

Sustainable consumption within a sustainable economy – beyond green growth and green economies



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ABSTRACT

In 1992, one unambiguous result of the UNCED conference was the need for changing consumption and production patterns, with affluent countries taking the lead. 20 years later, at the 2012 UNCED, little is left over and instead the “green economy” has been the theme pursued by the OECD, the EU and other countries. So the question needs to be answered if this is finally an attempt to put into practice what was promised 20 years ago, or another diversion from what needs to be accomplished.

Sustainable development is still a convincing concept, if the original definition is taken, avoiding the confusion caused by partisan interests reinterpreting the concept. Focussing on human needs fulfilment and respecting environmental limits, it can still guide strong sustainable consumption. Green economy/green growth, on the other hand, is a new terminology for what is known since 40 years as ecological modernisation. It is indeed overdue, but with its focus on efficiency and innovation it cannot guarantee to fulfil the Brundtland sustainability criteria. A factor analysis based on the $I = P^*A^*T$ formula demonstrates how optimistic the assumptions regarding future technologies must be to support the green growth concept. Consequently, the authors pledge for a pragmatic, risk avoiding approach by slimming the physical size of the economy. This requires ‘strong sustainable consumption’ (including production as resource consumption), which in turn requires a change of the societies’ institutional settings (formal and informal, mechanisms and orientations).

Finally some elements of a strategy towards this end are pointed out, with special emphasis on the role of non-governmental organisations NGOs. Through networking and advocacy they can both stimulate bottom-up action and mobilise the pressure necessary for the institutional changes which are needed to mainstream strong sustainable consumption.

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1. Sustainable development – still a convincing concept

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- the concept of needs, in particular the essential needs of the world’s poor, to which overriding priority should be given; and
- the idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs.”

(WCED, 1987)¹.

Sustainable development as originally envisioned still is a convincing concept (for a history of the concept see Spangenberg, 2008; Grober, 2012). In its ‘Brundtland definition’ (WCED, 1987) it provides the two clear criteria for sustainable development which are also applicable to sustainable consumption.² An economy is sustainable only if it simultaneously caters human needs, in particular the essential needs of the world’s poor, and accepts the limitations imposed by the need to sustain the environment’s ability to meet present and future needs. In other words: not meeting the needs (not the wants!) of humans is socially unsustainable and consuming resources beyond the environment’s carrying capacity is environmentally unsustainable. As essential needs are not substitutable and as limits are clearly referring to the environment, and not to “natural capital or a substitute thereof”.

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¹ Frequently, only the first sentence is quoted as the ‘Brundtland Definition’ of Sustainable Development, which leaves more space for interpretation and suggesting priorities more in line with the prevailing economic paradigm.

² As production is a form of resource consumption we use the term ‘sustainable consumption’ to cover both, sustainable production and consumption, in the remainder of the text.

Unfortunately, in the 25 years since it's framing the Sustainable Development concept was often weakened and mis-interpreted. Therefore, humanity is hardly approaching it – current trends go towards the opposite direction. We neither manage overcoming poverty (OECD, 2011a) nor are respecting the planetary boundaries (Rockström et al., 2009). However, that does not make the concept superficial – on the contrary. The environmental and social concerns of that time are today complemented by the threats of peak oil and resource scarcity, the volatility of the financial markets and the vulnerability of the real economy to them.

One of the main problems with the actual dominant interpretation of the concept is the reliance on growth, innovation and technological solutions which has led into a lock-in situation. We have reached a vicious circle in which the measures taken for short term relief increase the problems instead of solving them in the medium to longer term. The growing uncertainties, and the necessity of precautionary action call for radical changes (Tukker, 2008) (from Latin *radix*, the root), i.e. changes which are addressing the root causes of the problems instead of focussing on curing the symptoms. The green economy concept, the latest interpretation or better transformation of the sustainable development concept (United Nations, 2012), still focuses on incremental improvements. Thus it fails to provide or at least promote the radical changes needed.

Section two introduces the concepts of green economy and green growth and offers some arguments why green growth is necessary for some and a green economy for all countries, but also why this necessary step is not sufficient to reach sustainable development. Section three challenges the green growth debate and sketches central elements of a sustainable economy considering both on the supply and the demand side. This is done applying a factor analysis of the link between resource consumption and the satisfaction of human needs. Such an idealised state would remain a utopia (Morris 1517, from Greek *u topos*, without a place) if the vision were not complemented with a strategy. Section four asks how to make a sustainable economy possible and provides preliminary answers combining earlier work on sustainable production, consumption, institutional change and ecological modernisation/greening the economy. However, strategies are a means for change only if pursued by sufficiently influential agents. Thus section five seeks for possible agents and intervention points for sustainable economies, finding that currently neither governments nor business are ready to support more than incremental change and thus fall short of adequately addressing both the dimension and the urgency of prevailing sustainability challenges. For civil society to fill this gap it would be necessary to strengthen its position in the political decision making processes. There may be a window of opportunity, but the chances are slim that it will be used effectively is the conclusion in section six. People can make a difference, but will they? This is a question the paper is not able to answer, but we hope it will stimulate and frame a discussion which supports such a development for sustainability.

2. Green economy and green growth – no concept to overcome social and environmental problems

Greening the economy is an old demand, and a re-emerging issue of the policy debate every ten years since the early 1970s. By now, the need to 'green' our production and consumption is hardly any more denied, while the implications are disputed and the distribution of burdens and benefits is a bone of contention.

Green growth is a political catchword, coined to overcome reservations of the business sector against all kinds of 'greenery', regardless of the potential economic benefits. It is at the core of the green economy concept (UNEP, 2011). The OECD has made it its

new overarching slogan (OECD, 2011c), although it is not (yet) coherently applied (the OECD growth and competitiveness analyses do not mention the "greening" concept so far). The concept was championed by the Republic of Korea. Its government, in order to escape the impacts of the Great Recession, started a national investment program, but focussed more on pro-green investment than competing countries.³ In a similar vein, the Chinese stimulus program, the world's largest, claimed environmental merits. In both cases, the environmental focus was much stronger than in e.g. Germany or France, let alone the USA, but was it a problem solving strategy?

The fact that China is today by far the World's largest emitter of greenhouse gases is no longer mainly due to its large population. While the IPCC considers a limit of about 2 t CO₂equ./cap · yr to be the necessary condition for keeping global climate change below the critical threshold of 2 °C, the Chinese per capita emissions are approaching 6 t CO₂equ./yr and have already surpassed the European per capita average, and the investment programmes focussing on infrastructure construction can be expected to rise the emissions further (Spangenberg, 2008). The same tendency prevails in Korea; emissions are on the rise. Both countries pride themselves on having achieved a relative decoupling (i.e. emissions grow less than GDP), but they have not achieved any reduction in absolute terms and only that is what counts for the climate. In fact, they are not even announcing any steps towards such a reduction. China points to its huge group of people still living in poverty to justify its dedication to growth, and most emerging economies use similar arguments.

