

Evaluating Sustainable Consumption Policies and Practices: gaps, white spots and future developments.

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1 Introduction

A new mandate for sustainable consumption and production (SCP) was created at the Johannesburg Summit in 2002 by calling for the development of a 10-year Framework of Programs on Sustainable Consumption and Production. In 2006 EU Sustainable Development Strategy was revised to include sustainable consumption and production and last year, in 2008, European Commission published an Action Plan on sustainable consumption and production (EC, 2008). Thus, the issue of sustainable consumption and production has been finally gaining momentum in the European policy arena. There is therefore a great demand for insight into what existing and potential policy instruments are best suited to support SCP.

A European project Sustainable Consumption Policies Effectiveness Evaluation (SCOPE2) has been conducted under the EU's 6th Framework Programme to assist with this task. The project included an inventory and analysis of the effectiveness of policy instruments, voluntary business initiatives for sustainable consumption and production and more systemic approaches to realise SCP. A gap analysis was then performed that focused on gaps of effectiveness (how instruments and approaches can be applied more effectively, alone or in combination), on sectoral (housing, mobility and food) and geographical gaps and on white spots of new instruments and approaches that seem necessary for furthering sustainable consumption and production, but are not applied yet anywhere. The project identified short, middle and long-term goals, means and problems with reaching various levels of sustainable consumption and production from a systemic perspective. It furthermore developed recommendations for how policy, business and more systemic efforts can be undertaken to promote SCP and which political actors should be involved in specific activities. This contribution reports the outcomes of the project.

2 Gaps in the existing toolbox of policy instruments

This section aims to identify the main *gaps in the existing toolbox of policy instruments*. The analysis will identify whether new instruments and initiatives are needed, or new mixes of thereof, or whether an extensive use of existing instruments will suffice for greening of the market and setting conditions and incentives for businesses to invest in innovation that stimulates more sustainable consumption patterns and contributes to greening of the markets.

2.1 General gaps

Various types of gaps have been identified in this study, both gaps of general nature and gaps located within individual consumption domains of food, mobility and housing. The general gaps include:

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- Inefficiency of the current economic system to provide and sustain the true quality of life to people
- Lack of coherent and shared vision on SCP
- Lack of systemic approach in developing SCP policies
 - lack of consideration of the broader societal context when developing individual policy instruments
 - blind faith in technological solutions
 - lack of environmental and social variables in the traditional innovation policies
 - social innovation, if at all, is expected to appear merely through information provision strategies.
 - misbalance in the number of policy instruments targeting supply and demand side
 - misbalance in the number of mandatory and voluntary instruments
 - misbalance in the number of regulatory, economic and information-based instruments
 - misbalance between instruments targeting products and services
 - absence of instruments addressing consumption levels
 - lack of coherency among existing policy instruments targeting the same area
 - fragmentation of existing policy strategies and approaches, as well as implementation pathways developed at national and regional levels
 - lack of awareness and action to deal with international consequences of European consumption patterns
 - lack of clearly defined sustainability targets
- Gaps between intended and actual outcomes of SCP policy instruments
- Implementation gaps of SCP policies

These general gaps are discussed in more detail below.

Inefficiency of the current economic system to provide and sustain the true quality of life to people

Perhaps the main gap identified in this study is the gap between the intended and the actual outcome of the current economic system in providing quality of life to people. The current economic system does not provide the true quality of life, because it interprets the quality of life in terms of material possessions, while surveys of people perceptions of what makes them happy all point to immaterial values, such as good social networks, comprising family and friends, availability of free time to engage in other activities than work. The mainstream economic system does not encourage immaterial values that cannot be satisfied with material good, does not encourage free time, since people need to work to earn their income, which they could then spend in their free time on buying material goods and thereby gain the state of happiness. The current system is thus fundamentally wrong about the nature of humans, whom it supposedly serves.

Lack of coherent and shared vision

One of the main gaps in the sustainable consumption and production area is lack of commonly developed and shared vision of sustainable consumption and production levels

and patterns. Stemming from this is the consequent lack of consensus on how more sustainable consumption and production patterns and levels can be reached. This is demonstrated in the study of Berg (2007) that analysed sustainable consumption and production strategies in Finland, the UK and Sweden and showed that the three countries have chosen very different strategies for addressing sustainable consumption and production that focus on methodologies for resource and energy efficiency, focus on the role of businesses and focus on consumer responsibility and actions. The fact that the EU plan for sustainable consumption and production has been postponed also indicates problems with common strategy, common vision for sustainable consumption and production and with yet to be realised sense of urgency to take action in improving consumption and production patterns and levels.

Lack of systemic approach in developing sustainable consumption and production policies

One of the main gaps in the current sustainable consumption and production policies arena is often the fact that policy instruments for sustainable consumption and greening the market are seldom developed and selected taking into consideration a *larger political or societal context* - instead they tend to focus on single issues or secondary aspects or consequences. A recent example of this is the growing shift in focus from sustainable development discourse to climate change issues in the public and policy discussion. The opponents of such a shift warn against narrowing the sustainable development agenda and demonstrate that such issues as toxic substances and sustainable consumption and production levels have very important role and need to be addressed.

Part of the reason to this situation is that policy measures are being lately developed as a reaction to actual public discussion or media attention stemming from the increasing public access to information. This in its turn affects the level of ambition and the scale of the envisioned change in the society due to the intended policy: design of the policy instruments does not allow for a relevant scale of change to be induced – relevant for the state of the environment or the social sustainability. Instead rather specific, but narrow goals are formulated, e.g. market share of products, awareness of a specific problem, with the expectation that reaching them would instigate profound changes in the society. Examples of such policy instruments include the third payer support for public transport or the eco-driving programmes. Another example is eco-labelling, which aims to stimulate market development towards more environmentally sound technologies that would reduce the overall environmental impact from a specific product group. Although per se the goal is quite commendable, one of the unintended effects is the fact that buying green products still increases resource consumption and does not question the very basis of consumption-related problems – consumption levels – and thereby the larger societal context of the problem is not addressed.

Another clear gap is that *solutions* to escalating environmental and social problems are expected to *come through technological innovations*. This is especially surprising since there are numerous studies demonstrating the limitations of technocratic approaches. Even industry starts admitting that technocratic approaches have its limits. “European automobile manufacturers have an important role to play and they are embracing this challenge. ... There are areas, however, where sharing efforts is necessary; because technology alone does not have all the answers” (ACEA, 2008).

Social innovation – if at all – is expected to appear through information provision strategies. An exception among the analysed cases has been the 35 hour week in France. In academic literature, the implementation of regulations to decrease the number of weakly working hours is frequently discussed as one key instrument to limit or even reduce the negative

environmental impacts of consumption. At the same time, this measure is regarded as having a huge potential to increase “social cohesion” of societies through more equal distribution of labour, on the one hand, and free time, on the other hand, thereby contributing to reduction of unemployment. However, there exist a significant amount of other initiatives of civil society, communities, NGOs and academic, aiming at developing and promoting other types of social innovation – social entrepreneurship, social business and social marketing, sustainable communities, social learning networks and many more interesting ideas that are worth investigating, supporting and learning from.

This study also illustrated that there is *lack of environmental and social variables in the traditional innovation policies* that aim at stimulating innovation at any cost, even if the innovation leads to furthering environmental burden. The existing innovation systems are evaluated mostly in terms of their contribution to national or regional competitiveness and do not include environmental and social aspects as an important part of gaining and maintaining certain level of competitiveness. Thus, “expertise is needed that understands innovation from a systemic perspective, particularly since many sustainability problems seem to be unsolvable by actors in the production-consumption value chain in an existing market” (Tukker, Sto et al., 2008).

