



## Sustainable production, consumption, and livelihoods: global and regional research perspectives



Philip Vergragt<sup>a,\*</sup>, Lewis Akenji<sup>b</sup>, Paul Dewick<sup>c</sup>

<sup>a</sup> Tellus Institute, 11 Arlington Street, Boston, MA 02116, USA

<sup>b</sup> Institute for Global Environmental Strategies, 2108-11 Kamiyamaguchi, Hayama, Kanagawa 240-0115, Japan

<sup>c</sup> Manchester Institute of Innovation Research, Manchester Business School, University of Manchester, M15 6PB, UK

### ARTICLE INFO

#### Article history:

Received 17 September 2013

Accepted 19 September 2013

Available online 3 October 2013

#### Keywords:

Sustainable production and consumption

systems

Transitions

Global

Research

Mapping

### ABSTRACT

In June 2012 at the UN Conference on Sustainable Development (“Rio + 20”), the Global Research Forum on Sustainable Production and Consumption (GRF-SPaC) was launched, bringing together organizations and individuals from various regions of the world engaged in research and its applications in the transition to sustainable production and consumption (SPaC) systems. Conceptualizing and researching transitions to a sustainable production and consumption system is a very challenging task; the research field is not yet very well structured, its boundaries are still fluid; it is often not clear where research ends and social practices and policies begin.

This introduction to a Journal of Cleaner Production Special Volume maps the emerging field of SPaC research and illustrates the multiple perspectives on how to analyze the present production and consumption system and how to conceptualize (systemic) change. We discuss how research over the last 20 years has revealed a lot of the mechanisms and lock-ins of unsustainable consumerist lifestyles and production patterns, and the barriers to systemic change. But many questions – trans-scientific in nature – remain unanswered. What is clear is that we need not only much more research into all the details of SPaC research arena but we also need bold thinking that addresses these trans-scientific questions.

© 2013 Elsevier Ltd. All rights reserved.

### 1. Introduction<sup>1</sup>

This special issue is based on papers and discussions at the first global workshop “Global and Regional Research on Sustainable Production and Consumption Systems: Achievements, Challenges, and Dialogues”, organized in Rio de Janeiro by the Global Research Forum on Sustainable Production and Consumption, GRF-SPaC, June 13–15, 2012 (Lorek et al., 2013). The year 2012 was the 20th anniversary of the UN Conference on Environment and Development, more familiarly known as the “Earth Summit.” In June of that year world leaders from governments, business and civil society met once again in Rio de Janeiro (the UN Conference on Sustainable Development or “Rio + 20”) to reflect on progress with regard to past and current commitments to the aims of sustainable development articulated in 1992. Given the general acknowledgment of an “implementation gap” amid “worsening trends”, despite

increase in public awareness and improvements in eco-efficiency, the need to better understand and promote sustainable production and consumption systems as well as the obstacles to this transition has become increasingly urgent.

The **Global Research Forum on Sustainable Production and Consumption (GRF-SPaC)** is a new initiative bringing together organizations and individuals from various regions of the world engaged in research and its applications in the transition to sustainable production/consumption (SPaC) systems. During the Rio + 20 conference, June 2012, research organizations, universities, practitioners and think tanks, supported by the Brazilian Ministry of the Environment and other partner organizations, helped mount the official launch of GRF-SPaC in Rio de Janeiro. The launch involved several events, most notably a three-day workshop featuring about 90 researchers and practitioners from various regions of the world. The workshop, held at the Escola Superior de Propaganda e Marketing (ESPM), had a focus on sustainable consumption and production research as well as its applications in practice.

This GRF-SPaC initiative builds on a 20 + year research tradition involving numerous researchers, institutes, and networks around the world, and on the many efforts and experiences applying research findings to policy, civil society activities, and business. The three-day

\* Corresponding author.

E-mail addresses: [pvergragt@tellus.org](mailto:pvergragt@tellus.org) (P. Vergragt), [akenji@iges.or.jp](mailto:akenji@iges.or.jp) (L. Akenji), [paul.dewick@mbs.ac.uk](mailto:paul.dewick@mbs.ac.uk) (P. Dewick).

<sup>1</sup> This section is based on the Introduction of Lorek et al. (2013).

workshop in Rio represented the official launch of the GRF initiative. The workshop aimed to achieve the following seven objectives:

- To identify some of the most critical research questions to be investigated in the next five to ten years, from the perspective of researchers as well as practitioners, educators, and policy makers.
- To review and assess the current state of knowledge on SCP around the globe, particularly in different regions.
- To create a bridge between researchers and practitioners from different regions around the world in a creative process of exchange of information, knowledge, and perspectives on sustainable production and consumption.
- To review the state-of-the-art concerning how change is achieved and what mechanisms are effective to achieve a switch to sustainable consumption and production patterns.
- To explore how to effectively communicate SCP research and findings to users and the general public, especially in different global regions.
- To formulate and send a clear message on the role of SCP research and practice as it applies to the global policy debate at the UN Rio + 20 conference.
- To examine and encourage research and efforts addressing well-being, inequality and alternative concepts and measures of prosperity, such as the Millennium Consumption Goals.

Workshop outcomes and plans were also discussed in a number of public panels in conjunction with Rio + 20 activities, including the Forum on Science, Technology and Innovation for Sustainable Development (International Council for Science), and the Brazilian Ministry Dialogue on Sustainable Consumption and Production.

At the time of writing (Sept 2013) GRF-SPaC has established itself as the global network of researchers and practitioners in the field of SPaC. It has organized a number of follow-up workshops and conference sessions in various places around the world (Beijing in 2012, Wuppertal, Stellenbosch, Davos, and [Montreal in 2013](#)). It has established a listserve and a website; conducted surveys among participants, reviewed existing SPaC literature, and is presently in the process of organizing its next global conference from June 8–11, 2014, in Shanghai. It has also started a research and policy project to develop frameworks for achieving absolute REDUCTIONS (Reducing Environmental Degradation & Unsustainable Consumption Trends & Impacts On Nature & Society). It closely collaborates with networks and institutions around the globe, like SCORAI in North America and Europe, and IGES in Japan.

