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Article

Policy Needs for Sustainable Consumption—Results of an Effectiveness Evaluation of Policy Instruments

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Abstract: Sustainable consumption policy instruments have rarely been evaluated for their effectiveness and efficiency. This paper presents some key results of a major European research project dedicated to this task. Based on the analysis of key driving forces and the relevant actors in the three dominating fields if household consumption (housing, mobility and nutrition) we derive some conclusions for policy makers with recommendations for how sustainable consumption and greening of the markets could be facilitated by a combination of policy measures and institutional adaptations. We furthermore offer suggestions regarding which policy measures have been used, which have been underexploited and which have not been tested at all and address the question who must be involved to make specific measures effective. Based on a gap analysis and applying a system innovation approach we additionally develop recommendations for general framework setting towards sustainable consumption systems. In a last step we finally question how the undervalued aspect of sustainable consumption – an adequate contribution do human well-being – needs to be approached to keep our economies within the limits of our environmental space.

Keywords: sustainable consumption; policy instruments; effectiveness; well-being

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1. Introduction

Environmental problems are of complex nature and in most cases it is no straight forward exercise to assess the effectiveness, let alone the efficiency of specific environmental policy measures and strategies. One of the reasons is that politics often does not address the environmental situation directly but rather tries to influence human behavior by offering incentives to specific groups. Furthermore, due to policy integration deficit various measures and the resulting developments and trends may together be a push into the direction planned, but could also have effects in the opposite direction.

These might be the reasons why explicit evaluation of sustainable consumption policies is rare on a national as well as on an EU level. Another reason may be that the evaluation of environmental policies in general as well as of specific policy instruments is a rather new discipline [1]. Only for few policies in few countries in-depth evaluations have been undertaken so far. It is against this background that the European Commission funded the SCOPE [2] research project (Sustainable Consumption Policies Effectiveness Evaluation) to evaluate instruments used in sustainable consumption policies throughout Europe. This paper is based on the conclusions we distilled from the project [2].

Study Design

The purpose of the project was to assess the merits of various instruments adopted in EU countries to promote and establish sustainable consumption. In the case of relative success the intention was to identify the conditions of these successes to allow assessing the chances of instrument transfer. Starting points for the analysis were a literature review of previous evaluation studies relevant for sustainable consumption [3] and a review of a survey among ministries responsible for sustainable consumption policies across the EU [4].

The instruments were reflected based on 2 sets of criteria:

1. Estimated relevance and impact: does the instrument target consumption aspects of high environmental relevance?
2. Existence of a balanced mix: are administrative, economic and informational instruments properly used? Are supply and demand side instruments properly used?

See Table 1 (Systemising the instrument mix towards sustainable consumption and greening the market) for an overview.

Table 1. Systemising the instrument mix towards sustainable consumption and greening the market.

Policy instruments	
administrative	bans, product standards, material and quality requirements, emission levels, regulation of chemicals, recycling, and recovery quotas; public procurement policies; recommendations of official documents with a normative but non-binding character
economic	Environment related taxes and subsidies; fees and charges; licenses and permits; emission trading schemes ETS
informational	Mandatory environmental information from governments to the public or to upstream governmental bodies (e.g. for statistical reasons) and from business to the public and/or to governments; mandatory and voluntary certification, eco-labelling, consumer advice, consumer campaigns, education voluntary certification schemes, advertising
Business initiatives	
demand side	green private procurement; green products, technologies and operations
supply side	Ecolabelling and social labelling; green marketing; product service systems

For in-depth analysis 12 policy instruments [6] and 10 business initiatives [7] were evaluated from the consumption areas food, housing and mobility. These areas were chosen as they represent the vast majority of environmental impacts of household consumption [8]. Table 2 summarises the lists the policy and business case studies evaluated in the project.

Table 2. Detailed case studies on the effectiveness of policy instruments.

	Policy instruments	**Business initiatives**
Cross cutting	The 35-hour working week CO_2 taxes Sustainability Weeks	
Housing	For eco renovation of existing buildings: (1) national minimum energy performance requirements (2) financial incentives Feed-in tariffs for the promotion of electricity from renewable sources Energy labeling for household appliances	Green private procurement: Skanska, Sweden; BedZed, UK Green products and technologies: BedZed, UK Ecolabelling and social labeling: Indesit, Italy Product service systems: AMG, Italy; RUSZ, Austria
Mobility	Third payer support for public transport Programmes to train eco-driving Congestion charges	Green products and technologies Toyota Prius, EU Product service systems Mobility Car Sharing, Switzerland
Food	Organic products via national labels on food from organic farming Public procurement of organic food	Green private procurement: Waitrose, UK Green products and technologies: Sheepdrove Organic Farm, UK Ecolabelling and social labeling: Änglamark, Sweden Product service systems: Aarstiderne, Denmark

In this paper we understand consumption as the final consumption of private and public consumers; intermediate consumption is considered to be part of production addressed by sustainable production policies. Sustainable consumption – although having undeniably social, economic, institutional and environmental aspects is understood here as a consumption that contributes to human well-being while not overburdening the limits of the natural environment [9].

The paper is structured in the following way: Section 2 develops some policy guidelines for sustainable consumption in different consumption clusters based on the case study results. Section 3 provides a more general policy analysis. Section 4 discusses the undervalued steps and gaps of the recent SCP policies and section 5 concludes our findings.

2. Policy Guidelines for Sustainable Consumption in Different Consumption Clusters

This section provides concrete guidelines how to combine promising instruments in the three dominant consumption clusters. In deriving them we follow an actor centred approach [10], indicating which stakeholder can contribute what, and how these activities have to be initiated. The guidelines reflect the following aspects (the colour code is repeated in the tables):

- Established instruments,
- Underexplored instruments,
- *Inspire/create room for innovative instruments*

The identification of established as well as the underexplored instruments is a result of the survey and literature review [3, 5] as well as the case studies [6, 7]. The innovative instruments are mainly derived from a gap analysis [11], all conducted in the course of the project. All three categories comprise policy instruments and business initiatives. The systemic approach [12] is reflected in the selection of the actors involved.

2.1. Sustainable Energy Use in Housing

Regarding the effectiveness of instruments in the building sector all approaches considered in the study confirm the central role of governmental support via legal framework setting (legislation, ordinances, plans). The traditional instruments of codes and standards accompanied by energy taxes, investment and subsidy schemes, and energy saving information programmes, have proven to be crucial for the success in the building sector in the Nordic countries. Demonstration centers complement the picture.

