571
Acceptance of environmental norms	-0.392	0.514
Perceived seriousness of problems affecting respondents directly	-0.240	0.191
Perceived seriousness of problems affecting respondents indirectly	-0.187	0.219
Environmental knowledge	-0.424	0.388
Short-term view	0.479	-0.450

It is vital to understand, which psychographic variables have the greatest role in separating clusters. Using SPSS, based on the F scores of the variance-analysis we are able to identify those factors, which contributed to the segmentation the most. Differences in perceived irrelevance of individual actions and ecological worldview had the most important part in creating the clusters. Acceptance of environmental norms and short-term view came after them in the row. Perceived seriousness of

environmental problems contribution to the segmentation is minimal. These results have strengthened again our hypothesis that the lack of belief in the effectiveness of individual actions prevents people from behaving in a socially desirable way.

Table 4: Strength of variables used in cluster analysis

Variables (standardized scores)	Explained variance by variable	Df.	Unex-plained variance	Df.	F	Sig.
Perceived irrelevance of individual actions	78.498	1	0.489	185	160.647	0.000
Ecological worldview	39.425	1	0.323	185	122.040	0.000
Acceptance of environmental norms	38.052	1	0.526	185	72.388	0.000
Short-term view	40.079	1	0.735	185	54.536	0.000
Perceived inconvenience of environmentally friendly behaviour	31.863	1	0.834	185	38.184	0.000
Environmental knowledge	30.619	1	0.83	185	36.873	0.000
Perceived seriousness of problems affecting respondents indirectly	8.614	1	0.964	185	8.936	0.003
Perceived seriousness of problems affecting respondents directly	7.644	1	0.952	185	8.025	0.005

1.6 Identifying consistent greens and their main differences from non-conscious respondents

Afterwards, I wanted to know up to what extent covers the membership of behavioural groups and of clusters each other. To know this, I compared the average scores of complex environmentally friendly behaviour (measured by frequency of 25 different environmentally friendly activities) between the clusters based on the antecedents of the behaviour. In line with the expectations, significant difference can be experienced between clusters shaped on the basis of psychographic variables. Therefore, these results strengthen the general hypothesis that environmentally conscious consumers behave in an environmentally friendly way in general (if it is a multidimensional concept).

Results are summarized in the table below.

Table 5: Comparison of the means of behavioural measurement between environmental consciousness groups

Measurement of environmentally friendly behaviour	Non-environmentally conscious cluster		Environmentally conscious cluster		T-test		
	Mean	SD	Mean	SD	t	Df	Sign.
Environmentally friendly behaviour (scale: 0-25)	10.95	4.95	14.29	4.87	-4.63	185	0.000

In line with the former results, it is not surprising that the membership of clusters based on psychographic variables is not identical with the membership of behavioural groups. The cross-table below shows that only in the case of two-third of the respondents their principles are consistent with their behaviour (57 and 65 persons), while the others are inconsistent in two ways:

- Those who do not practice what they preach (36 persons),
- Those who behave in an environmentally friendly way but not for ecological reasons (29 persons) (for example they use bicycle for sporting or use recycled toilet paper because it is cheaper)

Table 6: Cross-table of environmentally friendly behaviour and environmental consciousness

		Clusters based on psychographic variables		Total
		Non-environmentally conscious	Environmentally conscious	
Behavioural groups	Non-environmentally friendly	57	36(!)	93
	Environmentally friendly	29	65	94
Total		86	101	187*

* missing values were excluded by listwise method.

In practice, the main problem is that ecological worldview and positive environmental attitude is not transformed unambiguously to environmentally friendly behaviour. Unfortunately, the sample size is too small to examine the four group independently, however we can gain some indication by thoroughly examining the environmentally conscious cluster. Therefore, I used discriminant analysis for the 101 respondents to identify which psychographic variables differ alongside consistent and non-consistent environmentally conscious respondents. All psychographic variables were included in the analysis which were used for the former cluster analysis.

The analysis has resulted a significant discriminant function (Wilks' lambda=0.823, Chi square=19.48, DF=2, sign: 0.000, eigenvalue of the function is 0.21), and I could detect relationship with medium strength between the discriminant function and grouping variable. (canonical correlation=0.421).

Conscious and non-conscious environmentally friendly respondents differ significantly in the perceived inconvenience of environmentally friendly behaviour and in the acceptance of environmental norms – the strength of the former is much higher than acceptance of norm. Values of

structure matrix support this finding, which means that inconveniences of behaviour can definitely overwrite the pressure of norms.

Table 7: Structure matrix and standardized canonical discriminant function coefficients for environmentally friendly respondents

| Standardized variables	Structure matrix Function 1	Standardized Canonical Discriminant Function Coeff.
Perceived inconvenience of environmentally friendly behaviour	0.858	0.829
Acceptance of environmental norms	-0.561	-0.514
Perceived irrelevance of individual actions	0.283	
Perceived seriousness of problems affecting respondents directly	-0.206	
Ecological worldview	-0.083	
Environmental knowledge	-0.072	
Perceived seriousness of problems affecting respondents indirectly	-0.067	
Short-term view	0.050	

1.7   Overall conclusion

To summarize the findings above, here is a figure, which shows those psychographic variables, which differentiate respondents based on their environmentally friendly behaviour and environmental consciousness.

In the instance of environmentally consciousness, the main difference can be detected in connection with perceived irrelevance of consumers' actions and ecological world-view. Changing the general view on the relationship of man and nature is very difficult – it is not surprising that examination of the effect of different religions comes to the front.

Perceived consumer effectiveness has outstanding role in the formation of both behaviour and consciousness. Marketing managers should emphasise more the relative role of an individual both in causing and in solving environmental problems. There are two very demonstrative proofs that examination of the perceived consumer efficiency being at the centre thereof is actual and occupies the public. The CNN has recently (October, 2007) broadcast the documentary titled *Planet in Peril*; in the breaks, sentences were shown for a minute: each sentence factually grounded possible consumer contributions to the protection of the state of the environment. For example, how many minutes the energy saved by the recycling of aluminium can operate our TV, or how much water we can spare if we closed water during tooth brushing. Beside this the European Commission operates a new webpage[34] where we can find data on the carbon dioxide emission decrease generated by certain environmentally friendly activities of the consumers, namely the degree of contributions to the solution of the global warming problems on the agenda. We can also find here that if we decrease heating by one degree then the household emits less carbon dioxide by 300 kilograms; if we regularly put out five unnecessarily used bulbs, carbon dioxide emission annually decreases by 400 kilograms. All these can be interpreted in financial savings – this latter action could bring about HUF 15,000 annually.

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[34] Source: Pócs, Balázs: One can spare during toothbrushing, Népszabadság, 16 July 2007, p. 9

Figure 4: Main differentiating variables of respondent groups based on environmental consciousness and environmentally friendly behaviour
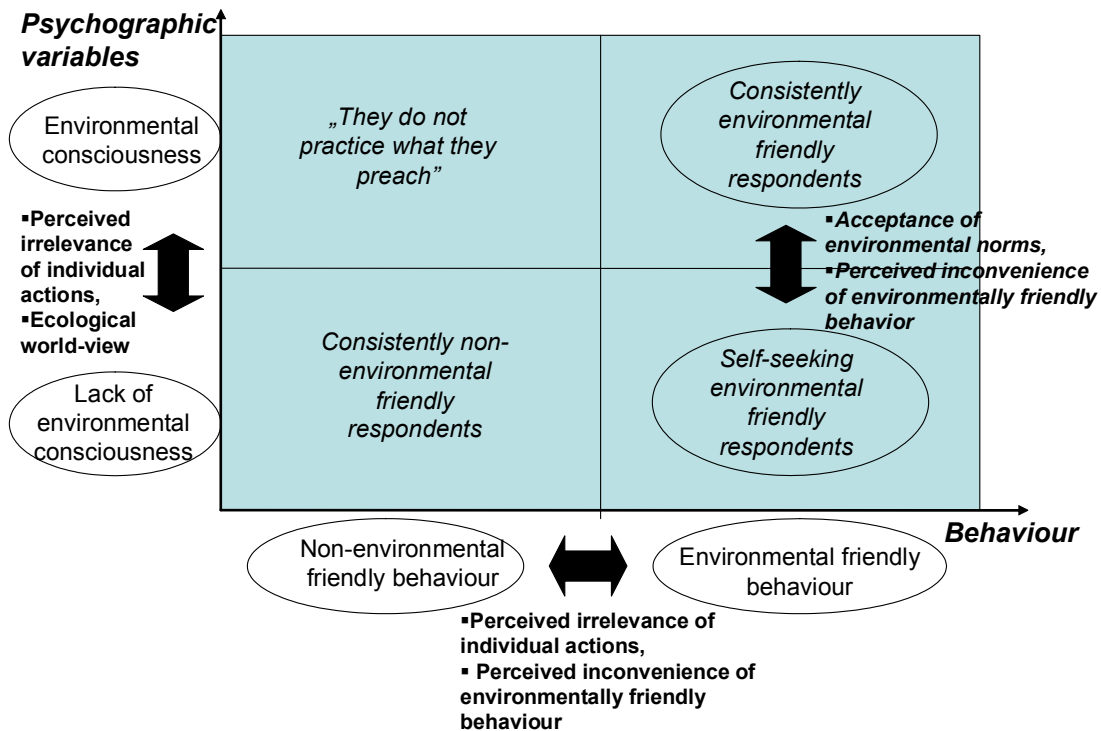
Another very important finding is that level of environmental knowledge is not the main reason for being environmentally friendly or not, which may open a wider way of non-rational influence methods of behaviour. It means that rational arguments and only the knowledge of environmental processes cannot generate green behaviour; role of feelings (beliefs, fear, commitment to nature) are also very important.

Putting green theory into practice can be prevented by perceived inconvenience of the environmentally friendly behaviour and lack of pressure of environmental norms. During socialization the attitude to nature is being formed – not always consciously: for example if scattering rubbish is accepted by our family and is not punished or condemned, then the message of that is that our environment is not important, we don't have to think of our surrounding. Acceptance of environmental norms can be helped on by the power of small communities – such as family and colleagues. Of course, instead of external pressure of norms, internalized environmental norms mean a stable background for environmentally friendly behaviour. Forming world-view (and value-system) and existence of environmental norms and their internalization is also the responsibility of the whole society and need multidisciplinary research. .

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Values and lifestyle: do consumers declaring sustainable values demonstrate sustainable consumption patterns?

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Abstract

This paper presents our recent analysis of a representative survey conducted through personal interviews to assess the relationship between values and lifestyle in Hungary. The study forms a part of an international endeavour to establish the extent to which the agency described by Paul Ray as *cultural creatives* is present in various parts of the world, including the US, Japan, France, and Italy.

Our study is a comprehensive mapping of the values held by interviewees, plotted against several aspects of consumption behaviour and its links to demographic characteristics. In particular, we examined the most important dimensions of cultural and other consumption patterns, such as food consumption, environmentally conscious shopping, energy use, mobility, information and culture consumption, cooperation and alternative medical care, and how they relate to worldview, the acceptance of ecological and feminine values, responsibility for the local environment, social networks, self-development, social sensitivity and responsibility, and non-materialistic values.

Our analysis focused on identifying groups with distinct value and lifestyle patterns and evaluating the behavioural and demographic characteristics of these groups. Using K-means clustering, we identified three clusters: about forty percent of our sample demonstrated materialistic orientations; another forty percent was more inclined towards humanistic values, while the remaining twenty percent scored low in both value sets. We intend to show that demographic variables are not decisive in defining group membership. We then examine relationships between cluster membership and consumption patterns to reveal how group membership could predict value declarations and consumption patterns. We shall conclude with a discussion of the implications of our findings for the promotion of sustainable consumption.

Acknowledgements

1.   Introduction

1.1   Are values the best predictors of behaviour?

Since values have been assumed to be the best predictor of behaviour, efforts to bring about sustainable, pro-environmental behaviour, have often been focused on achieving a (paradigm) shift in the subject's (fundamental) values. While the relationship between values and behaviour, or declared intention to act, is not straightforward (Bardi and Schwarz, 2003), and there may be many barriers preventing an individual or a group from behaving the way the they believe they should (Leizerovitz et al, REF, YEAR), social-psychological constructs such as values, attitudes, and beliefs have been found to predict pro-environmental behaviours more successfully than social structural variables (Buttel, 1987, p. 473.; Dietz, et al., 1998; Oreg and Katz Gerro, 2006).

It is meaningful then, to segment populations on the basis of declared values and examine how such declarations correlate with declared (and, in later studies, actual) behaviour.

1.2   Cultural creatives

The research on 'cultural creatives' is one such effort to segmentation. The term 'cultural creatives' was proposed by sociologist Paul Ray and psychologist Sherry Ruth Anderson in their book '*The Cultural Creatives. How 50 Million People Are Changing the World*' (Ray and Anderson, 2000). They suggested a third subculture in the United States in addition to the 'traditional' and the 'modern' ones described earlier by, for example, James Davison Hunter (Hunter, 1992). Ray and Anderson supported their claims by longitudinal research of over 100 000 surveys, several hundred focus groups and about sixty in-depth face-to-face interviews in the course of more than twenty years. During this time, the group they identified as cultural creatives increased from 5 percent in the 1960s to 23 percent of the US adult population by the year 2000. (Ray and Anderson, 2000)

The basis for splitting the American population into three subcultures was a set of 5 orthogonal value-based dimensions. These are

1. values related to ecological-social responsibility,
2. personal development, psychology, spirituality, feminine values,
3. modern, materialist, success oriented values,
4. tradition and religion,
5. socio-economic status (a single index of income, education, and employment status-career information).

Ray and Anderson, using K-means clustering, identified 8 clusters in their research which they then grouped into the three subcultures along the five dimensions listed above. The three subcultures Ray and Anderson described were the following:

- Their '*moderns*' represent the normal worldly culture whose central values are democracy, equal rights, goal-orientation, financial success, a rejection of altruism and idealism, political cynicism, a secondary role of social relations, and the importance of appearances and position.
- Distinct from this group are the '*traditionalists*' whose principle concerns are religious values, characterised by the importance of home and family. They believe following rules is the foundation of society, share a simplified worldview, reject foreigners and subscribe to a traditional perception of women's roles.
- The third group identified by Ray and Anderson constitute the '*cultural creatives*'. According to their findings, cultural creatives are explorers of new ways who believe that personal relations are important. Their locus of control is internal, and their worldview is holistic. They focus on spiritual and psychological self-development, respect feminine values, prefer active forms of cultural consumption, and they are committed to the importance of health and ecology. Their sense of responsibility is more prominent, they worry about the sustainability

of the world, and they view environmental problems in their interconnectedness. They consider the global community important, consume less, and live a simpler life than their fellow-Americans. They are more open to understanding others and cooperation.

1.3   The objectives of this study

The present analysis will segment the Hungarian adult population into distinct groups (clusters) with relatively homogenous value sets, and examine relationships between group membership and consumption patterns. Our expectation is that demographic variables will not decisive in defining group membership. We also expect that group membership will predict value declarations and consumption patterns; for example, cultural creatives are expected to both declare sustainable consumption values and act accordingly, while other groups may declare but not act, or vice versa. The study of these relationships is expected to reveal insights into how best tailor policies and strategies for sustainable consumption.

2.   Research method

2.1   Participants

The study was conducted on a random sample of 1000 participants, representing the Hungarian adult population by gender, age, and place of residence.

2.2   Materials: questionnaire

Based on experience from Paul Ray's extensive longitudinal research on cultural creatives in the United States (Ray, 2000), the structure of the questionnaire reflects the recommendations of a European multinational research team. Adapted to suit the socio-cultural context of Central and Eastern Europe, it contains 7 (+1) section of mainly Likert-type items covering questions on cultural and consumption patterns, spiritual orientation, self–image, world problems, politics, humans and the environment, basic demographic variables, and 64 items on values:

- the first group of items, cultural and consumption patterns, inquires about food consumption habits, buying environmentally friendly produce, energy use and transport modes, patterns of cultural consumption, cooperation, and the perception and use of alternative medicine;
- spiritual orientation is explored in multiple dimensions, including an expression of active support for a certain religion, and value and behaviour items situating respondents in a multidimensional religious space;
- the main body of the questionnaire is comprised of value items on sustainability and ecology, feminine values, locality, limits to growth, social connectedness, self-development, social responsibility, the acceptance of the "other", support for non-material values, and social sensitivity;
- the last three groups contain items on self-image and the perceived supportiveness of the respondents' social environment, as well as general, non-party political orientations, and attitudes towards active participation in public matters, the appreciation of world problems, a section with Riley Dunlap's new ecological paradigm scale, and finally, questions on socio-demographical data, political behaviour and income).

The questionnaire was first tested and evaluated in a test survey with 60 respondents. The test run served two purposes: to identify items that best fit the Hungarian context, and provide input into the construction of a survey instrument suitable for comparative research on large samples in the other participating countries of the 'Cultural Creatives Europe Survey' project (Székely et al., 2004). The finalised questionnaire was used for data collection in personal, face-to-face interviews.

2.3   Analysis of data

In our analysis, value items of the questionnaire were first grouped to form value-scales according to instructions provided by Paul Ray. These, as can be seen below, correspond to the first four of five orthogonal dimensions used in the American study (in alphabetical order by the English acronym):

BIG Support for big business and corporations
- *Corporate greed and shortsightedness are harming our country.*
- *Government mustn't limit stock exchange speculation.*
- *Business corporations make too much profit.*
  Multinational corporations are indispensable to provide goods and services for our material wellness.