## 2. Brief overview of SPaC and adjacent research areas

### 2.1. On the scope of SCP research

No full agreement exists among scholars about what constitutes the SPaC research field. A distinction needs to be made between research on *present* (often unsustainable) production and consumption patterns and practices, and studies reflecting the *aspiration* of SPaC. Another distinction is between *individual* production and consumption practices and the *collective* act of production and consumption; which is associated with the cultural notion of a consumer society and consumerist lifestyles. A further distinction can be made between *material* aspects of SPaC (as often expressed in Life Cycle Assessments and Materials Flow analyses); *economic* aspects such as transactions between buyers and sellers as well as investments and the economy as a whole; and *cultural* notions at the individual level (norms and habits) and the collective level (fashion, consumerist lifestyles). Next to static analyses (such as the LCA of a product), dynamic analyses of change processes exist, such as the

frameworks of socio-technical transitions; grassroots innovations; and social movements. Change process can be analyzed through the lens of power relationships between elements of the incumbent system and actors who want to change the system. Finally scholars conceptualize production and consumption as a complex system; and analyze the complexities of changing such systems.

It is often helpful to visualize these challenges. The most common approach is to start from the life cycle of a product, from mining or growing its raw materials to its recycling or waste disposal. [Barber \(2010\)](#) expanded this life cycle view with other elements like investments and distribution; and placed values or needs in the center of the diagram:

In [Fig. 1](#) one can distinguish the life cycle of a product or service, beginning from extraction of its raw materials, to waste. It also includes economic/financial transactions like investments, and activities like distribution and trade, which are part of the production/consumption system, but do not qualify as production or consumption themselves. It is interesting that Barber places values/needs in the center of the diagram: the main drivers of the production/consumption system are our (perceived) needs or wants, driven by our values. Although the visualization in [Fig. 1](#) is useful to roughly position production and consumption, it needs further detailing in order to understand better the production and consumption as a system. A further step is depicted in [Fig. 2](#), where some of the elements of [Fig. 1](#) are specified:

In [Fig. 2](#) one sees an overview of sustainable practices that roughly covers the production–consumption system. Another way of further detailing that system can be achieved by subdividing the activities of [Fig. 2](#) along various sectors, regions, and issues (see the cube in [Fig. 3](#)).

The advantages of [Figs. 1–3](#) are that they allow detailed analysis of SPaC activities, for instance: research on the climate change aspects of food production in Africa, using life cycle assessment and investment decisions; and including transportation and trade. However, this approach leads also to a rather fragmented view of the field; and it is not very helpful to formulate broader research questions and agendas. A more cross-cutting and unifying approach is necessary to characterize (un)sustainable production and consumption, and to develop a research agenda focusing on systemic change.

In its draft GRF-SPaC ten-year research agenda the main research questions are framed as “..... *how to understand the present lock-in in unsustainable consumerist lifestyles and production patterns, and to understand how a possible transition to more sustainable production and consumption patterns and lifestyles could be accomplished. For quickly developing countries like China, India, and Brazil this question has an even higher degree of urgency, given the rapid emerging of new middle classes with consumerist lifestyles, next to the persistence of deep poverty and growing inequality.*” This framing has two aspects to it: a rather static question (how to understand the persistence of current unsustainabilities); and a dynamic (how to transition towards a more sustainable system).

The present **lock-in aspects** could be analyzed through a variety of lenses:

- A *financial and investment* lens (sunk costs in the present unsustainable infrastructures); current subsidies on unsustainable practices like fossil fuels for electricity generation; current prices that do not reflect the true ecological costs; and the current GDP calculations that do not reflect well-being and societal costs.
- A *cultural* lens: the persistence of dominant consumerist cultures, and the persistence of values that support this culture like respect for property; competition, excellence, and achieving, without counting the ecological costs.