This points to a more general development: the majority of the World's poor is no longer living in poor countries, but in middle income ones. An estimated 960 million poor people, the majority of the world's poor, by income and multi-dimensional poverty measures, live in countries classified by the World Bank as middle-income countries (MICs) (Chen and Ravallion, 2012; Sumner, 2012a,b; World Bank, 2012). This is the result of the graduation of several populous countries from low-income status. Half of the world's poor live in India and China (mainly in India), a quarter of the world's poor live in other MICs (primarily populous lower MICs such as Pakistan, Nigeria and Indonesia) and a quarter of the world's poor live in the remaining 35 low-income countries. Thus the right to growth as claimed e.g. by India should no longer be granted to any one country, but to groups of people in poverty. In some sub-Saharan African countries on the other hand, the country as a whole is still in demand of increasing consumption and of growth, despite the recent growth period based on resource exploitation. Such a change of perspective would also highlight the fact that in affluent and middle income economies alike redistribution of wealth is the main alternative to the long disappointed hope of overcoming poverty through trickling down from the growing income of the upper classes. The experience of the last decades shows that the current neo-liberal policies lead to income polarisation, an increasing number of poor plus a growing number of very rich individuals, at the detriment of the middle class (OECD, 2011c). Whereas there is no correlation between economic growth and poverty reduction, there is a strong one between reducing poverty and the existence of a welfare state (Alber, 2002). Thus redistribution of wealth and income can be understood as an immediate necessity for sustainable development. However, such considerations play no role in the OECD green growth concept – it is essentially a resource economics concept, i.e. neoclassical economics extended by acknowledging that nature is an important capital stock and should be accounted for as part of the national

³ Although the classification of many of the investments as 'environmental' remains debatable.

wealth. Its social component does not differ significantly from that of neoliberal economic policy prescriptions.

In Asia and Africa, the concept can be understood as a call upon those countries needing to increase the national wealth to allow their citizens leaving the stage of unsustainable under-consumption without liquidating the stocks of national wealth (as it is currently the case), but by strategies securing a long-term sustainable living for their respective population (UNEP, 2011). As in every country, this will require a fair distribution policy. Whether Least Income Countries or the more affluent ones: re-distribution is the key to reducing resource consumption while overcoming poverty (United Nations, 2011).

3. A factor analysis of the green growth challenge

Like all kind of growth concepts also green growth depends on the promise of technological solutions. For instance it assumes sufficient affordable energy supply without climate impacts through energy efficiency, or expects substitution ending the threat to biodiversity. However, this is a cheque drawn on the future, and nobody can be sure if it will be honoured. As there can be no certainty about future inventions, the precautionary principle suggests a pragmatic approach of stimulating radical innovations while not relying on their realisation, and thus preparing for the case of their non-appearance. Such a technologically cautious (or pessimistic) policy would, while stimulating green innovation, take measures to solve sustainability promises even if the technology developments disappoints high flying hopes of overcoming environmental limitations. More often than not such measures turn out to be low- or no-regret options, and overall recommendable policies.

The $I = P \cdot A \cdot T$ equation (Ehrlich and Holdren, 1971) illustrates the problem of unreflected technological optimism. It disaggregates the (environmental) impact (I) into three components, population (P), affluence (A), and technology (T). A is defined as GDP per person and T as the eco-efficiency, i.e. the resource consumption per unit of GDP.

There is ample evidence that the impact of our economies has to be reduced if sustainability is ever to be achieved ($I = \downarrow$). According to all forecasts the world's population will grow ($P = \uparrow$), at least until about the midst of the century (Lutz et al., 2008; United Nations, 2011). The green growth/green economy approach explicitly relies on a concept that promises and encourages growing affluence ($A = \uparrow$). The inevitable consequence is the assumption that technology development will compensate for both, increase in population and in affluence. The theoretical basis for such measures are concepts like Ecological Modernisation (Ayres and Simonis, 1993; Weizsäcker et al., 1998), Industrial Ecology (Ayres, Ayres et al., 1996; Erkman, 1997) Integrated Product Policy (Rubik and Scholl, 2002; Scheer and Rubik, 2006) or Cleaner Production (Fresner, 1998).

Some of the environmental problems of the past have indeed been solved in the industrialised countries through technical means. Take for instance SO_2 causing acid rain – it was almost eliminated by making scrubbers mandatory for large combustion plants, NO_x was minimised by introducing catalytic converters. Nitrate pollution from detergents causing eutrophication was reduced by regulations enforcing changes in product composition. The energy consumption of some individual appliances has been reduced through market mechanisms supported by labelling and – in Japan, not in Europe – the top-runner approach. All these are welcome and important contributions achieved by either making production processes (sustainable production) or the products themselves 'greener' (eco-design, Tukker et al., 2000). However, as argued above technological solutions are not enough (Beck, 1986; Cohen, 1997). There are other examples as well, where problems

have been "solved" by outsourcing them to other countries like those related to the production of steel. Finally, taking up an argument from above, previous decisions for technological solutions have created lock-in situations for today's problems like motorways bypassing cities which soon increase traffic and its environmental burdens. All in all technological solutions often just accelerate the treadmill of production (Schnaiberg et al., 2002).

Consider what would be the challenge if technological solutions have to deal with about 30% population growth and 300% growth of average per capita income by the midst of the century (OECD, 2012). Will they be able to significantly reducing the environmental impacts? Regarding e.g. the necessary decarbonisation of our global environment to meet the 2° target (IPCC, 2007) Jackson calculates the need for a 130fold improvement of efficiency from 2007 to 2050 if population grows to 9 billion, the global economy still intends to grow with 2%/a and the global general income is in the level of EU (Jackson, 2009). Such a rise of efficiency is out of scope. Massive cuts in the resource consumption of the global consumer class as well as limitations to resource consumption increases of low consumers will be necessary,⁴ demanding significant increases in resource provision, production, product design, distribution and consumer satisfaction efficiency (Spangenberg et al., 2010).