ECO Ecology
- *I am worried that world overpopulation may create a major ecological collapse.*
- *We must return to a simpler way of life with less emphasis on consumption and wealth.*
- *If any natural resources are used up, science and technology can always find substitutes for them.*
- *Instead of regulating the increase of consumption, scientific and technical development is necessary to protect the environment.*

EEC Economy and the environment
- *With the help of scientific and technical development we can grow our economy and protect the environment at the same time*
- *Companies need to focus more on long-term growth rather than short-term profits.*
- *Businesses that contribute to their local communities reap both good will and good profits.*

FEM Feminine values
- *Housework is the task of women mainly.*
- *More women should be more accepted as top leaders in business and government*
- *Our culture and society need more feminine influence and sensibility.*
- *Women should concentrate on being good wives and mothers.*
- *Today we can hardly experience violence and abuse of women in the family*

GAIA Respect for Nature
- *We have a moral duty to protect and preserve all animals and creatures.*
- *Humans are able to evade themselves from Nature's cycles and rhythms.*
- *Nature is there to use as we need.*

GOD Religious values
- *Belonging to a religion or spiritual path is decided by birth*
- *The Bible is all the guide you need in your life.*
- *We should make divorces more difficult in order to protect the children.*
- *Only responsibly thinking people should bring up children.*

GRO Support for economic growth
- *It's better to protect jobs than endangered species and forests.*
  We need more economic growth to take care of human needs, not less growth.
- *There are just not enough resources for more people to live decently on this planet.*
- *Competitiveness in world-market is more important than local problems and needs.*

HEA Health
- *Alternative medicine should be taken more seriously by official medicine, health care system and politicians.*

HED Hedonistic values, consumerism
- *…changing outfits and accessories according to fashion?*
- *…changing mobile very often - (about years, or more frequently)?*

IDEA Idealistic values

- *...finding your purpose in life rather than merely making more money?*
- *...having your work make a contribution to society?*
- *...wanting to be involved in creating a better society?*
- *...being involved as a volunteer in good causes?*
- *...changing in better myself and my life can help in changing the world.*

JUST Poverty, social justice
- *The best way to decrease poverty is to give more subsidies to big business corporations.*
- *We must do more to satisfy the basic needs (housing, health care, education) of the poor.*
- *Today only those are poor, who do not want to work.*
- *Have to spend more budget to develop the local communities and living circumstances.*

PAY Willingness to pay extra for environmental purposes
- *I'd pay 10 cents more per litre for gasoline if I were sure it would pay for environmental cleanup.*
- *I'd pay a little more taxes if I were sure it would help solve our environmental problems.*

REL Relationship values
- *...helping other people?*
- *...making a commitment for creating better relationships with colleagues and co-workers?*
- *... searching for opportunities to fight or compete with others?*
- *...making a commitment for developing deeper and more intimate relationship with your partner, sons, and friends (for instance by reading books and/or attending seminars, etc.)?*
- *...making your own decisions without others' intervening?*
- *...being able to rely on your friends and people around you for help?*

SELF Personal development
- *...being able to express your own talents and creativity?*
- *...developing more self-awareness — that is, not sleepwalking through life?*
- *...finding more time to dedicate to meditation and spiritual pursuits?*
- *...putting more time and effort in developing more self-awareness, self-knowledge and personal development?*
- *...in school education, topics like self-awareness, personal growth and interpersonal relationship should be considered at least as much important as notions and professional skills?*

SPE Finances
- *...avoiding over-spending (make both ends meet)?*
- *...getting better control over your finances?*
- *...getting back on your feet financially?*
- *...getting possibilities to purchase on credit?*

SUCC Materialist values
- *...making as much money as possible?*
- *...having good looks (externally attractive)?*
- *...living without debts?*
- *...owning property?*
- *...buying everything what you want?*
- *...being successful in your work and admired by other people?*

TRAD Traditional values
- *Wives need to respect and obey their husbands.*
- *...living in accordance with the traditional moral values of my parents and grandparents?*

XEN Values related to accepting or rejecting foreigners
- *My children should learn to appreciate and make friends with people from other countries.*
- *We have to get illegal immigrants out of our country.*
- *The diversity of ethnic groups is a precious resource.*
- *Illegal immigrants are putting too big a burden on our country.*
- *I'm interested in different people living in other countries with different cultural background.*

We tested the reliability of these scales on our data set, using Cronbach's alfa calculations. Factor analysis and clustering was then performed, first using all the items of the questionnaire. We then examined the items to find indices which would together measure well the values and behaviour that revealed the existence of cultural creatives in the United States. Working from the results of a factor analysis, we identified *five new indices* with acceptable Cronbach alfa values. These new indices were also controlled for representativity against the entire sample. Robust testing was performed on the indices for various demographic aspects (for example, gender, age, place of residence, and income) and indices were also compared to each other to establish any existing correlations between items. Simplifying the original US research methodology, we then used these new indices to cluster the sample population. We ran the *K-means clustering* process for 2, 3, 4 and 8 clusters, but only the run for 3 clusters produced acceptable results. ANOVA was used to establish whether the separation between these subpopulations is significant if each individual is assigned to a group, and controlled the results using discriminant analysis. Multidimensional scaling was used to interpret the relationships between results. ANOVA runs were used to establish the relationship between value scales and lifestyle patterns.

For the analysis of consumption patterns, a second run of K-means clustering was performed using value indices of 'limits to growth' and 'willingness to pay for environmental purposes', and behaviour indices of 'eco-friendly shopping' and 'overconsumption'. These were compared to the findings of the first clustering. Demographic variables were investigated to establish any impact they may have on cluster membership.

3.   Results

3.1   Reliability of the original set of cultural creative scales

The majority of the original American value-scales did not yield acceptable reliability on the Hungarian population. Cronbach alfa values are shown in Table 1.

Table 1. Reliability of the starting value scales

Name of scales	Cronbach alfa values on the Hungarian data set
Materialism (SUCC)	0.776
Idealist (IDE)	0.676
Relationship 1. (REL)	0.663
Willingness to pay for environmental purposes (PAY)	0.653
Finances 1. (FIN)	0.648
Rejecting foreigners (XEN)	0.619
Self-development (SELF)	0.600
Religion (GOD)	0.578
Hedonism (HED)	0.545
Relationship 2. (REL)	0.507
Economy and the environment (EEC)	0.455
Finances 2. (FIN)	0.436
Relationship 3. (REL)	0.297
Traditionalism (TRAD)	0.291
Respect for Nature (GAIA)	0.283
Support for capital and corporations (BIG)	0.186
Poverty, social justice (JUS)	0.186
Ecology (ECO)	0.176
Economic growth (GRO)	0.130
Feminism (FEM)	0.078

As shown in Table 1, only the top seven of the seventeen scales come close to acceptable levels of reliability, despite our efforts to create improved scales by omitting a few items (shown in the table as Finances 2, and Relationship 2 and 3). For this reason, these scales had to be excluded from further investigations.

3.2   A new set of indices to identify cultural creatives in Hungary

A meticulous examination and repeated regroupings of the items resulted in five reliable new indices, which measured the same dimensions as the original scale set. These indices were composed of the following value items (acronyms in brackets show position in the original value scales):

1. Materialism (SUC)

    How important is it in your life…
    - *to make as much money as possible?*
    - *to have good looks (be externally attractive)?*
    - *to own property?*
    - *to buy everything what you want?*

2. *Traditional and religious values (TRAD, REL, GAIA)*

    How much do you agree with the following statements?
    - *Belonging to a religion or spiritual path is decided by birth*
    - *The Bible is all the guide you need in your life*
    - *We have a moral duty to protect and preserve all animals and creatures*

    How important is it in your life to…
    - *find more time to dedicate to meditation and spiritual pursuits?*
    - *live in accordance with the traditional moral values of your parents and grandparents?*

3. *Socially useful work (REL, SUC, IDE, SELF)*

    How important is it for you to…
    - *perform activities matching your talents and skills rather than working for material rewards?*
    - *develop more self-awareness — that is, not sleepwalking through life?*
    - *find your purpose in life rather than merely making ever more money?*
    - *have your work make a contribution to society?*
    - *help others?*
    - *make a commitment for creating better relationships with colleagues and co-workers?*

4. *Personal development and public activity (SELF, IDE, REL)*

    How important is it for you to…
    - *put more time and effort in developing more self-awareness, self-knowledge and personal development?*
    - *be involved in creating a better society?*
    - *be involved as a volunteer for good causes?*
    - *make a commitment for developing deeper and more intimate relationship with your partner, sons, and friends (for instance by reading books and/or attending seminars, etc.)?*
    - *be able to rely on your friends and people around you for help?*

    How much do you agree with the following statement?
    - *In school education, topics like self-awareness, personal growth and interpersonal relationship should be considered at least as much important as notions and professional skill.*

5. Openness to other cultures and change (IDE, XEN)

    How much do you agree with the following statement?

- *Changing myself and my life for the better can help changing the world.*
- *My children should learn to appreciate and make friends with people from other countries.*
- *The diversity of ethnic groups is a precious resource.*
- *I'm interested in different people living in other countries with different cultural background.*

3.3   Reliability of the new indices

All five new indices show high reliability, especially compared to the reliability values of the original set of scales. Reliability values of the new indices are shown in Table 2.

Table 2. Reliability of the new indices

Name of index	Cronbach alfa values on the Hungarian data set
Materialism	0.776
Traditional and religious values	0.646
Socially useful work	0.810
Personal development and public activity	0.776
Openness to other cultures and change	0.615

3.4   Segmenting the population along the five new indices using K-means clustering

Figure 1. Main characteristics of each of the three clusters identified by K-means clustering
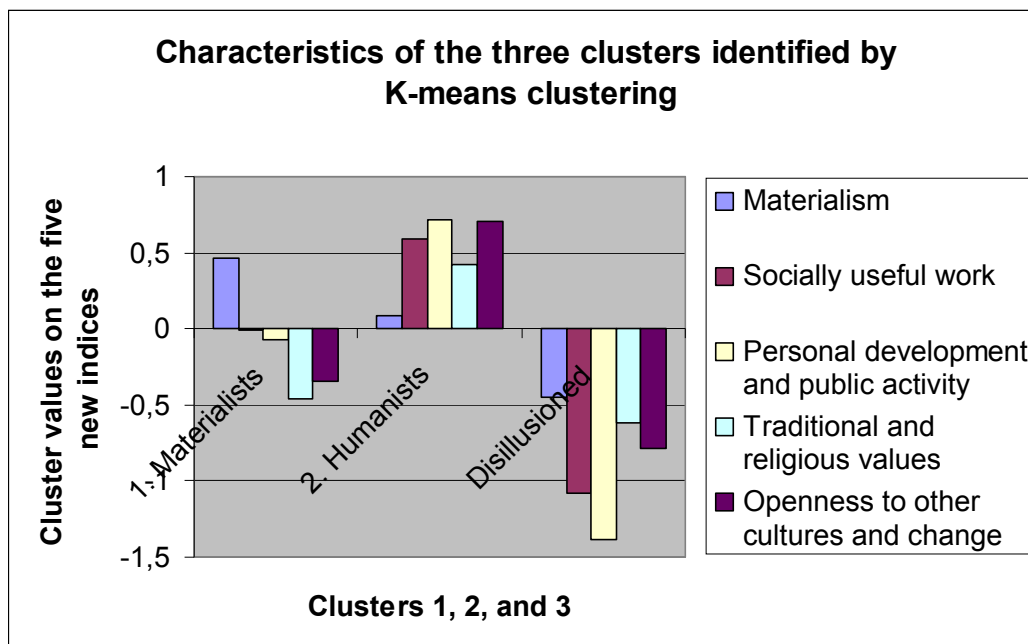
Using these indices, we identified three distinct groups in our sample, using K-means clustering.

Figure 1. shows the main characteristics of each cluster along the five new indices:

1. The first cluster was dominated by materialistic, modern, success oriented individuals committed first of all to achieve material wealth. We shall call them *materialists*.

2. The second cluster was composed of individuals who were hopeful, trusting. These are the people for whom material wealth is secondary compared to other pursuits, while they score very high on all the other indices. Interestingly, tradition, the importance of personal development, sensitivity towards social goals and openness towards other cultures are all equally important to them. This is

the group that comes closest in its orientations to the cultural creatives described in Paul Ray's research. We shall call them *humanists*.

3. The third cluster is the *disillusioned*. Neither materialism, nor religion, nor social and personal values attract individuals in this group.

Multidimensional scaling on the new indices shows that socially oriented personal development and working for social goals (with similar elements identified by Paul Ray's as "social responsibility" and "personal development") are close to each other, and are important to a certain degree for everyone.

3.5   Humanists – the cultural creatives in Hungary

The population that comprises 41.38 percent of the Hungarian sample reflects a mixture of what Paul Ray called in his studies 'cultural creatives', and protestant work ethic. It is the group of hopeful, trusting people for whom money does not come first – all their index values are higher than those they score on our „materialistic interests" scales, that is, they are more interested in pursuits other than those related to money and things:

-   Their materialistic interest index is significantly lower than the other two groups of nearly average value.

-   This is the group that scores significantly the highest among the three on socially useful work, personal development, and public activity.

-   While the two other groups do not show a significant difference on the traditional and religious values indices (both demonstrate relatively low values), this cluster scores significantly higher on spirituality.

-   The Hungarian humanists demonstrate the highest values on the openness index (the lowest score was measured for the disillusioned).

-   While our *humanists* score comparably high values on environmental and social equity items, their overall environmental awareness is still very unsophisticated (compare, for example, our results for the consumption of organic produce and environmentally friendly cosmetics with the frequent replacement of articles of personal use).

3.6   Demographic variations between materialists, humanists and disillusioned

We investigated demographic variables of gender, age, and place of residence, as well as marital status, education, job status, number of people per household, and income per household and per capita.

Our results show that

-   there are no significant differences on gender, place of residence, number of children, and per capita income among any of the clusters
-   the materialist and the humanist clusters do not differ from each other significantly on any of these variables
-   the disillusioned cluster differs significantly from the other two clusters on several demographic variables:
    o   it contains a significantly greater number of elderly, and significantly smaller number of young people;
    o   it comprises significantly more people with lower education and fewer with higher education, than do the other two clusters
    o   there are more pensioners and fewer full time employees,

- there are more singles than those living in shared households,
- there are more households with income below 50 000 HUF per month than households with income over 300 000 HUF per month

Thus, demographic attributes are not significantly different from one cluster to the other: gender, place of residence, family status, and per capita income do not significantly influence cluster membership in our sample. Two striking features are, however, that the proportion of people over 61 years of age is smaller in the cluster of humanists than in the other two clusters, and humanists are characterised by more time spent in the education system (as are materialists, and unlike disillusioned).

Environmentally conscious consumption is more characteristic of the humanist cluster. This feature is a tendency rather than a significant difference against the materialistic group, but a significant difference compared to the very low values of the disillusioned.

Humanists tend to be less prone to *overconsumption* compared to the cluster of materialists, yet both humanists and materialists change their articles for personal use more frequently than do disillusioned.

Hungarian cultural creatives are significantly more intent on *environmentally conscious action*: they would be willing to pay more for petrol if they could be sure the money was spent on purposes of environmental protection and would also pay higher taxes to help solve environmental problems.

Members of the humanist cluster reject statements characterising *economic growth for its own sake*: they agree with statements such as 'the greed and short-sightedness of major corporations will ruin our country' and 'businesses make too much profit'. They also agree with the notion that 'there are not enough resources on our Planet to provide for a decent living of even more people', and they 'worry about a general ecological collapse likely to be brought about by overpopulation'. They believe that 'we should revert to a simpler lifestyle where less emphasis is placed on consumption and economy'.

They prefer *active cultural consumption* forms: reading books, including ones related to environmental protection, social issues, spiritual and religious topics, and self-development. They are more likely to visit theatres, operas, concerts or museums, and they themselves enjoy performing amateur artistic activities. They more frequently volunteer for social and environmental civil organisations, go to church, or dwell on spiritual or personal development. At the same time, they are not significantly different from the materialist cluster in their passive entertainment habits, such as watching videos, listening to non-classical music, going to cinemas and sports events, or organising parties.

They perceive *their own value system* as being the most environmentally and socially conscious, with order, equality, patience and democracy ranking higher in their value structure than for other people. Similarly, the highest values for faith, authority, and tradition are measured here.

Their *sensitivity to human relations* is significantly the strongest among the three clusters. This is expressed by, for example, the fact that members of this group are more likely to discuss their problems or important decisions with family and friends. Disillusioned treat their relationships more superficially, while materialists score in between the two other clusters.

In conclusion, Hungarian humanists demonstrate a distinct sense of responsibility towards each other, as well as an inclination for self-development, but a comprehensive knowledge of facts that enabled Americans to link this attitude to sensitivity for environmental problems and social inequity is not so expressed.

3.7   Indices to measure values and behaviour related to sustainable consumption

To analyse values and behaviour related to sustainable consumption on the clusters, we constructed the following indices:

Behaviour related to sustainable consumption: two reliable indices were found to indicate sustainable consumption: eco-friendly shopping and overconsumption:

*Eco-friendly shopping index **(Cronbach alfa on standardised items: 0,707)***

> *How often do you buy / use*
>   - *produce of organic farming*
>   - *eco-friendly soap and cosmetics*
>   - *energy saving bulbs*
>   - *products with reusable packaging*
>   - *eco-labelled products*

*Overconsumption index **(Cronbach alfa on standardised items:0,764)***

> *How often do you buy*
>   - *a new hi-fi set*
>   - *a brand new mobile phone*
>   - *a winter coat of the latest fashion*
>   - *boots of the latest fashion*

The disillusioned cluster scores significantly lower than the two other clusters on these indices. Humanists have a tendency to score higher on the overconsumption index than materialists. This latter difference, however, is not significant. Conversely, materialists are more prone to overconsumption than are humanists.

Values related to sustainable consumption: two reliable indices were used to indicate values related to sustainable consumption: *'Active environmental protection'*, as expressed in declared intention to contribute financially for environmental purposes, and the *'limits to growth'* index.

*Active environmental protection **(Cronbach alfa on standardised items: 0,658)***

> *How much do you agree with the following statements?*
>   - *I'd pay 20 forints [0,1 $] more per liter for gasoline if I could be sure it was used to pay for environmental cleanup.*
>   - *I'd pay a little more tax if I were sure it would help solve our environmental problems.*

*Limits to growth index **(Cronbach alfa on standardised items: 0,578)***

> *How much do you agree with the following statements?*
>   - *Corporate greed and short-sightedness are harming our country.*
>   - *Business corporations make too much profit.*
>   - *There are just not enough resources for more people to live decently on this planet.*
>   - *I am worried that world overpopulation may create a major ecological collapse.*
>   - *We must return to a simpler way of life with less emphasis on consumption and wealth.*

These value indices are not as reliable as the behaviour ones above, although they are still within acceptability limits for attitude type scales.

The cluster of humanists scores significantly higher on both these indices than do the other two clusters, and the cluster beyond hope is again the lowest on both.

3.8   Clusters of sustainable consumption values and behaviour

We investigated the distribution of the population on the indices of active environmental protection (value) and environmental-friendly shopping (behaviour), using K-means clustering, again. Table 3. below shows this typology of the sustainable value indicator – sustainable behaviour indicator relationship. This analysis produced three meaningful clusters:

1. The first cluster contained respondents declaring an intention to contribute financially (in petrol price or tax) for the protection of the environment, but this does not reflect in their shopping preferences.
2. Members of the second cluster do not declare any intention to pay for the protection of the environment, yet they prefer to consume environmentally friendly produce.
3. The third cluster contains those who score low on both indices – they do not declare willingness to pay, nor do they purchase environmentally friendly products.
4. There is no cluster in the population with respondents who both declare and act sustainably.

If we compare these three clusters to our original value clusters we called 'humanists', 'materialists', and 'disillusioned', we find the following significant differences:

- Humanists largely fall into the first category: they declare that they would contribute financially to the protection of the environment but do not buy eco-friendly products
- Materialist are roughly equally distributed between the first and second category: some declare willingness to pay for environmental purposes but do not buy eco-friendly products, while some do buy these, without declaring proenvironmental intentions.
- The disillusioned cluster is nearly eaqually distributed in the three categories, with a somewhat higher percentage in the 'neither declare, nor buy' category,

Table 4. Value and behaviour patterns of 'materialist', 'humanist' and 'disillusioned' consumer segments

Values (declared intentions to buy eco-friendly products)	Behaviour (declared purchase of eco-friendly products)	
	Sustainable	Non-sustainable
Sustainable	no such cluster	59.1% of Humanists 38.3% of Materialists 26.7% of Dissillisoned [281 persons]
Non-sustainable	28.4% of Humanists 39.8% of Materialists 35.6% of Disillusioned [215 persons]	12.5% of Humanists 21.8% of Materialists 37.6% of Dissillusioned [128 persons]

4. Discussion

4.1 Methodological considerations regarding cross-cultural value research

The first part of our analysis focused on identifying meaningful clusters of distinct value sets in the Hungarian adult population. As our research is a part of an international endeavour to measure the extent to which cultural creatives are present in various parts of the world, we first tested a data-reduction instrument developed in the course of research conducted on United States population. Our analysis showed that this instrument is not reliable in Hungary. This finding corresponds to our expectation that instruments developed to study culturally bound phenomena will not be easily transposed into the study of other cultures. also supported by empirical evidence in a number of studies (for an overview of studies on the cultural and ethnic variations of environmental belief and behaviour variations see Milfont et al., 2006. or Schultz, 2002.). We expect that a similar study in any other Central or Eastern European country would be similarly unreliable.