There is also *misbalance in the number of policy instruments targeting supply and demand side*. Judging by the evidence from two innovation policy databases, the CEC’s trend chart on European innovation provides data on seventeen different innovation policy measures targeting supply side of innovation and zero measures explicitly oriented towards demand (Edler and Georghiou, 2007).

The study confirmed that there is *clear misbalance in the number of mandatory and voluntary instruments* with over-reliance on voluntary and market-based instruments.

There is also *misbalance in the number of regulatory, economic and information-based instruments* when it comes to addressing consumers. The distribution of instruments also varies between different consumption domains, with food being the domain with the smallest number of regulatory instruments aiming at sustainable consumption patterns and levels.

Despite the recent attention to services and service industries and the growing recognition of significant environmental impacts attached to their activities, there is still a huge *misbalance between the amount and extent of instruments targeting products and those targeting services*.

This study identified the total *absence of instruments addressing consumption levels*. So far, all the instruments where they exist target greening the market and changing consumption patterns through labelling, consumer information and campaigns, and in few cases through choice editing. However, no policy instrument or initiative have been identified that would address the very core of the rebound effects – growing levels of consumption in Europe. Perhaps the most accepted and supported by governments are campaigns against obesity, and in the last year the growing dissemination of messages regarding health effects of excessive red meat consumption, which can lay grounds for acceptance of such campaigns in the future with regard to other consumption categories. Examples of other consumption categories that are currently addressed by civil society and NGO initiatives are sufficiency initiatives or Slow Food and Slow Cities networks, which also address consumption levels.

The *lack of coherency among existing policy instruments* that target one area has also been identified as a gap in this study. The individual instruments are not integrated with each other and do not represent a systemic approach to targeting specific problem areas. Potential synergies between the different policy instruments are not exploited. For example, environmental regulations trigger the design of private cars to be lighter and smaller, while

safety regulations and consumer preferences drive the cars to become larger within their own different model segments (ACEA, 2007).

There is also *fragmentation of existing policy strategies and approaches, as well as implementation pathways developed at national and regional levels*. The fragmentation of national and regional policy strategies and approaches sends conflicting signals to actors and leads to market distortions (European Commission, 2008).

There is *lack of awareness and action to deal with international consequences of European consumption patterns*. European studies demonstrate that Europe is consuming more and more resources extracted outside Europe, thereby outsourcing impacts of internal consumption to other regions of the world (EEA, 2005b). So far, no comprehensive policies exist at European level that would tackle this important issue.

Another significant gap relates to that most of the sustainable consumption and production policies and instruments *lack clearly defined sustainability targets*. It is often unclear, with perhaps the exemption of the CO₂ related strategies and instruments, what limits we are facing with regard to other environmental impacts and availability of resources and how should we adopt our production and consumption patterns to the changing environments and realities? Following this, there is a need to:

- identify how much various sectors in society should contribute to reaching the set targets
- develop indicators or the so-called alarm bells, as common in the economic sector, like inflation rate or national debt/national budget
- devise an alternative set of indicators that measure the genuine progress of the humanity and the quality of life that society provides to people, e.g. Genuine Progress Indicator (GPI) or Happy Planet Index (HPI), and not indicators of how well money flow in the economy – GDP. So far, at least 11 countries (e.g. Austria, England, Sweden and Germany) have calculated their GDP using the GPI and demonstrated steady decline over the last 30 years (Baker, 1999).

Gaps between intended and actual outcomes/impact of the policy instruments

Another major gap within the sustainable consumption and production policies identified in this study is the gap between the *intended and actual outcomes* and impacts of the specific policy instruments. The gaps between intended and actual outcomes of the policy instruments often stem from rebound and side effects accompanying policy instruments. The unawareness about the potential impact on the final outcome of a policy instrument of the side effects stems from the lack of comprehensive and systemic picture, within which a policy instrument is being developed and it's intended and side effects are evaluated. The rebound effects or side effects typically become apparent when the scope of the policy evaluation is extended from focusing mainly on the outcomes of the specific policy instrument to evaluating policy outcomes on a broader scale, including its potential positive and negative side effects and rebound effects, and eventually suggesting measures to either instigate changes in the evaluated policy design or to address these effects by other measures.

Implementation gaps

Good ideas for initiating and furthering policies and actions for sustainable consumption and production have been developed and outlined already in 1992 in the Agenda 21 and Rio Declaration (UNCED, 1992). Since then, however, not much development has happened (Mont and Plepys, 2008). At policy level, it seems that recent attempts to follow the ideas and directions provided in 1992 become weaker, e.g. the Integrated Product Policy and many others.

At the level of civil society and consumers also no drastic progress can be noticed. Of course, in some countries, e.g. Nordic countries, Germany, Austria, the Netherlands and Switzerland, consumer awareness and willingness to buy more environmental and socially sound products is growing. On the other hand, consumer choices and invested money are often negated by the growing number of products that consumers buy and use.

There is certainly a growing number of more sustainable niche initiatives, e.g. eco-villages and sustainable communities, devised by civil society and sometimes even businesses, e.g. car sharing. However, the scaling up of these more sustainable alternatives, although being called upon for a decade, has not taken place.

In many business sectors, knowledge about more sustainable alternatives has been around for several decades. For example, we know how to build more energy efficient or even passive houses since mid-1970s. Still, the main housing stock in society is not energy efficient, and even the majority of newly built housing complexes is not energy efficient. Another problem is that out of the total number of companies on the market in different sectors, there are still very few, mostly large multi-national companies, that undertake conscious efforts and have devised strategies for improving their production and product efficiency. There are even fewer companies that realise their potential role in shaping consumption patterns and levels to more sustainable directive. Even at the global level, the number of companies supporting UN initiatives is ridiculously low: there are 3700 companies in the world that have subscribed to the UN Global Compact initiative (UN, 2008). The number of companies in India is over 700 000 and in the USA alone, there are 23 000 000 small and medium size enterprises. When are they joining the quest to more sustainable consumption and production?

2.2 Gaps in domain “Energy use in housing”

The range of administrative mandatory instruments in the domain “*Energy use in housing*” is quite broad. The minimum requirements for new buildings are reported in most of the countries, while requirements for existing buildings have not been developed in all the EU countries. Also, most often these requirements include standards for heating and hot water supply systems, but not for other energy-using systems in houses, e.g. lighting.

There is yet *no common standard developed for zero-energy buildings*. In addition there is *no rating system developed for individual eco-buildings* and eco-housing projects. Creation of such a common and easy to follow rating system would greatly help stakeholders with their choices.

Building passport is not introduced in all the EU countries and where it is introduced, it usually does not include such aspects as information on materials, maintenance, upgrading and demolition. Even in labelling of buildings, main criteria are for improving energy efficiency of buildings. Other aspects of building construction should be made mandatory for labelling.

One important missing element in this domain is the focus on absolute energy savings instead of *energy saving in single appliances in single new buildings*.

Incentives are also missing for the *reduction of living space m²/person*. A potential instrument to create such an incentive is the regressive tax on energy use/person.

In *green public procurement* majority of recommendations are made to purchase energy saving office equipment. And only in some countries *minimum energy efficiency requirements* are also set for specific household appliances to ensure that energy-intensive appliances do not enter the market.

Some countries introduce measures to stimulate the production and use of electricity from renewable energy sources. However, *production of renewable energy on public roofs* does not seem to be included.

None of the countries has yet introduced the *CO2 emissions trading scheme for households*, but the measure is being currently discussed.

And finally, a *differentiated VAT rate for zero emission buildings* has not been yet developed in Europe at large.

No *concrete targets* for housing sector to improve its resource and energy efficiency have so far been set. Specific and dynamic goals should therefore be developed, e.g. “50% reduction of energy demand from housing sector by 2025 or 50% of new houses should be passive houses by 2010” (CSCP, Ministry of the Environment and Spatial Planning of the Republic of Slovenia et al., 2007).