If we meet the necessary reductions will depend on many factors, including changed consumer habits. Goods are not consumed in splendid isolation, neither physically nor socially, they are parts of dominant socio-technical regimes (Geels, 2004) and habituation (Geels and Schot, 2007). Changing such a regime requires innovative niches in which new technologies and consumption pattern are developed and tried out (Cogoy, 1995; Røpke, 1999; Spangenberg and Lorek, 2002). While marginal improvements of efficiency are possible by *innovations within* the socio-technical regime, radical improvements require *renovations of* the regime, against a high level of inertia and lock-in (behavioural and economic: habits and sunk cost).

We summarize the technology and market based approaches under the label of 'weak sustainable consumption' perspectives. They focus not on the physical limits of the economy in absolute terms and are not addressing overconsumption in general or the rebound effect in particular. In contrast, the alternative represents a 'strong sustainable consumption' perspective, focussing not on technology (without neglecting it), but on affluence, the level and patterns of resource consumption or the physical size of the economy, thus providing a link to the ongoing de-growth discourse.

In the past decades, the OECD countries' consumption was unsustainable. While energy and material use efficiency have been incrementally increasing, energy and material consumption were increasing as well, due to economic growth. This holds true even in cases like Germany, which tends to claim it has absolute decoupled growth from resource consumption. Here, indeed, energy consumption has been rather constant since about 40 years and material consumption since 15 years which indicates that I was constant. Still we can hardly observe a sustainable situation. As long as the impact is well above environmentally sustainable levels the situation best can be called less unsustainable. There are rebounds from efficiency increases, limiting their effects to 30–60% of the initial technological potential. For instance, the development of new products may induce the purchase of more products (see the

⁴ Talking of rich and poor countries, or of North and South, makes limited sense as the majority of the world's poor – those in need of growing access to material goods – is living in middle income countries. Thus the terminology of world system analysis (see Braudel, 1986; Wallerstein, 2004) and Dependency Theory (see e.g. Senghaas, 1982), distinguishing centre and periphery, might make more sense today again.

mobile phone experience, Røpke, 2003), or decreasing prices or higher savings due to decreased consumption may in turn stimulate more consumption (each win–win situation is a rebound case). On the macro level, efficiency increases are well known to stimulate further economic growth – this is even one of the main arguments for promoting them in current politics (OECD, 2011c; European Commission, 2011). An optimistic view of these mechanisms is promoted by authors like Weizsäcker, Lovins et al. (1998), a pessimistic one for instance by Heinberg (2003), Hirsch (2005) or Trainer (2007).

Thus looking at the $I = P^*A^*T$ formula again and taking into account the precautionary principle, unforeseeable development of technology (T), and the need to reduce the environmental impact (I), it is recommendable to slow the increase of the world population P and to effectively decrease resource consumption per capita (A) to avoid disaster in the event that technology fails to solve the problems. This is why Victor (2010) calls for “degrowth by design, not by disaster”.

To summarise, considering the ecological challenges we face, slight adjustments within the system relying mainly on technological improvements while promoting environmental modernisation and green growth runs the risk of sooner or later encountering long expected disasters from a peak in oil supply to climate change and ecosystem collapse due to biodiversity loss (Hooper et al., 2012). Such a weak sustainable consumption approach may hold the potential to postpone disasters (Garner, 2000), but it will not avoid them in the long run. Technological innovation cannot address the complex interaction of behavioural routines, of role models and the symbols they use to signal their superiority, of convenience and status, of individual and collective identities shaping consumption clusters, or of the trajectories of business and state in setting the framework conditions for individual consumption decisions. What our societies need instead is a structural reform of the ways they work. Technological improvements are indispensable, but they must be combined with and integrated into structural change and sufficiency policy initiatives. So far, ecological modernisation/green growth falls short of this: it is rather a greening approach for selected products, for some individuals or a few lifestyle groups than a coherent vision for a sustainable future.

4. A sustainable economy – a necessary condition for sustainable development

The green economy as discussed at Rio+20 (United Nations, 2012) cannot provide a solution, although a substantial greening of the economy would be one of the corner stones for the transition to a sustainable society. However, such a transition requires not only sustainable production and consumption patterns, but – as enshrined in the 1992 Rio Principles and in Agenda 21 (UNCED, 1992a,b) – more justice and democracy, empowerment of marginalised groups, and international collaboration to solve the global environmental and social problems.

The philosophical basis of a sustainable economy is the perception of natural, not produced resources as a common heritage of humankind, requiring fair sharing (intragenerational justice), and leaving a fair bequest package for future generations (as laid out above). However, while an ethical consensus seems to be emerging for current policies that the solution must be a convergence of consumption levels based on an overall contraction intergenerational justice, i.e. what we ‘owe’ to future generations is disputed politically and amongst philosophers. It is the details which are controversial. Which limits to be set? Should we establish an individual or a collective entitlement to resource use? Which distribution mechanisms are most beneficial? How to

Table 1
Impacts of strong and weak sustainable consumption policies.

Policy approach	Living situation for global population	Living situation for global population	
		Technology can solve the problems	Technology can't solve the problems
Weak sustainable consumption policy	High material standard of living for some. Less poverty for others?	High human well-being for most	Living in misery for most
Strong sustainable consumption policy	High human well-being for most	Balanced living for most	Balanced living for most

Lorek 2010.

overcome the consequences of past overshoots, i.e. the ecological debt of affluent countries⁵? Current generations have to act very careful when they – in one way of the other – pre-define the preferences of future generations to avoid a ‘temporal dictatorship’. One plausible idea is defining a political imperative to maximise the capability space available to future generations; this would imply restrictions but not a ban on current use of non-renewable resources.

Such a change must be democratically agreed by the majority of people and enforced. Analysing the lifestyles of the majority of Europeans and Americans (Galbraith, 1958; Schor, 1998) as well as the third of the global consumer class located in the low and middle income countries (Worldwatch Institute, 2004), it can be seen that they neither tend to restrict their consumption to their own fair share on a voluntary basis nor take care to ensure access of others to their fair share. How then to reduce their (or, the authors being from Europe, our) environmental impacts? Just consider technology does not fulfil the expectation to solve global problems. In the case societies have applied weak sustainable consumption approaches only this would not stop further depletion of global resources, overstretching earth’s sink capacity and most likely result in some kind of catastrophe caused by nature or man. In any case living in misery for most of us might be the result, in an environment with life threatening weather extremes or water shortage or in societal instability due to collapse of financial and social systems leading to wars or riots. Only applying strong sustainable consumption policies in time will – hopefully – lead to a balanced living for most in accordance with the ecological and social necessities because we learn to reduce our consumption before we are forced to do it. And just in case the technological optimism proves to be right a strong sustainable consumption policy still is beneficial because policies applying weak sustainable consumption goals have not proven that they take a serious impact on poverty reduction and redistribution of wealth – two aspects inherently linked to a strong sustainable consumption approach. Table 1 illustrates the different options.