We therefore developed our own indices to analyse the data collected from a representative sample in Hungary, and managed to identify three clusters with distinct value sets and behaviours. In our introduction we postulated that cluster membership could predict value declarations and consumption patterns; that cultural creatives would both declare sustainable consumption values and act accordingly, while other groups may declare but not act. We also expected that demographic attributes would have little or no impact on cluster membership. Our findings support some of these claims but also revealed surprising results for others, as we discuss below.

4.2 Does value-cluster membership predict sustainable consumption values and behaviour?

Our assumption that *consumption patterns would be the most sustainable within the Hungarian cultural creative, i.e. humanist cluster* did not prove to be accurate. According to our findings, humanists in the Hungarian population declare intentions to support environmental purposes financially, but they are not in majority among the ones who buy eco-friendly products. There may be several reasons for this.

As we pointed out in the introduction, the values-behaviour link is often indirect. For example, Bardi and Schwartz found that stimulation and tradition values relate strongly to the behaviours that express them; while hedonism, power, universalism, and self-direction values relate moderately; and security, conformity, achievement, and benevolence values relate only marginally (Bardi and Schwartz, 2003).

Leizerowitz et al. review the many barriers that may prevent an individual or a group from behaving the way they believe they should. Critical gaps between values or attitudes and behaviour include prioritising between different values and attitudes. Personal capabilities such as the lack of behaviour-specific knowledge and skills, illiteracy, low social status, the lack of resources (both time and money), the lack of empowerment, and mere habit or routine, or external contextual obstacles, including the lack of practical choices, material costs and rewards, laws and regulations, available technologies, social norms and expectations, advertising, and the broader social, economic, and political context such as the price of oil, interest rates, currency fluctuations, etc., may all contribute such barriers (Leizerowitz, 2004).

Further studies should establish what prevents those who support the sustainability cause in principle from actually performing pro-environmental behaviour, under the Hungarian circumstances. The most likely explanations could be the lack availability (the product is not sold in the shop nearby) or accessibility (it is too expensive). It is also important to remember that cultural creatives in the United States are characterised by very strong pro-environmental values and behaviour, whereas the Hungarian 'humanist' cluster is, first of all, not so strong on these, and secondly, its pro-environmental behaviours are inconsistent (compare buying eco-friendly produce with the habit of frequently changing articles of personal use).

Even more interesting is the case of the materialist cluster, which provided a large proportion of respondents to the 'does what he preaches' category, but also appeared under the 'does not declare, but buys' heading. This may point to the fact that buying eco-friendly products is trendy, and therefore may appear as a status symbol, as has been the case for certain consumer groups in the United States since the beginning of the new millennium. It may also imply a preference for lower taxes, i.e. less state presence. It is also important to call attention to the fact that the category for respondents who would both pay to support environment protection and buy eco-friendly product is empty. Also, a stronger correlation between these two indices (pay to support environment protection and buy eco-friendly product) would have been more easily understandable. Issues raised by the findings for the materialist cluster may not be fully explained by analysing the current data; however, they will provide useful input into an in-depth qualitative analysis.

4.3   Demographic variation among materialists, humanist, and the disillusioned

Our findings support our original thesis stating that demographic variables have little impact on cluster membership. An exception to this is *age:* unexpectedly, the proportion of people over 61 years of age is smaller in the cluster of humanists than in the other two clusters. On the other hand, humanists, as well as materialists, are characterised by more time spent in the *education* system, while the disillusioned cluster comprises individuals with fewer years of schooling. These findings together may point to a potential increase in the proportion of humanists in the future. They also confirm that a significant shift toward sustainable consumption within the disillusioned cluster would require major social structural changes, especially considering that significant time may elapse before changes in circumstances of the individual appear in her values: values of adults usually reflect the socio(cultural)-economic conditions of her childhood. (Inglehart et al., 1997; 2000.)

5.   Overall conclusions

Using value based market segmenting can uncover hitherto untapped potential for sustainable consumption in Hungarian society. A significant proportion of Hungarian society is declares pro-sustainability values and others act sustainably even if they do not declare such intentions. Values are

decisive factors defining these preferences. Our research suggests that there may be barriers to acting in a sustainable fashion even for those who, in principle, are committed to doing so.

Policy could be instrumental in removing these barriers. Our findings also show that while education play a part in enhancing pro-sustainability values and behaviour, a significant section of the society, the one we called '*disillusioned*' in our study, may only be moved towards sustainable patterns by taking far-reaching measures to improve their socio-structural situation. Continuing research on factors defining sustainable consumption patterns can support well-founded policy decisions in this direction.

Green businesses – in our view – could take advantage of pro-environmental consumption preferences declared by those not subscribing to pro-environmental values by strengthening the trendy character of being 'green', and expanding their consumer base into the population we defined as *'materialists'* in our study.

In addition to cross- (and trans-)cultural issues, *research* to establish an in-depth understanding of the relationships between values and consumption patterns should focus on further integrating value-based approaches with structural-demographic models. Further, the thinking on consumption for sustainability needs to consider how product choice based findings may be integrated with research on non-(material)growth socio-economic models.

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<div align="right">Chapter 11</div>

The sustainability of the consumption of university students

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Abstract

The unsustainability and the potentially self-destructive character of the current socioeconomic processes have become a problem to be considered by public opinion and the researchers of environmental issues. It is a scientific fact that these processes can restrict the socioeconomic options in the near future by irreversibly ruining certain unsubstitutable ecosystem services. Since the publication of the Stern Review (2006) these facts have also been recognized in economics. Regarding these tendencies, even more authors emphasize that it is necessary to reduce the environmental effects of the personal consumption of the citizens in developed countries, including Hungary. This does not only mean developing more eco-efficient technologies – indeed, the well-documented rebound-effect (Alcott, 2005) highlights the limits of eco-efficiency from the aspect of sustainability – but also a change in the currently unsustainable lifestyle of the northern societies.

Therefore, in our study we investigate what influences the environment-conscious consumer behaviour of the students of the University of Szeged. In the first part of our study, we examine whether the ecological footprint is an appropriate measure for environment-conscious consumer behaviour. We conclude that it can be an important tool since it measures the real environmental effects – and not only the environmental objectives and intentions (of the consumers) – of consumer behaviour. Afterwards, based on our quantitative survey, we analyse the size of ecological footprint among the students of the University of Szeged. Our results are based on Krause's ecological footprint calculator.[38] Finally, we explore several psychological and sociological factors influencing the personal ecological footprint based primarily on Stern et al's (1999) Value-Belief-Norm Theory (VBN Theory). We adopt the typology of values developed by Schwartz (1992), which maps human values and divides them into ten value types and four broader value orientations. We examine the four clusters of values, namely altruistic, egoistic, traditional and openness to change, and their effect on personal ecological footprint. We also add "nepotism" to the original value system of the VNB model since it may influences consumer behaviour in Hungary to a high extent. We also measure whether knowledge related to the biosphere and to the environmental crisis influences environment-conscious consumer behaviour. Eventually we use the New Ecological Paradigm (NEP) scale, which examines personal beliefs regarding the biosphere and the effects of human action on it.

Our conclusion is that although the different sociological and psychological factors do influence environment-conscious consumer behaviour, it is family income which affects the environmental effects of personal consumption to the highest extent.

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[38] We acquired the ecological footprint calculator from KÖVET-INEM Hungary (www.kovet.hu)

1.   Sustainable development – natural capital

The concept of sustainable development has become an intergal part of current political and scientific discourse. Nowadays the unsustainability of our social-economic system has been reinforced by influential documents (IPCC, 2007; Stern, 2006).

The *paradigm of sustainability* emphasizes importance of the ecosystem that generally apprehends in economics through the notion of natural capital[39] (Ekins et al., 2003; Gutés, 1996). Nature provides vital ecosystem-services for the economy through ecological processes supported by biodiversity (Ekins et al., 2003). Humanity damages biodiversity and ecosystem-process, therefore *human transformation of the biosphere* (Takács-Sánta, 2004) is becoming a severe problem from the aspect of future consumption possibilities and life circumsrances (Stern, 2006). Thus, the restraint of human effect on biosphere is essential for sustainability. Consequently, examination of the effects of consumption and the chances for reducing consumption is an essential field of study. It is important to examine which factors influence consumption and consumumer behaviour.

2.   Ecological footprint as the indicator of environmentally conscious consumer behaviour

In our study, we investigate what influences the environment-conscious consumer behaviour of the students of the University of Szeged. We use the ecological footprint (EF) measure which can be an important tool since it measures the real environmental effects – and not only environmental objectives/intentions – of consumer behaviour. *The ecological footprint measures humanity's demand on the biosphere in terms of the area of biologically productive land and sea required to provide the resources we use and to absorb our waste* (in global hectare – gha) (WWF, 2006). According to the data of 2006, an "ordinary citizen" has an EF of 1.8 gha. But we can also find huge differences. The EF of Western countries is extremely high, within this category, the North-Americans have 9.4 gha and the Canadians have 7.6 gha of EF. These are followed by the East-European countries, the Hungarian citizens' average ecological footprint is 3.7 gha. It is worth noting that nowadays the ecological footprint of humanity exceeds the biocapacity of the Earth (1.8 gha) with 25 % (this is the so called global ecological deficit). *This means that humanity's demand on the biosphere exceeds the carrying capacity of the biosphere* (WWF, 2006). For this reason, the ecological footprint of humanity has to be reduced below the present world-average. According to present estimations, *by 2050, an overshoot of 200%* will be reached if humans do not change their lifestyles and initiate new, environment-friendly technologies.

The size of the ecological footprint is in connection with the following factors: *population, consumption per capita and technological efficiency*. The ecological footprint calculation is a multiple-stage process and the indicator can be determined with a simple formula (Ekins, 2004):

$$I = P \bullet C \bullet T$$

where I is Impact, P is Population, C is consumption per capita and T is technology, which is used for consumption and production. The ecological footprint is similar to the formula which illustrates the humans' effect on the environment, whereby the scale of humans' biosphere-transforming activity depends on three factors, which are in close connection: population number (P), consumption per

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[39] Natural capital is defined as the stock of environmentally provided assets, which provide a flow of useful goods and services (renewable, non-renewable and generally non-replaceable) (Goodland, 1995).

capita (C – GDP per capita), and environmental effect of consumption unit (T – environmental effect). The latter is the technological component (T) in the EF, because production technology determines the environmental effects of a given scale of consumption to a great extent.

To determine the ecological footprint five major consumption classes are set up: food, home/residence, transport, consumption goods and services. These classes can be divided into further classes in order to have a more exact analysis. Consequently, the ecological footprint helps to determine the available natural capital on one hand and the consumption of natural capital of people or communities on the other. Thus, we can measure whether the way of life of a given unit (person, household, community etc.) is sustainable or not. In this way it can be examined wether social policy is necessary regarding population, consumption and technology (Rees, 2000).

There are several criticisms regarding EF because the measure has some weaknesses, but presently there is no tool for sustainability which is complete and none will satisfy everyone perfectly. Furthermore, the ecological sustainability is not absolutely measurable, especially not with a one-dimensional indicator (Bergh-Verbruggen, 1999; Costanza, 2000; Moffatt, 2000). Nevertheless, based on our present knowledge, we regard *EF as the most comprehensive sustainable indicator*. In several countries – e.g. Switzerland, Germany and Finland – it has become the official sustainability indicator (Vida, 2007).

As mentioned previously, the ecological footprint per capita is determined by technology and personal consumption. Thus, the ecological footprint per capita can be reduced by introduction of new technologies. In the literature of sustainability, eco-efficiency has a significant role in relation to technological change; increasing of eco-efficiency is regarded as the principal tool for moving in the direction of sustainability. A unit (enterprise, national economy etc.) is more eco-efficiency than the others if it produces a certain output with less environmental effect.

Simultaneously, *rebound-effect* is well-known in the special literature. According to this phenomena eco-efficiency improvement (resulted by the introduction of a new technology) may work against resource conservation. The reason for this is that a (relative) increase in eco-efficiency enlarges the scale of human transformation of the biosphere in absolute terms instead of decreasing it (Alcott, 2005). The rebound-effect is observable both at micro and macro level. In case of households, the increased technological efficiency is typically used to enhance comfort and the standard of living instead of decreasing of resource-consumption. For example, improvement of households' energy saving leads to the increase of the size of residence, higher room temperature or the use of electric domestic tool (Hanssen, 1999). In the case of enterprises it can happen that eco-efficiency improvement is followed by an increase in production so enterprises' absolute resource-use is entirely growing (Dyllick and Hockerts, 2002). At the macro level, in the case of public transport in Great Britain for instance, the increase of fuel-efficiency was followed by expansion of number of cars and car-use per capita (Hanssen, 1999).

Since the GWP (Gross World Product) is continuously increasing, in spite of the decrease of the ecological footprint/GWP ratio (growth of eco-efficiency) humanity's EF is growing in absolute terms. Moreover, countries that have higher GDP per capita generally also have higher EF (Bagliani et al., 2006; WWF, 2006) and are responsible for more emission of carbon-dioxide (Stern, 2006).

According to this, we consider that the current empirical results do not reinforce the techno-optimist thesis, that modern societies can reduce the biosphere-transformation and move towards ecological sustainability only by technological change. Furthermore, since rich countries' effect on the biosphere triply exceeds the Earth's carrying capacity (Wackernagel and Rees, 2001) it is vital to emphasize the possibility of the reduction of consumption and tthe change to a sustainable consumption structure. Humanity has arrived at a turning point as its culture built on consumption and extensive growth has reached its boundaries.

3.   Environmentally conscious behaviour

As we mentioned above, ecological footprint is a consumption-based indicator so consumption-reduction may lead to a decrease in EF. Consequently, environmentally conscious consumer behaviour may have a significant role in the reduction of EF. Furthermore, from the three factors of EF (population, consumption and technology), consumption can be reduced most of all by "average citizens" and societies in the short run.

Several researches examine environmentally conscious consumers, "green-consumers". Straughan (1999) examined demographical variables (age, sex, income, education), which may affect environmentalally conscious behaviour. According to the examinations, the general belief is that younger individuals are likely to be more sensitive to environmental problems. In the case of level of education, researchers have found education correlated positively with environmentally conscious behaviour. This relationship could be explained with the fact that the higher level of education means more information in association with environmental problems. As far as income is concerned, it is generally expected to be positively related to environmentally conscious behaviour, at higher income level consumers are willing to pay higher price of environmentally friendly products. However, other studies have found negative connection because willingness to pay does not mean effective purchasing (Majláth, 2005). Beside demographical variables other factors exist (values, beliefs, norms) that can influence humans' environmentallly conscious behaviour. In the following, we examine these factors in detail.

Stern (2005) examines environmentally significant behaviour (ESB) that "can be defined by its impact: the extent to which it changes the availability of materials or energy from the environment or alters the structure and dynamics of ecosystems or the biosphere itself" (Stern 2005: 408). Stern (2000, 2005) differentiated four types of ESB:

1. environmental activism,
2. non-activist behaviour in the public sphere,
3. private-sphere environmentalism,
4. other environmentally significant behaviours.

Active participation means that individuals take part in the work of environmentalist organisations and demonstrations. Active citizenship (for instance membership of environmentalist organisations) is distinguished from the support or acceptance of public policies (for the willingness to pay higher taxes for environmental protection). Private-sphere environmentalism examines to what extent individuals take the preservation of environment into consideration during consumption, e.g. the use of domestic products. Thus private-sphere environmentalism has direct environmental consequences. Finally, individuals may affect the environment through other behaviours, such as influencing the actions of organisations to which they belong. From these types of behaviour we we examine the private-sphere behaviour, whereas individuals' environmental effect depends on their decisions as consumers.

3.1   Environmentally conscious consumer behaviour

Individuals' consumer behaviour can be influenced by the values they consider important. In our paper we explore several psychological and sociological factors influencing ecological footprint based primarily on Stern's Value-Belief-Norm Theory (Stern et al., 1999). We adopt the tipology of values developed by Schwartz (1992), which maps human values that can be divided into ten value types and four broader value clusters or orientations (self-transcendence, self-enhancement, openness, and conservatism). In the course of our examination we adopt Stern's VBN Theory, which is widely accepted and appears in several research[40], furthermore we amplified the four values (altruistic, egoistic, traditional and openness to change values) with nepotistic values. Stern et al. (1999)

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[40] For instance Steg et al. (2005) confirmed the casual order of the variables of VBN Theory by a questionnaire. All variables were significantly related to the next one.

examined five variables and the connection between them: values (especially altruistic values), new ecological paradigm (NEP), adverse consequences (AC), ascription of responsibility to self (AR), and personal norms for pro-environmental action (Figure 1). Each variable affect the next, the VBN Theory begins with four types of values that form the basis of environmental attitudes and behaviours. Environmentally friendly behaviour results from personal norms which are activated by beliefs (AC and AR beliefs are dependent on NEP).

Figure 1: Schematic model of VBN Theory
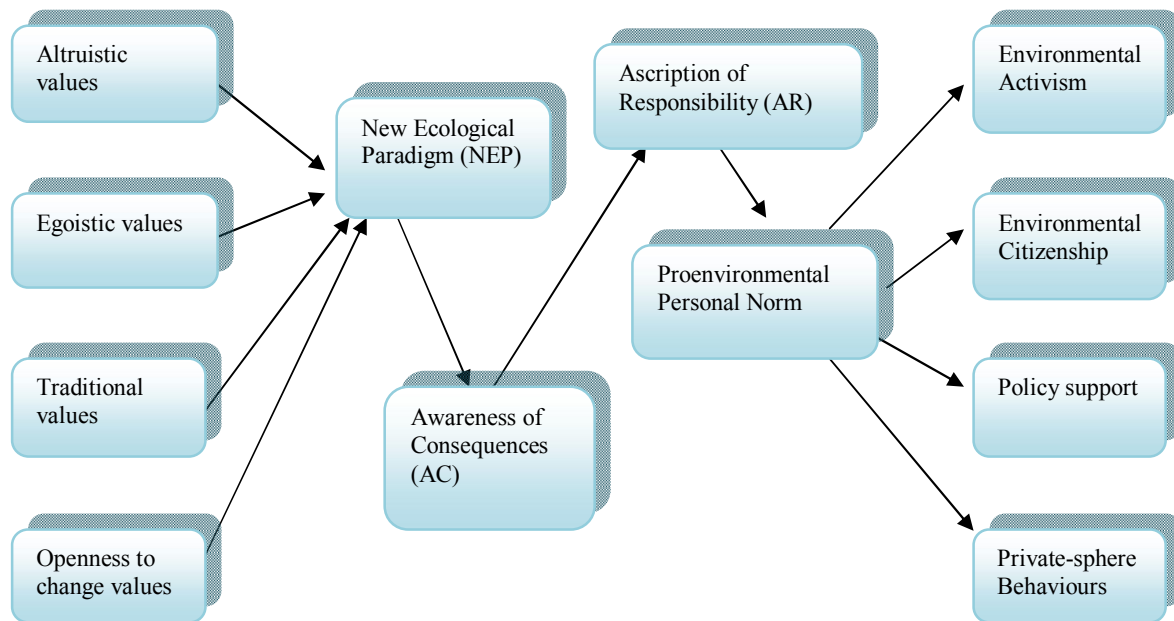
Source: Stern et al., 1999: 84.

 The literature emphasizes that altruistic values are in association with pro-environmental behaviour, that is altruistic values may lead to pro-environmental behaviour. Personal norms for pro-environmental actions (e.g. recycling, producing less household waste, etc.) are activated when an individual believes that violating them would have adverse effects on things the are valued by the individual (called awareness of consequences (AC), in the literature). These are also activated when people believe that by taking action, they would bear significant responsibility for those consequences (called ascription of responsibility (AR), in the literature) (Stern, 2005).