Quite some instruments are either underexplored or underexploited in the context of energy use in housing. For instance, much stronger emphasis could be given to integrated spatial planning, with roads oriented to allow maximum solar energy use of the houses, minimise heating, provide opportunities for installing heat pumps or collective warm water storage tanks, etc. (further integration with leisure and mobility planning would reduce energy consumption for mobility as well).

To maximise energy saving in the housing sector, support has to increase from the private sector complementing public activities over the whole range of relevant activities from planning (architects, planners), financing (e.g. specific green loans from banks to private owners and other investors),

consulting (in particular for modernisation) and implementation. All these measures should go hand in hand with existing governmental advisory and subsidy schemes.

The aspects of knowledge transfer and information flows are also worth to be expanded. Here effective demonstration projects for more radically innovative solutions could offer positive learning experiences within the building sector, for a diffusion and further use (advancing the state of technology). The final consumers have to get reliable and easy understandable information about the real energy performance of homes not only in the case of buying one, but also as tenants. The legal basis in many countries needs to be improved, in others the enforcement of existing regulations is the weak point. With increasing European mobility, harmonisation of regulations at the highest level would be desirable.

Public and corporate procurement have to play important roles according to their market volume and the related demonstration effect. Demand as well as production of renewable energy is only one aspect here, albeit a crucial one. The failure of public institutions to reorient their procurement practice (often the legal regulations have been adapted to green or sustainable procurement) is a massive failure rising doubt about the seriousness of polity and the ability of public administration to stand up to new challenges.

Finally, as developed in detail in the case studies [6], all instruments have to be adapted as well for existing buildings as soon as possible.

Not under consideration so far but desirable is the development of a common standard for zero-energy buildings (a quite different challenge in different parts of Europe, given different climate conditions, climate change forecasts and construction traditions), as well as a rating system 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. Combined with a "top-runner approach" in the performance criteria, they could greatly contribute to dynamising the energy status of the housing stock.

In addition, economic incentives might be suitable to accelerate the market penetration process. For instance,

- a differentiated VAT rate for the construction of zero emission buildings could be considered,
- a CO_2 emissions trading scheme for households could be introduced, as currently discussed in academia and civil society,
- a progressive tariff of tax on energy use per person, providing also an incentive for the reduction of living space (m^2/person) in houses where no zero energy housing standard has been reached. It could complement a cost free provision of a minimum supply of basic services such as water, gas and electricity.

Table 3 (Actor and Instrument Matrix Energy use in Housing) shows a recommendable mix of instruments (established, underexplored, or *innovative*) the various relevant stakeholders should adopt when intending to support effective changes towards sustainable consumption in the housing sector.

Table 3. Actor and Instrument Matrix Energy use in Housing.

Instrument Actors	**policy instruments**			**business initiatives**	
	administrative	***economic***	***informational***	**demand side**	**supply side**
European Commission	expand requirements for existing buildings; Develop codes and standards; *establish top-runner scheme for building material and houses*	*differentiated VAT rate for zero emission buildings; remove VAT on energy efficient materials*		*standard development for zero-energy buildings*	
national governments	expand requirements for existing buildings; public production and procurement of renewable energy for public buildings Develop codes and standards; *establish top-runner scheme for building material and houses*	energy taxes; subsidy schemes; establish demonstration centers *differentiated VAT rate for zero emission buildings; regressive tax on energy use/person; remove VAT on energy efficient materials*	*establish top-runner scheme for building material and houses*	*standard development for zero-energy buildings*	
local and regional authorities	integrated spatial planning; public production and procurement of renewable energy for public buildings; combined heat and power plant			enable community washing centers and other sustainable home services	
construction and construction material companies			continuing education	*require top-runner certified material; standard development for zero-energy buildings; proactive use of eco labeled*	participate in standard setting; provision of knowledge in innovative solutions;
energy providers		establish feed-in tariffs		education and support for	invest in combined heat

				efficient energy consumption; expand eco-tariffs;	and power; invest in alternative energy sources;
banks		support for green loans		offer special green loans	
producer and supplier of household appliance				participation in labeling schemes	development and supply of high efficient products
house owners			mandatory information on energy performance of buildings	*require top-runner certified material* enable community washing centers and other sustainable home services	
tenants			mandatory information on energy performance of buildings		

Established instruments; underexplored instruments; *innovative instruments*

For household appliances as well, there is ample room for improving their (energy) performance. In the past, labeling for energy-efficient appliances has had slow but significant effects on consumer behavior: it demonstrates that labeling can help transform rising consumer awareness into changed market demand. It also demonstrates the difficulties inherent to this approach: consumers are facing the transaction costs

- information costs: here branding has its merits, if well-known brands guarantee the best available technology;
- product finding efforts: a proper retailer stock policy offering the best available technology cannot be taken for granted, and
- the financing costs of households: they are characterised by different payback time horizons than for commercial investments (households tend to exhibit a cash preference). Households may need financial support to reduce price differentials even in cases where commercially it is a profitable investment.

However, efficiency standards might have achieved the same effect in a fraction of the time, and a top runner approach would have been even more dynamic. Put (overly) simple, with labeling the laggards determine the market, with standards the average does, and with a top runner approach the dynamics is put in the hands of the front runners.

2.2. Sustainable Mobility

The traditional tool box to manage mobility and limit its environmental impacts includes only a limited number of instruments (as opposed to the plethora of planning and subsidising instruments to enhance mobility). On the three relevant levels different and countervailing tools dominate.

- Reducing transport volumes: No policy initiatives. Planning, investment and incentive structures try make transport easier, reduce bottle necks and limit price increases, thus enhancing transport volumes;
- Changing the modal split: here some efforts have been undertaken to strengthen non-motorised transport and to motivate a shift from road to rail, with limited success. Taxation and fuel pricing dominate the picture.
- Technical/incremental improvements of the status quo: this has found by far the most attention so far, by means of regulatory measures (speed limits are established in nearly every country, EU emission standards for cars are compulsory, more recently mandatory use of agro-fuels – disputed as it is – was an initiative to reduce CO_2 emissions).

In this third (and least fundamental) dimension, strong administrative requirements were missing so far. Thus the untapped innovation potential in the automotive sector is high, for improved vehicles as well as for alternative energies. Imagine that innovations like the 3 l/100 km car, the particle filter, hybrid cars, city cars, etc., introduced by the French, Italian or German car industry had become European minimum standards (a kind of top runner approach), and the lost opportunities for progress are obvious.