Conceptualising a sustainable society, next to technology an additional set of inputs has to be mobilised, from sources such as ecological economics (Spash, 2012; Healy et al., 2013), political economy, degrowth/décroissance (Demaria et al., 2013; Muraca, 2013; Spangenberg, 2010), or environmental justice (Martínez-Alier, 2012). A sustainable society, including a sustainable economy with strong sustainable consumption and production, will respect both criteria from the Brundtland Report and strike a balance between them. It will thus seek to achieve a high ratio of need fulfilment while minimising resource use, with need fulfilment

⁵ See for instance the EJOLT project <http://www.ejolt.org/?cat=17&issue=consumption-ecologically-unequal-exchange-ecological-debt> or the ENRI-futures project http://www.esf.org/fileadmin/Public_documents/Publications/enri-future.pdf

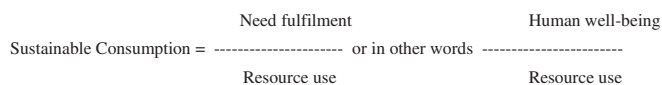


Fig. 1. Sustainable consumption as a relation of human well-being and resource use.

understood as equivalent to human well-being, with a broad spectrum of human needs taken into account (Max-Neef et al., 1989), as illustrated in Fig. 1.

Fig. 2 shows a factor analysis of Max-Neef's term, illustrating one way of how resources flow to contribute to human well-being embedded in various different social contexts. The social elements rank from basic social rights in general, like human rights or the right to decent work, via equity in access to production and consumption to strengthening social inclusion and supporting more equity in societies. The factor is disaggregated into various components. While the choice of components is of course arbitrary,⁶ nevertheless, it allows new insights where along the process which kinds of sustainability efforts have to be established.

Efficiency allows for mining the necessary resources in a way respecting the planetary boundaries and the rights of future generations to the same level of ecosystem services by reducing the amount of mobilised but unused material (ecological backpack).

Socially the rights of indigenous peoples are respected, safe and secure working conditions for miners are established, non-hazardous methods of mining are secured.

- In the *production phase*

Efficiency ensure a high ratio of products generated per unit of bio-physical input used (materials, energy and land, plus biological resources like biodiversity).

Socially the ILO criteria are applied, participation and co-decision rights are established.

- In the *product phase*

Efficiency requires that the produced products offer an optimal service supply (e.g. efficient appliances).

Socially products are empowering, meaning users can control them, they are co-designed by consumers and producers taking the needs of consumers as the starting point; misleading advertising is forbidden and advertising in general restricted (e.g. no advertising targeting children).

- In the *service phase*

Efficiency increases the factual rate of services consumed from the services products provide (e.g. sharing instead of individual ownership).

Socially public services like transport or cultural events enable social inclusion for all (e.g. through reduced fee for low income groups); basic provision of goods like energy and water is secured.

- In the *phase of human well-being*

The service consumed indeed contribute to the well-being of the consuming individual; the contributions of non-market activities to the well-being of individuals are encouraged and honored; shared societal instead of primarily individual values are strengthened.

The examples given suggest intervention points supporting sustainable consumption, each of them requiring a specific policy approach to increase the overall sustainability throughout the production-to-consumption chain. The efficiency component at the sourcing, production, and product level based on technological developments. The first two are a part of sustainable production; the third is about more sustainable products. These three aspects are already quite conventional intervention points in environmental policy and well covered by research. Efficiency in service identifies gains from the societal organization of consumption and from consumer attitudes. This aspect plays an increasingly important role in the discourse and praxis of sustainable consumption (Mont, 2000; Halme, 2005; Manoochehri, 2006; Tukker and Tischner, 2006) and has to play a role in a search for a sustainable economy.

The most challenging intervention point is the level of human well-being. At first glance it refers to the quality of services and the degree to which they meet human needs. The well-being effect can be expected to be quite high when the service fulfils real needs like food or shelter, respect or communication (Max-Neef et al., 1989). As the marginal utility declines with increasing supply (let alone saturation effects), it is expected to be significantly lower if the service is one's 20th pair of shoes, however efficiently they have been produced in the previous steps.

On a second look, the inclusion of human well-being in the concept raises two crucial questions: "For whom should the available resources be used best?" and "What contributes to human well-being besides goods and their services?"

Regarding the first question the normative approach of strong sustainable consumption implies channeling resource use towards those consumers where the marginal utility is highest, i.e. the have-nots of any society (Jackson, 2011). This indicates in turn the need to ensure that if reductions in material consumption are required, they have to fall on those with the lowest marginal utility of consumption, the wealthy. They will least suffer from reduction, (Beddoea et al., 2009). This way the factor analysis gives hints for the operationalisation of the key concepts of the Brundtland definition.

The second question extends the perspective beyond the consumption of commodities to recognise that further, non material factors are of equal importance for the wellbeing of humans, like safety, belongingness, social coherence, equity, and social relations (Scitovsky, 1992). The ongoing research on human happiness underlines this point: physical properties like health and social constellations like family and friends are more important than income (and thus market-based consumption) above a certain minimum level. Already in the 1970s Easterlin (1973) found that increasing monetary wealth does not permanently increase well-being. Nonetheless, in most societies people from higher income strata are happier than those from lower ones, and people in affluent nations are in average happier than those in poor and middle income countries (Veenhoven, 2010). Layard (2005) emphasises the importance of equitable distribution of wealth for happiness, but Veenhoven (2008) insists that it is not the monetary transfers of social security improving the well-being, but that freedom and the capability to self-determination are more important than distributional justice. However, an overall better situation of more equitable societies has been described by Wilkinson and Pickett (2009). They argue – and support their arguments with a wide range of statistical data – that inequality is eroding trust, increasing anxiety and illness, and encouraging excessive consumption. For each of eleven different health and social problems, including physical and mental health, drug abuse, imprisonment, obesity, violence, and teenage pregnancies, outcomes are significantly worse in more unequal rich countries. More equal societies would

⁶ The factors could be defined differently, e.g. if the research interest was a different one, as long as the formula as such is still equivalent to Fig. 1.