Snelgar (2006) made a comparison between the VBN Theory and Schultz's (2004) model and found that Schultz's scale has a better factor structure and more reliable sub-scales than does Stern et al.'s VBN Theory. In spite of it the VBN Theory is more polpular. Furthermore, Schultz and Zelezny (2003) summarize several recent lines of research which have applied the concept of values to environmental attitudes and behaviour, for instance utilitarian values, ecocentric values, anthropocentric values and environmental values. Their model based on Schwartz' (1992) focused especially on the latter one. It distinguished three value-based clusters: egoistic, social-altruistic and biospheric, just like Stern (2000, 2005) in his recent studies. Finally, we can conclude that recent studies use this triple classification instead the former one which differentiated four value clusters.

Regarding the Hungarian special literature, Nemcsicsné (2007) examines the environment-conscious behaviour and distinguishes five major components: environmental knowledge, environmental values, attitudes, willingness to act and actual behaviour. In addition, she presents some models of environment-conscious behaviour as Ajzen's Theory of Planned Behaviour, the model of Kollmuss

and Agyeman that emphasizes three factors which influence individuals' behaviour: demographical variables, internal (e.g. motivation, ecological knowledge, values and attitudes) and external (for instance economic and political) variables. Furthermore, Majláth (2005) summarizes the factors which have an influence on environmentally conscious consumer behaviour (e.g. demographical and non-demographical variables).

In the following section we introduce the results of our empirical study. First we examine the effects of several demographical variables and the effects of values on the personal EF of the students of the University of Szeged. Then we demonstrate the results based on Stern et al.'s (1999) study following its logical order. We start with the examination of values, then we examine the NEP and the adverse consequences, finally within the VBN Theory we investigate cultural biases. In our study we do not study personal norms. As a consequence of the lack of time we have not explored the connections between these factors up to the present. However, in the future we plan to do so. In the end we examine the importance of knowledge in environmentally conscious consumer behaviour.

4.   Survey

In our study we present the results of our quantitative survey, which was done in March and April 2008. The sample consists of 394 students from three faculties (economics, arts and science) of the University of Szeged. Our questionnaire consisted of four major parts:

1. general demographical data (9 questions),
2. ecological footprint (29 questions),
3. questions about environmental philosophy and values (14 questions), and
4. questions about environmental knowledge (3 questions).

In the first part of this section we introduce some descriptive demographical data of our sample. Afterwards we explore the relationship between the examined variables and EF (Table 1).

Table 1: Structure of our examination
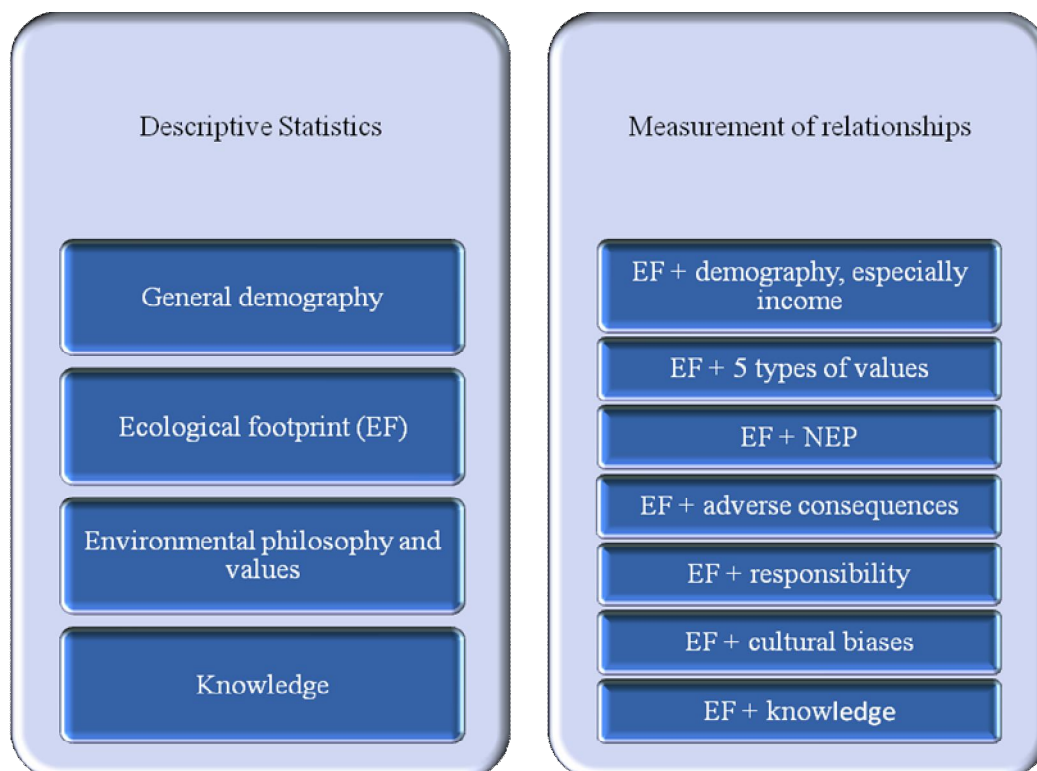
4.1   Hypothesis

First we set up seven hypothesis based on the literature, especially on the basis of the examinations of Stern et al. (1999, 2000, 2005) and the literature of ecological footprint (e.g. Bagliani et al., 2006).

- *H1:* From the demographical variables income has a significant role in influencing personal EF. That is students whose family's monthly net income per capita is high have higher EF.
- *H2:* Students who prefer altruistic values have smaller EF.
- *H3:* Students who consider modern technology as a solution for the environmental problems have higher EF. That is techno-optimism leads to higher EF.
- *H4:* Students who think that environmental problems have negative consequence for themselves have smaller EF.
- *H5:* Students who believe that single persons and small communities may play an important role in the solution of environmental problems have smaller EF.
- *H6:* Students who prefer egalitarianism (as a cultural bias) have smaller EF.
- *H7:* Students who have adequate knowledge regarding environmental problems and the present state of the natural environment have smaller EF.

4.2   General demography

In the first part of our survey we asked general demographical questions about the respondents (faculty, income, parental qualification, future plans of the students after graduation). Our results showed that about half of the students in our sample were economists, one quarter of them were arts or science students (Table 2).

Table 2: Division of the respondents faculties

Faculty	Frequency (head)	%
BTK (arts)	101	25.6
GTK (economics)	190	48.2
TTIK (science)	103	26.1
Total	394	100

Source: own illustration

Our first hypothesis is confirmed since the income of the respondents' family is correlated positively with EF (Pearson Correlation, sig. 99%) (Table 3). Furthermore monthly living cost of the students also correlated positively with their EF to a lower but still significant extent (95%). This observation is consistent with our expectations and the results of the literature.

Table 3: Correlation between income and ecological footprint

		Ecological Footprint	**How much is your family's monthly net income per capita?**	**How much is your monthly average expense? (the cost of lodgings, dormitory, travel, entertainment, meal)**
Ecological Footprint	Pearson Correlation	1	.403	.105
	Sig. (2-tailed)		.000	.050
	N	356	343	351

Source: own illustration

4.3   Ecological footprint

In the second part of our questionnaire we measured the ecological footprint of the students. There are several EF-calculators but none of them fulfilled the requirements of preciseness and intelligibility simultaneously and in addition, each of them showed different results when we tested them.

First, we chose Earth Day's and Global Footprint Network's common EF method. However, in the course of the test survey the calculator proved to be difficult to understand for the students and the questions were also too long. Therefore, in our study we used Eric Krause's ecological footprint calculator, which is intelligible but the result are not precise, it only determines the EF approximately. Moreover the major problem is that the calculators present rather different results. According to the authors' own experiences Eric Krause's calculator shows essentially higher EF results than the one of Earth Day's and Global Footprint Network's. Therefore, in our analysis we do not analyze absolute levels of EF only the relative effects of the influencing factors within our sample. Eric Krause's calculator measure the EF with 18 questions that are divided into 5 parts.

The average ecological footprint of the students of the University of Szeged is between 6-7.8 gha. This number is incredibly high, it is approximately twice as large than the Hungarian average (3.7 gha) and almost reaches the Canadian average (7.6 gha). Economic students have the highest EF which can also be a result of the differences in the income of the respondents since the family-income per capita of the economic students is higher than of the other two faculties' students (on the basis of the likelihood ratio test which is equivalent to the chi-square test). According to the first explanation, economic students are wealthier than the average. On the other hand their lifestyle may involve higher environmental burden because of their different preferred values.

We can say that *higher income means higher EF* and the *faculty of the students may also influence the size of their EF*. However, it could happen that this influence is also a result of income differences.

4.4   Environmental philosophy and value

As we mentioned above, Stern et al. (1999) link five variables to environmentally significant behaviour: values (especially altruistic values), new ecological paradigm (NEP), adverse consequences (AC), ascription of responsibility to self (AR), and personal norms for pro-environmental action. In our study we measured five types of values (four from the VBN Theory completed with nepotistic values), NEP, AC, AR, and cultural biases based on VBN Theory. Later Stern (2000, 2005) examined only three values (altuistic, egoistic and biospheric values). In our study, however, we chose the first classification and below we show that our values can be divided into five types with principal component analysis {aside from several exceptions regarding the original categories given by Stern (1999)}.

First we composed five components with principal component analysis[41] from the values based on Stern et al. *(1999)* – nepotistic values do not occur in the original theory. Within the category of altruistic values the *"influential, having an impact on people and events"* value did not fit into the principal component. Likewise, within the category of traditional values the *"self-discipline, self-restraint, resistance to temptations"* value did not fit. In the course of examination of the relationship between the five components and the EF we have found that EF was positively correlated with egoistic values (correlation is significant at the 0.01 level, Pearson Correlation is 0.188). On the contrary, EF was negatively correlated with altruistic values (correlation is significant at the 0.05 level, Pearson Correlation is -0.124). *the results confirmed our second hypothesis, that is* the students who prefer

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[41] According to our expectations the minimum value of the loading variables was 0,7. We expected the principal components to preserve 60% of the amount of the information (communality) (this is the generally expected level in social sciences).

altruistic values have smaller EF. Our results are consistent with the results of Stern et al. (1999) whereas the individuals who prefer altruistic values pay attention to preservation of environment.

In our study NEP was measured using three statements which were valued on a five-grade scale by the respondents. These statements were connected to the role of technology in the solution of environmental problems. The students who consider modern technology as a solution for the environmental problems without the need for changing their lifestyle have higher EF (correlation is significant at the 0.05 level, Pearson Correlation is 0.126). This finding is consistent with our third hypothesis thus *it has been confirmed that is the students who consider modern technology as a solution for the environmental problems have higher ecological footprint. That is techno-optimism leads to higher ecological footprint.* It is easy to see the individuals who believe development of technology is the best way may not take part in the protection of environment.

Within the category of *Adverse Consequences* the respondents had to determine how large problem the environmental crisis is going to mean for themselves and their family, for the future generations, for their country, for the developing countries and for other species of plants and animals. We found that the students primarily worry about the well-being of future generations and of other species. Furthermore, the respondents who think environmental problems have negative consequences principally for the next generation have smaller EF (correlation is significant at the 0.05 level, Pearson Correlation is -0.123). We explain with the fact that these respondents potentially have more information about sustainability than the others, since the official, scholar definition of sustainability and/or sustainable development is strongly connected to the well-being of future generations - see e.g. the most cited definition of Bruntland (1987). That is they have smaller EF because of their higher knowledge. This expectation is confirmed by our study's results which prove that students with appropriate declarative knowledge have smaller ecological footprint. *Consequently, we could neither confirm nor refuse our fourth hypothesis which says the students who consider environmental problems dangerous for themselves have smaller ecological footprint.*

In our study we measured the *relationship between AR and ecological footprint.* First we divided the actors who may be responsible for the solution of environmental problems into four principal components with principal component analysis; we used Varimax rotation with Kaiser Normalization (Table 4). Our first component, "*small community principal component*" contains individuals, small communities, civil organisations, local/national environmentalist organisations and smaller settlements. Therefore these respondents expect the solution from the local level. The second one is *"mezzo principal component"* contains cities, regions/counties, countries. The third one is *"international principal component"* contains international organisations and international environmentalist organisations. Finally, the last one is *"business principal component"* contains small-, and medium-sized businesses and multinational businesses. EF was negatively correlated with small community category (correlation is significant at the 0.01 level, Pearson Correlation is -0.149). In the other three cases no significant relationship were found. *Thus we confirmed our fifth hypothesis that the students who consider locality important regarding the solution of environmental problems have smaller ecological footprint.* Presumably these respondents believe in their "effect for sustainability".

Table 4: Results of categorize of responsibles (rotated component-matrix)

What role do you think the following factors would have in the solution of environmental problems?	Component			
	1	2	3	4
Individuals	**.778**	.130	-.216	.003
Small communities (pl. neighbours, friends, etc.)	**.879**	.062	-.169	.100
NGOs	**.811**	.102	.225	.048
Local/national environmentalist organisations	**.726**	.092	.481	.011
Smaller settlements	**.649**	.408	.143	.155
Cities	.353	**.809**	.031	.160
Regions/counties	.216	**.836**	.132	.114
Countries	-.084	**.712**	.363	.228
International organisations	-.094	.285	**.818**	.164
International environmentalist organisations	.124	.096	**.903**	.098
Small and medium-sized enterprises	.313	.115	.128	**.804**
Multinational companies	-.098	.259	.118	**.832**

Source: own illustration

Finally, *cultural biases* were measured using 8 statements from the research of Stern et al. (1999). These items were divided into four groups: egalitarian, individualist, hierarchist and fatalist cultural bias. In the course of principal component analysis we found that our results consistent with the original theory We examined the relationship between the four principal component and the EF but there was no significant relationship. *Thus we could not confirm our sixth hypothesis - the students who prefer egalitarianism have smaller EF.*

4.5 Environmental knowledge

In the last part we examined the environmental knowledge of the students. The students had to choose the correct answers from 3-4 options. According to our recent survey, it can be stated that the students of Faculty of Science have more environmental knowledge than the students of the other two faculties. On the other hand there is a negative correlation between the ecological footprint and environmental knowledge (Table 5). In other words, the ecological footprint of students who have more environmental knowledge is – in the case of the identity of other conditions - smaller. This connection also exists when we filter the other effects (income, faculty, etc.). *Thus we confirmed our last hypothesis that the students who have more adequate environmental knowledge have smaller ecological footprint.*

Table 5: Relationship between environmental knowledge and EF

		Ecological footprint	Environmental knowledge
Ecological footprint	Pearson Correlation	1	-.161
	Sig. (2-tailed)		.002
	N	356	356

Source: own illustration

This finding does not signify that appropriate information definitely leads to environment-conscious behaviour, because there are a lot of other important factors. However, this result certainly means that environmental knowledge is significant for environment-conscious behaviour. Furthermore, the spread of appropriate knowledge about environmental problems may open humanity's eyes and individuals may contributes to the change of consumption behaviour.

5.   Overall Conclusion

It is generally known that humanity's effect on environment is already unsustainable. The extent of unsustainability may be measured with EF. From the three factors determining EF, developed countries could make steps in the field of technological development and most of all in the field of consumption. Relying on the literature we proved that the increase of eco-efficiency itself – beside current consumption values – does not lead to the decrease of EF (because of the rebound-effect). For this reason the key issue for the developed, western countries is the transformation of values that is people could move towards the ecological values from consumption values.

In our study we seek answers for the above-mentioned problems with an empirical research. We emphasized some important conclusions from our results:

- The wealthier students have higher ecological footprint and from all the examined variables income influences the EF to by far the highest extent.
- The students who prefer altruistic values have smaller EF; on the contrary, the egoist respondents have bigger EF.
- The results showed that the higher level of techno optimism, results in a bigger ecological footprint.
- Students think that environmental pollution is a serious problem for other species of plants and animals and for the future generations. (Consequently they do not consider it a problem for themselves yet).
- Students who consider the welfare of future generation important have smaller EF.
- The students who believe in local and individual solutions have smaller EF

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What role can civil society play to encourage sustainable consumption patterns in the CEE region?

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Abstract

Civil society has a major role to play towards encouraging less-environmentally damaging consumption patterns. Neither governments nor businesses alone can create demand and supply for environmentally friendly and fair products, and motivate sustainable lifestyles. Most importantly, the challenge to address growing absolute levels of natural resource consumption requires awareness and action from all parts of the society. Hence, civil society organizations are key actors to collaborate for shifting to sustainable consumption patterns and transforming markets. If they have available financial and human resources, they can work effectively at various levels from the gross-roots actions at the community level to the international level such as the Marrakech Process.

Despite this huge potential, studies focusing on the CEE region have shown that majority of the civil society organizations do not necessarily see the relevance of sustainable consumption to their current field of work. It is observed that while some community level activities do exist, involvement in ongoing processes at the national or international level stay very limited. Especially, the potential to influence the international agenda such as the 10 Year Framework of Programmes is not tapped.

This paper presented a four-stage process that the CSO community can go through in order to enhance their participation at various levels towards encouraging sustainable consumption patterns. These stages would be namely; inform, engage, pilot, and multiply.

The paper introduced two projects, which claim to address the first three steps. The first project "CSO Platform on SCP" addressing the "inform" and "engage" stages is about establishing a discussion platform for CSOs with a focus on three major consumption impact areas; food and drink, mobility, housing. The second project "Civil Society and Research Community Partnering for SCP" addressing the "engage" and "pilot" stage focuses on concrete actions by creating partnerships between CSOs and research organizations towards action for SCP. However, for real impact multiplying these efforts would be essential. For this, absolutely crucial in the CEE region is to create interest among other stakeholder groups especially private and public sector organizations to partner with the civil society and mobilization of financial and human resources.

Keywords: *sustainable consumption, Central and Eastern European countries, civil society organizations*

1.   Introduction

In order to reach the goal of shifting towards socially responsible and less environmentally damaging consumption patterns without reductions in the quality of life, actions from all parts of the society are needed. Civil society organisations have an important role in e.g. motivating consumers to rethink their consumption patterns, moving business to produce and market in an environmentally and socially responsible way, asking academia to assess the trends, drivers and impacts of our current consumption patterns and negotiating with the government on measures to make our current patterns more sustainable.

Although participation of civil society is considered to be crucial by many stakeholders, civil society organizations (CSO, see box 1) have not been actively involved in sustainable consumption, especially in the international level (SC, see box 2). CSOs can engage in sustainable consumption (and production) in five levels: product and company level, local level, regional level, national level and international level (see figure 1). The product level activities include e.g. projects with business partners in order to make products more eco-efficient. At the local and regional level community action can be arranged and e.g. participation in planning processes can be conducted. In the national level CSOs can e.g. participate in the formulation of national sustainable consumption (and production) action plans and strategies as well as organize national campaigns. At the international level it is possible participate among others in EU processes and the UN Marrakech process.

Figure 1. Levels of CSO activities.

At the moment many CSOs don't see the relevance of SC to their current field of work (Church and Lorek, 2007). Lorek and Church studied how actively the member organizations of ANPED[42] (The Northern Alliance for Sustainability) engage in SC. Even though ANPED has SC as one of its core focus areas, only a small group of their member CSOs engage actively in SC. Only a few of the surveyed organizations saw SC(P) as an important theme in its own right. (Church and Lorek, 2007). Also very few of the voluntary sector groups funded by their government to work on a Sustainable Consumption-related programs use this phrase in their publicity materials. (Church and Lorek, 2007) In the international level, CSO participation in the Marrakech process has been limited. This paper focuses mainly on the international level of action.