2.3 Gaps in domain Mobility

Although in recent years cars have become more fuel efficient, growing transport demand and the increased use of heavy and relatively fuel-inefficient cars has outweighed these improvements, resulting in a net increase of 20% in CO2 emissions from transport over the past 10 years (EEA, 2004). Thus, the domain Mobility has a significant *gap in addressing such issues as potential phasing out of vehicles and planes with high fuel consumption levels*. Some countries and municipalities approach this issue by establishing zones, which can be entered only after a congestion charge has been paid, or cannot be entered on vehicles that do not fulfil some technical specifications, e.g. cars only with catalytic converter. Others, but not all countries, set up targets for substitution of traditional fuels with a certain percent of biofuels. Perhaps, all *fuels should be taxed in accordance with their life cycle impacts*. In this respect, marine fuels need to be especially analysed.

Another potential area for improvement is to apply the *top runner approach for mobility system*, which could help identify the best types of fuel on the market and the best alternative vehicles available. It seems however that the market, although being very agile, is not mature enough to make these kinds of choices. This is also perhaps related to the fact that mobility solutions penetrate and are dependant upon vast infrastructure and depend on huge investments and therefore cannot be changed overnight. The very perspective on what needs changing has to evolve from associating mobility with private car ownership to the system that primarily relies on public mobility, but is also supported with other alternative and hybrid solutions, such as car sharing and pooling.

Mobility is a broadly neglected aspect in *public purchasing*. Only Sweden refers to a regulation calling for 25% environmentally friendly vehicles in the public car fleet. Some examples are given on case studies with public transportation based on alternative fuels. Those examples have mainly demonstration character and rarely become a part of broader recommendation to be applied in other countries.

There are currently very few programmes supported by governments that encourage *reduced demand for mobility* with focus on daily travel and commuting. Some businesses take proactive stance in this regard and encourage their employees to work from home, when possible, in order to reduce travel-related environmental impacts and to reduce congestion on the roads. Working from home once a week reduces commuting-related environmental impacts by 20%.

No concrete initiatives of national governments have been found that would support *alternative mobility modes*, such as car sharing. Car sharing can be introduced as part of the green public procurement activities for all public organisations.

There is also no *differentiated VAT rate for cars* with different fuel efficiency and CO₂ emissions.

And finally, there is no clear *allocation of responsibility between actors* in mobility domain for how to reach concrete CO₂ reduction targets set up for transport sector.

2.4 Gaps in domain Food

Policy instruments in Food domain mainly include information or other voluntary instruments, besides regulation on health and food safety. *Economic instruments* targeting households and individuals seem to be less popular in the food domain, even though they are applied upstream the food supply chain, e.g. subsidies to organic farmers.

The main gap in the domain Food is *lack of clear understanding of what a sustainable food and sustainable diet is*. Therefore, measures should be undertaken to generate knowledge and data that would help identify which diets are more sustainable: organic food, local food, or a combination with intensive, but local farming.

Where such data are available, there is still *gap in undertaking measures to address these impacts*. For example, despite the knowledge about environmental impacts of animal products (among the ten most environmentally relevant products/services five are related to animal production or products and therefore, animal-based diets are more CO₂ intensive) (Tukker, Huppes et al., 2005), there is hardly any governmental policy targeting the *reduction of meat consumption* in public canteens, restaurants, schools and in households, with the exception of information campaigns against obesity. Potential measures can include a higher VAT on meat products or even production quota.

So far, no country can boast *taxation of food products with high CO₂ impact* or with high footprint. If the promotion of such products is to be supported, products with high CO₂ content in the life cycle should be taxed more than environmentally sound alternatives.

The growing, although not the largest impact from the food life cycle is the *direct environmental impacts of food and drink consumption* from travel to shops, storing, cooking and generating waste (EEA, 2005a). Little is done to address these impacts and if measures are taken to e.g. improve energy efficiency of appliances used for food storing and preparation, the number of these appliances in each household is increasing, so that the aggregate impacts from households have remained stable (EEA, 2005a).

No measures have been identified in this study that would make the *environmental consequences of individual food purchasing choices visible* to end consumers in terms of health and economic effects. This is an important gap that should be addressed.

There is large number of eco-labels and social labels, e.g. Fair Trade, on European market. The gap however is in consumer understanding of differences between these labels and in action when consumers are faced with several labels addressing different aspects of food products – fibre content, nutritional facts, local organic organisation label, Fair Trade label, etc. Perhaps one way to reduce this gap is by developing a *combined socio-ecological label* that would cover all the aspects.

Special attention deserve labels providing information about the *origins of food* products, which are especially used for meat products. Similar labels are not available for other products. With the growing consumer concern for environmental and social issues provision

of more detailed information from various life cycle stages, not only production, for more food products seems to be needed.

Another issue that has started to be discussed in academic circles but have not yet received sufficient attention from policy-makers is the *self-sufficiency* of various countries in terms of food supplies. This is a rather complex issue, not least challenged by WTO rules and the EU policies promoting inter-country trade, but which nevertheless needs to be analysed in the near future, since data are already available demonstrating the adverse effects of these policies leading to increased transportation of food from country to country or showing that e.g. 40% of food in the UK is wasted. Thus, consideration should be given to *phasing out of export subsidies* and negotiations with World Trade Organisation should be started to address this misbalance.

No *concrete targets* for food domain to reduce environmental and social impacts and to improve energy efficiency have so far been set. Specific and dynamic goals should therefore be developed, e.g. “targets defining the minimum share of local and seasonal food in stores” (CSCP, Ministry of the Environment and Spatial Planning of the Republic of Slovenia et al., 2007) or targets specifying maximum premium for organic products to stimulate their production and consumption.

3 “White spots” analysis

This section identifies the main “white spots” in sectors, products, target actors or geographical areas, where successful policy instruments, business initiatives and systemic innovations have not yet been applied, but might be applicable. Based on the analysis of drivers, barriers and success factors identified in chapters on policy instruments, business initiatives and systems innovations, insights into how the introduction of these successful instruments, business initiatives or systems innovations can be introduced in the new areas are provided.

3.1 Reasons for white spots

In order to better understand the reasons for “white spots”, it is important to take into consideration the significant differences that exist among the domains (food, mobility and housing), which affect the level of innovation, pro-activeness and implementation of various strategies for reducing environmental and social impacts. These are listed below:

- *Difference in culture in different sectors*, e.g. housing sector appears to be the most traditional and slow in development domain. Due to strong industry ties and lobbying power, it is not easy to introduce large scale and drastic changes. Electronic appliances seem to be a more agile industry with a lot of innovation potential and much higher level of activity, mostly due to existing and upcoming legislation, e.g. on energy-using products, energy labelling for appliances, etc.
- *Difference in the nature of products*, e.g. long life of construction products (houses) and the level of maturity of construction technologies influence the speed of innovation in the industry. However, energy-efficiency technologies and construction have been available since at least 2 decades. However, these approaches and technical solutions have not been widely applied neither in construction of new buildings, nor in retrofitting old and/or existing housing stock.
- *Innovation potential*, e.g. in automobile sector the innovation potential for alternative vehicles seems to be high and in demand. In the past year, there has been a large shift in what vehicles are being produced and marketed, i.e. there has been drastic increase in the

amount and the diversity of eco-cars sold and marketed. This development comes after a decade of relative stagnation in car industry, which had come out with eco-cars to the market already in late 1990s, but was not accepted or demanded by consumers. The situation with appliance manufacturers is quite different. The industry has been under close review by legislation, e.g. European directives on EuP and eco-labelling, and has been working on improving energy efficiency of appliances for 2 decades. Therefore, nowadays producers claim that they have already reached the limit of the economically-feasible technical improvement of their products and therefore the only way towards higher energy efficiency of appliances is to replace all the white goods on the European market that are older than 10 years with newer versions.