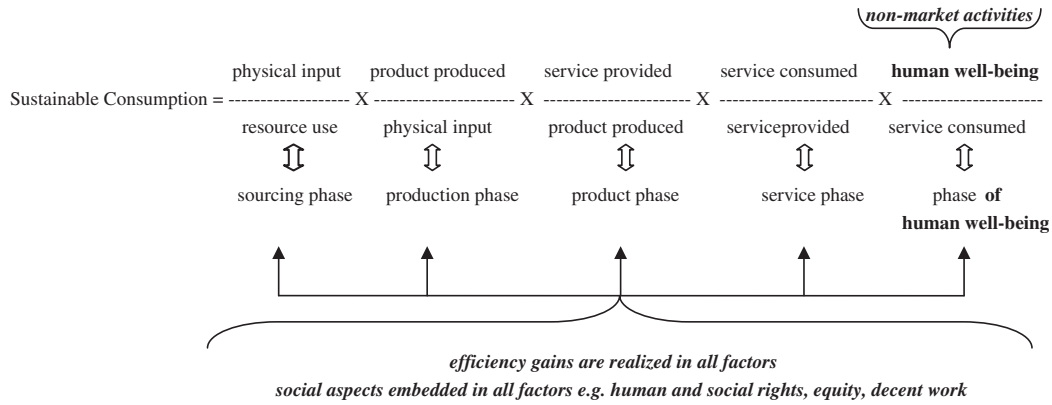


Fig. 2. Effective resource use for human well-being including social and other non-material aspects of sustainable consumption. Source: further developed from Lorek (2010)

be characterised by more social, non-commercial exchange of services (neighbourhood cooperation etc.) but in turn also a condition for decommmodification of everyday activities and reducing the amount of compensatory (Scherhorn, 1991) and conspicuous consumption (Trigg, 2001). Beyond the substitution of material for non-material consumption, it can be argued that many non-commercial activities like do-it-yourself or neighbourhood collaboration are using resources as well, and less efficiently so due to the lack of professionalism and economies of scale. However, while it is probably true that a product bought might be less resource intensive, due to a higher production efficiency, than a self-made substitute, this argument ignores two important aspects: on the one hand, the satisfaction from producing one's own stuff goes beyond what buying an equivalent object could provide (effective provision of human well-being), and on the other, maintenance of self-made objects tends to better and their replacement rate lower than for those bought, increasing the service efficiency – which in turn reduces the resource consumption (Anwar et al., 2011; Fuad-Luke, 2009; Spangenberg et al., 2010).

Note that in the whole factor analysis monetary values and thus markets do not play any role – they are neither excluded, nor are they essential for this description of consumption (Röpke, 2009). In fact, non-market activities like household production and voluntary work play an important role as for example reflected in research on time use (Lorek and Spangenberg, 2002; Spangenberg, 2002). The UN Integrated Environmental and Economic Accounting system (SEEA) providing monetary and non-monetary satellite accounts complementing the system of national accounts; in 2012 the United Nations Statistical Commission adopted the SEEA as a global statistical standard (see UNStats, 2012). Such satellite systems can re-value the contributions of non-market based activities like family work, caring, charity or neighbourhood help (Schaefer, 2004; Schiess and Schön-Bühlmann, 2004; Egerton and Mullan, 2008). This approach partly inspired the ongoing debate on alternative measures of well-being (Stiglitz et al., 2009).

5. Making sustainable economies possible

As research on globalisation and sustainable consumption has already shown (Fuchs and Lorek, 2002), intervention points to foster sustainable consumption lie partly inside, partly outside the domain of household consumption decisions, national framework setting or even the regional (e.g. EU) sphere of influence. Recalling the factor analysis (Fig. 2), elements like resource extraction and production are part of the unsustainable consumption system. They are quite often located in developing countries where social unsustainability is significantly more pressing than rich-OECD

countries. Recognising that interventions follow the logics of specific actors (e.g. in developed countries), the solutions they provide may only shift problems outside the context for which they have been developed with little care for such external effects. Therefore it seems important to complement the experiences and efforts of sector-, place-, product- and consumer-oriented approaches with analytical perspectives and practical initiatives treating production and consumption in a sustainable economy jointly and in a global perspective. This would allow exposing those 'environmental improvements' in affluent countries achieved by relocating polluting industries to emerging economies only (Bruckner et al., 2012; Dittrich et al., 2012).

Table 2
Examples of enabling mechanisms for sustainable production-consumption systems.

Enabling mechanism	Short description
Produce with less	Innovations in production process reduce the environmental impact per unit made
Green supply chains	Firms with leverage in a chain impose standards on their suppliers to improve environmental performance
Co-design	Consumers are involved in design of products to meet functions with less environmental impact
Produce responsibly	Producers are made responsible for waste from the disposal of products at the end of their life
Service rather than sell	Producers provide service rather than sell products, this reduces the number of products made while still providing to consumers the functions they need
Certify and label	Consumers buy labelled products. As labels are based on independent certification, producers with good practices increase their market share
Trade fairly	Agreements are made with producers that may include minimum price and other investments or benefits. Consumers buy products labelled as or sold through fair trade channels while producers get a better deal.
Market ethically	Reducing unethical practices in marketing and advertising would reduce wasteful and over-consumption practices.
Buy responsibly	Campaigns that educate consumers about impacts of individual products, classes of products and consumption patterns change behaviour overall.
Use less	Consumption may be reduced for a variety of reasons, for example, as a consequence of working less. There are many potential environmental gains from less overall consumption.
Increase wisely	Increasing consumption of under-consumers can be done in ways that minimize environmental impacts as economic activity expands.

Lebel and Lorek 2008.

5.1. Enabling mechanisms for strong (or weak) sustainable consumption

Researchers and practitioners have explored and proposed imperatives and implementation mechanisms for fostering the sustainability of production-consumption-systems. A literature review identified 11 main different ways in which sustainable production-consumption-systems could be made possible (Lebel and Lorek, 2008). They are presented in Table 2, ranging from initiatives which emphasize production activities to those which are more consumption related.

On the first view some of the mechanisms appear more to follow a weak sustainable consumption approach trying to optimise the system from within like 'greening the supply chain' or 'certify and label'. Others already indicate a rethinking of the system like 'use less' or 'service rather than sell'. Here we can already see that strong sustainable consumption is not limited to consumer part of the product chain. In the end, however, in a sustainable economy all mechanisms have to be developed in a strong sustainable consumption direction:

Produce with less	→ Efficient mining, respecting the rights of people and nature
Greening supply chain	→ Standardized information flow along the product chain about ecological backpacks as well as social standards in the companies
Co-design	→ Needs of consumers are the basis for innovation, not the hope of companies to increase market share
Producer responsibility	→ Producers have full responsibility for their products at the end of the use phase to recirculate the components (cradle to cradle)
Service rather than sell	→ Producers provide service rather than sell products
Certify and label	→ Gradually shift from labelling the better products to inform consumers about not sustainable produced products (comparable to tobacco advertising)
Trade fairly	→ Similar to certify and label
Market ethically	→ Advertising is restricted and based on product information only
Buy responsibly	→ Consumers are aware of their impacts and restrict consumption habits to efficient and fair produced commodities
Use less	→ Consumers know their fair share and restrict their consumption according to it
Increase wisely	→ Increasing consumption of under-consumers in ways that minimize environmental impacts

5.2. Towards a sustainable economy – overcoming main failures in the policies for sustainable consumption

To reach a society were all – or at least most – of the elements listed above can be established, some fundamental changes in societies have to take place. In the following we line out some elements which need to be addressed for such changes.