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[42] ANPED is an alliance of organisations that works to empower Northern civil society in creating and protecting sustainable communities and societies worldwide.

Box 1. Definition of Civil society organization

In this paper, 'civil society organisation' refers to any legal entity that is non-governmental, not-for-profit, not representing commercial interests and pursuing a common purpose in the public interest. This definition includes traditional citizen and community groups, environmental and social lobby groups, religious organisations, human rights groups, health groups, women's groups, youth and student organisations etc. CSOs are similar to NGOs in so far that they are not part of the government. However, one of the main differences between CSOs and NGOs is that CSOs are engaged in a dialogue with a government entity that formulates policy directly (e.g. through lobbying, civic action, etc) or indirectly (e.g. through influencing the opinion of voters). This is called "civic action", different from the "community action" more often carried out by NGOs. (CSCP, 2008)

CSO participation in SC is gaining momentum in some western and northern European NGOs. For example WWF-UK has worked with researchers in a project called 'One Planet Business'. It is a new international initiative that builds on a collaborative approach (WWF, 2007). The project aims to bring together business, government and civil society to develop ways in which human demand for natural resources can be kept within the limits of the Planet. Another example comes from Finland, where the Finnish Association for Nature Conservation conducted a wide-ranging research project on sustainable household consumption and awareness raising. The results from the research were extensively popularized and brought to the public discussion and media (e.g. Lähteenoja et al., 2008). However, in Central Eastern Europe (CEE, see box 3) this kind of development is yet to be witnessed, at least in national and international levels.

This article examines the current state of Central Eastern European CSOs' participation in sustainable consumption policy discussion and discusses how participation could be enhanced.

Box 2. Definition of sustainable consumption

Sustainable consumption gives consumers the opportunity to consume products and services that meet their needs in an efficient and effective way, while minimizing the negative environmental, social and economic impact. The ultimate goal of sustainable consumption is to improve quality of life for all consumers in our and future generations, while minimizing associated environmental impacts. (UNEP, 2005: 3)

Box 3. Definition of CEE countries

In this paper following the definition of OECD, CEE countries include Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Montenegro, Poland, Romania, Serbia, Slovakia and Slovenia. (OECD, 2008)

2.   Theoretical background: Why is CSO involvement towards SC of key importance?

Many of existing policies aimed at consumers are guided by the traditional "rational choice" model. The model states that consumers are rational decision makers, who make deliberate choices based on cost-benefit calculations. (Jackson, 2005.) More recently this view has been broadened by consumer researchers and social scientists. In fact, consumption decisions are not made according to precise cost-benefit analysis, but they are part of social practices. Consumption decisions are shaped by habits, routines, identity and social norms. (e.g. Spaargaren, 2003; Hobson, 2001 and 2002; Halkier, 1999; Gronow and Ward, 2001; Blake, 1999; Moisander, 2001.) Material goods are also important because

they play symbolic roles in our lives, not just because of their functional use value. Consumer goods symbolize e.g. status, identity and group norms. (Jackson, 2005.)

From the perspective of institutional economics, for consumption patterns to change, changes in both formal and informal institutions are needed (figure 2). Formal institutions consist of constitutions, laws and property rights and informal institutions of e.g. customs, traditions and taboos (North, 1991: 97).

If the context of consumer's consumption choice is taken into consideration, it becomes clear that consumption patterns can't be changed solely by the actions of individual consumers or by changing the formal institutional setting. If consumption is profoundly a social phenomenon, social action is needed to change environmentally harmful consumption practises. As the sustainable consumption roundtable states: "The focus needs to be on creating a supporting framework for collective progress, rather than exhorting individuals to go against the grain" (Sustainable consumption roundtable, 2006: 1).

Widening the space of action (see figure 2) is where CSOs come into the focus. CSOs have good preconditions for questioning current consumption patterns and arousing social change in this field. CSOs can have a major role in awareness raising, information dissemination and popularisation of sustainable consumption patterns (Charter et al., 2008: 397). CSOs can bridge the gap between different stakeholders and play key roles in designing and implementing co-operative environmental initiatives (Hartman et al., 1999: 166).

Figure 2. Consumer's space of action.
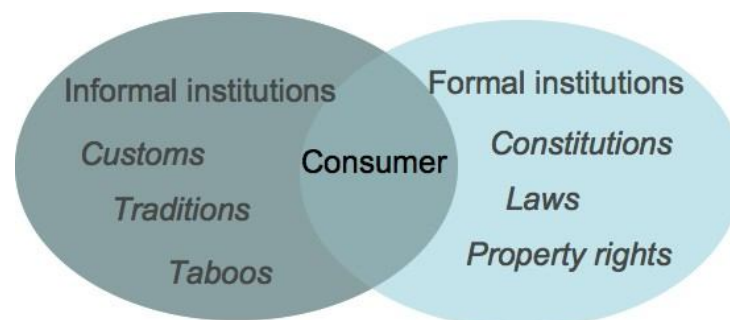
The more active involvement of CSOs in SC policy discussion is also desirable according to the so-called *governance perspective*. According to Hajer and Wagenaar (2003: 1-4), policy has transitioned from traditional *government*, which was characterized by top-down command-and-control approaches, to more subtle and deliberative *governance*. The purpose of the new way of governing is to include stakeholder groups more broadly into decision making and that way try to find solutions to complex and thorny issues, such as environmental problems. The idea is that one single actor cannot hold all relevant information about environmental problems but more deliberative processes are needed. (Hajer and Wagenaar, 2003: 1-30)

To enhance the importance of SC(P) in the activities of CSOs, this paper suggests that the CSO community has to go through four phases, namely 1) inform, 2) engage, 3) pilot and 4) multiply (figure 3). Like Lorek and Church (2007) state, more possibilities for information exchange on SC are needed as well as better linkages between CSOs and other stakeholders. Information dissemination on SC(P) is the first prerequisite for action, but it is of course not enough: the CSOs have to be engaged in SC(P) for a change in their activities to be possible. After that pilot projects can be carried out and the active involvement tested in practice. The last phase consists of multiplying the pilot projects to

other regions and areas. This four-stage procedure is connected to the field of systemic change and societal learning (e.g. Waddel, 2005).

Figure 3. Stages of CSO involvement in SC (inspired by Smith, 1994: 312-328).
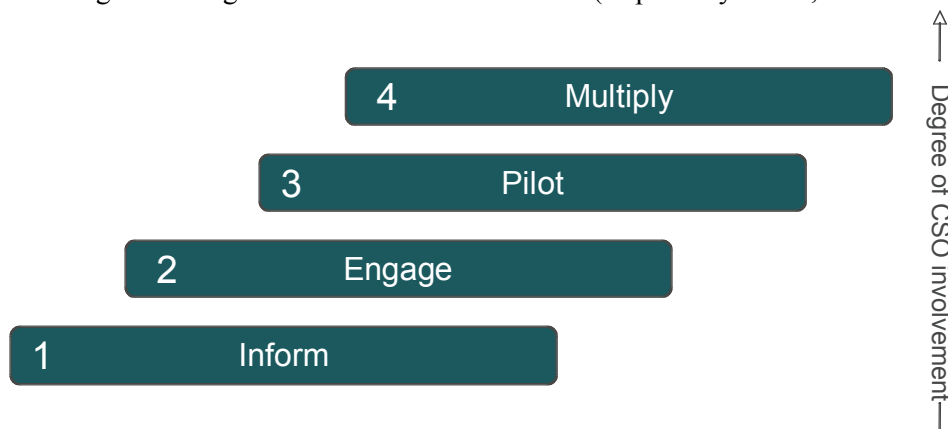
3.   CEE region and the role of CSOs

The CEE region is going through a transition period after the collapse of the iron curtain. Household consumption is still smaller in scale than in Western Europe but it is growing rapidly. One of the reasons is that in the socialist past consumption was constrained and nowadays achieving similar consumption levels than in Western Europe is important for most of the population. (e.g. Vadovics, 2006: 153-155). While lifestyles and consumption patterns are changing in CEE region, it might be possible, and also important, to shape consumption patterns into a more sustainable direction. In CEE countries, sustainability might be possible without cutting existing consumption levels but trying to avoid extensive grow in e.g. material use. In this process, CSOs have an important role. In the next section the current civil society practises towards sustainable consumption as well as barriers and opportunities for action are examined.

3.1   Current civil society practises towards SC in CEE region

The countries in the CEE region vary considerably in cultural, economic and environmental terms. Although one single truth from the region can not be reached, this section provides some evidence on the current civil society practises towards SC in the CEE region. Two major studies done in this field are presented: a study made by The Northern Alliance for Sustainability (ANPED, 2007) and another one made by Regional Environmental Centre for Central and Eastern Europe (Striving for sustainability, 2007).

The Northern Alliance for Sustainability (ANPED) has published in 2007 a collection of country reports assessing CSO activities on SCP in 11 countries (ANPED, 2007). ANPED member organisations in Belgium, Bulgaria, Czech Republic, Germany, Hungary, Latvia, Norway, Romania, Serbia, Ukraine and United States reported if CSOs in their country have had activities in 5 different areas of sustainable consumption (and production): 1) ecological fiscal reform, 2) clean and eco-effective production, 3) education for sustainable consumption and production, 4) corporate responsibility and accountability and 5) information and public participation for sustainable consumption and production. The organisations also reported if CSOs in their country were going to have action in some of these fields in the future.

The selection of the countries was based on the voluntary contributions of ANPED member organisations, so the selection cannot be claimed to be representative. However the comparison between CEE countries and the other countries in the report indicates that at the moment there seems to be less amount of activity on SCP in CEE countries (see table 1). The actions taken in CEE

countries by CSOs range from introducing consumption education in university curricula, promoting cleaner production through training and consultation to environmental indicator reports covering sustainable consumption issues.

Table 1. CSO activities on SCP in some ANPED member countries (source: ANPED, 2007)

CEE-countries	Number of areas where action had been taken (5 = top score)	Number of areas where action had been announced (5 = top score)
Bulgaria	3	1
Czech Republic	3	0
Hungary	5	1
Latvia	4	0
Romania	0	2
Serbia	1	1
Ukraine	2	1
Other countries	Number of areas where action had been taken	Number of areas where action had been announced (5 = top score)
Belgium	5	4
Germany	5	0
USA	5	0
Norway	2	0

From the CEE countries, Hungarian CSOs have been as active in SC as the western CSOs. The Hungarian Network for Sustainable Consumption and Production is a cross-sectoral partnership, which managed to join the forces of several stakeholder groups uniquely in the CEE region in order to make common efforts for more sustainable production and consumption patterns. The partnership has emerged from the initiative of the UNEP's SCOPE programme with the strong support of the REC's Hungarian Country Office as well as the Business and Environment Programme. The main task of the network is to promote dialogue among stakeholders, to develop and implement the strategies and actions for sustainable consumption and production (REC, 2002; European Commission, 2004). The Network was further extended during several cross- and intra-sectoral events. This network is identified as one significant multi-stakeholder activity.

The Regional Environmental Centre for Central and Eastern Europe (REC)[43] conducted in 2007 a regional assessment of 433 environmental civil society organisations in the Western Balkans (Striving for sustainability, 2007). The countries studied included Albania, Bosnia Herzegovina, Croatia, Kosovo (territory under interim UN administration), Macedonia and Montenegro. According to the study, sustainable consumption was the 16th important topic (from 26 topics) in the actions of CSOs in Western Balkans. The most addressed topics were sustainable development in general, nature protection and waste and water issues. (Striving for Sustainability, 2007: 5) Most of the CSOs (over 80%) worked on the local level. After the local level, the geographical levels of action in descendent order of importance were regional, national and international. About 30 % of the CSOs worked on the international level. (Striving for Sustainability, 2007: 6) The financial situation of the CSOs in the region can affect the scope of their activities: about 65 % of the CSOs listed their financial status as unstable, poor, or very poor (Striving for Sustainability, 2007: 8). Unstable financial situation leads to problems in staffing, because the salaries paid by CSOs are not high enough to attract experts. Non-acceptance of staff salaries by many donors has exacerbated the situation. (Striving for Sustainability, 2007: 13)

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[43] REC is an international organisation whose mission is to assist in solving environmental problems in Central and Eastern Europe.

3.2   Barriers and opportunities for action towards SCP

Based on the results of ANPED's and REC's studies, it is possible to drive some barriers and opportunities for action towards SCP in CEE region.

One major barrier for action is lack of proper and stable funding. As mentioned in the previous section, the financial situation of many (especially small) organisations is poor. For CSOs to participate in international and national policy processes, more financial and human resources would be needed. Many of the organisations rely heavily on voluntary work, so the actions taking depend mainly on the interests of the people offering their voluntary work. Smaller organisations seem to have a lack of strategic thinking in this field, and projects are conducted in a sporadic manner.

Secondly, there seems to be a lack of knowledge on what SC(P) actually is about. According to REC, clear future vision of sustainable production and consumption in the CEE region is needed. The civil society in the countries is aware of the unsustainable patterns of the Western European consumption, but cannot stop this process at the border. The question is how to combine the priorities of the national development and the priorities of sustainable development. Linkages between the everyday work of CSOs – done in the local and regional level – and the wider concept of SC(P) should be made visible.

Thirdly, there is a lack of efficient dialogue between consumers and producers. The local and temporal actions of CSOs, such as campaigns and awareness raising programmes, can be temporary successful, but not for long run. More dialogue between different stakeholders are needed.

On the other hand, there are many opportunities for CSO action in SC(P). CSOs have already good networks with local actors and they are close to the community. If SCP would be perceived as an important topic and enough resources would be available, CSOs would have good opportunities to engage the local community to SC(P). Furthermore, CSOs have the capability to engage consumers in creative and innovative ways.

> "*Creative instruments applied by CSOs can be used to catch peoples' attention with a positive message and help move them from awareness to action via engagement*".
> *(Jan Rademaker, Executive Director, ANPED)*

Green public procurements and greening trade are seen as a potential action area in CEE countries. "Greening the Trade Network" is a project coordinated by REC 2006-2010. Together with TESCO, the role of international food trade networks in promoting the SCP habits in Hungary are examined. The project reveals regional differencies between the marketing and business strategies of multinational companies and their reasons in the western and CEE countries. The project can be seen as one solution for filling the gap of lacking dialogue between consumers and producers. (REC, 2008.)

4.   Tools for CSO involvement

In this section two projects are introduced, whose overall objective is to make better use of the unique contribution CSOs can have on sustainable consumption policy and research. They correspond to the "inform", "engage" and "pilot" phases presented in section 2.

4.1   Inform and engage

The first step in involving CSOs to SCP is to inform and engage these organisations. It is essential to "agree on the evidence base" if you want to achieve changes in the system of consumption and production (Tuncer and Narberhaus, 2008). This means that CSOs have to be brought to the same page about SCP before anything else can happen.

The project "CSO Platform on SCP" is funded by 7th framework program and conducted by UNEP/Wuppertal Institute Collaboration Centre for Sustainable Consumption and Production (CSCP), Centre for Sustainable Design (CfSD) and Regional Environmental Centre (REC). In the project a discussion platform for CSOs will be established. The idea of the platform is that CSOs can exchange information and discuss the role that CSOs can play in promoting sustainable consumption and production. The project focuses on three high-impact consumption areas, namely food and drink, housing and mobility. These areas have been chosen because they are responsible for 70 to 80 percent of the environmental impact of product consumption in the EU-25 (Tukker et al., 2006). In practice, the project consist of two conferences – an opening and a closing conference – a workshop series and an internet-based discussion platform. In the platform discussion can be carried out between the workshops and conferences. In inviting CSOs to participate in the project special attention is given to CEE region, so that particularly CSOs from this region are included.

Figure 4: The focus of the CSO platform project.
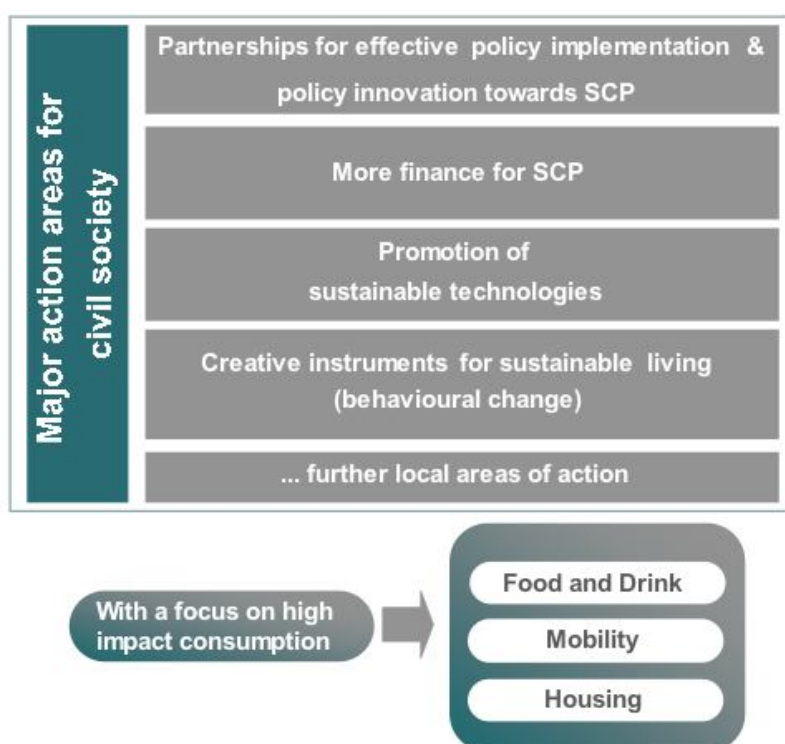
The specific objectives of the project are to:

- Develop material promoting the concept of SCP and displaying the potential and role of CSOs in this field. The material will contain information on previously undertaken research, the status of relevant processes, programmes and action plans (especially the EU SDS and the SCP Action Plan) and relevant stakeholders and networks (especially concerning CSOs). In creating the information material the differences in understanding SCP in different parts of Europe will be taken into account.
- Identify and discuss patterns and sustainability impacts and factors that limit progress towards SCP in the demand areas of food, housing and mobility with the active involvement of stakeholders. Also differences between different regions in Europe will be discussed;
- Identify and discuss issues in the areas of finance, technology, policy instruments, capacity building and education and behavioural change as factors limiting or enabling SCP with the

active involvement of stakeholders;

- Draw and discuss conclusions for the future research agenda, for the implementation of processes, programmes and action plans and for deliberative processes to involve stakeholders with a focus on CSO and similar organisations, and
- Develop perspectives with the European Commission, the European Environment Agency and other European organisations regarding the future research agenda, the implementation of processes, programmes and action plans and for deliberative processes to involve stakeholders with a focus on CSOs and similar organisations.

4.2   Engage and Pilot

The second project, "Civil Society and Research Community Partnering for SCP", focuses on concrete actions by creating partnerships between CSOs and research organisations to increase involvement of CSOs in research. The project is carried out by CSCP, Northern Alliance for Sustainability (ANPED), Stiftelsen Stockholm Environment Institute (SEI), Sustainable Europe Research Institute (SEI) and WWF-UK. The focus areas of the project are policy strategies and instruments, assessment tools for sustainable consumption and indicators for sustainable consumption. Partnering CSOs are encouraged to provide new insights for increasing efficiency in these focus areas.