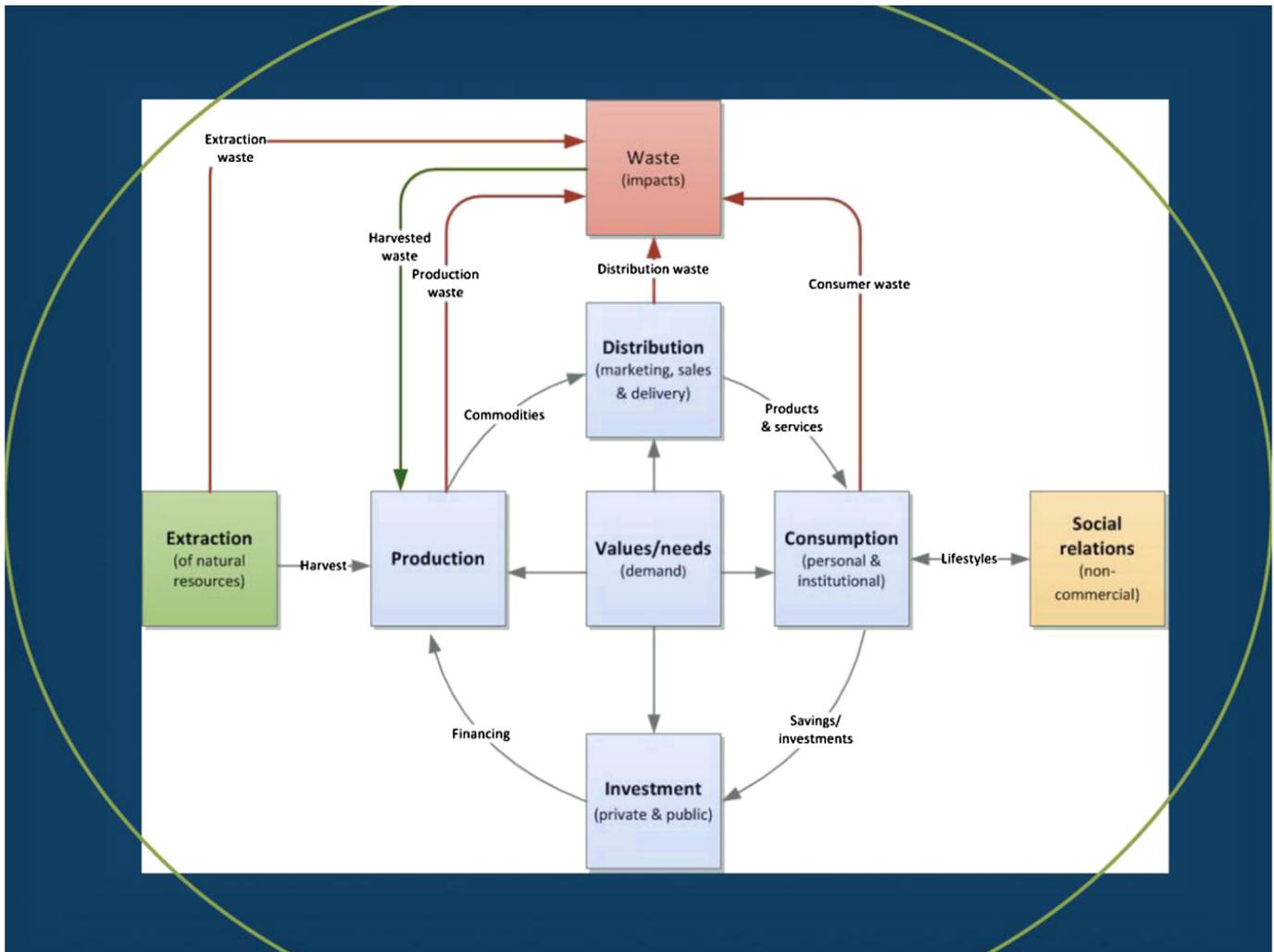


Fig. 1. Consumption and production systems (Barber, unpublished).

- The *institutional* lens, the ‘rules of the game’ – both ‘formal’ (rules, laws, constitutions) and ‘informal’ (socio-cultural norms of behavior, conventions, self-imposed codes of conduct) – that shape the environment in which production and consumption take place. This lens could analyze the persistence of institutions, many of those are not focused on sustainability; or are even promoting unsustainability issues.
- The *social-psychological* lens, which focuses on people’s behaviors and motivations: people are craving for happiness and well-being, but are not always aware that more stuff does not always make them happier; and in addition, people do not like big changes, people are anxious about their own security, and the possibilities for their children to advance in society.
- A fifth lens could be *power relationships, political systems, and governance systems*. Existing power relationships often depend on economic assets and access to the mass media, and access to the political system; the political and the governance systems are not easily changed, and thus also form a lock-in and a barrier to change.

## 2.2. On systemic change

Next to the rather static lock-in analysis, we need to reflect on **theories of change**, especially changing the present unsustainable

production–consumption system into a more sustainable system. The dominant paradigm is that technological innovations, in combination with suitable policies, will be able to solve ecological problems. However, it is becoming more and more recognized that technology alone will not be able to solve this problem. Technological innovations have the potential to transform society, like the internet; and also have the potential of reducing pollution and enhancing resource efficiency – for instance through dematerialization and through energy efficiency and renewable energy. However, rebound effects (Herring and Sorrell, 2008) on many levels are counteracting these efficiencies: on the individual level, if consumers spend their saved expenses on unsustainable activities; and on the economic level, when efficiencies spur innovations in more new products and services (the Jevons paradox) (Alcott, 2005).

Next to efficiency we need a measure of “*sufficiency*”: how much is enough? (Princen, 2005). Sufficiency needs to be connected to two issues: one is individual and social well-being; and the other is ecological sustainability. Thus a sufficiency lifestyle should on the one hand remain within the ecological footprint that reflect a fair earthshare; and on the other hand enhance human and social well-being. There are many visions and scenarios for such sustainability lifestyles that reflect sufficiency, for instance the TellusInstitute’s Great Transition Scenario (Great Transition Initiative 2013) and the