- *Media attention as a driver* Food scares and climate change issues, as well as social issues, such as child labour, increase general public awareness in society and simultaneously place significant demands on companies in various sectors. In response, companies often develop initiatives to address the public concerns even though sometimes the largest impacts of their products are not always where the media attention is. Nevertheless, the increasing awareness and raising level of knowledge in society creates not only the driving force for companies to develop more efficiency and less environmentally burdensome products, but directly translates into increased consumer demand and spending on more environmentally sound offers. This situation also spurs generation of scientific knowledge in the areas where actions are desperately needed or can be undertaken due to created attention and attained commitment from citizens.
- *Legislative pressure* differs considerably between the three domains, Regulation and minimum requirements seem to work best within construction and housing, where clear regulation and standards are required for safety reasons in many countries. This might be the reason why an EU Directive on energy efficient buildings has been already passed, while mobility as a high individual consumption cluster still works on voluntary commitments from the car industry. Again the influence of society attention to certain issues and the perceived link between the issues and a specific sector contribution to them play a significant role. For example, in food sector, the impact of food production, e.g. beef, is not perceived as contributing that much to climate change and therefore, there is much higher awareness in society when it comes to health issues, which is reflected in the increasing demand for organic food.
- *Business lobbying position* - various sectors have different negotiating power when discussing issues with authorities and governments at various levels – national as well as international. The lobbying power itself depends on the industry structure and the level of industry consolidation. For example, the construction industry is known for its cartels and therefore legislative pressure or enforcement may not be as strong as in the car manufacturing or food industry.

Below general white spots and white spots in each domain are investigated in more detail.

3.2 General white spots

One of the white spots that cuts across all the domains is that the overall vision for policies for sustainable consumption and production, such as *National Action Plans for Sustainable consumption and production*, have been developed only in few countries, namely the United Kingdom, Finland, Sweden and Czech Republic (EEA, 2007). Many other countries include sustainable consumption issues into their National Sustainable Development Strategies, e.g. Austria, Belgium, France, Greece, Hungary, Italy, Malta, the Netherlands, Poland and Romania. Still there are many EU nations that neither have a clearly developed sustainable

development strategy that includes sustainable consumption chapter nor a National Action Plan for Sustainable consumption and production. The so far developed National Action Plans for Sustainable consumption and production from 4 countries focus on very different aspects. For example, Finland calls for more research in resource and energy efficiency, Sweden puts main responsibility and policy focus on individual consumers, while the UK believes in the leading role of businesses. So far, none of the strategies have managed to develop a plan that builds on close collaboration of all the relevant stakeholders, whose interaction and actions, goals and responsibilities are seen from a systemic perspective. In addition to that, it has so far been unclear how prominent these National Plans are and how far they have been implemented. Sweden has actually withdrawn its National Plan. In any case, National Plans for sustainable consumption and production can be seen as a first step towards the development of a more coherent national strategy towards sustainable consumption and production and should therefore be developed in all EU nations.

Within sustainable consumption and production domain, existing policy instruments are mostly of economic and informative nature. For example, a study of Berg (2007) analysed the newly developed Finnish and UK Strategies for Sustainable Consumption and Production and compared them in terms of instruments they employed. Despite the different allocation of responsibilities among actors in these strategies that was mentioned above, the picture of the employed instruments is quite revealing (See Table 1). Majority of all the instruments are of informative nature, followed by market-based instruments and almost non-existent regulatory measures.

Table 1 Total number of new proposals in each SCP programme and the quantitative and percentage shares of different policy tool categories (*shading is added*) (Berg, 2007).

Country	Total no. proposals	Regulation	MBIs	VAs	Informational devices	Institutional arrangements	Other/No tools
Finland	%	0	25	17	47	2	25
	93	0	23	16	44	2	23
UK	%	6	22	9	16	9	38
	32	2	7	3	5	3	12

MBIs = market-based instruments; VAs=voluntary agreements

Regulative measures are typically less employed and can be observed in various domains to a different extent, but mostly in the form of standardisation, e.g. the minimum requirements for new buildings, which include standards for heating systems and warm water supply systems; car inspections for safety and increasingly for environmental performance – emissions; and finally food safety regulations, which rarely affect the environmental performance of products, but rather focus on protecting consumers' health and economic interests. In the area of sustainable consumption – distinguished from SCP – regulatory measures are not common and focus is on information provision instruments (see Table 2).

Another issue is that policy instruments mainly focus on the sustainability of business processes, products and markets, and hardly ever address consumption processes or consumer behaviour. This point is illustrated in Table 2, that lists the policy instruments given in the EU background paper on Sustainable Consumption and Production and Sustainable Industrial Competitiveness (European Commission, 2008).

Table 2 Policy instruments in the production-consumption chain proposed in the Background document on SCP and Sustainable Industrial Policy (European Commission, 2008)

Production and products	Markets	Consumption
Production Resource efficiency targets Enforcement of eco-innovation Setting eco-innovation targets Eco-management and IPPC Sectoral approaches Products Dynamic performance req. Simulating eco-design Standardisation	Lead market initiative Environmental product declarations Market based instruments Differentiation of VAT Revision of eco-labels Misleading advertisement Fostering low-carbon technologies	Consumer information and education Green public procurement (not directed at households)

Both latter points are closely related to the fact that essentially, a change towards SCP implies *fundamental changes in our production and consumption systems and the paradigms*, on which they are built. It is highly debatable if radical goals like a factor 4 to 10 reduction in energy and material intensity can be realised in a society that is based on the growth paradigm, the paradigm of the free market, the ideal of full consumer sovereignty, and where material possessions play a key role in personal standing and status. Probably exactly since this point would imply such a radical breach with existing paradigms, mainstream policy plans hardly seem to touch such issues (Fuchs and Lorek, 2005). The need for explicit strategies that deal with such “difficult” issues is widely recognised in scientific circles (Jackson, 2006; Princen, 2005; Sustainable Consumption Roundtable, 2006; Tukker, M. Charter et al., 2009). The system innovation approaches seem a good step in dealing with this problem. Yet, also here often protagonists seem to foster a rather positive image that sustainability can be realised via technical breakthroughs and socio-cultural change that poses no hardship for society as a whole. Issues like limiting consumption seems not in their phrase book, e.g. (Rotmans, 2003).

Another white spot is the *lack of evaluation studies of EU-wide policies*. The majority of the identified studies evaluate application of a policy or a policy instrument in one or several countries. This makes it difficult to obtain comparable quantitative information not least because of the differences in evaluation techniques used in various studies.

3.3 Energy use in housing

Energy use in housing is the area that requires close attention since technology for more energy-efficiency houses and appliances is available, but has not yet been widely implemented in practice due to various reasons, mainly pertaining to the culture in the sector and the strong lobbying power of construction companies against significant changes.

The major white spot for energy efficiency measures are *the existing buildings and the possibility to retrofit them in energy efficient way*. Only few countries have regulation for building retrofitting that includes private houses. In most cases, mandatory requirements get into force once the renovation is completed. Thus, what is lacking are incentives for renovation in an energy efficient way.

An example of a measure to promote energy efficiency in housing has been advocated by the Committee on Industry Research and Energy of the European Parliament. The Committee especially highlights the tax incentives as an adequate instrument to increase the effectiveness of energy efficiency in buildings. It recommends removing the value-added tax on materials and components that improve energy efficiency in buildings and introduce specific tax incentives to encourage households, micro businesses and private landlords to undertake energy efficiency measures in all member states. Other studies recommend devising packages of policy instruments that typically work better than individual instruments. For example, the

best outcomes have been seen when taxes are supported by the availability of technology or environmentally sound products, which was the case with taxes on leaded and unleaded petrol.