In order to make public transport a viable alternative, its quality has to be improved in many European cities. This refers to the technical equipment, the reliability and the relative speed of transport (narrow stops to reduce walking distances, but separate routes to make public transport independent from traffic jams – now a global success receipt). For financing such modernisation programs, while at the same time reducing traffic jams in the inner cities, congestion charges are one effective instrument not sufficiently used so far. Outside urban centers, where there is no underground or tram transport, public bus and vehicle fleets can be modernised by purchasing relatively sustainable stock (this could include not only energy efficient vehicles, but also those minimising the damage to children in case of accidents – a design available since more than a decade but never introduced into the market). Existing vehicles could be upgraded, including a switch towards alternative fuels like liquid gas or electricity. This is an option not only for public transport vehicles, but also for the vehicle fleet of public institutions.

In a more system wide approach, reduced demand for mobility can be gained through spatial planning that allows covering daily needs as well as recreation in walking distance. The existing urban housing and mobility policies are clearly not geared towards sustainable development and do lock people into unsustainable patterns.

Finally, all these measures will not lead to a long-term reduction of negative impacts from transport (not only CO_2 and VOCs but also noise and accidents) as long as on the highest level, the orientation is towards more, and not less transport, and transport growth will tend to continue to outgrow all

efficiency gains on the lower levels. Here a real U-turn is required, in national as well as in EU policies. The challenge is to derive and implement more substantial instruments reverting the current mindset of fast and individual auto-mobility dominating in planning authorities and ministries even more than in the public at large. Policies need to promote changes in behaviour, not only by promoting a reduction in the need of travelling but also by providing the opportunities to actively participate in social life without travelling. Another element is the status symbol character of car ownership - public support or car sharing and other Product Service Systems (buying the service, not the delivery machine) may be elements of a strategy to overcome the current car fetishism.

Table 4 (Actor and Instrument Matrix Mobility) recommends a mix of established, underexplored and innovative instruments the various relevant stakeholders should adopt to support effective changes in the mobility sector.

Table 4. Actor and Instrument Matrix Mobility.

Instruments / **Actors**	**policy instruments**			**business initiatives**	
	administrative	***economic***	***informational***	**demand side**	**supply side**
European Commission	*top-runner approach*		*disassociating mobility from private car ownership;* mandatory eco-driving curricula	efficiency labeling for cars;	
national governments	*decreasing* speed limits; obligations for non- fossil fuels; *top-runner approach;* infrastructure for non-car mobility; *infrastructure to satisfy human needs locally; public purchase of env. improved vehicles*	taxation and fuel pricing; support of car sharing	*disassociating mobility from private car ownership;* mandatory eco-driving curricula	efficiency labeling for cars;	demand alternative fuels and improved vehicles
local and regional authorities	Speed limits; Congestion charges; infrastructure for non-car mobility; *infrastructure to satisfy human needs locally; public purchase of env. improved vehicles,* increased parking cost	support of car sharing; cost free or cheap city bikes	*disassociating mobility from private car ownership;* offer one-stop mobility centers, real and virtual		demand alternative fuels and improved vehicles

car manufacturers		design for car sharing		efficiency labeling for cars;	supply improved vehicles; *change advertising 'leitbilder'*
car dealers		offer car pooling, in particular for companies		efficiency labeling for cars;	supply improved vehicles
public transport companies		offer car sharing		*provide mobility services*	demand alternative fuels and vehicles
civil society organisations			*support social experiments of disassociating mobility from private car ownership*		
consumer		cost-conscious calculation of the real cost of car base mobility to the household (rolling and standing stock)	information on car performance and alternative modes of mobility		demand alternative fuels and improved vehicles

Established instruments; underexplored instruments; *innovative instruments*

2.3. Sustainable Food Consumption

To develop policy guidelines in the food domain appears more difficult than in the other domains. One reason is the lack of a generally shared understanding what sustainable food and a sustainable diet is and how sustainable food systems may look like. Discussions on sustainable food provision include initiatives on healthier agriculture (without use of GMOs and reduced chemical inputs) as well as support for organic and local food systems while the consumption debate focus on product groups (like animal products), production conditions (no child labour in case of tropical products) and ingredients. Some of the recommendations given how to increase sustainability can contradict each other (e.g. whether organic, fairly traded or local products should be preferred). In absence of a positive definition of sustainable food, at least several unsustainable developments could be identified - reducing them would enhance the sustainability of food production. They include the disconnection between food consumers and producers (in miles as well as in minds), the significant losses of biomass between the field to the table, the post-table waste generation, and the consumption of animal products in form of meat as well as dairy products.

It has to be taken into account that the European agricultural sector is a highly regulated market. The administrative and economic instruments in place are mainly targeted at the production side and thus not covered in this study. Nevertheless the support provided via subsidies for producers of organic

products as one element of the agro-environmental measures under the reformed Common Agricultural Policy is likely to generate a stronger push for the increased market availability of organic products than the instruments evaluated.

Considering the demand side national governments play a rather weak role. Administrative instruments are less common here and the field is left to business strategies. Numerous strategies for reducing CO_2 emissions from food sector have been initiated, including substituting for more sustainable fuel choices, investing in energy efficient and low carbon technologies, reducing life cycle impacts of food produce, but except for climate change labeling and food miles, they are production focused.

In most countries growing market shares of organic food are mainly caused by large retailers wich during the last half decade have begun to stock up on organic food, specific regional products and fair trade products, driven by consumer demands. Additionally in some countries a growing number of fully organic and ecological retail chains has occupied a small but relevant (to themselves and the competitors) market share, further motivating the "big players" not to neglect this niche of environmentally conscious consumers with sufficient purchasing power.

This is important to keep in mind in the development of a national organic food label. In general such a label can increase attention and recognition and thus increase market share for organic products. To be a success in the market it needs the support of administrative authorities, producers, consumer organisations and major retail companies.

A further support administrations can give is by promoting more sustainable products and diets in public canteens, schools and hospitals. The examples given in various countries (such as Denmark and Italy) show that such changes need time and effort, but can work out quite well.

The tremendous challenge to reduce the consumption of animal products is not taken up so far. Only recently it received some broader attention [13]. Taxation of food products with high greenhouse gas emissions or with large ecological footprints may serve as an entrance point to raise awareness and make the environmental consequences of individual food purchasing choices visible to end consumers. Stronger and more effective potential measures include a higher VAT on meat products or even production quota [14]. These measures do not specifically address private households, as they are aimed at a reduction of meat consumption in households as well as in public canteens, restaurants, and schools.

Table 5 (Actor and Instrument Matrix Food) recommends a mix of established, underexplored and *innovative* instruments the various relevant stakeholders should adopt to support effective changes in the food sector.