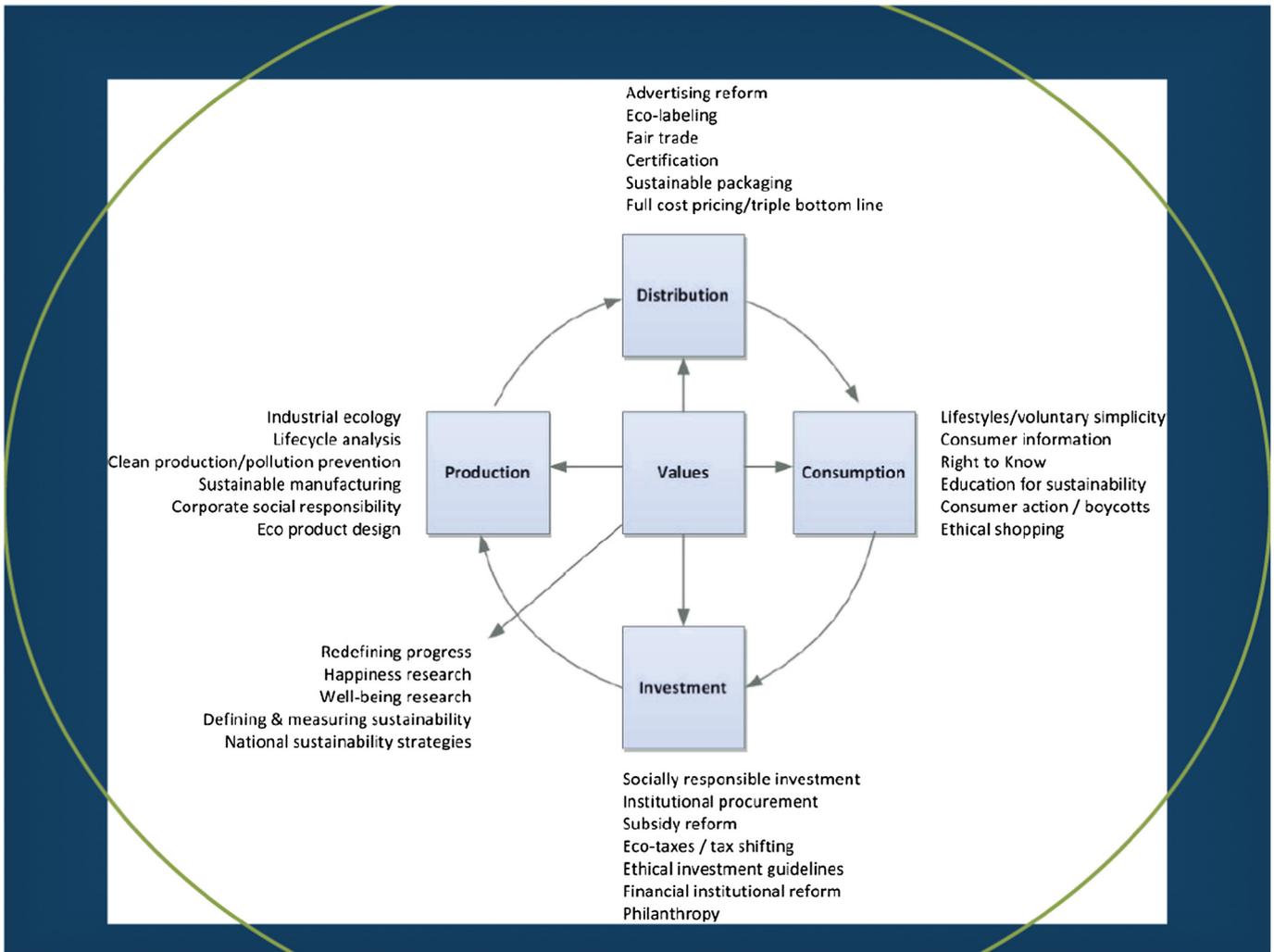


Fig. 2. Research and practice in SPaC systems (Barber, 2010).

SPREAD project (SPREAD, 2013; Mont et al., 2014). The challenge is not only to develop appealing visions of the future, but especially to develop strategies and policies about how to get there. So far, there is a deficiency in effective strategies and policies.

Here we want to reflect on a few **strategies for systemic change** that have been developed over the last decade or so. The **socio-technical transitions framework** focuses mainly on technological innovations. The framework in essence stipulates that technological and social innovations are developed in niches, where social actors are able to experiment with the design and the implementation of new technologies, social arrangements, and organizational structures (Geels and Schot, 2007). This is shown graphically in Fig. 4. An obvious example is the electric car. Once experiments in niches have developed the innovation into a somewhat stable design, the niche may eventually challenge the mainstream, which is called a socio-technical regime (in this case the internal combustion motor regime). The destabilization of the socio-technical regime may be further enhanced when “landscape” developments push in the same direction (for instance the global challenges of climate change). The incumbent regime may eventually be replaced by a more sustainable regime (like steam ships replaced sailing ships 100 years ago).

This is not the place to extensively discuss the benefits of, and the critiques on the socio-technical transitions framework. It has

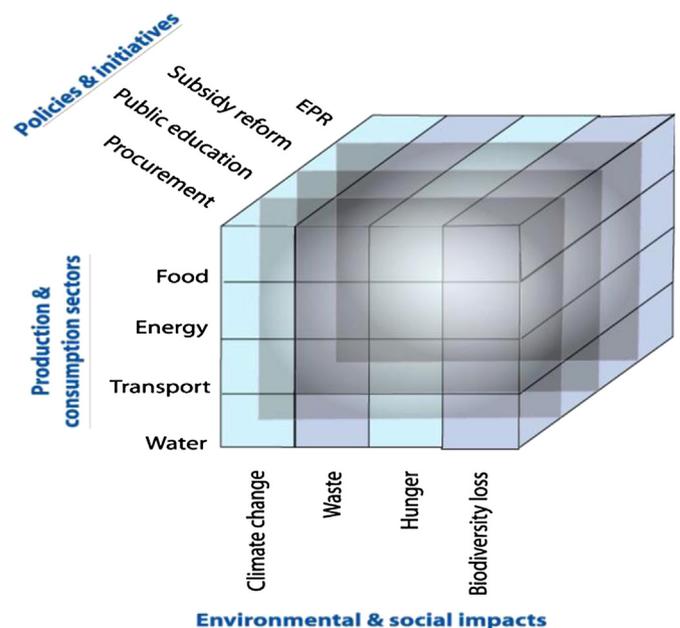


Fig. 3. Sectors, policies, and impacts (Barber, 2010).