The project consists of three major phases: 1) taking stock and identifying gaps, 2) filling the gaps and 3) creating partnerships (figure 5). In the phase "taking stock and identifying gaps" the state of CSOs knowledge on sustainable consumption and production and how to shape these patterns in a sustainable way will be assessed. Also gaps in research agenda on SCP policy frameworks, policy instruments, indicators and assessment tools will be identified. In the phase "filling the gaps" support activities to increase CSOs' knowledge base for SCP will be conducted and exploratory actions for developing new insights for SCP policy strategies, assessment tools and indicators will be carried out. The aim of the "creating partnerships" -phase is to foster exchange and dialogue between both groups and to increase involvement of CSOs in research concerning policy strategies, assessment tools and indicators for sustainable consumption and production.

Figure 5. Structure of the Civil Society and Research Community Partnering for SCP project.
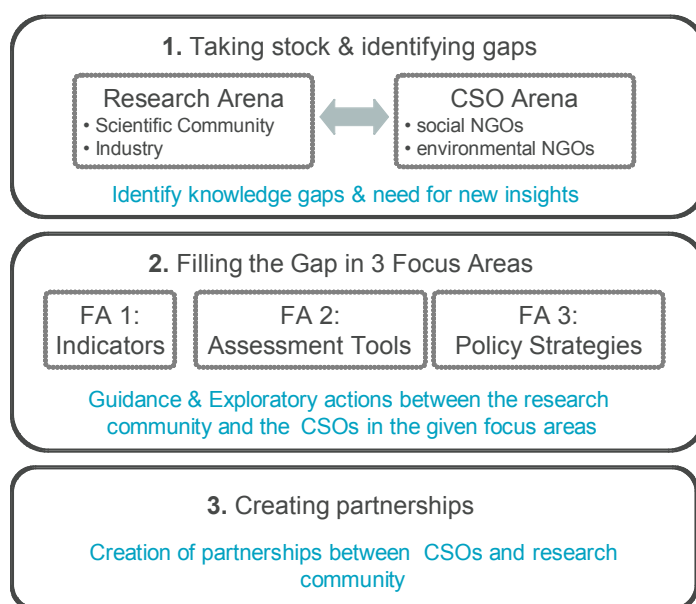
At least three CSOs from different EU member countries or non-EU Eastern European countries will be selected as national focal points for accumulating and disseminating knowledge on SCP. At least one of these CSOs will be selected from the CEE region. Selected CSOs will be tasked to participate in an orientation seminar, a feasibility survey and an assessment seminar, a support workshop and exploratory actions, a 'Researchers Meet CSOs' event, and dissemination activities and development of a strategy paper and position papers.

5.   Conclusion and recommendations

Civil society has a major role to play towards encouraging less-environmentally damaging consumption patterns. Neither governments nor businesses alone can create demand and supply for environmentally friendly and fair products, and motivate sustainable lifestyles. Most importantly, the challenge to address growing absolute levels of natural resource consumption requires awareness and action from all parts of the society. In this respect, civil society organizations are key actors to collaborate for shifting to sustainable consumption patterns and transforming markets. If they have available financial and human resources, they can work effectively at various levels from the gross-roots actions at the community level to the international level such as the Marrakech Process.

Despite this huge potential, studies have shown that majority of the civil society organizations do not necessarily see the relevance of sustainable consumption to their current field of work, not even to mention the CEE region. It is observed that in this region, while some community level activities do exist, involvement in processes especially at the national or international level stay very limited. Especially, the potential to influence the international agenda such as the 10 Year Framework of Programmes[44] is not tapped at all.

This paper presented a four-stage process that the CSO community can go through in order to enhance their participation at various potential levels towards encouraging sustainable consumption patterns. These stages would be namely; inform, engage, pilot, and multiply. "Inform" happens through intense knowledge exchange. "Engage" happens having comprehended the urgency to switch to more sustainable consumption patterns, civil society engages with the research community or other stakeholders to plan for actions. "Pilot" happens when small exploratory projects are carried out and tested for impact. "Multiply" happens when these pilots become more numerous and create the needed change.

The paper introduced two projects, which claim to address the first three steps. The first project "CSO Platform on SCP" is about establishing a discussion platform for CSOs with a focus on three major consumption impact areas; food and drink, mobility, housing. It addresses the "inform" and "engage" stages. The second project "Civil Society and Research Community Partnering for SCP" focuses on concrete actions by creating partnerships between CSOs and research organizations towards action for SCP. It addresses the "engage" and "pilot" stages. However, to achieve real impact multiplying these efforts, which two projects will hopefully create, would be crucial. For this, interest among other stakeholder groups especially private and public sector organizations to partner with the civil society in the CEE region and mobilization of financial and human resources would be essential. In this way, civil society organizations in the CEE region can move beyond voluntary action and become real and essential partners, and at times leaders, for change towards sustainable consumption.

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The role of timing in the success of energy saving programmes

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Abstract

Energy efficiency and energy saving are important aspects of sustainable consumption. Programmes to promote energy saving exhibit various levels of success, partly due to contextual features. The evaluation literature addresses the role of context and framework conditions in the successfulness energy policy programmes, but has largely overlooked the temporal dimensions of the programme context. This paper explores the various roles of *timing* of the programme in relation to changing context. There is evidence that timing does indeed influence the success of a programme, but good timing is often considered a matter of "luck". There is a lack of conceptualisation of timing in the context of programme planning and evaluation, which makes it difficult to introduce issues of timing into programme design. We understand timing as activity which brings together multiple elements at a particular point in time. In the context of energy saving programmes, timing includes processes and strategies whereby the programme interacts with *changes* in its context. This paper presents examples of the impact of timing, and suggests a useful framework for conceptualising the role of timing in managing energy systems change. The framework distinguishes between endogenous and exogenous timing, and suggests different timing issues in past, ongoing and future layers of the programme context. The framework contributes to a better understanding of how timing issues relate to successful design of energy saving programmes.

1.   Timing, success and rationality of programme design

Timing relates to the success of any kind of policy programme or development project. According to Miller (1993: 182), for example, timeliness and untimeliness of actions, in the context of political action, "open gateways, erect barriers, dictate scenarios, and significantly shape the distribution of rewards and punishments." Therefore, the timing of activities is not neutral, but it has value.

It is easy to find examples of the value of timing in policy related research, including studies of policy change and agenda setting (e.g. Durant, 2007; Kingdon, 1995), organization studies (e.g. Cooren and Fairhurst, 2004; Jones et al., 2004), futures studies (e.g. Muneer and Sharma, 2008; Dekimpe et al., 2000) and evaluation research (e.g. Mason and Barnes, 2007; Egmond et al., 2006). Pralle (2006: 988), for example, in the context of policy change research, has argued that "the timing and sequencing of events, actor mobilization, and venue shifts significantly shaped the divergent paths of the conflicts" (related to pesticide policy regulation in Canada vs. the US). In the case that she analyzed, the earlier and stronger counter-mobilization of the pesticide industry in the US weakened the nascent anti-pesticide campaign, whereas in Canada, by contrast, the industry was late to launch an effective counter-campaign, which allowed momentum to build around municipal pesticides restrictions, leading to the further diffusion of regulations. Examples of "timing gone wrong" are provided by

Muneer and Sharma (2008: 211), in the context of marketing studies.[45] According to the authors, the history of mobile product development is littered with examples where leaders in one era did not see the next one coming or miscalculated the timing and impact of mass-market adoption growth curves.

While it is thus easy to find evidence of the impact of timing for the success of different kind of programmes or projects, it is less clear whether timing can be subject to rational control and management. There are three alternative views on the "rationality" of timing as strategic activity. According to a rationalistic perspective, timing can be, and it largely is, a matter of humanly control. The opposite, irrational perspective, maintains that timing cannot be rationally controlled, but is largely a matter of luck and fortune.[46] A middle-way view is that timing is an arational type of action: doing the right thing at the right time is possible, but only on an intuitive basis. According to the arational view, good experts can master the right timing of actions, but they do it intuitively, not on the basis of rational reasoning (Hukkinen, 2008: 12; Dreyfus and Dreyfus, 1986).

There are strengths and weaknesses in each of the three perspectives on timing. A rationalistic approach to timing is often required in formal contexts, as in setting up new projects and proposals, which requires that the sequence of activities is indicated in time schedules and diagrammes, as well as in the evaluation of programmes, which requires the monitoring of the orderly achievement of the milestones and outputs. The demand for anticipating and controlling future actions is further maintained by programme evaluators and supervisors, who may expect project managers to have "programme theories" that anticipate the future sequence of activities in detail.

Despite the formal requirement for rational timing and design of the projects and programmes, this approach also has its flaws. One problem is caused by the non-linearity of programmes. According to Mason and Barnes (2007: 159), the identification of what is intended to happen within a project and what actually happens is necessary for developing an understanding of why outcomes are or are not achieved, but in reality, however, "…this detail cannot be understood in full nor predicted from the outset, as programmes develop in a non-linear fashion." The problem is that programmes and projects change and develop over time, especially in cases where customer feedback or participation by users influence the programme concept. Another, even more fundamental problem is the difficulty to predict future consequences of plans and decisions. According to Hajer (2003: 185), "{t}he failure to foresee and forestall has given rise to a widespread awareness of the ubiquity of the unintended, perverse consequences of large-scale rationalized planning and the limits to centralized, hierarchical regulation as the dominant mode of collective problem solving (Scott, 1998)."

The criticism of rationally planned and hierarchically controlled programmes undermines – in many cases for good reasons – the idea of rationality of timing as managerial activity. If the problems of timing issues are unduly exaggerated, however, the result is a rather pessimistic view of how programme design can learn from past experiences. In other words, if one emphasizes complexity, surprise, scale breaks (see Hukkinen, 2008: 24) or other similar phenomena which make the prediction of contextual changes very difficult, one ends up easily with a fatalistic and irrational conception of programmes. If the role of tacit knowledge and intuitive insights in the management of chaotically developing processes is emphasized, the result is a romantic and arational idea that successful timing of programme can only be achieved by gut-feeling-experts or ethereal geniuses.

In our paper on we aim at a more balanced and analytically specified understanding of how timing related issues impact on the success of energy saving programmes. On the basis of some preliminary

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[45] Muneer and Sharma (2008) give several examples of "timing gone wrong": Motorola, for instance, "having dominated the analog world, missed the digital wireless evolutions, ceding market share to Nokia. Subsequently, Nokia was slow to capitalize on the flip-phone mania that led to the emergence of Korean device manufacturers – Samsung and LG" (op. cit. p. 211).

[46] The two approaches resemble Durant's (2007: 409-410) view of the two main streams of theoretical perspectives on organizational actors: The first "…sees organizational actors as purposive, strategic, and largely captains of the fate of change efforts (rational adaptive, policy diffusion and innovation, and dialectical and conflict theories). The second sees actors as reactive, tactical, and largely at the mercy of larger forces (institutional, lifecycle, and ecological theories)."

findings from our data, which includes 24 recent energy saving programmes in Europe,[47] we aim to distinguish what timing issues and activities can better be understood as out-of-the-control, subject to rational management and enhanced social learning, or belonging to the sphere of intuitive mastery.

The remainder of this paper is structured as follows. In Section 2 we propose a framework for analyzing timing related issues in the context of energy saving programmes, and propose some hypothesis to be studied through the empirical cases. In the third section we describe the data and its origins. In the fourth section we report our *preliminary findings* of the role of timing in energy saving programmes and discuss whether the data supports or calls into question the hypotheses formulated in Section 2. In the fifth and final section we discuss how different timing issues relate to the success of energy saving programmes, as well as challenges for further research.

2. Toward a timing sensitive framework of the study of energy saving programmes

In research literatures on policy change and agenda setting (e.g. Durant, 2007; Kingdon, 1995), organizational and management studies (e.g. Cooren and Fairhurst, 2004; Jones et al., 2004), futures studies (e.g. Muneer and Sharma, 2008; Dekimpe et al., 2000) and evaluation research (e.g. Mason and Barnes, 2007; Egmond et al., 2006) we can find different definitions of timing as strategic and managerial activity. In the following, however, we have adopted a conception of timing based on Kingdon's "streams model" model of policy agenda setting. The model is widely applied approach in policy analysis and provides a general starting point for further conceptualization.

2.1   Timing as bringing together of problems, programmes and political contexts

We understand timing as activity which brings together multiple elements at a particular point in time. Following Kingdon's "streams model" of policy agenda setting, we assume that the basic issue with timing relates to the bringing together of three kinds of elements: problems, solutions and political contexts (see Pralle, 2006; Kingdon, 1995). In the context of energy saving programmes, timing relates to efforts to adapt the programmes to better respond to the perceived energy saving problems and prevailing political contexts. Following Kingdon's streams model, we hypothesize that **(H1)** good timing, or *the high match between problems, solutions and political contexts is the way to the success of the energy saving programmes*.[48] We also assume that the efficiency and effectiveness of the programmes are indicators of a match between a problem and its solution, whereas "social learning" reflects the match between the programme and its political context. By social learning we refer to interactive learning processes entailed in creating and appropriating new technologies and enhancing institutional change (see Russell and Willams, 2002).

2.2   Endogenous and exogenous timing factors

Focusing on energy saving programmes, we propose a distinction between endogenous and exogenous timing factors. Endogeneous timing factors refer to the internal characteristics of the programmes and exogenous factors to the contextual factors. This kind of distinction can be found in Dekimpe's et al. (2000) model of technological adoption times across countries. The authors distinguish between endogeneous or innovation related factors, such as the elapsed time since the introduction of the innovation (a proxy for the accumulated experience with the innovation) and exogeneous or

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[47] This paper is based on an on-going EC FP7 funded research project CHANGING BEHAVIOUR (contract 213217), which focuses on energy demand management programmes and the kind of information that they need to change the behaviour of their target groups. More details about this project and its partners are available at the website www.energychange.info. For the case studies referred to in this paper, see Appendix 1.

[48] In Kingdon's (1995: 202) words: "The probability of an item rising on a decision agenda is dramatically increased if all three elements–problem, policy proposal, and political receptivity–are linked in a single package."

socioeconomic factors, such as the socio-demographic characteristics of the studied countries influencing technology adaptation.

The flow of "endogeneous time" is often described through the concept of "innovation (or market) development cycle". Egmond et al. (2006: 3464), for instance, in the context of energy efficiency innovations, characterize the "market development cycle" as follows: "…markets develop gradually, especially if innovations are involved. Diffusion starts with the early market (innovators and early adopters), followed by the mainstream market (the early and late majority), and ends with the laggards." Dekimpe et al. (2000) extend the diffusion theory to the global marketing context, where the units of analysis are countries, and distinguish between countries that emerge as "innovators" (early adopters) or a "laggards" (late adopters) in adopting a new technology.

The literature on innovation diffusion cycles provides some interesting findings that may prove relevant also in the context of energy saving programmes. Dekimpe et al. (2000: 25-26) have found evidence of a global "demonstration effect": as the number of countries adopting the technology becomes larger, the likelihood of "similar" countries following their example increases. Following Dekimpe's et al. (2000) we hypothesize that **(H2)** *the more there is experience with, or, the later the stage of the market development cycle of an energy saving programme concept, the more likely it spreads to other "similar" countries and contexts* (i.e., we assume that the "demonstration effect" influence also in the transfer of energy saving concepts from one country to another).

Both Egmond et al. (2006) (focusing on the target group of housing associations) and Dekimpe et al. (2000) (focusing on countries as target groups of innovations) have further distinguished between early and late adopters.[49] According to Egmond et al. (2006: 3464), the actors in the energy efficiency markets differ in their willingness to adopt innovations: the early market actors have a visionary attitude, whereas the mainstream market actors are more pragmatic. Therefore, the authors propose that different policy instruments should be applied for early vs. late adopters. For the mainstream actors, they recommend early intervention in the decision-making process; that energy conservation should be presented as a solution to an actual problem, and that advantages such as comfort and quality, in addition to money and energy saving should be emphasized in communications. They also see that the mainstream market can be effectively influenced by permit requirements, since they cause a problem which the target group has to solve. Measures for the early market actors should be different, because the group is highly internally motivated. Suggested instruments include knowledge transfer about innovative technologies and products, as well as calls for innovators to play the role of demonstrator. Dekimpe et al. (2000) have found similar differences between early vs. late adopting (or: "innovative" vs. "laggard") countries. They profile innovative countries as wealthy, highly concentrated in population, open in economy, and culturally homogeneous; isolated economies as laggards in adopting technologies. They also make the claim that innovations diffuse more slowly in heterogeneous social systems, as interpersonal influence processes are less effective.

It is not in the scope of this paper to make an exhaustive review of the exogenous factors influencing the design and timing of energy saving programmes.[50] The examples above, however, draw attention to the two particular aspects of the impact of context on timing. Egmond's et al. (2006) finding of different target groups supports the idea of Kingdon's stream model of policy (1995) proposing a tight coupling of solutions (energy saving programmes) and perceived problems (early vs. late adopters). Dekimpe's et al. (2000) findings of the impact of different country characteristics on the adoption of innovations, in its turn, hints to what Kingdon's model says about the close coupling of political context and problems. We summarize the findings of how different target groups and contexts relate to timing with the following hypothesis **(H3)**: *Successful energy saving programmes take into account different target groups and country contexts (i.e., early vs. late adopters).*

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[49] Even though the early vs. late adopters of innovations, or, in our case – the target groups of energy saving programmes – are closely tied to the "endogenous" characteristic of the programmes (i.e., the programme concept being in an early or late stage of the development cycle), we can also perceive those actors pertaining to the exogenous context.

[50] In the analysis of the European energy saving programmes, in Section four, however, we make a distinction between micro-, meso-, and macro level factors that impact the timing and success of those programmes.

2.3   Opening windows of opportunity - past, present and future bonds

A "window of opportunity" for a successful energy saving programme emerges – following again Kingdon's streams model of policy formation – when all three elements of problems, solutions and politics are joined together. Windows are opened by "shocks" (such as environmental catastrophes), and "events" (such as new legislation), both in the problems and political streams. The two different sources of opportunities can be called "problems windows" and "political windows" (Kingdon, 1995: 201-203). The stream model provides a view of problems, solutions and politics, where all the three elements have lives of their own: the recognition of the problems, the evolution of the programmes, as well as the shifting of political events and contexts. The stream model provides an opposite view to a linear model of problem solving (or policy cycle), which assumes that people first become aware of a problem, then consider alternative solutions, from which they choose the most rational ones (op. cit. p. 172), and finally evaluate their activities and try to make them better in the future.

Timing of activities means acting when windows of opportunity are open. That problems, solutions and contexts flow along according to their internal dynamics and rules, however, implies that past, present and future bonds of institutions influence the timeliness of programme activities. The designing of the programmes – e.g., to launch a specific energy saving information campaign at a specific point of time, with a specific mix of products such as leaflets, information and consultation services, educational materials etc. – takes place in the present, in the immediate political, economic, technological and organizational context of the programme.

The intervention and its success, however, is affected by choices made in the past. Continuities with the past are relevant timing issues, because programmes are build on existing experiences and competencies. For example, programme stakeholders can have earlier negative experiences with energy saving technologies that influence their perceptions of new solutions. "Path dependency" (see Durant, 2007: 417-418) is a common term used to describe the patterns of politics driving large-scale organizational change, due to choices made in the legacy of the past. Other examples of past issues impacting the design of the programmes include the rootedness of the programme to its policy context or the level of public acceptance or hostility toward an energy saving measure. In the following analysis (Section 4) we identify such issues in three different contextual levels: micro (programme actors and target groups), meso (organizations and sectors) and macro contexts (political and economic institutions and cultural environments).