Table 5. Actor and Instrument Matrix Food.

Instruments / **Actors**	**policy instruments**			**business initiatives**	
	administrative	***economic***	***informational***	**demand side**	**supply side**
European Commission	further shift of budget from the 1st to the 2nd column of CAP; *production quota on meat products*	*taxation of food products with high emissions; higher VAT on meat products*	*questioning meat consumption levels*		
national governments	*production quota on meat products*	*taxation of food products with high emissions; higher VAT on meat products*	development of national organic lables; *questioning meat consumption levels; making environmental consequences of individual food purchasing choices visible*	less meat dishes in public canteens	
retailers			*making environmental consequences of individual food purchasing choices visible*	development of national organic labels; establish regional food chains	
specialized producers and suppliers				establish regional food chains; food delivery services; consumer producer networks	offer more and tasty non-meat dishes in local canteens and restaurants
local food suppliers			promote producer-consumer networks	establish regional food chains	
civil society organisations			*questioning meat consumption levels*		
consumer				demand organic food; demand regional food; choose meet reduced diet	*self-supply from (city) gardening;* supply from local farmers/farmer markets

Established instruments; underexplored instruments; *innovative instruments*

3. General Policy Analysis Results

Our research revealed some strength of current sustainable consumption policies in Europe, but also identified some of the most common weaknesses. What we found in the analysis of existing policies is summarised in the following section.

Our research results clearly indicate that most bottom-up initiatives work most environmentally effectively when "guided", supported and stabilised by clear and reliable administrative frameworks. This confirms the findings of Garcia-Sanchez and Prado-Lorenz [15] regarding the factors influencing the diverging implementation successes of Local Agenda 21 processes throughout the European Union.

The traditional top-down regulatory policy is neither outdated nor in contradiction to other, more en vogue instruments (economic and informational), but necessary to make them effective by providing a clear orientation framework for all agents. Within it, more innovative modes of public-private governance and partnerships can play an important role, e.g. by cooperation and voluntary agreements ("agree-and-control" instead of "command-and-control", in case that shift offers environmental benefits), by incentives, by networking / involvement of stakeholders, or support for the non-profit economy.

The various business initiatives are as well no means to replace regulations, targets and timelines, but smoothen their implementation. For instance, business innovation behaviour is mainly triggered by stringent environmental policy; a large part of "voluntary" actions of companies and environmental product innovations are driven either by existing or anticipated regulatory actions. The crucial demand to framework setting is that politics must stimulate and coordinate the process(es) without suffocating innovative experimentation [16-18].

The overwhelming dominance of incremental over radical and of process over product innovations indicates significant room for improvement in the existing frameworks [19, 20] beyond incremental improvements radical innovations are needed, combining hardware and software, or technology and social arrangements, using diverse new technologies and "eco-enabeling" existing ones.

Regarding economic instruments, our results indicate that sticks (punitive instruments, e.g. taxes and charges) seem to be more effective than carrots (stimulating economic instruments; e.g. our case studies on CO_2 tax, congestion charge, and third payer support for public transportation). Positive financial incentives like subsidies gain their importance when they accompany regulatory instruments or speed up the change towards new technologies (e.g. in the case on renovation of existing buildings and feed-in tariffs). However, as carrots yield more public apprehension than sticks do, governments often feel tempted to use economic stimulants rather than punitive instruments.

What seems to be overemphasized is the effectiveness of informational instruments, dominating current SCP policies and strategies. Information overloads (in psychological terms) respective high transaction costs for reliable information (in economic terms) strongly suggest, before focussing on informational instruments, to first analyse whether or not a lack of information is really the core of the problem [21]. This is quite often not the case in the context of consumer's decision making where price and availability are more frequently the main obstacles to sustainable purchasing decisions and even more so social factors like peer group acceptance. Sustainability knowledge provision is more important in curricula for architects and designers, and it could be a part of the professional education

of retailer managers. More generally, as certain companies with a proven qualification in waste management (independently verified) have easier access to public contracts in the waste and chemicals sectors, similar administrative incentives could be introduced based on sustainability competence (that is the carrot – the stick is a black list for companies who faked).

3.1. Cross Sectoral - Recommendation for General Frameworks

As already stated, the route towards a sustainable consumption and production system is a very complex one [22, 23]. This complexity arises from a number of factors. In the first place, sustainable consumption and production pre-supposes a clear balance between economic, environmental and social aspects. Secondly, no actor involved has the power to enforce sustainable consumption and production going it alone, neither for himself nor for others.

Two systems theory schools offer relevant contributions for a holistic approach towards SCP [12]:

- The *system innovation approach*, which sees a partly locked-in, interdependent mainstream regime of technical artefacts, user practices, infrastructure, values; a niche level with novel practices, and a landscape that moulds the degrees of freedom of the regime. Regimes (or modes of regulation) hence change only marginally, if at all [24].
- The *innovation systems approach*, which is interested in understanding development and diffusion of innovation. This approach argues that the right mix of knowledge infrastructure, entrepreneurship, risk capital, launch markets etc. must be in place [19]

The Dutch transition management school distinguishes the use of regular policy instruments and transition instruments [25]. Regular policy instruments are mainly economic instruments, informative instruments, and regulation (legislation). For persistent problems such as the increasingly unsustainable consumption patterns of individuals and households, regular policy instruments may not to be sufficient. This means that new (systemic) transition instruments are needed which could be particularly useful to foster long-term changes to sustainability in consumption.

In the Dutch approach, discursive efforts to problem and strategy definitions are preferred, without quantified targets and timelines. In other countries, it is the cross-cutting policy approach including both targets and time plans which is the core of the innovation (e.g. in Luxemburg). In any case, the form of the cross-sectoral approach to be chosen must resonate with the respective political culture [26].

The main idea behind the definition of systemic instruments is that they truly differ from traditional policy –they are realistically applicable and effective but require great coordination efforts. Clearly, the use of systemic instruments might allow the identification of targeted solutions for specific problem aspects but they could also be used to tackle the problem as a whole. To sum up, the change to SCP is a systemic challenge where the application of the existing sets of individual, traditional policy instruments may turn out to be not always sufficient, even if they were all fully applied (which is currently not the case). Systemic failures hindering changes to SCP can possibly be addressed using systemic instruments.