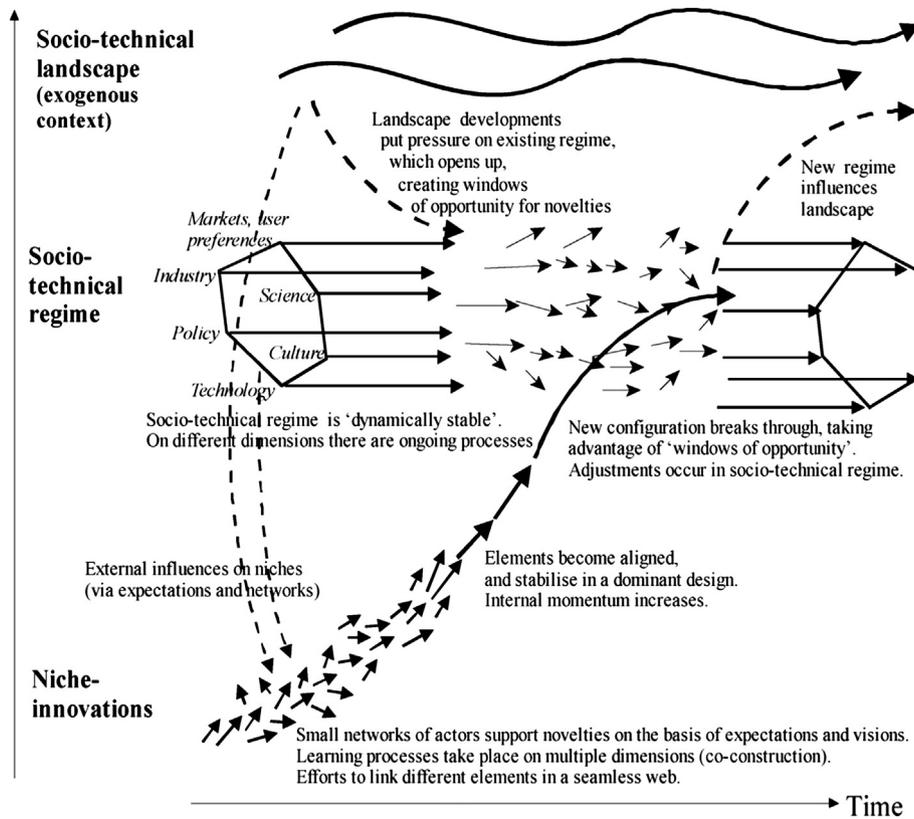


Fig. 4. Socio-technical transitions (Geels and Schot, 2007).

proved to be able to generate a multitude of case studies, and has inspired a generation of researchers to investigate long-term changes and challenges of the incumbent socio-technical paradigm. The framework is somewhat deficient on the economic side; it hardly discusses the economics of transitions. It also does not discuss the issue of growth or degrowth. It is also not very explicit about lifestyles and consumption patterns. However, it is one of the very few frameworks that allow us to think strategically about long-term systemic change; and offers the possibility of directionality into a sustainability transition.

A second framework of systemic change is the perspective of grassroots innovations (Seyfang and Smith, 2007; Seyfang, 2009), which is also discussed under the heading of **Bounded Socio-Technical Experiments** (Brown and Vergragt, 2008). BSTE are in essence experiments in alternative technologies and social arrangements in niches: this framework focuses on the social learning processes that take place in those niches. The theory claims that learning occurs when actors with different world views (business, government, civil society, and academia) collaborate in concrete projects, for instance on the design of a sustainable transportation system, or a sustainable city concept. In such collaboration the actors, guided by their different world views, initially develop incompatible problem definitions (profit making; long-term social benefits, social change, knowledge creation). During the project, and especially in the design stage, actors mutually adjust their problem definitions (but not their world views, which are stable), and develop a joint problem definition that guides their collaboration. This development and stabilization of a common problem definition constitutes higher order learning; and actors can transfer this learning to their subsequent projects.

Seyfang and Smith have studied “grassroots innovations” existing in the “social economy” of community activities and social

enterprise, rather than in the market economy (Seyfang, 2009, p 72–73; Seyfang and Smith, 2007). Among their examples are: local currencies, local farmers’ markets, non-traditional housing, and others. The institutional forms of those initiatives are different from market institutions, including cooperatives, voluntary associations, informal community groups, and other social enterprises. They are driven by two motives – social and environmental needs, and ideology – and emphasize different social, ethical, and cultural rules and values. Social and environmental needs could for instance consist of access to affordable and sustainable housing, fresh and sustainable food, sustainable transportation services, etc. Ideology refers to “...alternative ways of doing things, counter to the hegemony of the regime..... Some grassroots innovations develop practices based on reordered priorities and alternative values. Examples are for instance the new economics, focusing on the quality of life rather than on economic growth per se” (Seyfang, 2009, p 74).

Another framework of systemic change has been developed under the heading of **visioning and backcasting** (Quist et al. 2011). Backcasting can be defined as “generating a desirable future, and then looking backwards from that future to the present in order to strategize and to plan how it could be achieved” (Vergragt and Quist, 2011). It has gradually become more widely applied over the last decade. This is related to the rising popularity of the strongly normative concept of sustainability. As backcasting is about desirable futures – the futures we would like to get – it has a strongly normative nature too, and therefore it is especially well equipped to be applied to sustainability issues. Backcasting works through envisioning and analyzing sustainable futures and subsequently by developing agendas, strategies and pathways how to get there. Visioning and Backcasting have been used in the SPREAD project, described in this issue by Mont (SPREAD, 2013;

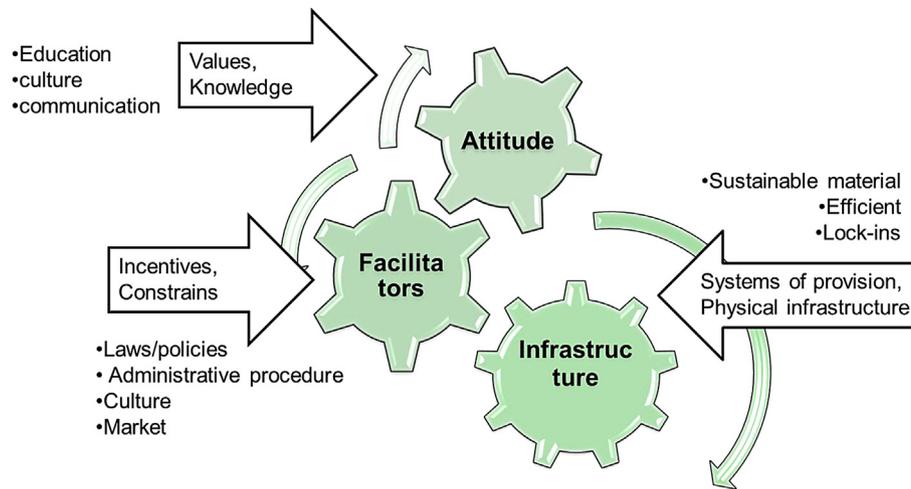


Fig. 5. Mainstreaming sustainable consumption (Akenji, 2014).