When it comes to new buildings, lack of proper housing in many European countries leads to *construction of houses with inferior energy performance*. Increasing energy prices have not yet reached the level that is decisive for choosing more energy-efficient construction processes and more energy-efficient houses. On the other hand, the need for more housing presents a potential to building more energy-efficient houses from the beginning (Tukker, 2008). And although, regulation has not been the main driving force in the construction sector so far, the recent requirements on housing certificates may be seen as an important driving force for retrofitting buildings.

In terms of white spots for specific policy instruments, one of the white spots is *lack of information on energy-efficiency of buildings provided to end consumers* and consequent low market demand for energy-efficient houses. The situation is changing with the implementation of the European Directive 2002/91/CE on the energy performance of buildings. According to this directive energy labels on buildings in Europe are obligatory. There are examples of pioneer companies that label their houses received eco-label for their more energy-efficient houses and that use this in their marketing strategies, in their bidding for tenders and in educating consumers about their products, thereby creating future market for their energy-efficient products (see example of Skanska). Still, very few construction companies provide life cycle information on energy use to final consumers explaining this by the lack of demand for such information from the market.

The situation with *eco-labelling* for energy-efficient appliances demonstrates that rising consumer awareness through labelling simultaneously creates market demand for such products and also triggers the environmental improvement of products. The potential to stimulate the improvement of environmental performance of all products in a specific product category is visible in the example of energy-efficiency label for electric and electronic appliances: in some Swedish appliance stores labels for energy-efficiency of fridges can be found on 80% of all products. For many other products this figure is much lower and for example for refrigerators the average penetration of eco-labelled white goods on European market is around 30%. This also represents the white spot that needs to be addressed. However, it is not always possible to attribute a particular result to a specific policy. For example, in the UK the market share of A-rated fridge freezers rose from 1% to 76% within 5 years, washing machines from 0% to 85% and dishwashers from 0% to 74% within 7 years until 2005. It is however difficult to conclude whether these impressive increases are due to the energy labelling. The Sustainable Consumption Roundtable identified at least three other aspects that may have affected these figures, namely availability of A-rating products from well-known brands, a proper retailer stock policy and price support to reduce price differentials. At least for fridge freezers the latter influence is obvious. In the five years of energy labelling with still high price differences (1995-2000) A-rating cold products had a market share of 0-5% only. Other areas of potential application of the mandatory labelling are entertainment products, such as TVs, DVD players, computers, etc.

A further white spot is a *“top-runner” scheme in the performance criteria for the label*. The Top Runner approach identifies the most efficient product in the market and turns its specification into the level that all similar products must meet by a specified date. With this dynamic instrument inefficient appliances are simply phased out from the market.

When it comes to *geographical white spots*, passive houses are more disseminated in Germany and Austria, Switzerland, while in other countries there are only few individual

initiatives or pilot projects of passive houses. Scandinavian countries seem to be leading the development and implementation of energy-efficient housing and communities. Only in Sweden alone, there are more than 60 eco-communities. There is therefore a huge potential for other countries to engage in activities for developing and constructing passive or more energy-efficient houses. Countries differ drastically in the already reached level of improvement of house energy efficiency. For example, a lot of work is undertaken now in the UK on insulating housing, the activities which had taken place in Sweden in 1970s. So the improvement potential in this area in Sweden is rather low, simply because the starting point is so much higher than in the UK, where many houses are not properly insulated.

A potential area for further policy application is to provide *incentives for increasing the use of renewable energy for various purposes in the construction process*, as well as in the household operations. For example, financial incentives like the feed-in tariff have proven to be a useful tool in promoting renewable energies. Another possibility is to design and construct housing that takes use of the natural conditions in a specific area. For example, increase the use of photovoltaic in southern countries, promote and support generation of wind power in coastal areas, and hydro power in northern countries with abundant access to rivers. For appliances and entertainment products used in household, regulatory measures for phasing out stand-by mode could be welcomed. Similar measures could be undertaken for phasing-out traditional energy bulbs and their substitution with energy saving lamps.

Not all countries have *demonstration centres on sustainable construction and housing*. Thus, an additional measure could be to initiate demonstration projects and centres on sustainable construction, housing and demolition, where information on these issues can be provided to all interested stakeholders, including architects, students, citizens and not least authorities and policy makers.

Business strategies that are and can be applicable for housing sector companies are driven by various actors and are used to a different degree by companies. For instance, *greening supply chains* is driven by media and public concern for social issues associated with extraction of raw materials and production of construction materials and modules in countries outside the EU.

Eco-design of houses is often employed by architects or consultancy and development companies that do not drive the implementation phase, in which large and traditional construction companies are coming into the picture.

Eco-labelling for housing is still very much in rudimentary stage, although some companies have approached eco-labelling organisations requesting to develop eco-labelling criteria for various construction products and for entire rooms (e.g. kitchen) or an entire house (Nordic Swan) and there are some companies that have been already awarded an eco-label, e.g. Skanska. Voluntary eco-labels in the housing sector are accompanied by the mandatory EU-wide labelling of white appliances, as well as by labelling of environmentally sound construction materials, energy efficient buildings, and electricity from renewable sources.

On the other hand, there seems to be sufficient number of *tools for stimulating energy efficiency of products*: numerous labelling schemes are set up by, for example, the Energy Efficiency Labelling Directive (European Commission, 1992), the Energy Star Programme, the Ecolabel Regulation (European Commission, 2000) and other national schemes developed by Member States that aim at stimulating energy efficiency of products and provision of more information to consumers in order to motivate them to buy energy efficient products. The problem is, however, that energy efficient products have typically higher investment costs and without life cycle costing eco-labels are not sufficiently effective. In

addition to this, the Energy Efficiency Labelling Directive or the Energy Star Programme mostly target household appliances and office equipment and therefore labels are mostly developed for these products, which represent only a limited number of products. Furthermore, energy-using products account for mere 35-40% of the environmental impacts of products. Finally, actions of Member States are seldom coordinated, thereby failing to capitalise on the full potential of eco-labels.

Green marketing is almost non-existent and product-service systems are niche business examples mostly for appliances, and in some cases for provision of electricity to housing – pay for temperature, not for the amount kWh bought.

3.4 Mobility

Almost all large manufacturers of cars have developed and sell eco-cars of different types: hybrid, ethanol, electric, etc. Many other companies belonging to mobility domain develop alternative fuels, e.g. ethanol, fuel cells, etc. The white area is still the lack of understanding *which types of cars and fuels are the best* in terms of reduced environmental and CO2 impacts and in terms of economic feasibility. Market instability makes this situation even more difficult.

When it comes to policy instruments, *congestion charges* are so far applied only in few countries. However, they have already proven to be an effective instrument to handle mobility habits in larger areas with satisfying results for the inhabitants. Instruments that provide incentives for commuters to shift to public transport are not sufficiently used in most countries. It appears that beyond economic incentives via employers or tax support some further measures have to accompany the instrument, whether disincentives like reduction of parking space or the better provision of public transport.

Access to public transportation is not adequate in many European cities and this situation needs to be addressed as soon as possible. This goes hand in hand with the need to develop spatial planning policies, in which more sustainable mobility and housing patterns can be undertaken by people. The existing urban housing and mobility policies are clearly ineffective and do lock people into unsustainable patterns.

Although examples of *eco-driving programmes* are available, their existence is still in niches. Eco-driving should become the mainstream process in all the driving schools. Eco-driving should be introduced as a mandatory requirement for new employees of public and private organisations.

Examples of some airline companies, e.g. Scandinavian Airlines, are available that provide opportunity for people to *calculate their CO2 emissions* during their travel and compensate for this impact by purchasing shares in CO2 reduction activities, e.g. planting trees. Similar systems can be developed for people to compensate for their everyday mobility-related CO2 emissions.