3.2. Politics So Far

What matters most in this context of Sustainable Consumption and Production is a clear target setting and coherence in policy making. Only few countries (UK, Finland, Czech Republic, Sweden) so far took the challenge to develop an explicit SCP Action Plan (or explicit SCP programme) respectively a Framework and so did the European Union – with very different approaches and different levels of ambition. For example, while the SCP programme of UK emphasizes the role of business in advancing sustainable consumption and production agenda, Sweden counts on consumer and Finland in R&D and stakeholder involvement [27]. The policy tools proposed by these countries are biassed towards the popularity of informational tools. On the other hand, the SCP programmes give very scarce attention to the possibilities of governmental regulation in the context of sustainable consumption [28]. How difficult the exercise is shows the Swedish case where the programme was withdrawn with a change of government. When developing SCP programmes, strategies or action plans, four elements should be given special emphasis as they are crucial for success:

1 Adequate stakeholder involvement, impact on decision-making;
2 Development of clear multi-dimensional sustainability targets;
3 Clear agreements on implementation steps to be taken by different agents, and
4 Implementation control, success monitoring and feedback loops.

Adequate stakeholder involvement, impact on decision-making

Sustainable development as a transition process affecting all branches of government and, beyond that, all sectors of society [29] needs to combine dedicated government efforts with broader governance involving all "major groups" of society [30]. Improved communication and mutual learning amongst government entities and between them and the stakeholders has played a major role in most sustainable development/SCP strategies, and was evaluated as a time consuming but fruitful element by all interview partners [31].

Such learning processes begin on the national level (with lower level input where available) with a reflection of responsible agents about the challenges the future strategy has to counter. As this is the stage where policy objectives are defined, gathering input from society is a necessity in order to make sure that the strategy addresses the main sustainability issues of public concern and thus will have a broad resonance when put into practice. For this behalf, reflection processes and discourses within civil society should be supported or – where necessary – even initiated, parallel to or even before those within the administration and in politics. Such reflection processes are particularly helpful if they happen on both levels, inside government, on the political level, and inside the administration.

In addition to learning, commitments by key actors are an advantage often associated with participative policy processed. However, getting commitment is not always guaranteed. For example, the making of Finland's programme on sustainable consumption and production involved committee work for one and a half years during which some 40 people, ministry representatives but also people from interest organizations as well as NGOs and research institutes, deliberated on the content of the programme proposal. The finalised programme contains 73 proposals for action and after each of these

points there is a list of actors who should participate to the implementation of the proposal. But when the committee members were interviewed it was noticed that many actors did not recall the responsibilities they were given in the SCP programme. In addition, many saw that in the implementation, their role would mainly be to participate - should the government initiate something. In this sense, their perception about their role in implementation was not very pro-active. In addition, some said even that they will continue to work against some of the programms' proposals even though they had been part of the group that commonly agreed on the text [32].

Development of clear multi-dimensional sustainability targets

Quantitative targets for SCP defined by the strategies themselves exist only sporadically. Exceptions to this are Finland where a quantitative target on organic farming is set in the SCP programme, as well as Luxemburg. In other countries, SCP-related targets are included in sectoral (such as transport, agriculture) or thematic (e.g. climate change, energy efficiency) strategies. The most broadly and uniformly used targets are related to energy: on the one hand, improvements in energy efficiency (both in general and specific e.g. to the housing sector), and on the other the share of renewable energy in final consumption (in different categories, e.g. electricity, heat etc.). Other relatively frequent areas for target setting are the share of organic farming in total arable land, and the transport sector (various types of targets e.g. specifying limits for related emissions or the share of transport modalities etc.).

Broadly missing are clear reduction targets in absolute terms, e.g. on resource use or emissions (thresholds usually refer to concentrations, not to absolute mass flows) [33]. Relative annual improvements in resource productivity, e.g. of 3% as discussed in the preparation phase of the EU SCP Action Plan, would lead to stabilising resource use only if they coincide with a lower rate of economic growth [34] – as expected in that document. However, the yardstick for assessing the suitability of policy instruments is their possible contribution to an absolute reduction, specified by (scientifically informed) policy decisions, like -60% for the EU CO_2 emissions by 2050, according to the IPCC's 2007 ar4 report [35].The Commission recognises the setting of sustainability targets in areas such as energy and resource efficiency as important in order to move forward [33]. Nonetheless the EU SCP action plan represents another missed opportunity to put these insights into action, to walk the talk.

As regards SCP indicators, most countries use some indicator frameworks to monitor the implementation of their SCP approach. Two countries, France and the UK, have defined dedicated SCP sets of indicators within their larger set of sustainable development (SD) indicators. The Czech Republic defined potential clusters of SCP indicators. Austria and Finland for the time being monitor the implementation of SCP by their general set of SD indicators [33].

Clear agreements on implementation steps to be taken by different agents

It is important to note that the successful implementation of a policy instrument is always context-dependent. Aspects such as the historical development of specific consumption patterns, institutional arrangements (including societal orientations), technological aspects and other factors determine to a large extent, whether or not a policy is effective. Therefore, experiences from one

country cannot be directly transferred to other countries [36]. However, for policy action at the EU level, some general strategies have to be established. A clear allocation of responsibility must be assigned to specific organisations, either embedded in existing ones or newly formed. These should have a mandate from the highest possible level, i.e. being located in the head of government's office or (repeatedly) mandated by it. Another element proven to be effective is a two-level coordination system, on the political as well as on the administrative level [26]. The former helps to develop coherent policy priorities, and the latter (interministerial coordination and information exchange) to improve coherence of policy implementation [16].

It has been noticed in the context of evaluating the implementation of the Finnish SCP programme that it is hard to say which of the proposals for action would have been implemented even without the programme. The reason is that the programme includes many "old" proposals that have already been suggested elsewhere or that are already in preparation. In the Finnish case, what had been proceeding during the time of more than two years of SCP programmes' existence were e.g. sustainable public procurement and the establishment of a service center for material-efficiency. However, the development of long-term economic and tax reforms to support sustainable consumption and production did not reach the level necessary for effective support. Still, this economic restructuration could be one of the key tools to proceed towards an SCP society. This difficulty in evaluating the follow-up of SCP programmes might be one reason why it could be worthwhile to have a clear set of indicators attached to the programmes [37].

Implementation control, success monitoring and feedback loops

In the process of monitoring it is essential that not only the implementation as such is surveyed, but also the impacts the measures had are critically assessed. This second step is all too often forgotten, leading to "ballistic policies" following the motto "fire and forget" [38]. As a result, a fully developed policy cycle is a rather complex process beyond deliberate hands-on management.