5.2.1. Heading the adverse wind

As pointed out before, sustainable consumption is usually not a topic on high-level political agendas and whenever it is, it is interpreted as weak sustainable consumption calling for relative improvements e.g. through more efficiency, not absolute ones by setting limits. This does not contradict too much neo-liberal thinking. Accordingly considerations on sustainable consumption are missing in precisely those institutions that contribute most to shaping patterns of consumption, like the WTO and big business organizations. With its explicit reservations on economic growth, especially strong sustainable consumption is hardly in the short-term interest of powerful actors (Fuchs, 2005).

The lack, if not total absence of support from powerful actors influences the opportunities for action perceived by those organisations which are dedicated to make sustainable consumption an issue of public debate. Desperately trying to generate resonance (and thus possibly have influence) they prioritise themes they suspect their prospective counterparts would consider to be 'harmless', and thus discussable topics. As only innovation and technological improvement are well in line with the prevailing ideology and can be incorporated into the existing mechanisms without any major frictions, this creates a strong momentum towards focussing exclusively on weak sustainable consumption issue. While such a strategy is often claimed to provide a promising entry point to a broader debate, in the past this was not only the beginning, but also the end of the discourse. All issues linked to strong sustainable consumption and the structural changes that implies tended to be excluded from the agenda. An attempt to at least start a discussion on systemic changes within the so called Marrakech Process led by UNEP/UNDESA by including "topics [currently] too hot to handle" into the longer term agenda of the 10 Year Framework of Programs negotiations failed immediately (SCORE Network, 2008); the endorsement of such a framework at UNCSO 2012 still does not touch upon them. Instead of institutional change, market mechanisms were taken to be the backbone of sustainable consumption; for instance the OECD made huge efforts to explore the willingness of consumers to pay for more sustainable goods and services (OECD, 2011b).

However, the barriers and adverse winds hindering strong sustainable consumption do not at all change the ecological, economic and social facts making it a sustainability necessity. But they do influence the strategies developed on how to deal with them.

5.2.2. Carrot and stick to stimulate the public debate

In the past, neither warnings of future environmental or social catastrophes (Meadows et al., 1972; Heinberg, 2003), nor the presentation of potential solutions have succeeded in creating momentum for a strong sustainable consumption policy. Thus to kick-off a debate on strong sustainable consumption involving the public at large as well as relevant policy makers is still one of the main tasks. From our experience a two-pronged strategy is necessary: that is, a carrot and stick approach.

The stick in this case would be to create a sense of urgency. This means popularising the insight that reducing consumption is not an option to choose or to drop, but it is an inevitable development: for environmental reasons we have to limit the inputs as well as the outputs of our economies (justice considerations come on top of this). Limitations to resource consumption arise on both the source side (peak oil, minerals, everything) and – even earlier – regarding the sinks. The latter has been analysed by Rockström et al. (2009), pointing to three manifest transgressions of the "planetary borders": biodiversity destruction, nitrogen and phosphorus flooding of ecosystems, and greenhouse gas emissions causing global warming. We are already beyond what they call "the safe operating space" of humankind, and returning there will come at a cost.

Limitations arising at the input and the output side of the economy will rather inevitably reduce economic growth (measured as GDP increment) substantially, and probably turn it negative. Ensuring a soft landing instead of a hard one may still be possible, but proper management of the challenge depends not least on the success of the proponents of strong sustainable consumption, whether they manage to get their message across in due time, or not (Lorek and Fuchs, 2013). So we have a choice indeed: we can either actively anticipate or passively live with the consequences of overstretching the limits, be prepared for the change to come, or not.

However, since Machiavelli (1524) it is established knowledge that people shy away from change for the cost of it, even if it would improve their situation. To overcome this socio-psychological lock-in – for consumers, policy makers and perhaps most for business decision makers – scenarios help imagine and compare the potential implications of the choice options. For other themes from population to economic growth, such scenarios have been developed. For strong sustainable consumption they are missing so far or remain un-recognised, like the one drawing the picture of a ‘Great Transition’ (Raskin et al., 2003). This makes the decision process abstract and hinders a broader perception of what the choice really is. It can even result in the paradoxical effect that to some the ongoing de-growth debate rather strengthens than challenges the growth paradigm – for consumers as well as for political decision makers, as Berg and Hukkinen (2011) have shown in a narrative analysis among Finnish sustainable consumption actors. Coherent visions of a life under resource scarcity, in particular in a situation of peak oil and with lingering climate change and biodiversity loss, and how to maintain its quality in that case are rare, difficult and so far inconclusive. Scenarios would be a mean to assess the social, economic and environmental impacts and their trade-offs. They need to compare the suggested strong sustainable consumption option with the risks and costs of inaction – economic as well as social ones (OECD, 2008).

Using scenarios – like the one of the Great Transition – would be effective by illustrating that the alternative to substantial sustainability and strong sustainable consumption is not the status quo, but a situation characterised by social, economic and environmental unsustainability, of more conflicts and social tensions. On this basis, sustainability targets could be explained and understood as means to avoid collapse by staying off the ecological limits. They could also be used to derive strategies offering roadmaps, showing what has to be reached when, how this can be done, and who has to contribute what for that behalf. Research can provide the first step here, as such scenarios lay a basis for societal discussions and transparent democratic political processes. Societal agreements (not necessarily a consensus) on how to act could be stimulated, while control over the governments’ implementation of the decisions would be easier using indicators derived from the scenarios. In this context the indicator set for sustainable consumption being developed under the auspices of the European Environmental Agency is a helpful step, promising at least to clearly indicate how the general impact of consumption is developing. It explicitly strives to answer questions like ‘is the environmental pressure activated by consumption sustainable?’ (Watson et al., 2010).