Mont et al. 2013). An interesting, as yet unpublished, new approach is “Systems mapping”, based on an approach developed by Hsueh (2012).

In the sociological literature the concept of “**New social movements**” is relevant (Buechler, 1990). The most noticeable feature of new social movements is that they are primarily social and cultural and only secondarily, if at all, political. New social movements concentrate on bringing about social mobilization through cultural innovations, development of new life-styles and transformation of identities. They also give rise to a great emphasis on the role of post-material values in contemporary and post-industrial society as opposed to conflicts over material resources. Contemporary social movements are rejections of the materialistic orientation of consumerism by questioning the modern idea that links the pursuit of happiness and success closely to growth, progress and increased productivity and by promoting alternative values and understandings in relation to the social world.

In this Special Issue, the paper by Akenji (2014) offers a useful conceptual model of change, summarized visually in Fig. 5. It presents three conditions necessary to shift the system towards sustainability – the right attitudes by all stakeholders (shaped by values and knowledge); facilitators to translate attitudes into action (incentives and constraints); and sustainable infrastructure (including systems of provision and the physical infrastructure).

### 2.3. Additional perspectives

In addition to the above mentioned approaches to systemic change, there are other useful approaches that are cross-cutting the field of SPaC. One approach to sustainable consumption is the **social practice theory** (Shove and Walker, 2010; Halkier, 2013). Social practice scholarship views consumers of goods and services as practitioners immersed in the affairs of everyday life. Practices are the ways that people constitute the ordinary tasks of working, cooking, washing, preparing food, socializing, and relaxing. Moreover, most individuals typically regard themselves as practitioners engaged in the business of living, rather than as consumers of scarce commodities. This approach offers a useful new perspective on consumption practices; it however offers few insights into how to change established consumption practices.

A discussion that touches on sustainable consumption is the **growth-degrowth debate**, which rages both within economics but also in the social movements around SPaC (Schneider et al. 2010;

Sekulova et al. 2013). This debate is closely connected to the efficiency-sufficiency debate. Economic growth (measured in GDP) has since WW2 been the bedrock of economic theories and government policies. Economic growth is supposed to generate employment for most, as well as technological innovations, infrastructure development, and lifting the poor out of poverty. In this context the notions of relative and absolute decoupling have emerged. Relative decoupling is a reduction of energy, materials, and emissions per unit of production, which reduce environmental pollution, but these reductions are often offset by economic growth. Absolute decoupling, on the other hand, refers to an absolute reduction in materials throughput, energy use, and emissions; which in many cases require degrowth. Although successes have been achieved in relative decoupling, absolute decoupling has so far not or hardly been achieved.

In this context, the degrowth movement argues that in (over) developed countries the economy should not grow further in terms of materials throughput, energy use, and GDP; but should shrink in a planned and orderly way, not through recessions and economic calamities (Alperovitz, 2011). Some modeling has been performed on degrowth, which shows that public investments rather than private consumption, in combination with a shortening of the working week, could possibly achieve a degrowth scenario (Victor, 2008, 2010).

Degrowth can be considered part of the New Economy movement, which has a macro-economic component (Harris, 2013; Røpke, 2013) (degrowth of the economy and different indicators for human and economic well-being than GDP); but it has also a grassroots innovation component as it concentrates on social and technical experiments, alternative currencies, experiments like transition towns, and different forms of company ownership like cooperatives.

In a recent book, based on the 2nd SCORAI workshop in 2011, three research traditions have been brought together: socio-technical transitions, new economics, and theories of practice (Cohen et al., 2013). This book shows that the deficiencies in each of these theoretical approaches can be, to a certain extent, be compensated by the other approaches. Jointly they cover to a large extent the sustainable consumption field. In this book this has been exemplified by a chapter on passive houses, investigated through the “lenses” of these three theoretical approaches (Brown et al., 2013).

Summarizing thus far, it is clear that conceptualizing and researching a transition to a sustainable production and

**Table 1**  
Lebel and Lorek 'enabling mechanisms' (2008).

Enabling mechanism	Short description	Concerns, constraints or challenges
Produce with less	Innovations in production process reduce the environmental impact per unit made	Rebound effects
Green supply chains	Firms with leverage in a chain impose standards on their suppliers to improve environmental performance	Unfair control of small producers
Co-design	Consumers are involved in design of products to meet functions with less environmental impact	Inadequate incentives for firms to involve consumers
Produce responsibly	Producers are made responsible for waste from the disposal of products at the end of their life	Incentives for compliance without regulation may be low for many types of products
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	Difficult transition for firm and consumer to make as it requires new behaviors and values
Certify and label	Consumers buy labeled products. As labels are based on independent certification, producers with good practices increase their market share	Consumers easily confused with too much information or lack of transparency & credibility of competing schemes
Trade fairly	Agreements are made with producers that may include minimum price and other investments or benefits. Consumers buy products labeled as or sold through fair trade channels while producers get a better deal.	Mainstream trade still dominates. Hard to maintain fair trade benefits to producers when product becomes mainstream.
Market ethically	Reducing unethical practices in marketing and advertising would reduce wasteful and over-consumption practices.	Reluctance by policy-makers to tackle very powerful private sector interests with regulation.
Buy responsibly	Campaigns that educate consumers about impacts of individual products, classes of products and consumption patterns change behavior overall.	Converting intentions and values into actions in everyday life is often difficult for consumers. Issues of convenience, flexibility and function still matter a lot.
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.	Dominant perception that using less means sacrifice. Less income and consumption may not automatically translate into better consumption impacts.
Increase wisely	Increasing consumption of under-consumers can be done in ways that minimize environmental impacts as economic activity expands.	Incentives for developed countries and firms to assist those in developing may be inadequate.