4. Undervalued Steps and Gaps

The previous sections have primarily dealt with ecological aspects. This reflects quite well the way sustainable consumption is perceived in public and private policies so far, within Europe and beyond [39]. However, the most cited definition of sustainable consumption refers not only to 'resource use' but also to 'need fulfilment' which in other words is 'human well-being'.
Figure 1 formulise the relation between resource use and human well-being in the context of the sustainability of consumption.

Figure 1. Sustainability of Consumption as a relation of human well-being and resource use. Source: [40].

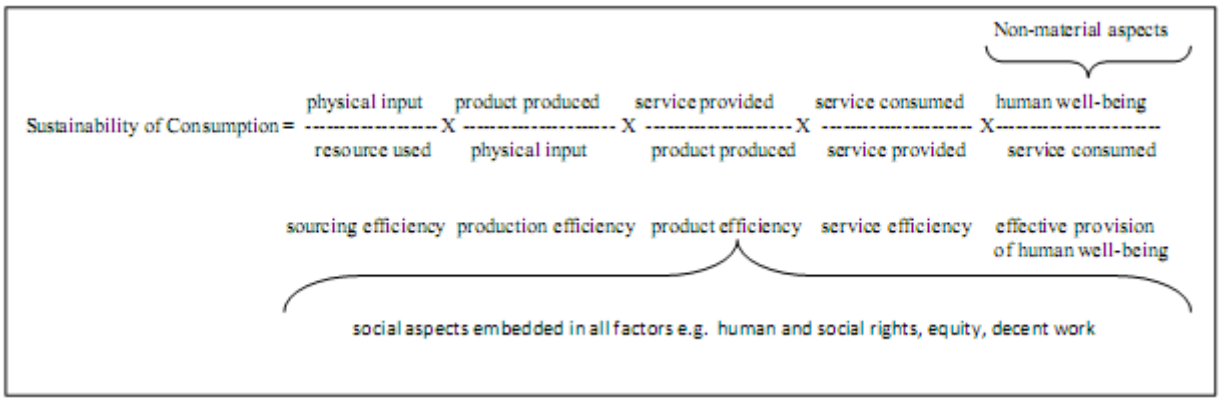
$$\text{Sustainability of Consumption} = \frac{\text{Need fulfilment}}{\text{Resource use}} \quad \text{or} \quad \frac{\text{Human well-being}}{\text{Resource use}}$$

The implication arising from this relationship, which seem to be too hot to handle on actual political agendas [41], are discussed in the following section.

As seen, policy strategies are mainly focusing on the sustainability of business processes, products and markets so far, and pretty rarely address consumption processes or consumer behaviour. When they do so, consumption is mostly dealt with in efficiency terms. But such a focus on efficient consumption options can only lead to a weak version of more sustainable consumption, in fact degrades sustainable consumption politics to a marketing instrument for more efficient products. This is reflected in the institutional embedding of sustainable consumption as sub-aspect of Integrated Product Policy in the EU and various countries. However, achievements based on product level and efficiency alone are limited to the environmental dimension of sustainability, and even in this field they are too often overcompensated by a growth in consumption volumes [33]. As opposed to current practice, sustainable consumption strategies, in order to be successful, need to address changes in consumption patterns as well as reductions in consumption levels.

This in turn requires a strong governance approach towards sustainable consumption, critically reflecting the drivers of consumption including infrastructures and institutions (Organisations, mechanisms and orientations which shape the societal decision making process, [42]), in particular the prevailing orientations. Some of them, among them the growth paradigm, the paradigm of the free market, and the ideal of full consumer sovereignty represent ideological locked-ins that need to be broken up [43]. What policies for sustainable consumption have to strive for is to search for the most effective and social acceptable contribution of resources to human well-being. Figure 2 displays a factor analysis, illustrating one way of how the transformation of resources into contributions to human well-being can be structured in a factor analysis.

Figure 2. Effective resource use for human well-being—fragmentation of Sustainable Consumption. Source: [40].



The components represent potential intervention points for Sustainable Consumption Governance (that is the purpose of the factor analysis) and each of these points needs to be addressed in a specific way. Sourcing efficiency, production efficiency and product efficiency mostly focus on efficiency gains based on technological developments and their socio-economic implementation. The first two fall under the category of sustainable production; the third is about more sustainable products. These three factors are already quite conventionally recognised intervention points of environmental policy.

Service efficiency considers gains from the societal organisation of consumption and from consumer attitudes. This aspect increasingly enters the discourse and praxis on Sustainable Consumption [44, 45, 46, 47]. The most challenging point in the factor analysis is, however, the effective provision of human well-being, including the question how well-being is influenced and can be enhanced by non-material factors.

4.1. The Micro Level of Individual Consumers

Happiness and consumption

In our modern societies the „good life" still consists of health and social relations, security and trust, education, reputation and good work – all things money can hardly buy (if it is helpful in reaching them depends on the respective society and in particular the quality of its public services). However, the increasing commodification of our consumer societies is based on the one hand on the assumption that the means to achieve these ends are mainly market products and processes (although they may be stand-ins rather than means). Advertisements address this aspect by promising happiness through new and more products and thus more consumption. On the other hand, commodification is based on the on the habit to signal status and identity through such products; advertisements address this aspect by promising private and professional success and reputation as the result of owning certain goods, and by linking these goods with high-status lifestyles. Thus modern lifestyles consist of consumption patterns, which are going far beyond what is actually needed for physical life support in order to meet the demand for symbolic communication.

Indeed, according to different philosophical schools, desire for happiness is the main driving force for human actions (and social relations are a precondition for life satisfaction [48]). However, different studies have shown that happiness is only increasing with income up to a certain level [49]. As soon as subsistence needs are fulfilled, more material wealth is only marginally or not at all increasing people's happiness [50] (for a critical assessment of current happiness measurements and methods see [51]). Wealth becomes one of several important factors rather than a dominant material need. In the USA, Easterlin (1974) showed that despite a tripling of the average income since WW II, happiness had hardly risen, and [52] mentions that despite a further doubling of wealth in the last 30 years the number of people calling themselves very happy has decreased from 35% to 30%. Layard (with reference to Maslow) concludes that well-being presupposes that we keep our position relative to the peer group we belong to and compare ourselves with, and that this "treadmill of production" and consumption [53] must be overcome to improve the happiness status. Increasing income polarisation decreases life satisfaction (as long as you are not on the top of the pyramid): happiness is always context dependent.

Veenhoven tends to disagree with the remedies suggested by Layard, emphasising instead freedom (political, individual and economic), and a functioning public administration not shaped by corruption or arbitrary decisions, a self-determined job and two glasses of red wine per day as conditions for a happy life [54]. For sustainable consumption policies, such freedoms have to be balanced by environmental and social limits, whereas good governance and good work (beyond just having a job) are complements rather than contradictions to Layard's suggestions.