The carrot for strong sustainable consumption is to raise the awareness of the fact that a slimming of the economy, reducing its physical throughput, is accompanied by much positive side effects – if we are prepared for it. Well-being in developed countries has for a long period already been successfully decoupled from economic growth (Daly et al., 1990; Mulder et al., 2006; Jackson, 2009). This needs to be communicated more effectively because humans are in average loss-averse, i.e. they hate losing what they do not value gaining. This so far even makes the idea of downscaling difficult. Understanding and internalising alternative measures of

well-being (New Economics Foundation, 2009; Stiglitz et al., 2009) can help to overcome growth addiction (van Griethuysen, 2010), not by downplaying losses, but by highlighting gains, e.g. of time and self-determination: it is important to sensitise people for the relevance of other elements of well-being beyond consumption. Examples like the US initiative ‘Take Back Your Time’ for reducing working hours and extended holidays are a valid contribution to strong sustainable consumption without explicitly focussing on it (Maniates, 2010a,b). Also the public discourse on happiness can help considering the limitations on increasing human well-being through material consumption (Layard, 2005; Hofstetter et al., 2006). Also Akenji (2014) elaborates on limits and indicators as well as on choice editing and social innovation (as we do in the next chapters).

5.2.3. Demanding responsibility of governments

The current debate on sustainable consumption in political circles is characterised by the same epistemic fallacy as the discussions about the priority fields of action and the adequate tools for implementing sustainable consumption ten and twenty years ago. Information provision is considered the key tool, a panacea to solve sustainable consumption problems thereby shifting the responsibility to the consumers, once they are informed. The recently launched European Consumer Agenda could have pointed out that in a clearer way. It is subtitled with: ‘Boosting confidence and growth by putting consumers at the heart of the Single Market’ (European Commission – DG Health and Consumers, 2012).⁷

Two key insights of sustainable consumption research of the last two decades: (i) the environmentally most relevant consumption clusters are food, housing and mobility (Lorek and Spangenberg, 2001; Spangenberg and Lorek, 2002), and (ii) hard policies like regulatory and economic instruments are most effective for changing consumption patterns (Rehfeld et al., 2007; ASCEE team 2008; Lorek et al., 2008). While the former is now pretty much accepted (EEA, 2010) the latter insight has made no inroads to the policy debate but is still lingering at its fringes.

To a certain degree the information deficit is indeed a key problem. But it is located not with consumers but with policy makers. Is thus the measure of choice to communicate scientific insights on the effectiveness of different policy instruments to political decision makers in a more convincing way? Of course the information should be available, but probably this is not the solution to the policy gridlock: governments have had reasons not to respond to such news in the past, an ideological and a political one. Politically, they first are afraid of the consumer responses. Intervening into consumption and phasing out unsustainable consumption options (lately called choice editing; Maniates, 2010a,b) are suspected to be deeply unpopular with consumers – who are voters (Church and Lorek, 2007). Second, they are heavily influenced by lobbying work and other forms of power from the business sector (Fuchs 2005). Both forces ideologically argue with consumer sovereignty, which is claimed to be a key achievement of modernity which must not be restricted by politics. This claim is based on the liberal conviction, legitimised by neoclassical economics, that the market on its own provides optimal solutions, while each external intervention can only result in a diminished welfare provision. Unsurprisingly this counterfactual attitude is popular with and promoted in particular by economists and the business sector, as it makes consumers the scapegoats for failures (Akenji, 2014).

⁷ Be aware that this (product) information provision to steer markets is completely different from inducing a societal debate we outlined in the previous chapter.

In fact, delay in taking action towards strong sustainable consumption is caused by the retreat of government in favour of governance. In general the governance approach – for example, in the development of sustainable consumption strategies or action plans – is applaudable. However, once agreements have been achieved by such processes, it is the task and duty of governments to implement, monitor and enforce them. As long as national governments limit their role in governance to the one of a moderator providing opportunities for the exchange of opinions and voluntary commitments any significant progress towards strong sustainable consumption will fail to materialise. Agreements which are not controlled and/or not sanctioned in the case of failure tend to be postponed or simply forgotten (Berg, 2006). Delegating responsibilities to societal actors in the implementation phase of agreements makes the effort needed for their development rather questionable. For civil society this means “participation overkill” rather than achieving real-world changes (Spangenberg, 1993, 2012).

5.2.4. *Appreciating the potential of social innovation*

Important incentives for strong sustainable consumption are quite likely to come from social innovation. A countless number of initiatives are on the way from food co-operatives to public gardening, the provision of services with explicit sustainable character, neighbourhood centres, barter trading platforms and local currencies (Seyfang and Smith, 2007; Seyfang, 2009). Of course many of these local social experiments are not suitable for up-scaling to the society at large (or would need to be drastically changed in the process), but they provide valuable “social laboratories”. They are development projects for the global North which can have the same role model function as successful development projects have in the global South (Lorek, 1995). Development theory might provide some insights why the spread of successful examples is always slower than optimists have expected.

The potential of such approaches still remains insufficiently explored, the efforts of scaling up extremely limited and the political macro structures to foster this process undeveloped. This situation is rather unchanged since the social movements resulted in alternatives to mainstream business, cooperatives etc. in the late 1960s and green companies developed in the 1970s. Most of such initiatives either failed or lost their alternative approach by now and act like typical mainstream companies. A thorough analysis of the institutional settings (not only the mechanisms of society, but also its orientations) would help identifying intervention points for changing the miserable past performance.

5.2.5. *Sharpening NGO strategies*

As a change towards strong sustainable consumption patterns is a collective societal effort Non Governmental Organisations (NGOs) have an important role to play in it, especially those working on environmental, development, and consumer issues. Much more than business or political parties they enjoy respect and trust in society and thus they can hardly be replaced in developing values and visions of sustainable consumption and fostering citizen engagement.

For a long time already NGOs contribute to the debates on sustainable consumption. Quite some of them have taken a rather radical approach in the late seventies/early eighties discussing for instance the limits of growth (e.g. Ökumenische Initiative Eine Welt, Germany), how to define a fair share of environmental space for everyone or at least for every country (e.g. Friends of the Earth Europe), how to induce better terms of trade (e.g. various national ‘trade not aid’-organisations) or how to visualise de-materialized lifestyles (Center for a New American Dream, US). Over the years, however, many of the – now established – NGOs have changed their perspective and ambition and concentrate predominantly on

efficiency increases and technical solutions, just like the policy makers they try to influence. Their main activity became cooperating with the forerunners on the business side and pushing and blaming the laggards.

Incremental and non-structural changes of consumption only have a very limited overall potential to provide change, as has recently been seen with the LOHAS movement, promoting a ‘Lifestyle of Health and Sustainability’ (Hartmann, 2009). An alternative approach is required to motivate more significant pro-environmental behavioural changes. As any change to be significant must envision not individual preferences but the tying bundles of products serving human demands (like warm housing or mobility), it must include a shift of institutional settings (rules, laws, habits, preferences). Otherwise it can only call upon people to behave ‘right’ within ‘wrong’ structures, resulting in a rather limited potential for change.