As with the past, the success of the measure is influenced by present and future issues, which can also be identified on all three contextual levels. Examples of present issues relating to timing include the synchronity of the programme with other similar programmes in its operating context and "eventfulness" of the moment, i.e., the number of activities taking place at the same period at the same moment. Examples of future issues include the future visions and expectations and decision calculi by other players in the field, since they can, e.g., delay their energy saving investments in the hope of a future fall in energy prices.

That there are different levels of timing involves a need for different type of sensitivity and measuring towards the variety of temporal scales. Famous organizational theorist, Peter Senge (2008: 4-5), has characterized climate change as "…an alarm clock telling us how rapidly the industrial age is ending…The alarm clock consists of a wide range of research and computer models, but it can be summed up with a few basic facts…To avoid catastrophe would require an 80 percent reduction of worldwide CO_2 emissions in 20 years. This is the 80-20 challenge facing industrial society." According to Senge, the big alarm clock has awakened decision makers to shifts in our living environment that call for "basic innovations" or fundamental changes in technology and organization that create new industries and transform existing ones toward more sustainable society. The big alarm clock has also awakened and increased decision makers' interest in energy saving programmes. As we will see in the next sections, successful programme managers will need to be aware of other scales of timing problems, as well.

3. Data and method of case study analysis

The European energy efficiency programmes that we have analysed reflect the diversity of programme managers and target groups involved today in energy demand side management and related programmes that involve energy savings as a core activity (see Appendix 1). The target groups include municipalities, households and individual citizens, schools and small and offices. Various instruments and programme types are present, including informative programmes (campaigns, advice services, promotion of energy saving products), programmes employing financial instruments such as grants or new financial arrangements, as well as technical or organisational support programmes such as audit programmes, awards and certification programmes.

We have focused on programmes operated by new kinds of players (rather than energy utilities). These can include ministries, government agencies or national or regional energy agencies (cases 4, 5, 10, 11, 17 and 18), but many are also operated by companies providing energy services or consultancy (cases 13, 15,16, 19 and 20). Energy users, especially municipalities, are also increasingly organising their own programmes to reduce energy demand (cases 1, 22). A particular feature reflected by the cases, however, is the emergence of multistakeholder networks that promote energy efficiency and energy saving (cases 2, 23 and 24). Finally, NGOs have emerged as a hitherto often unrecognised resource in promoting energy efficiency – in our material, many of the programmes were operated by energy-related non-profit organisations (cases 8 and 9) or by more general-purpose environmental or consumer NGOs (cases 3 ,6, 7, 13 and 14).

These different types of programme managers naturally face different challenges in operating their programmes and changing energy use patterns in their countries. In the following, we focus on a particular set of challenges ensuing from problems related to timing.

4. Timing in energy saving programmes – preliminary findings

As was noted in Section 2, timing issues are present on multiple scales, which we here categorise as macro, meso and micro scales (Table 1). Macro level dynamics relate to socio-economic structures and cultural values. The meso level relates to regions, organisations or sectors. Finally, on the micro level, there are dynamics related to the target group and its immediate environment, such as the available infrastructure of energy use. Further, we categorise the temporal aspect of programme context in terms of the relations of the programme to time past, the present time, and the future. Continuities with the past are relevant timing issues because programmes build on existing experiences and competencies. The programme also existing in a context of ongoing changes. Timing naturally also relates to the future. When designing a programme, managers usually have certain expectations concerning the type of future developments that make the programme necessary. These may be similar to, or different from, the expectations of other stakeholders, and correspond more or less with the future that eventually unfolds.

Table 1 Timing issues related to the past, present and future of energy demand side management programmes

	PAST	PRESENT	FUTURE
macro	historical legacy of policies, culture, markets and infrastructures	ongoing changes in energy prices and policies, related policies, market and demography	expected vs. realised changes in policy, prices and macro-economy
meso	previous experiences and existing capacities in the sector or region existing infrastructure of provision	supporting programmes and developments competing programmes and developments	future prospects and expectations of the sector
micro	previous experiences and existing capacities of the target group existing infrastructure of consumption	changes and turnover in target group life cycle change	programme managers' vs. target group's expectations about the future expected vs. realised changes in the target group and its immediate environment

In the following, we illustrate how programme managers encounter these various types of timing issues considering first continuities with the past, then relations to ongoing developments, and finally expectations and anticipation of the future.

PAST – the links of the programme to dynamics originating in the past

PAST circumstances continue to influence the macro context even if the original reasons for these circumstances may no longer be valid. Thus, for example, energy end-users have built their lifestyles under conditions of cheap and unquestioned fossil fuel supplies. The influence of past decisions is most visible in New Member States, where people are very aware that the legacy of socialist-era infrastructure and energy use patterns continue to exert an influence. There was also awareness of the opportunities for energy efficiency gains in a context where energy has previously been used wastefully. However, some other legacies of the past might also create positive opportunities. For example, Vadovics (2007) has pointed out that in Hungary, citizens are used to working together in groups on common projects, which can create an opportunity for local grassroots initiatives to save energy.

The past itself is not a timing issue – it cannot be changed. Yet it is useful for programme managers to recognise the obstacles and opportunities created by dynamics that originate in the past. Recognising the shape and speed of macro-level transitions like historical energy prices, energy policies or consumption patterns can also help programme managers to anticipate what might happen next.

The PAST is also present on the meso level, for example in the experiences that people have of energy-saving technologies. Poor historical experiences of geothermal heat pumps and highly insulated housing, for example, can influence public opinion for a long time after the situation in the market has changed. Similarly, in our Latvian case on energy efficient lighting, lack of quality standards for low energy (CFL) light bulbs, and hence market confidence, created an obstacle to their diffusion that had to be surmounted in the programme.

The past infrastructure of provision is an important factor influencing the success of a programme. Similarly, the existing capacities within the sector can also influence success. For example, in our Hungarian Climate Watch school programme, the capacities of the schools had been built up by previous eco-school networks and programmes, which created favourable conditions for Climate Watch. Past linkages between programme stakeholders can also reinforce the programme by providing a degree of trust and 'common language' for the programme to build on (see e.g., Engwall, 2003).

The PAST can also be powerful on the micro level, in terms of the previous experiences or capacities of the particular target group, or in terms of the existing infrastructure of consumption. This is a challenge, in particular, for EU-wide programmes that aim to address target groups in many different countries. The design of such programmes may assume a standard infrastructure of energy use, which may not be present in different national contexts.

Many programmes would like to position themselves as entirely novel and try to create a sharp break with the past. However, previous experiences with sustainable energy projects indicate that it is important to create continuities with the past, in particular if the behaviours or technologies promoted in the programme are novel (Heiskanen et al., 2007). Past experiences and concepts are what people use to make sense of new things (Moscovici 1998). If programmes can build on existing concepts and capacities, it is easier for the target group to adopt the changes introduced by the programme.

PRESENT – relations of the programme to ongoing change

Timing issues related to the PRESENT time concern the relationships of the programme with ongoing changes in the macro, meso and micro contexts of the programme. The most common ongoing *macro* developments found in the cases were the price of energy and government energy policies. During more long-term programmes, both of these types of macro elements could change. So a programme could start with strong support from central government, only to learn that certain subsidies were repealed a few years later. Conversely, many longstanding programmes had started long before the current surge in energy prices, but now benefited from an increase in demand due to changes in these macro conditions. For example, the residential energy modernisation programme in Lithuania benefited from the dramatic increase in district heat prices. Such dramatic changes can attract media attention and thus support awareness of the programme.

Macro-level developments are obvious, and usually recognised by the programme managers. Less attention has been devoted to ongoing changes on the *meso* level, i.e., in particular sectors or localities. Thus, we found, for example, that programmes targeted at offices in Hungary, Finland and the UK benefited from the ongoing interest in "greening businesses" and managed to position themselves as one way for businesses to address their environmental and social responsibilities cost-effectively. Likewise, programmes related to residential energy use benefited from ongoing changes in the housing sector, such as a strong investment in housing renovation in Lithuania or intensified tenant participation in housing governance in Finland.

Conversely, ongoing changes on the meso level can also create obstacles or competition for programmes. For example, in the case of the Latvian Efficient Residential Lighting Initiative, the attention of the energy efficiency community was entirely focused on other energy end-use applications such as household appliances or residential heating. This "crowded out" the interest in energy efficient lighting, and created challenges for the programme in engaging project partners. Programmes can, of course, make a valuable contribution by addressing a gap by providing a solution to a problem that others have overlooked, but they may then also struggle to secure funding and partners with which to implement the programme.

With programmes with a long duration, it is also necessary to think about renewal of the programme itself. In the beginning, the programme can provide a novel message, as was the case for example in the Tapukas programme in Lithuania, which in 1997 was the first communication campaign of its kind

in the country. As time goes by, repetition of the same, once-novel message can become boring, and there is a need to find new angles to the message. Also, with time, some of the gaps that the programme originally aimed to fill may be addressed by other players. Thus, the Ilmari Climate Change campaign for schools originally addressed an important gap in educational materials on climate change, but needed to change its focus over the years to more motivational aspects as informative materials on climate change for schools became available.

There is also a timing aspect to micro-level developments and changes in the target group itself. Examples include organisational turnover: for how long will particular members of the target group stay within the target group? Is this duration sufficient for them to be able to fully participate in the programme? These problems were encountered in programmes in Lithuania (Modernization-Programme of Multi-apartment buildings) and Finland (Energy Expert) involving ordinary residents in an advisory role. Natural changes such as retirement of a key contact person can also create a challenge for programmes.

The FUTURE – anticipating changes and dealing with various expectations

The role of timing issues pertaining to the FUTURE is not very visible at the present stage of our analysis. Nonetheless, based on previous related research (Heiskanen et al., 2007) we expect that abilities to anticipate future developments and to articulate future expectations can greatly influence the successfulness of energy saving programmes. Two distinct dimensions relating to the FUTURE are (1) various stakeholders' expectations about the future and (2) actual developments that are realized in a future that is unknown to the programme managers when planning the programme.

Programmes are often forward-looking, and embody assumptions about external developments that are expected to support the programme. On the macro level, such assumptions can relate to expected changes in policy, prices or the macro-economy that support the programme. Previous research (e.g. Heiskanen et al., 2007) indicates that such expectations may not always get their timing right. For example, a Finnish programme promoting low energy housing was launched in anticipation of policy developments concerning energy use in buildings (e.g., energy labelling of buildings, policy measures targeted at detached houses) which did not materialize during the programme, but only a number of years later, when they funding for the programme had already been long depleted. These developments were already on the horizon for experts when the programme was launched, but they had not yet filtered into the awareness of ordinary market players; thus, the target groups failed to see the urgency of reducing energy consumption when building new homes. Communicating a convincing image of the future is a key success factor for future-oriented projects, but not easy to achieve.

Meso-level developments relate to expectations in the sector targeted by the programme, and how these expectations are realised or change over the years. For example, the Green Office programme in Finland started well before the large-scale interest in climate issues. It was, however, originally a small-scale programme that had no fixed budget or expected size of the target group. As climate issues came more into focus in 2006, the programme manager was able to provide a well-tested service to meet the demand that surged as a result of the Stern report, Al Gore's film *An Inconvenient Truth*, and increasing discussion of climate issues in the domestic business community. Many of our case programmes gained a large boost from an increased media coverage of climate change issues, yet not all were equally capable of capturing the benefits. Flexibility in programme design is a success factor that enables programmes to expand when operating conditions provide "windows of opportunity".

Programme designs can also embody expectations about future changes on the micro level, e.g. within the target group, which may or may not be realised. For example, the Finnish low-energy housing project mentioned above (see Heiskanen et al., 2007) was based on a vision that future homebuilders would be increasingly convenience-oriented and would favour ready-made solutions rather than actively participate in the building process and modify their homes (see Heiskanen, 2007b). This expectation corresponded to existing trends, but amplified them beyond the reality, which is still much

more mixed. Historical growth in a certain market development does not necessarily mean that the trend will continue unabated.

5.   Conclusions

We have only just started to analyse our cases, and thus there is not sufficient evidence to confirm or disconfirm the hypotheses set out in section 2 of this paper:

- **(H1)** good timing, or the high match between problems, solutions and political contexts is the way to the success of the energy saving programmes.
- **(H2)** the more there is experience with, or, the later the stage of the market development cycle of an energy saving programme concept, the more likely it spreads to other "similar" countries and contexts
- **(H3)**: Successful energy saving programmes take into account different target groups and country contexts (i.e., early vs. late adopters).

However, the existing evidence supports the argument presented in H1 about the importance of timing. Moreover, we can indeed see that certain types of programmes are becoming more and more prevalent in different countries (H2), in particular via common European programmes like the current Intelligent Energy Europe. However, the programmes that we have analysed seem to be based more on local problems and needs than on uncritical diffusion of existing programme concepts. For example, the residential energy efficiency programmes in the Baltic states are targeted to address the particular challenges and opportunities of the existing building stock in those countries. A more comprehensive dataset, which we are also collecting in WP1 of the CHANGING BEHAVIOUR project, will likely shed more light on the question addressed by H2. The final hypothesis (H3) argues that successful programmes take into account the variable speed at which different target groups and country contexts are amenable to the adoption of new solutions and practices. Our analysis shows that this issue is probably more complex than suggested by Dekimpe et al. (2000) and Egmond et al. (2006). Indeed, we find many innovative programmes in large and populous countries like Germany. But we were able to find innovative programmes in all countries. Moreover, the evidence about the openness to innovation of different target groups is mixed, and the issue of 'openness to innovation' depends greatly on the context and the type of changes introduced by the programme. We did, indeed, find more or less innovative municipalities or housing associations, but these differences are likely shaped by a variety of structural factors. Our evidence as yet is insufficient to confirm or disconfirm this hypothesis, but it shows, at least, that the question needs to be specified and qualified.

Even though our findings are very preliminary, they have implications for programme managers and practitioners. Some practitioners might argue that timing is an issue of "luck" and that it cannot be influenced. Our case studies, however, show some of the ways in which programme managers can deal constructively with the uncertainties related to timing by:
1. Making a careful analysis of the history of the context into which they are introducing their programme. Are there problematic experiences that have led to distrust of certain technologies? Are there positive experiences or existing competencies that can benefit the implementation of the programme?
2. Examining the potential links of their programme to ongoing changes in the operating environment, such as synergetic or competing programmes and developments.
3. Articulating future expectations, especially when they are crucial to the logic of the programme, and creating forums for aligning the expectations of different stakeholders. So, for example, if a programme design is based on expectations of rising energy prices and increasing policies to promote energy efficiency, these expectations need to be clearly justified and communicated to the programme stakeholders.
4. Anticipating future changes by keeping the programme design flexible; for example by designing a programme that can be scaled up or down depending on the opportunities or constraints provided by changing conditions.

APPENDIX 1 Overview of case programmes analysed in the CHANGING BEHAVIOUR project

	Country	Programme	Aim of the programme
1.	Denmark	Samsø	Creation of a renewable, energy self-sufficient island municipality
2.	Estonia	Energy Saving Competence Centre	Promotion and knowledge networking on energy saving measures in apartment buildings
3.	Finland	Green Office programme	Certification and management scheme to reduce CO_2 and resource consumption in offices
4.	Finland	Energy Efficiency Agreements	Negotiated agreement to promote energy audits and investments in municipalities
5.	Finland	Energy expert program	Training of volunteer residents promoting energy efficiency in housing associations
6.	Finland	Climate Change Campaign for Schools	School climate change awareness campaign implemented by environmental and youth NGOs
7.	Germany	SANIT	On-site advice service for energy efficiency renovations provided by consumer NGO
8.	Germany	Standby	State-wide campaign to create awareness of standby energy among consumers and retailers
9.	Germany	EcoTopTen initiative	Nation-wide information and rating service for energy efficient products
10.	Germany	Contracting Rommerskirchen	Implementation of energy performance contracting for municipal buildings
11.	Hungary	Energy Trophy	Competition for saving energy in office buildings through change in employee behaviour.
12.	Hungary	Carbonarium Association	Produce information on participants' personal climate change impacts and promote public awareness
13.	Hungary	Global Environmental Social Business Mechanism	Implement energy renovations in apartment blocks
14.	Hungary	Climate Watch	Educational and award programme for school groups to reduce CO_2 emissions
15.	Latvia	Building energy audits	Energy audits of apartment blocks
16.	Latvia	EnERLIn - Efficient Residential Lighting Initiative	Increase the efficiency of residential lighting by 50% increase in CFL penetration via promotion campaign and quality charter
17.	Lithuania	Taupukas residential awareness campaign	Communicate the benefits of energy and water consumption efficiencyand stimulate energy and water saving
18.	Lithuania	Multi-apartment buildings modernization programme	Promote energy modernisation of multiapartment buildings via demonstrations and subsidies
19.	Netherlands	Groene energie trein Leidsche Rijn	Reduce the energy, heat and water use in apartment houses by 5% through a specific education and communication approach
20.	Netherlands	Groene energie trein Rijswijk	Reduce the energy, heat and water use in apartment houses by 5% through a specific education and communication approach
21.	UK	CIS Co-operative Insurance Society Solar Tower	Renovate a landmark building using solar panels
22.	UK	Metropolitan Police Energy Efficiency Programme	Improve energy efficiency improve energy efficiency in existing buildings and practices of the Metropolitan Police Service
23.	UK	Manchester is My Planet (MiMP) programme	Increase policy development/implementation on Climate Change among Greater Manchester local authorities
24.	UK	MiMP Climate Change Pledge	Attract citizens in Greater Manchester to sign up to a Climate Change Pledge and encourage a switch to less carbon-intensive lifestyles.

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Using the latest research for better communication on sustainable consumption.

Case story of One did it

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Abstract

The behaviour change of individual consumers is one key issue when seeking for sustainable consumption. Due to the climate change discussion, more and more people start to understand the problems related to consumption and want to do something. However, for non-professionals in the environmental field, it is still difficult to understand the effectiveness of different choices. Individual consumers also often think that their choices cannot really make a difference.

This paper discusses how to combine sustainable consumption research and entertaining web community, as well as different stakeholders like researchers, NGOs and business, in order to promote sustainable consumption. It tells the idea and background of a new web community for eco-minded people.

The first part of the paper discusses the concept of sustainable consumption and why it is important. The role of consumers play is presented. Since consumer decisions are related to norms and values of the surrounding community, the decisions can't be assumed to be simple and rational cost-benefit considerations. Therefore, the social aspect of consumption should not be ignored.

The second part explains the idea and aims of the web application as well as issues related to the current database. The One did it application is based on the ecological backpack concept. The paper opens the calculations behind the application as well as explains reasons for choosing this particular indicator. The majority of the background data of the application is based on a Finnish research project on the ecological backpacks of private households. The sectors included in the application are housing, energy, eating, mobility, tourism, household goods and lifestyles. The core idea of the One did it application and community is to provide an entertaining and easy tool for users to test the environmental pressure of their everyday life and provide information on how to make more sustainable choices. Social features are an essential part of the application and it is possible to see the total effects of small actions when many people are doing them. It is also possible to compare one's own test results with the results of other users.

The paper is concluded by discussing the benefits of the kind of co-operation used in the One did it case as well as the challenges and possibilities faced during the development process of the application. Also plans for further development are discussed.

Keywords: *communication, MIPS, ecological backpack, web community, consumption*

1. Introduction

Concern about the unsustainable development of private consumption has risen during the past few decades in Western countries. At the same time, household consumption has increased and changed its shape. Income is growing from year to year alongside the GDP over the whole of Europe so that we have more and more to consume. In Europe, the people in the Central and Eastern European Countries have finally got the opportunity to increase their welfare during the past twenty years. This has lead to a rapid adoption of Western lifestyles as these are representing a concept of better life. However, according to the Global footprint network (2008), we would need four planets if all the people in the world consumed as much resources as people in the Western countries.