**Table 2**  
Main research areas in the SPaC research field.

Research area	Main research areas	Main topics	Papers in this special issue
1	Systemic change	Visioning and backcasting Socio-technical transitions Attitudes-facilitators-infrastructure (AFI) framework New Economy Solidarity economy; economic democracy	Mont et al. Akenji
2	Macro approaches	Scenarios; forecasting Trend analysis Macro modeling Economic growth vs. degrowth Cultural analysis Post-consumerism trends	Brizga et al. Juknys et al.; Lorek and Spangenberg
3	Production, technology, design	Life cycle assessment Cleaner production Industrial ecology Materials Flow Analysis Eco-design Design for sustainability	
4	Business, innovation, and marketing	Green supply chain management Choice editing Green marketing Product service-systems Fair trade Sustainability reporting	Akenji Echegaray Ariztia et al.
5	Governance, policies, politics	New forms of business ownership (coops) Sustainable procurement Eco-labeling Regulations, incentives, information Political consumerism Leadership	Smith et al. Ariztia et al. Dendler; Echegaray Schroeder Ariztia et al.; Barbosa et al.;
6	Civil society	Grassroots innovations Bounded socio-technical experiments (BSTEs)	Vinkhuyzen and Vinkhuyzen Smith et al.

(continued on next page)

Table 2 (continued)

Research area	Main research areas	Main topics	Papers in this special issue
7	Equity	Collaborative consumption Stakeholder analysis NGOs and social movements Education Poverty eradication Inequality in income and wealth Sustainable Livelihoods Fair Earthshare	Echegaray Schroeder  Lorek et al.
8	Final consumption	Shopping Theories of practice Well-being and happiness Sustainable lifestyles Collaborative consumption Shortening of the working week Consumer behaviour	Mont et al.  Wang et al., Zhao et al.; Veloso and Borboa; Blumberga et al.; Anantharaman
9	Mapping progress	Values Sufficiency Metrics, indicators of progress Mapping the movement Alternatives to GDP; well-being indicators	

Academic disciplines that cover these research fields range from psychology, sociology, anthropology, philosophy, to innovation studies, science, technology and society (STS) studies, well-being studies, and many others. Most research questions, however, require an interdisciplinary or even transdisciplinary approach.

consumption system is a very challenging task. It is often not clear where research ends and social practices and policies begin. It is clear that the research field is not yet very well structured, and that its boundaries are still fluid; all are manifestations of a pre-paradigmatic phase. This introduction tries to sketch some lines through this emerging research field.

From a practitioners and policy point of view, somewhat more progress has been made. In the last 30–40 years, environmental policies have focused on cleaner production (Almeida et al. 2013), sustainable design, materials and energy efficiency, and increasing on sustainable consumption and the propagation of sustainable lifestyles. Lebel and Lorek (2008) produced a useful overview and consolidated most of these practices in the following overview of “enabling mechanisms” (Table 1):

This overview focuses mainly on producers, governments, and consumers as actors. Each of these enabling mechanisms suggests a number of research questions, such as: how effective has this mechanism been in practice; what has been learned; how to compare countries, sectors, and approaches with each other; how have the concerns mentioned in the second column been addressed, and by whom? And how effective have these attempts been?

In Table 2 we organize the main research directions in SPaC research; this overview is created by studying the main subject issues in recent papers, books, and conferences. Every overview has its biases and its flaws; and the complex system that SPaC is can be represented in many different ways. We use this table in two ways: to map the SPaC research field in general; and to position the papers in this special issue (some papers appear in more than one category):

### 3. Papers in this special issue

In this special issue the selected papers obviously do not cover all categories of Table 2. Still, at the Rio (2012) workshop a remarkable coherence was reached. The workshop papers were at that workshop clustered in the following categories: Southern perspectives (keynote); Long-term visions and trends; Inclusive economy (Keynote); Green innovation; Green economy or degrowth?; Grassroots innovations (keynote); lifestyles; culture;

policy; education; and mapping knowledge, practice, and leadership. Not all workshop papers could be accepted for this special issue; for a complete overview of all papers see the workshop report (Lorek et al., 2013) and the website <http://grf-spc.weebly.com/rio-de-janeiro-2012.html> where all papers and presentations are collected. Some papers will appear as GRF-SPaC working papers.

Below follows an overview of the papers in this special issue. We organized the papers close to, but not entirely coinciding with, the scheme of Table 2. Each of the sections, which consist of 2–4 papers, is followed by a selected set of open research questions. This section is followed by Section 4: *reflections and further research*.

#### 3.1. Systemic change

Akenji taps into the discursive confusion over sustainable consumption, analyzing and highlighting critical differences between green consumerism and sustainable consumption. Green consumerism is the dominant policy approach, but Akenji argues that it is insufficient and often at odds with sustainable consumption. He then expands the concept of consumption beyond just the individual or households – questioning assumptions often built into policies that attempt to address unsustainable consumption. To avoid “consumer scapegoatism” and to go beyond green consumerism, Akenji develops an AFI framework – Attitude, of stakeholders; Facilitators, to reflect attitudes; Infrastructure, to facilitate sustainable lifestyles – to use in designing policies for sustainable consumption. Stemming from his analysis are four examples of policy approaches that together can shift society beyond green consumerism targeting choice editing, measuring sustainable progress, encouraging grassroots innovation and introducing environmental limits. He then highlights the crucial role of science and research not only in helping policy makers understand the implications of unsustainable consumption but also in setting and effective targets for consumption to stay within ecological limits while enabling shared prosperity.