Other research has shown that sustainable lifestyles and consumption patterns are directly linked to happiness and life satisfaction [55]. This is reflected in a growing number of people of rather affluent people opting voluntarily for a less consumption intensive lifestyle, called cultural creatives or LOHAS (lifestyle of health and sustainability). They do so less as individuals breaking the ranks with their social environment, but as a peer community, strengthening the new attitude by positive mutual feedback: the willingness to and the way we consume are social as well as psychological phenomena. Thus lifestyle change is a crucial element of successful sustainable consumption strategies, and it must address not only the individual, but also the group level, and stimulate processes of social learning and cultural evolution.

Additionally, sufficient social transfers, shorter working times and less status good consumption have been found to contribute to a happier life. Thus a way to increase the individual well-being in the (European) societies would be to re-distribute work, both remunerated and unpaid work (community work, caring work and work as a self-provider: mixed work, see [53, 56, 57, 58]) in a more equitable fashion between cultural groups, classes and gender [10, 59]. Other suggestions to reduce social inequality and excessive status product consumption include increased taxation of high incomes, maybe at the 1960s/1970s US level of 95% of the income above a certain threshold.

If paid work were declining, because more people (want to) do unpaid work, the GDP would be reduced – however, the environmental impacts of unpaid work are hardly understood. So positive expectations should be taken with a grain of salt: the highest concentration of pesticide use is found in private gardening. For other products the impacts on resource consumption and thus environmental pressures might increase due to reduced efficiencies and economies of scale, if not the emphasis on non-market work goes along with significantly changing consumption levels (longer life times and use times of products, repair instead of replacement, etc. due to a higher subjective value of self-fabricated goods). Such a change will also require a redesign of many products in order to permit a more sustainable use, but progress in the design profession towards Design for Sustainability (DfS) is painfully slow so far [60].

Rebound effects and consumption

The introduction of innovative technologies is important and necessary and has no doubt led to more eco-efficiency. However, in many cases it has also caused lower expenditures, announced as win-win-situations, and thus left additional money in the hands of consumers which they could spend for more of the same, or for other goods and services. Each purchase financed with the money saved reduces the total of the efficiency gains: This phenomenon is known as the rebound effect. The rebound effect illustrates that efficiency increases on the micro level (e.g. products) are not automatically improving the environmental situation. Thus in a win–win situation, the second win always undermines the first one (economists would say “there is no such thing as a free lunch”). For both reasons, efficiency may slow the increase of resource consumption, but will usually not stop it, let alone reduce it to a sustainable level.

This insight causes scepticism regarding the central role win-win options play in promoting sustainable consumption and production on the EU level.

Sustainable consumption therefore can only be achieved, if policy measures to improve the

efficiency of production and consumption are accompanied by complementary measures to deal with the rebound effects. Only by "skimming off" the purchasing power released by efficiency gains can rebound effects be avoided (an alternative, albeit fragile, with its own rebounds and not addressing the macro level effects, would be wide-spread voluntary sufficiency in consumption).

Such skimming-off could be implemented by means of consumption taxes designed to compensate the rebound effect, thus shifting the economic incentive structure from carrots to sticks ("you don't win when going green, but you definitely loose if you do not"). However, this might lead to social unsustainability, as such measures might hit the low income sector relatively more than the well-off. Thus either the measures should be designed in a way to rule out such effects (for instance through the introduction of cost escalators, i.e. negative rebates for large users, with low or free basic entitlements for every citizen as an in-built avoidance of regressive effects).

4.2. The Macro Level of Social Processes

In Europe, there is broad evidence that relative and/or temporary decoupling has been achieved on the macro level in several areas, for instance in the transport or manufacturing sectors, but examples for absolute and lasting decoupling (i.e. an absolute reduction of environmental pressures) are rare. This is due to a second effect on the macro level, complementing the rebound effect on the micro level, and known since the 19th century as Jevons' paradox: increasing efficiency will either decrease demand while supply is given, and thus the prices will go down – creating in turn an incentive to use more of the respective resource. Even if supply adapts to decreasing demand, and the price of the resource does not drop, it has still become *relatively* cheaper as a production factor than those inputs not undergoing the same efficiency improvements – which in turn provide an economic incentive to use more of it than before. Thus the increase in consumption due to more efficient (and thus cheaper) production in many cases offsets the drop in demand from the original efficiency gain. As a result, the state of the environment and resource reserves continue to worsen.

To deal with this macro level effect, eco-taxes (not only on energy) could be designed to compensate for the relative price decrease from efficiency gains achieved in the average of the economy and thus avoid Jevons' Paradox. Here the incentive structure would change from a long-term gain to a first mover benefit: companies would cash in on such a scheme as long as their improvements were above the average, and they would lose if not (a kind of macro level top runner approach). Both instruments would stimulate further efficiency increases along the whole use chain, from provision via design, production and distribution to consumption. Alternatively, physical limits to resource consumption could be introduced, limiting the overall level of environmental pressures [61]. This could be achieved by so-called "cap-and-trade" systems, which are currently implemented within the Kyoto framework and could be extended to cover other environmental categories (raw materials, land,…).

Economic and physical limits both lead to reduced resource consumption through higher prices – with a better control of the cost development with economic instruments, and better control of the environmental effects, but less of the socio-economic side effects with setting physical limits. Thus, for social sustainability reasons, introducing new instruments requires special attention to their potential regressive (i.e. re-distributional) effects, in particular the more than proportional (and

possible more than justifiable) burden on low income households and on women. For physical limitations (with price formation at the stock exchange) this is even more urgent, and the social compensation mechanism to be developed must be more flexible. Macro level "skimming-off" could also be a source of resources for other sustainability policies, social and economic, domestic and international.

To many groups in society, the symbolic value of the goods they consume is frequently more important than their initial function as 'service delivery machines' [62], and this symbolic value is an important contribution to the subjective quality of life [63]. But consumers are no isolated individuals; their decisions are taken in a social context. One key factor determining purchasing decisions is the individual assessment if existing alternatives are affordable in terms of purchasing power, time use preferences, resource endowment, and the desire to maintain or improve self-esteem, social status and acceptability [64]. Similar criteria apply to goods not traded on markets, but exchanged with or without equivalent compensation, like all services from unpaid work (caring and supply, housekeeping and education, voluntary and community activities, and so on).