To tackle the problem of overuse of resources and other negative outcomes of consumption, the concept of sustainable consumption has been proposed as a guideline to shift consumption behavior to a less harmful direction. Various interpretations of sustainable consumption have been proposed during the recent years. A widely recognized definition was proposed by the Oslo Symposium on Sustainable Consumption in 1994: "Sustainable production and consumption is the use of goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as to not jeopardize the needs of future generations." (The Norwegian Ministry of Environment, 1994). Another definition, proposed by UNEP (2005), underlines also the social and economic aspect of consumption: "Sustainable consumption gives consumers the opportunity to consume products and services that meet their needs in an efficient and effective way, while minimizing the negative environmental, social and economic impact. The ultimate goal of sustainable consumption is to improve quality of life for all consumers in our and future generations, while minimizing associated environmental impacts."

In order to make a shift from high-impact lifestyles towards sustainability, the behaviour and decision-making of consumers must be understood. Consumption decisions are not made according to precise cost-benefit analysis, but they are part of social practices. Consumption decisions are shaped by habits, routines, identity and social norms (e.g. Spaargaren, 2003; Hobson, 2001 and 2002). According to OECD (2008a),"in designing effective sustainable consumption policies, general consumer behavior (awareness, rationality) as well as attitudinal variables should be taken into account. For some consumers, income level and status concerns indicate that initiatives could build on their desire to make green statements or send social messages."

The consumers' view on sustainable consumption is in general positive but also passive (OECD 2008a). In the recent few years, concern about climate change has risen and more and more people are willing to do something to promote sustainability. This paper presents one solution for encouraging consumers to take action and shift their lifestyles towards more sustainable patterns and, in addition, promote the feeling that taking "green" actions can be meaningful and even entertaining.

2. Consumers as decision-makers – how to make a difference?

2.1 Environmental and social aspects of sustainable consumption

In order to make a shift towards sustainable consumption, all actors of society are needed (Sustainable Consumption Roundtable, 2006). Business, government and consumers all have an important role, but consumers' power must not be underestimated as consumers are making the final choice on how to act and consume. Like Sutcliffe et al. (2008) argue a bottom-up approach is important in the promotion of sustainable consumption. This means good understanding and communication on what is relevant and that everyone's choices have an influence.

A first step towards more sustainable consumption patterns is to quantify the environmental pressure caused by our lifestyle. You can't manage what you can't measure. Various methods for measuring resource consumption or emissions are used to quantify the pressure our lifestyle causes on the

environment. The challenge is that there is not one widely accepted method or indicator but many different ones all telling a bit different stories.

One target for sustainable production and consumption has been the reduction of material flows in the industrialised countries by a factor of 10 up to the middle of this century. This would allow a worldwide cut in material flows by half, while doubling worldwide prosperity, i.e. it would lead to an increase in worldwide resource productivity by a factor of four (Schmidt-Bleek, 1993; von Weizsäcker, Lovins & Lovins, 1998). Resource-efficiency is a good aspect for sustainable consumption while it's concentrating on the inputs instead of the outputs. As Ropke (2001) states, "as the number of pollution problems is very large, it is difficult to construct reasonable indicators for overall environmental impact from the output side. The focus of inputs is thus a way to avoid drowning in detail."

In addition to the environmental aspect of sustainable consumption, also the social aspect is important. Socially sustainable consumption holds the idea that everyone should be able to meet their basic needs. The social aspect can also refer to the social nature of consumption, the desire to consume certain type goods and perform certain type of actions. This is where values and customs of the community play a role and define the standards what is acceptable way of living. Like Jackson (2005) states, in addition to functional value of material goods they play symbolic roles in our lives. Goods can symbolize e.g. status, identity and group norms. Since consumption is profoundly a social phenomenon, social action is needed to change environmentally harmful practices. As the Sustainable Consumption Roundtable (2006) states: "The focus needs to be on creating a supporting framework for collective progress, rather than exhorting individuals to go against the grain". Social communities can be one of these supporting frameworks as they can show the power of many people doing small actions, which finally affects the whole lifestyle.

2.2   Economic trends and consumption patterns in CEE countries

Central Eastern European countries have been facing a major transition after the collapse of the communist regimes. Household consumption is still smaller compared to Western European countries but it is increasing rapidly. Since consumption was limited during the socialist rule, catching up with the Western European level is felt important (e.g. Vadovics, 2006: 153-155). The issue of sustainable consumption is more than relevant at the moment in the region. Statistics show that economy in the region is expanding fast and also opportunities for consuming more than just basic needs are available for an increasing number of citizens.

To take an example of economy growth in the region, from the beginning of the 1990ies to 2006 Hungary and Poland have more than doubled their GDP per capita. Thus, the growth has been rapid compared to EU 15 where the growth at the same time was approximately 85 per cent (OECD, 2008b). The total values of GDP in the CEE region are still below EU 15 as well as below OECD averages. It is very likely that economic wealth and consumption level will continue to increase in the CEE region.

According to the Eurostat yearbook 2008, the growth in consumption expenditure in the European Union between the years 1995 and 2006 has been most extensive in Latvia, Estonia and Lithuania. All CEE member states are above the EU average.

It is obvious that economic resources set the limits to consume. It is also evident that while income increases the overall level of consumption increases, too. This occurs despite the fact that sustainability issues are more likely taken into account by consumers and households with higher income (OECD, 2008a). Also Røpke (2006) discusses the relationship between economic development and consumption pattern. She states that in some cases an increase in GDP is linked to improvements in the environmental conditions but the volume of consumption tends to increase over the time when economy expands. Since lifestyles and consumption patterns are changing in CEE countries, there will be a challenge and opportunity to decouple resource consumption from economic

growth and to shape consumption patterns in a sustainable way. Trying to avoid excessive growth in resource use decreases the need of cutting the consumption level in the future.

Tuncer et al. (2008) studied the sustainable consumption actions of civil society organizations (CSOs) in CEE region. There are some activities, e.g. in Hungary there is a network for sustainable production and consumption. Anyway, the activity in this field is smaller than in the Western countries. Tuncer et al. (2008) address some challenges for sustainable consumption work in the CEE region. There is a lack of information as well as lack of dialogue between consumers and producers. As the area is geographically wide, web-based services for information and motivation might be useful in the region. One did it application presented in the next chapter could be one solution in CEE region as well.


3.   One solution for better communication: One did it

3.1   The concept of One did it

There is a wide range of environmental calculators and tests available in the internet, many of them focussing on green house gas emissions or the ecological footprint. Some services provide tips how to improve one's personal environmental performance. However, the question is how to convert the concern on the environmental pressure of consumption and the willingness to do something about it into real actions in the long term. The aim of One did it is to provide a platform for a community, which encourages to take small every day actions towards a less environmentally harmful lifestyle. The importance to closely combine environmental information and guidance on how to make improvements has been shown by Sutcliffe et al. (2008). They suggest that consumers are willing to act when easy measures to make a difference are provided. One did it is an online community and an eco-planner with which members of the community can estimate the size of the ecological backpack of their lifestyle and get informed in an inspiring way on how to lighten the backpack. The beta version of One did it application was first launched in June 2008 at the Green Week in Brussels. Since then, feedback from users has been collected and the content, features, and visual performance have been developed. The next updated release will be available during the autumn 2008.

The core feature of the site includes the ecological backpack test which estimates the environmental burden of one's lifestyle including housing, energy use at home, mobility, food and beverages, household goods, leisure time activities and waste. After the user has completed the test and registered, daily tips provide a means to make small eco-improvements in everyday life. The main features of the service are presented in figure 1.

Figure 1: The current structure of the One did it service.
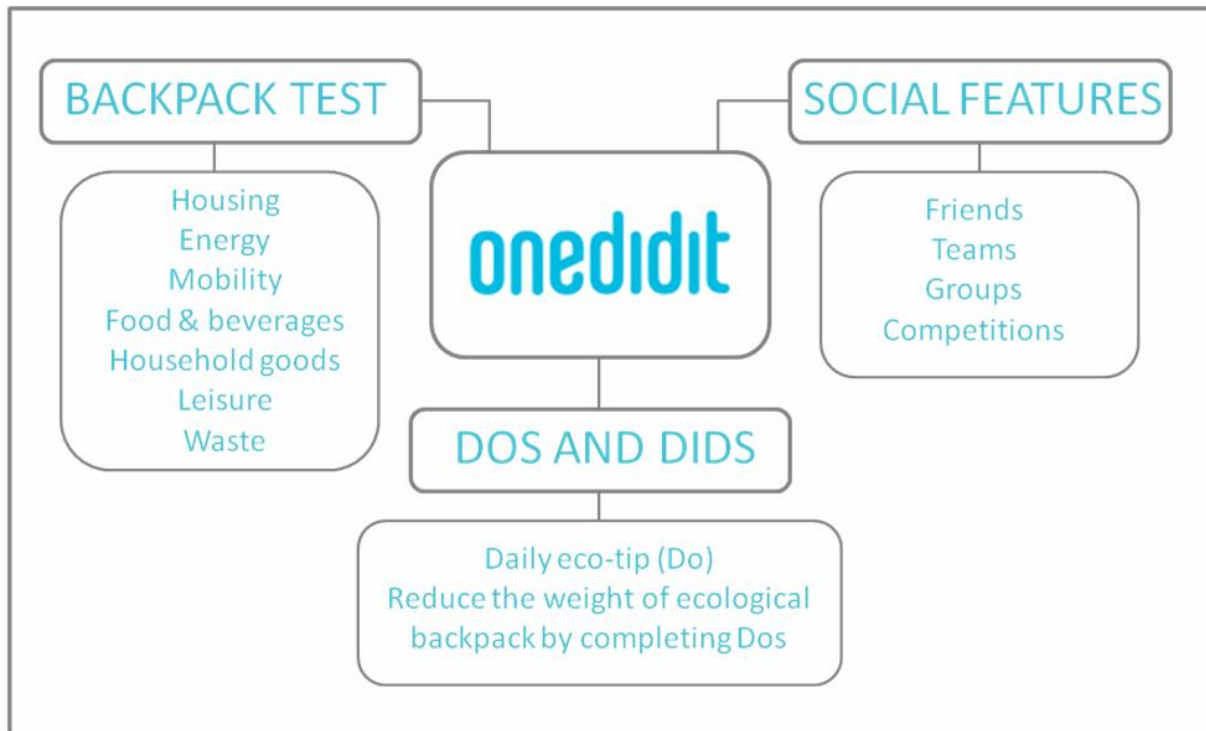
In addition to the test and daily tips social features are essential part of the service. Features like groups and challenges between groups will motivate users to actively take small everyday actions. In the development phases to come up, members of the community will be able to document and show others "how they did it" by for example sharing a photograph of their new bicycle they will use for commuting or presenting a good recipe which was a success when they were having a vegetarian day.

Examples of daily tips, Dos, are presented in figure 2. A tip is called a Do when proposed to the user and it will become a Did after the user has completed it. Dos hold a value in kilograms and once the user accomplishes a Do the saving will be subtracted from the original test result. Members of the community can use Dos for competitions. Who or which team made the greatest saving by completing Dos?

The Dos encourage users for example to choose a vegetarian lunch, take public transport to work or to share clothes with friends. To make the actions more rewarding, the total saving of the whole community, meaning all users together, is presented on the site. This makes the power of the community visible like the Sustainable Consumption Roundtable suggests: people must feel that their efforts are important and that there are also others acting the same way and this is why it all makes difference (Sustainable Consumption Roundtable, 2006).

Figure 2: Example of two Dos and one Did.

Consumers are very much conscious how their purchase, lifestyle or actions looks to others. Social norms are significant contributors to action (e.g. Barr, 2003). One aim of One did it is to make sustainable choices not only to look like ordinary but something that is desirable and part of a lifestyle one enjoys.

One did it encourages members of the community consider to think beyond simple product comparisons when seeking for more sustainable consumption and lifestyle. Consumers seeking for environmentally sound options have learned look for energy or other labels which help to choose the less harmful option in the specific product category. Energy labelling has helped to improve energy efficiency in case of refrigerators for example. However, household electricity consumption continues to increase in IEA member countries despite the fact that energy efficiency of many appliances has increased (OECD/IEA, 2007). The average household size is decreasing and at the same time increasing number of appliances is available and size of certain appliances has increased. The example shows that in addition to improvements in the supply side, also reconsiderations from the consumer side are needed to when sustainable consumption patterns are striven.

3.2   Data used in the application

The data used in the application is mostly based on a research called FIN-MIPS Household – Promoting Sustainable Consumption (Lähteenoja et al., 2007 and 2008). In addition, several other MIPS (material input per service unit) studies have been used. In this chapter, the research project and the MIPS concept are briefly explained. After that, an overview of the data modification is given.

### 3.2.1   Materials from FIN-MIPS Household research

FIN-MIPS Household is a research project conducted in Finland in 2006 - 2008. It covers the most important categories of private household consumption, including housing (construction and energy use at home), mobility, tourism, eating and drinking, household goods, leisure time activities and waste management. The coordinator of the research project was the Finnish Association for Nature Conservation.

The MIPS-indicator used in the research was created in the beginning of the 1990ies at the Wuppertal Institute for Climate, Environment and Energy. MIPS (Material Input Per Service unit, MIPS or MI/S) calculates the amount of natural resources used to provide a certain benefit or product and compares it to the service provided. It is proposed as a basic measure for assessing and comparing the ecological pressure caused by products and services (Schmidt-Bleek, 1993). MIPS constitutes a tool for assessing and systematically reducing the resource consumption of products or activities. The basis of the MIPS values are the ecological backpacks calculated for different goods or commodities. The ecological backpack is the sum of natural resources moved from their original place in the ecosphere during the entire life cycle of a certain raw material, product or activity, including indirect resource use as well. (Ritthoff et al., 2002.)

The MIPS concept divides the natural resources used into five different categories, i.e. abiotic resources, biotic resources, water, air, and soil movement in agriculture and forestry (mainly erosion). Abiotic and biotic resource consumption together with erosion can be summed up as TMR (Total Material Requirement).

In the FIN-MIPS Household research, the level and structure of natural resource consumption were analysed for each consumption sector using consumption data gathered from 27 Finnish households during a six-week consumption survey. The ecological backpacks were calculated per person in one year, meaning, the service unit (S) in kg per person per year. The result of the calculation is shown in figure 2.

Figure 2: Summary of the ecological backpacks of households studied. Every column presents one household. (Kotakorpi et al., 2008.)
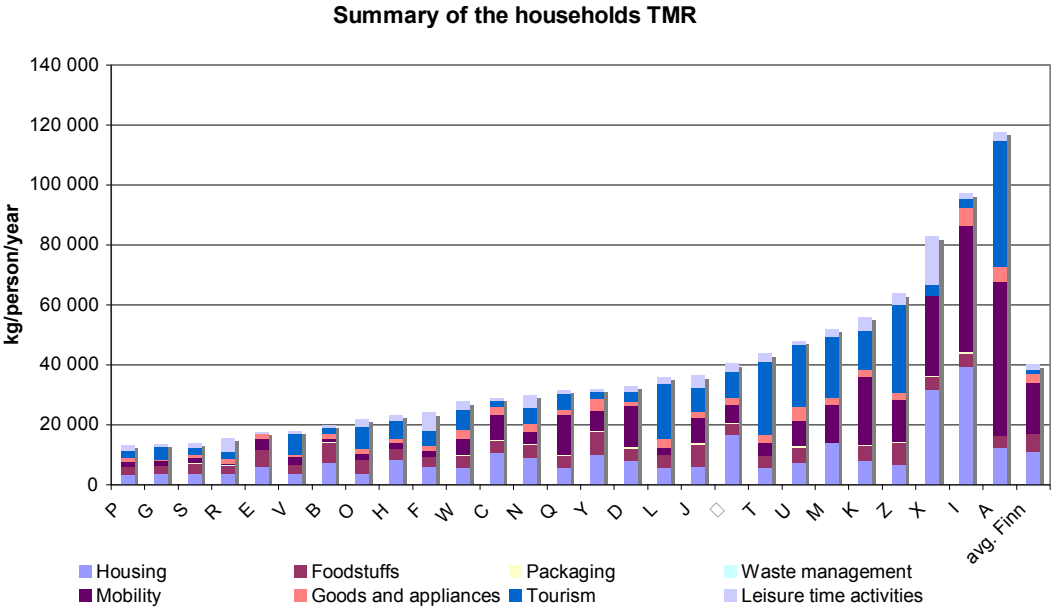
The backpack calculation gives a general idea of the total consumption and the relative shares of different consumption fields. More research is still needed to expand the database, make it more coherent and provide more region-specific results and data in the future.

3.2.2   Data analysis for One did it

One did it uses the concept of the ecological backpack to illustrate the volume of natural resources we consume. Ecological backpacks can be calculated in several natural resource categories but to keep it simple One did it backpacks include the consumption of non-renewable and renewable resources, soil (erosion) and air. Air consumption is linked to carbon dioxide emissions. Thus, the addition of the

TMR values and the air consumption was found to be the best solution for sufficiently including climate aspects into the calculation of ecological backpacks while still not confusing the users with different figures for one product or activity. The data obtained from the FIN-MIPS Household research was also modified to fit better to the Europeans in average than just to Finnish consumers.

4.   Challenges and opportunities of services like One did it

There is a huge competition on consumers' resources in terms of how they spend their money and time. Increasing range of products and services are available for consumption and various kinds of media grave for their share of our time. Various sorts of information (not only on environmental issues) is distributed. This leads to the situation where conflicting messages are sometimes addressed to consumers and frustration might result: What should I do to make the right choices? The message of One did it is that environmentally sound choices need not to be complicated, anyone can easily do them with the guidance and support of the service and community. To address this message is one of the challenges since competition between social media applications is fierce.

Environmental issues are sometimes seen to be too abstract, complicated, boring or depressing. To overcome the first two challenges, the ecological backpack was chosen to measure overall environmental pressure. The indicator provides results which are easily understandable. The concept of One did it relies on positive attitude and encourages to start with small changes while still being honest to tell that some actions make a bigger difference than others. Various fields of expertise is found in the One did it team and its networks to ensure that not only the information is trustworthy but also that the overall concept is interesting and entertaining.

The current database covers all major categories of household consumption. However, research is needed in various fields to fill currently existing gaps concerning the geographical scope of the data for example.

Since community members can be found all over the world, it is a challenge to provide information relevant for persons from different regions, cultures and circumstances. French, German and Spanish language versions of the site are already under construction but the future plans include releases of localized versions. Localizations not only refer to translation of the content on the site but also to modifications of it to better fit specific regional cultural environment and conditions. Localized versions in the CEE region are considered to be part of the longer term localization plan as, so far, the biggest interest to the service has been faced in the old EU member states.

The opportunities of a service like One did it include the possibilities to help to overcome the gap between distribution of information and the implementation of actions in consumers' everyday life. One did it team believes that providing the information from latest research together with a means to act and support of the like-minded community will encourage the community members to take actions towards more sustainable consumption.

5.   Overall conclusions

We have shown in this paper that the shift towards sustainable household consumption is needed. To promote this shift, the social aspects of consumption need to be considered when searching for means to communicate sustainable consumption and to encourage consumers to rethink their habits. Since an increasing number of people is involved in online communities, these communities should provide an opportunity to promote sustainable consumption patterns, too. The One did it has again shown that cooperation between experts and actors from different sectors is required when communicating the issues of sustainable consumption towards consumers. In CEE countries the challenge is to motivate both researchers and civil societies to promote sustainable consumption in a way that it would become acceptable among consumers.

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