To foster acceptance for such policies NGOs have an important, more strategically oriented role to play than they have adopted so far (Akenji, 2007). To incorporate this broader perspective it is mandatory for them to address their members, donors and the public as such not merely as consumers, but as (politically sensitised) citizens. This way they can use their credibility to induce societal debates and raise awareness regarding the need and the inherent promise of taking the steps needed to reach strong sustainable consumption. Communication and discourse are basic conditions for fostering the changes required.

To sustain their role as meaningful player and justify the trust put on them, many NGOs have to recognise and overcome some look-ins they are currently suffering from:

Firstly, the majority of NGOs so far lacks a clear understanding about the emerging challenges of sustainable consumption in an era of scarcity (Church and Lorek, 2007). Most NGOs, in their consumption-related work are focussing on specific consumption items such as energy, mobility or food without sufficiently reflecting their embeddedness in larger socio-cultural and institutional structures. They rely on strategies too narrowly defined to be effective, such as green procurement, voluntary simplicity or cleaner production. But this is not necessarily a dead-end road: the issues themselves are often justified but need to be embedded into a broader sustainable consumption perspective. Many NGOs, with their proven capacity to learn and self-reinvent, are potentially in a position to do so. The challenge just has to be recognised (Barber, 2007),⁸ and with it the potential to strengthen their position by offering a coherent message across different fields of their activity.

Secondly, quite some NGOs got dependent either on public or business funding. While cooperating with companies was and still is an item of contempt among European NGOs (in the USA the debate is often vice versa), the dependence on public money shows its pitfalls less obvious. However, the necessity to apply for money from environmental agencies, relevant ministries etc. requires following donors’ interests as expressed by the calls. If these funds contribute a significant share to an organisation’s budget, donors exert an indirect control over NGO’s activities. Worse, action plans and campaigns may be tailored not to endanger future funding, expanding the control function to the whole of the organisation profile. As in times of political green growth promotion campaigns for strong sustainable consumption will have hard times finding donors. Closer collaboration with (political) foundations might open new possibilities or emphasizing more prominently the need for financial support from the respective NGO members.

⁸ The same seems to be true and useful for the different stakeholders on the governmental side, overcoming the narrow thinking within the boundaries of government departments.

Thirdly, in order not to lose the most important capital NGOs have, the trust and engagement of their members and supporters, they have to carefully balance how to combine leadership for strong sustainable consumption with being in line with the (implicit) mandate they have from their respective constituency (Spangenberg, 2012): being one step ahead is leadership, but being two steps ahead means being out of touch. Fortunately studies already confirm that speaking plain language does not necessarily scare off people. To the contrary, appealing to environmental values is more likely to lead to a spill-over into other pro-environmental patterns of behaviour than an appeal to financial self-interest or social status (WWF-UK, 2008; WWF-UK, 2009). Not following a government agenda and rejecting a 'can-do' business approach might go hand in hand with refusing to further on emphasise material benefits when appealing to members and donors. Instead environmental psychologists recommend to better appeal to the intrinsic motivations each person has (Schmuck et al. 2000). Shaping value sets toward more intrinsic motivation might be one of the most important tipping points our societies need.

Keeping those aspects in mind NGOs can play a catalyst's and an initiator's role: as bottom-up, often grassroots networks they stimulate and catalyse their members and supporters, inform, motivate and link them. They can also initiate or even run pilot projects, demonstrate the feasibility of the options they suggested, but implementing change on a larger scale is not their task but the responsibility of democratically legitimised public authorities.

As political actors can and should they demand structural changes, advocating the shift to sufficiency policies to complement efficiency. A first important step on this way is to distance themselves from any attempt to stylise such weak sustainable consumption strategies as being *the* solution of the unfolding sustainability crisis. The more complex the issue, the more important it is for NGOs to take up the catalyst role, not least to muster enough political pressure capacity to push politics to implement substantial sustainable consumption policies instead of pursuing the (illusionary) objective of sustained growth in a greened market.

Fruitful benefits for NGOs can be gained as well by closer cooperation with academia. Various approaches are on the way, e.g. the collaboration between Environmental Justice Organisations and research institutions or the Sustainable Consumption Research Initiative SCORAI.⁹ Besides complementing each other in content and argumentation, academia can be supportive for NGO engagement in another way. Scientific efforts can help improving their effectiveness in pointing out gaps in the strategies that NGOs are using and can suggest improvements in detecting ineffective strategies (Narberhaus, 2011). doing so, science can become consciously an active agent within civil society and thus falls under the explicit and implicit rules and regulations of it – a development which is positive and desirable for some scholars and topics, but obviously not for all. Of course knowledge is always context dependent as context provides the meaning (Spangenberg, 2005). However, whether influencing social discourses or becoming consciously an active agent is a different matter – it is the attempt to define, as an agent, the context in which the information provided by science acquires a meaning.

6. Conclusion

Sustainable development is characterized by both: living within the ecological limits and meeting the needs of everyone. The concepts of green growth and green economy claim to fulfil these two

aspects. A closer look, however, shows that they will not be able to deliver what they promise. Previous experience shows that growth neither leads to reduced environmental impacts nor substantially reduces poverty. The technology based approach green growth is based on might be a necessary step towards sustainable development but it is not sufficient. To develop sustainable economies next to technology also population growth and not least affluence has to be tackled.

As we developed in this article, sustainable economies have to be based on sustainable forms of consumption – including the resource consumption in production. The provision of consumption opportunities have to be designed in a way that they contribute best to the overall well-being of people. This includes to realize efficiency gains along product chains wherever possible but also to structure living and working conditions in such ways that they allow a decent life for all. In addition sustainable economies have to establish lower but as well upper limit for resource consumption. This includes reallocation of resources from those in affluence to those which basic needs are still not met.

As the necessary reduction of environmental impacts calls for shrinking instead of growing markets sustainable economies revalue the contribution of non-market activities for human well-being like sharing or voluntary work. Thus the already existing enabling mechanisms for sustainable consumption have to be consequently developed to meet a strong sustainable consumption approach.

As sustainable economies do not match with the mainstream economic thinking business will hardly be the driver for such a development. This calls for better governmental leadership as well as stronger engagement of civil societies and their organizations. Strengthening social innovation and clear convincing messages about the benefits of sustainable societies as well as of the risks of unsustainable ones are crucial elements on the way.

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⁹ (<http://www.ejolt.org/>)/<http://scorai.org/> there are of course many more such examples; we just picked two we are involved in for illustration.

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