The goods consumed, products or services, paid or unpaid, can be symbols of group identity, reflecting the visions, *Leitbilder*, grand narratives or concrete utopias a group like a nation, an ethnic group, or a lifestyle-based sub-group has, the idea of quality of life they share and live according to. Exposing a certain good (privately or collectively owned, or borrowed) can thus symbolise the membership of a certain group (or the aspiration to be a member), support for a certain idea, and so on: products do not create identity, but they are indispensable tools to express it. Expressing one's own identity as an active act is experienced as extremely positive, since it creates the opportunity to experience one's identity, in this case by exhibiting certain products, an extremely frustrating mechanism for those who wish to join this group, but cannot [65].

A specific form of distinction is the ownership and exhibition of positional or oligarchic goods. The less people can afford a certain artefact at a given time, the smaller the group of potential owners, the higher its positional value, and the higher the incentive for all others to strive for future ownership as well. Once this situation is achieved, the good will be no longer positional, rendering the intended positional gain unattainable, which is subsequently sought from another good. Although positional goods need not be monetary, tradable or material – status is a clear positional good, time can be one – Mainwaring [66] suspects that as a rule of thumb positional goods will be more environmentally damaging than less positional goods, as status is most frequently advertised by exhibiting material goods. Once ecosystem services become sufficiently scarce and thus more valuable in market-economy terms, environmental intensity as such might become a characteristic of positional goods [67]. As societies and economies change, altering the patterns of scarcity and the relation of capital, labour and the environment, the failure of consumers to adapt to changing circumstances can lead to a lock-in, to outdated but quasi-sacred consumption patterns, as is the case, for example, with the 'American way of life' [63].

In a certain sense, this treadmill of consumption sounds sick, and it makes sick: The desire to receive higher income / achieve a higher status (compared to others) is leading to addictions. Examples for such addictions are addictions for food, alcohol, games, cleaning, buying, sex, amusement. These are unsuccessful attempts to find happiness via consumption. Latouche highlights that continuous economic expansion comes at the expense of people's quality of life [68].

De-growth for sustainable consumption

Degrowth (in French: décroissance) has recently become a subject of major debate in several EU member states, and in the some circles in the USA. Degrowth proponents believe that the present growth of society is not sustainable in the long run and that a downscaling of the physical size of the economy (i.e. the production and consumption systems) is not only desirable but necessary in order to avoid collapse. In the medium to long term, inactivity, viz. continuing on the growth-path may lead to economies that go into decline from the cost of dealing with a different climate and other environmental pressures [53], while already in the short term throughput reduction is needed to deal with the social and economic effects of "peak everything". The overall aim is a smooth transition towards a low carbon, resource-efficient, non-growth society. This implies to overcome the central role economic growth is playing in today's economies and societies. One main demand is a massive reduction of working hours in order to guarantee (full) employment, which otherwise is one undeniable advantage of rapid economic growth. However, mature degrowth theories do not exist yet, as the focus of research has been on growth economics for decades. The state-of-the-art can be found in the proceedings of the first international conference on sustainable degrowth in Paris [54] and in a Special Issue of the Journal of Cleaner Production [69].

Debates on sustainability have led decision makers to acknowledge the physical limitations of nature as a sink (not yet as a source), as a fait accompli. However, as long as economic growth and an increase in consumption remain the number one priority, this only leads to calls for more efficiency, but not to effective limitation strategies as demanded by the Brundtland-definition of sustainable development. This obsession with economic growth is just as fatal as it is redundant. Limitations set by nature, both as a source and a sink, are unavoidable and will dominate our economy and our lives in the long term. Our consumption patterns will have to adapt to these facts of life, and with increasing resource scarcity (be it economic, physical or political scarcity) and the strive for social justice inherent to sustainable consumption, even its very definition is about to change: in future, sustainable consumption may no longer mean to stop squandering natural resources despite a situation of abundance, but to lead a dignified life in a situation of overall resource scarcity (a situation familiar to the world's poor).

Beyond GDP

Climate change, biodiversity loss and other ecological crises are omnipresent issues in today's societies. Nonetheless most policy processes on the EU level are still based on the belief that technological environmental innovations and eco-efficiency are sufficient approaches to face the ongoing environmental degradation, that no new approaches and instruments are needed. However, this illusion seems to be coming to an end.

The discussion process in the EU about indicators, which better reflect aspects of well-being beyond pure economic performance and thus material consumption, has recently gained in importance. Though not questioning the general paradigm of economic growth, the EU made an important step by organising a high-level Beyond GDP conference in late 2007. The Commission and the Parliament acknowledged that GDP is not inclusive enough to effectively measure progress, wealth and

well-being. The conference aimed at clarifying which indices are appropriate to include social and environmental dimensions in measuring progress, how to integrate these indicators into policy-making and trigger public debate. Follow-up activities include the development of a well-being indicator at the European level, which is planned to be published as a complement to GDP in about two year's time. If such a new system of measuring welfare is to contribute to sustainable consumption patterns, it should be based on the full definition provided by the Brundtland Commission, and thus report on the fulfilment of human needs (life satisfaction may be one element thereof) and if we manage to keep our economies within the limits of our environmental space.

Conclusion

Based on the analysis of key driving forces and the relevant actors in the three dominating fields if household consumption (housing, mobility and nutrition) we could derive some conclusions for policy makers with recommendations for how sustainable consumption and greening of the markets should be facilitated by a combination of policy measures and institutional adaptations. Our research offers suggestions regarding which policy measures have been used, which have been underexploited and which have not been tested at all and address the question who must be involved to make specific measures effective. Examples for such recommendations are: (1) combination of measures and institutional adaptations for sustainable consumption and greening of the markets; (2) combinations of existing and/or new policy instruments in the most promising application areas (countries, sectors, product groups and/or target actors); (3) market-based policy instruments, which stimulate innovative, proactive companies; (4) underexplored market based instruments. Further considerations are given to trade offs and perverse side effects of instruments and the implementation mechanism.

However, our research indicates as well, that conceptual framework setting and proper governance for sustainable consumption is missing. The radical changes increasing environmental threats, resource scarcity and social inequity are calling for need clear strategies. As crucial for success for such frameworks we identified (1) an adequate stakeholder involvement; (2) the development of clear multi-dimensional sustainability targets; (3) clear agreements on implementation steps to be taken by different agents, and (4) a proper implementation control, with success monitoring and feedback loops.

Even beyond such steps, a growing amount of voices from academics, civil society and politics demand to broaden the environment focused perspective of sustainable consumption bringing human well-being in the focus of policies again. A crucial element in this context is to stop taking economic growth further on as a proxy for increasing wellbeing.

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