In terms of business initiatives, *greening supply chains* in mobility domain mainly takes place in terms of purchasing bio-fuels. There are many examples of communities' requirements to upgrade public transportation that lead to that public busses run on natural gas and bio-gas, and projects are under way in Iceland where busses are expected to run on hydrogen.

Eco-design of vehicles has seen drastic changes compared to mid-1990s. Just in recent years, new vehicle designs that run on alternative types of fuel or combine different fuel types have been developed. There has been drastic change in the level of emissions that are allowed from a single vehicle, which has also triggered innovation in car industry.

Eco-labelling of car fuel efficiency and emission levels is on the way in some countries, e.g. UK. Some car manufacturers, Renault, have designed their own label to communicate environmental performance of their cars and the company efforts to consumers.

Green marketing is also on increase in mobility domain, both from car manufacturers marketing their more environmentally sound vehicles and from communities that run various campaigns to reduce impacts from transport in cities and educate consumers about more sustainable transport modes, such as busses, bicycles, and more efficient driving patterns, e.g. eco-driving.

Product-service systems in mobility domain represent a tiny niche of less than 0,1% of the total number of people who own a car. In terms of geographical white spots, car sharing is more spread in Germany, Switzerland and the Netherlands than in southern Europe.

3.5 Food

The food domain and initiatives within it so far include healthier agriculture (without use of GMOs and reduced amount of pesticides), organic and local food systems, bio-dynamic production methods, local markets, organic and locally grown produce, etc. With the drastically increased consumer awareness and the societal attention to the climate change issues, numerous strategies for reducing CO₂ emissions from food sector has been initiated, including substituting for more sustainable fuel choices, investing in energy efficient and low carbon technologies, reducing life cycle impacts of food produce, climate change labelling, food miles, etc. In addition to environmental issues, food domain is closely linked to social issues, including fair trade.

Despite all these strategies employed in the food domain, one of the main white spots in the food domain is lack of clear understanding of what sustainable food and sustainable diet are and how sustainable food systems may look like. The difference between sustainable food and sustainable diet is crucial, since one can eat a very healthy and sustainably produced food, but simply eat too much or too little of it, or the food would be grown in a sustainable manner, but would be highly processed and packaged, which would not be sustainable in the long run and would have adverse long term effects on health and the environment. For example, OECD countries generally consume too much meat and do not eat enough vegetables and fruits (WHO and FAO, 2003), and on the other hand, there is on average over-consumption of calories in European countries.

Fair trade labelling and strategy is been used for a number of specific products, production of which takes place in the developing economies. Fair trade labels can be found on bananas, coffee, chocolate, flowers, etc. There are however many other products, for which criteria and quality assurance used in Fair trade can also be applicable.

One of the important white spots is also the *declining trust in food safety*, which occurs in the climate of very strict control and regulation of the food safety in Europe. This mistrust comes from the long supply chains, from globalisation of food production and consumption, and from disconnect between food consumers and producers. To compensate for the reduced trust more and more information is provided to consumers, leading to information overload and confusion. For example, there are a large number of labels for food across Europe. One problem is that the sheer number of these labels is very confusing for customers, who do not have the time to understand the difference between them. On the other hand, consumers are often left with the choice of choosing between, for example, organic products and Fair trade products. Another problem associated with food is the huge difference in the level of recognition of eco-labels and other labels for food. For example, despite the fact that organic food is being promoted in many European countries through labels, the level of recognition

of it varies from 1% of consumers recognising the label in Greece to 94% of people in Sweden who recognise the organic label (Zanoli, 2004).

Despite the growing amount of attention at policy level in food domain, the developments are influenced by the current power structure, in which governments have a rather weak role, compared to retailers, which exercise a much stronger power in the food domain. Specific sustainability related administrative instruments are less common in the food sector. Here regulation is concentrated on food safety, aiming to protect consumers' health and their economic interests, and less on environmental aspects.

In terms of business strategies in food domain the following are the identified gaps and white spots. There is a growing consumer demand for instruments for healthy, organic and local food products. Following this market demand, quite a few large retailers have started *sourcing their products from local sources* and placing demands for organic produce upstream in their supply chains. However, so far the greening of food supply chains is mainly undertaken by large retailers with strong power position in the chain. For smaller actors these strategies have not yet become reality.

In terms of *eco-design strategies*, we see examples of the development of more efficient food delivery systems, especially driven by recent attention to food miles and emerging stream of food labels addressing the food transport strategies, e.g. air-freight. Another application of eco-design strategies in food industry is in the reduction of packaging materials and reduction of artificial additives and chemicals in food products.

When it comes to *eco-labelling* the main problematic aspect is the growing number of eco-labels in Europe that leads to consumer confusion. There is increasing need for standardisation of food labels and their criteria. Countries with a high market share by volume for organic products indeed have a common national label and consumer recognition of this label is usually high. Good examples are Denmark and Sweden, where more than 90% of all consumers recognise the label for organic products.

The number and diversity of *green marketing messages* on the market is growing, often creating confusion among consumers, rather than providing clear answers and suggestions for action. This can partially be explained by the lack of consensus regarding what sustainable food systems mean and what products, services or sub-systems should be promoted.

Product-service systems in food domain comprise examples of few box schemes, local farmers markets and others, which still however represent only niche solutions. On the other hand, there are a growing number of fully organic and ecological retail chains with much larger market share. These two options satisfy different customer segments.

The forces that shape the introduction and the market share of *organic food* in different countries are still not clear. For example, in Italy, the long-lasting example of Ferrara does not seem to push the general market share of organic products that much, while Denmark, the country with high share of organic products in public catering, is ranking high in the turnover on the organic food on the market. It seems that a combination of various driving factors, e.g. organic label, public demand and availability of organic products in general food shops, rather than a single instrument or strategy, drive the development of the organic food market.

Besides the identified white spots in the range of policy instruments and business strategies for sustainable consumption and production, there are areas where gaps in policy instruments for sustainable consumption and production exist. Unlike white spots, gaps mean areas where none of the countries has a policy instrument to address a specific problem.

4 Future development: innovative approaches and mixes of instruments, business actions and systems of innovations

The goal of reducing environmental impacts of consumption can be reached by a combination of greening of the market through shifting to more environmentally sound production processes and products, shifting demand to low-impact consumption categories, and lowering material demands for satisfying needs through alternative consumption patterns and reducing consumption levels.

4.1 Dynamic framework

This section presents some ideas for a dynamic framework that should contain innovative approaches and mixes of instruments, actions and systems of innovations, which could help overcome the identified gaps in the existing set of instruments and contribute to genuine progress towards sustainable consumption and greening of the market.

As demonstrated in this study, there is lack of a *common vision of a sustainable society* and as a consequence of this, there is lack of coherent and systemic action on sustainable consumption and production. *“Probably the most challenging task facing humanity today is the creation of a shared vision of a sustainable and desirable society, one that can provide permanent prosperity within the biophysical constraints of the real world in a way that is fair and equitable to all of humanity, to other species, and to future generations. This vision does not now exist, although the seeds are there”* (Costanza, 2000). Therefore, the first step in furthering the sustainable consumption and production agenda is the development of a common vision for sustainable consumption and production shared by all the major actors in society: governments, businesses, consumers, NGOs, civil society, academia, etc.

Envisioning should aim at creating shared pictures of preferred states of the world and embedding them into the very societal fabric, including institutional, regulatory and economic frameworks. The challenge really is to design a vision that is both desirable for people from different cultures and that is environmentally sustainable in the short and long run. Without knowing where we want to go it is impossible to get there. Additional challenge is to balance our desires with what we have at hand – all the resources and natural capital that the earth can offer us, and make sure that we do not undermine the very basis of our society – the natural ecosystems. The goals of the shared vision, according to Meadows, (1996) should be crystal clear, while path should be as flexible as possible. The vision itself should be evolving and therefore the process of creating shared visions is at least as important as the visions themselves (Costanza, 2000).

In order to contribute to the lacking societal vision for radical improvement, proper information on system innovation (system changes) is necessary that could initiate the dialogue among various stakeholders and help develop common vision and eventually targets. Such information should highlight how serious the problem of unsustainable consumption and production is. Prospective solutions should be based on targeting people not as consumers hoping to increase market share of selected green products, but as citizens, thereby provide the floor for relevant changes in the political, administrative, and economic framework setting. The societal vision should lay grounds for the long-term planning and further development of strategies for addressing unsustainable consumption and production patterns and levels. The common vision could also strengthen the sense of urgency to deal with economic, environmental and social unsustainability. However, lately, the sustainable development discourse has been hijacked by the climate change agenda, and the number of

concerned voices is growing pointing to this growing misrepresentation of the problems we face.

Since changes in consumption and production patterns and levels are subject to numerous factors, including socio- technical, economic and cultural, it is unlikely that single policy instruments can lead to large scale and broad societal changes that are needed to reaching more sustainable consumption and production. What needs to be realised is that policy instruments need to be supported by *actions of all other actors in society* – consumers and businesses, advertising industry and education. “For sustainable consumption to truly take hold it should be owned as a movement by all stakeholders” (Welsh Consumer Council, 2004). Therefore, facilitating extensive discussions between institutions, government, and the civil society to arrive at a shared vision for consuming and living sustainably is the main prerequisite of devising a fully-fledged sustainable consumption framework. Since the field of SCP is remarkably complex, wide-ranging stakeholder dialogue is necessary to get to grips with its practical application.

However, policy instruments, regulatory and economic, do set the main boundaries and rules for the system – the society – and therefore their importance in the change process should not be underestimated. Currently, some European countries place much more faith and responsibility on individual consumers who are expected to change our society to become more sustainable by voting on the market through their purchasing choices. The option of delaying or avoiding purchasing is not encouraged by the current market-driven economic system, which rewards companies that create needs, stimulate continuous consumption of material goods and who commoditise previously freely available resources.

The entire economic system stimulates material growth and speed of acquisition by both individuals and companies, a more holistic approach and the involvement of other actors in society is needed that would be able to challenge these types of values, and could provide a different perspective of how more sustainable society could be reached. This shift would require new ways of *reflexive and participatory governance* that would need a different approach to policy making – more systematic, flexible and oriented towards continuous learning. The new type of governance should provide room for experimenting, with trial and errors and with establishment of learning networks. Bottom-up experiments of civil society and businesses alike can only be sustained and result in lasting changes if protected and supported by governmental frameworks and legitimised in the society. Experimentation allows alternative schemes to exist within the boundaries of systems, fundamental values of which do not support their existence without support. These alternatives typically stay in niches until a “window of opportunity” arises and they can break through into a mainstream position (Kemp, 2007). Experiments provide opportunity for alternative schemes to be tested, adapted and to evolve

An important issue investigated in this study is whether future policy makers should focus on developing, improving and advancing individual policy tools or more attention should be given to developing systemic instruments for innovation, including institutional change and with attention to the role of niches and front runners. The clear answer is that *more systemic approaches need to be developed* to address the sustainability challenge, which would be able to stimulate changes in institutions and unlock the ‘lock-in’ infrastructures, to trigger changes in consumers’ values and to initiate long-term and cross-sectoral approach to policy making. One of the important steps in this direction is the integration of the SCP policies into existing range of policy instruments, but especially those related to consumer protection and product policies. Coherent policies and instruments are needed that would make use of synergies between numerous policies and strategies existing and addressing various types of

environmental and social impacts stemming from various sectors. The tendency so far, however, is again towards dealing with individual issues, e.g. climate change, even if they are complex per se, but they are not addressing the entire sustainability challenge and rather take away attention from other pressing issues.

The more systemic approach requires that **packages of instruments** are developed to address the systemic challenges. For example, a UNEP study conducted with support of the Sustainable Buildings and Construction Initiative (SBCI) confirmed previous findings that effective policy instruments result in net savings for society and that packages of instruments are more effective than individual instruments (UNEP, 2006). These packages should consist of a mix of economic and regulatory instruments that should play the leading role and should be complemented, but not lead by a range of voluntary and information-based instruments. Studies demonstrate that regulatory instruments have high effectiveness for emission reductions and high cost effectiveness, e.g. see the evaluation of the policy instruments in the construction field.

Packages of instruments should be geared towards reaching specific, clearly set, but dynamic, **targets**, examples of which were provided in the section on Gaps for various domains.

Packages of instruments allow **targeting different actors along life cycle**, which leads to more comprehensive solutions and consequently to more profound improvements. When different measures are applied to different actors a vertical strategy could be effective (Linden, Carlsson-Kanyama et al., 2006). For example, is a national aim for energy production and consumption is to lower the level of CO₂ emissions, the energy production companies might be addressed by governments with a tax of their CO₂ emissions, while households could be stimulated with bonus programs, inspection and advice. At the consumption side are also owners of dwellings in multi-occupancy blocks that could be targeted with voluntary agreements for reducing interest rates for introducing new energy-saving technology.

Following this line of thought, packages of instruments are also needed **to ensure the greening of supply chains** across national borders. Cross-sectoral collaborations among businesses and authorities should enable cross-fertilisation of ideas that so far have worked in specific areas. There is therefore a need to develop political measures that could support companies' practices in supply chains – making sure that companies can maintain the same standards of their performance at the initial stages of life cycle – mining and manufacturing – as in the later stages of the life cycle – retail, use and end-of-life phase, which are much more regulated and monitored than the earlier stages.

Packages of instruments are also needed **to ensure the absolute reduction of consumption levels and to avoid potential rebound effects**. For example, working time reductions should be accompanied by measures to reduce income to limit the amount spent per person, since studies demonstrate that increased personal income is typically spent on more environmentally harmful activities, such as for example travel (Christensen, Godsken et al., 2007). Other examples can include choice editing – eliminating the unsustainable products from the market. This is currently done with products that do not fulfil health related standards; the same logic can be used for products that do not fulfil environmental standards.

This study demonstrated lack and weakness of **environmental and social marketing** strategies – both employed by companies and by governments. Social marketing or even sustainability marketing has an enormous potential in stimulating more sustainable purchasing choices, and what is even more important, in triggering change in consumer

behaviour not only towards more sustainable and green products, but towards higher quality - less quantity consumption choices.

4.2 Dynamic process

The Sustainable Consumption Research Exchange network (SCORE!) has developed a process for furthering the sustainable consumption and production agenda in short- and long-term (Tukker, Emmert et al., 2008). Based on it, the following dynamic process is suggested:

Level 1 has a short time horizon. Level 1 includes operationalisation of existing knowledge, integration and improvement of synergies between existing policy, economic and information instruments, development and implementation of new measures and instruments that are based on or correspond to the beliefs and paradigms prevalent in the current economic system and society at large. At this level, governments make operational agreements on implementation of such instruments as green public and private procurement, elimination of perverse subsidies and internalisation of external costs, stimulation of eco-design, support of green marketing and promotion of healthy diets, more people-oriented city planning and promotion of mobility based on public transportation, bicycles and walking. At this level, changes in housing would include building only energy efficient buildings and identify ways for retrofitting the existing housing stock; in mobility - improving public transportation system and efficiency of cars and fuels, and in food domain - identifying what sustainable food and sustainable diet is, as well as measures to satisfy the criteria of sustainable diet.

Level 2 has a middle time horizon. Level 2 includes measures that address commonly accepted problems, solutions to which entail more radical changes and/or specific means and implementation paths are still uncertain, and hence detailed planning at this time is difficult. At this level, governments could initiate and foster visioning, initiate and support experimentation, summon local knowledge and organise stakeholder dialogues for identifying solutions, encourage such ideas as indicative planning and transition management. At this level, changes in housing would include improving construction techniques for energy efficient houses and stimulating retrofitting of the existing housing stock with new methods; in mobility - identifying and stimulating use of alternative transport systems, e.g. car sharing, and combinations of the existing and alternative systems; and in food domain - considering self-sufficiency for Europe for most of the products, devising strategies for sufficient supply, avoiding food losses.

Level 3 has a long time horizon. Level 3 brings attention to problems existence of which is not yet realised by the society at large or has not been accepted by all the actors, because potential solutions to the problems clash with existing mainstream beliefs and paradigms, e.g. continuous economic growth. At this level the nature and scale of such problems and potential solutions are discussed and the role of governments could be to foster informed and broad societal deliberation (Kemp and Martens, 2007) on the more fundamental issues related to markets, governance, and fundamental values in life. At this level, changes in housing would include retrofitting the entire housing stock and continuously improving efficiency of passive and CO₂ neutral newly built houses, reconsidering space/capita and devising alternative ways of living with increasing share of collective spaces; in mobility - developing integrated mobility system that is reliant on collective or shared systems and/or on vehicles and modes neutral in terms of CO₂ and other environmental and social impacts; and in food domain - devising a long term strategy for sustainable food production and healthy diets, incorporating slow food ideas and goals of moderation, with all food surplus going to other regions of the world to eradicate malnutrition and starvation there.

Although the three levels have different time horizons for reaching results, work on each of them can and should begin now.

References

- ACEA (2007). Homepage of the European Automobile Manufacturers Association.
- ACEA (2008). AWBriefing, European Automobile Manufacturers Association.
- Baker, L. (1999). Real Wealth. Use of gross domestic product figures as economic indicator may no longer be valid. Farmington Hills, Michigan, Earth Action Network, Inc.
- Berg, A. (2007). "Beyond effectiveness" - Developing a framework for evaluating and understanding the pioneering programmes of sustainable consumption and production. The 8th Conference of the European Sociological Association, Glasgow.
- Christensen, T. H., Godskesen, M., et al. (2007). "Greening the Danes? Experience with consumption and environment policies." *Journal of Consumer Policy* **30**(2): 91-116.
- Costanza, R. (2000). "Visions of alternative (unpredictable) futures and their use in policy analysis." *Conservation Ecology* **4**(1): 5.
- CSCP, Ministry of the Environment and Spatial Planning of the Republic of Slovenia, et al. (2007). Summary report of the conference 'Time for Action — Towards Sustainable Consumption and Production in Europe' 27–29 September 2007, Ljubljana, Slovenia. Copenhagen, European Environment Agency: 146.
- Edler, J. and Georghiou, L. (2007). "Public procurement and innovation-Resurrecting the demand side." *Research Policy* **36**(7): 949.
- EEA (2004). Fact sheets on Transport and Environment Reporting Mechanism (TERM). Copenhagen, European Environmental Agency: 7.
- EEA (2005a). Household consumption and the environment. Copenhagen, European Environmental Agency: 72.
- EEA (2005b). Sustainable use and management of natural resources. Copenhagen, European Environmental Agency: 68.
- EEA (2007). National Sustainable Consumption and Production (SCP) Strategies in the EU. A comparative review of selected cases Background paper for the conference 'Time for Action — Towards Sustainable Consumption and Production in Europe'. Copenhagen, European Topic Centre for Resources and Waste Management: 49.
- European Commission (1992). "Council Directive 92/75/EEC of 22 September 1992 on the indication by labelling and standard product information of the consumption of energy and other resources by household appliances." *OJ L 297*(13.10.1992): 16-19.
- European Commission (2000). "Regulation (EC) No 1980/2000 of the European Parliament and of the Council of 17 July 2000 on a revised Community eco-label award scheme." *OJ L 237*(20.9.2000): 1-8.
- European Commission (2008). Communication from the commission to the Council and the European Parliament on the Sustainable Production and Consumption and Sustainable Industrial Policy Action Plan. Brussels, EC: 15.
- Fuchs, D. and Lorek, S. (2005). "Sustainable Consumption Governance: A History of Promises and Failures." *Journal of Consumer Policy* **28**(3): 261–288.
- Jackson, T., Ed. (2006). The Earthscan Reader in Sustainable Consumption. London/Sterling, VA, Earthscan.
- Kemp, R. (2007). Transition management for sustainable consumption and production. System Innovation for Sustainability 1: Perspectives on Radical Changes to Sustainable Consumption and Production. A. Tukker, M. Charter, C. Vezzoli, E. Stø and M. M. Andersen. Sheffield, UK, Greenleaf Publishing: 450.

- Kemp, S. and Martens, P. (2007). "Sustainable development: how to manage something that is subjective and never can be achieved?" Sustainability: Science, Practice and Policy(Fall).
- Linden, A.-L., Carlsson-Kanyama, A., et al. (2006). "Efficient and inefficient aspects of residential energy behaviour: What are the policy instruments for change?" Energy Policy **34**(14): 1918-1927.
- Meadows, D. (1996). Envisioning a sustainable world. Getting down to earth: practical applications of ecological economics. R. Costanza, O. Segura and J. Martinez-Alier. Washington, D.C., Island Press: 117-126.
- Mont, O. and Plepys, A. (2008). "Sustainable consumption progress: should we be proud or alarmed?" Journal of Cleaner Production **16**(531-537).
- Princen, T. (2005). The Logic of Sufficiency. Cambridge, MIT Press.
- Rotmans, J. (2003). Transitiemanagement. Sleutel voor een duurzame samenleving [Transition management. Key to a sustainable society]. Assen, Netherlands, Van Gorcum.
- Sustainable Consumption Roundtable (2006). I will if you will - Towards sustainable consumption. London, NCC and SDC: 149.
- Tukker, A. (2008). Sustainable Consumption and Production: A Framework For Action. SCORE 2, Brussels.
- Tukker, A., Emmert, S., et al. (2008). "Fostering change to sustainable consumption and production: an evidence based view." Journal of cleaner production. **16**(11): 1218-1225.
- Tukker, A., Huppel, G., et al. (2005). Environmental Impacts of Products. Analysis of the life cycle environmental impacts related to the total final consumption of the EU25. Sevilla, ESTO/IPTS: 117.
- Tukker, A., M. Charter, et al., Eds. (2009). System Innovation for Sustainability. Perspectives on Radical Change to Sustainable Consumption and Production. Sheffield, UK, Greenleaf Publishing Ltd.
- Tukker, A., Sto, E., et al. (2008). ""The governance and practice of change of sustainable consumption and production." Introduction to the ideas and recommendations presented in the articles in this special issue of the journal of cleaner production." Journal of cleaner production. **16**(11): 1143-1145.
- UN (2008). United Nations Global Compact, United Nations.
- UNCED (1992). Agenda 21. The Earth Summit: the United Nations Conference on Environment and Development, Rio de Janeiro.
- UNEP (2006). Buildings and Climate Change: Status, Challenges and Opportunities. Paris, United Nations Environment Programme: 87.
- Welsh Consumer Council (2004). Policies for sustainable consumption in Wales. Cardiff, Welsh Consumer Council: 38.
- WHO and FAO (2003). Diet, Nutrition and the Prevention of Chronic Diseases. Geneva, WHO and FAO: 160.
- Zanoli, R., Ed. (2004). The European consumer and organic food. Organic Marketing Initiatives and Rural Development. Aberystwyth, University of Wales Aberystwyth (School of Management and Business).