Mont et al. focus on the role of stakeholder visions and emerging practices social innovation in enabling sustainable lifestyles and the role of research in shaping more sustainable ways of living in 2050. Four visions of a 2050 ‘sustainable lifestyle’ (defined

as 8 tons of total material consumption per person per year) are developed and a backcasting methodology involving participants from business, research, policy and civil society is used to explore the diverse ways in which they could evolve. Leverage points are identified for enabling the transition to sustainable lifestyles in 2050, including the development of policy, provision of infrastructure, alternative business models and community empowerment. To facilitate this transition, Mont et al. call for more interdisciplinary (social and technical science), inclusive (practitioners, business and consumers), and long-term oriented research. Scenarios and backcasting offer such opportunities and are valuable in focusing attention on future visions rather than on present day challenges; but Mont et al. highlight the need for innovation policy to encourage more society-wide experimentation toward sustainable lifestyles.

**Open questions:** is it possible to model, or even fully conceptualize a system; how to initiate change within the established system; how to account for unintended consequences of system interventions; how to synchronize interventions from various perspectives; which theory of change is best suited for sustainability transitions; how to recognize early signs of a transition; what is the role of business, civil society, governments, leaders in such a transition; how to quantify and validate research outcomes?

### 3.2. Macro approaches: growth vs. degrowth

**Lorek and Spangenberg** criticize the current 'green economy' or 'green growth' agenda as being insufficient and potentially counter-productive to the long-term goal of sustainability because of their reliance on 'weak sustainability' stimuli. They argue that institutional change that promotes "strong sustainable consumption" is a necessary condition for sustainable development and call for the greater involvement of government and "powerful" actors in encouraging public debate. But Lorek et al. reserve their main recommendations for civil society engagement. They criticize some NGOs for weakening perspectives on sustainability and cooperating too closely with the (more conservative) government and business organizations. The authors encourage NGOs instead to interpret their work in a broader (more systemic) perspective, to widen their sources of finance and to shape members "value sets" toward more intrinsic motivation through better leadership, to initiate and catalyze grassroots networks and to work more closely with academia.

**Brizga et al.** assess the progress of Eastern European countries toward sustainable consumption and production. The Eastern European countries are particularly interesting to observe because of the structural changes over the last 20 years that have led to higher economic growth, more consumption and production and increased environmental pressures. Brizga et al. combine a statistical analysis of SCP trends with expert interviews about ongoing processes. The analysis reveals that although SCP is widely unknown, many socio-economic development policies are consistent with SCP. However, many of these are unenforced and/or fragmented and contradictory. Moreover, policy effectiveness is difficult to measure because of weak environmental monitoring systems. The authors conclude that EU policy influence is necessary but not sufficient, and that national SCP policy development and stricter regulation is needed also.

**Juknys et al.** provide a background to the on-going debate about economic growth and sustainability. By distinguishing between the trends seen in developed and developing countries, Juknys et al. critique the notion of a one-size-fits-all strategy of de-growth. They point to decelerated economic growth in developed countries over the last half century. How then should developed countries reduce their ecological footprint without resorting to strategies of "radical

degrowth"? The authors argue the most promising avenues lie with de-fossilization (increased energy efficiency, increased use of renewable resources) and de-materialization (reduce, re-use, recycle). Further deceleration, coupled with a lower ecological footprint, in developed countries would allow accelerated economic growth in developing countries – the empirical focus of Juknys et al.'s paper – enabling socio-economic catch-up with developed countries. The authors remain hopeful that this development can be achieved with lower environmental impacts because of the "traditions and habits of a leaner life" experienced by citizens in developing countries.

**Open questions:** How to manage growth in developing and transitional countries such that it does not lead to "overshoot" into overconsumption; is there a "sustainable path" leading from underdevelopment to sustainable development without mimicking the consumerist societies; how to manage alternatives in an ocean of consumerist culture; how could mass-media and social media be harnessed for this; how to protect emerging economies and citizens from pressures of unsustainable economic growth and consumerism driven by traditional Western dominated institutions and norms?

### 3.3. Governance and government policies

**Schroeder** considers SCP governance in China and the relative effectiveness of top-down and bottom-up approaches for both enabling and restricting more sustainable and unsustainable consumption and production. Based on interviews with Chinese and foreign experts he illustrates that top-down approaches are considered to be relatively more effective and discusses examples such as the subsidy programs for stimulating the uptake of energy efficient appliances, and restrictions on car use in major cities. In his discussion, Schroeder notes that both policies could have been more successful, for example, the former hindered by more absolute consumption of appliances, the latter by contradictory policy initiatives subsidizing the purchase of private vehicles. Examples of initiatives promoting sustainable urban commuting and changing farming practices demonstrate that there is a role for bottom-up approaches also, especially in rural areas where communities are stronger. Overall, the study evidences an "insufficient" governance system for SCP in China, and Schroeder calls, in particular, for more bottom-up governance initiatives to encourage voluntary sustainable consumption choices and behavioral changes.

**Dendler** tackles what has been repeatedly discussed as a shortcoming of the prominent governance instrument of product labeling – the confusion amongst the public created by a plethora of product information schemes – and considers the inherent challenges in establishing a sustainability meta-labeling scheme (SML) to address this shortcoming. Analysis of the dynamic and complex legitimacy construction process of four product labeling case studies reveals a cluster of "institutional logics" that she uses to explore the potential effectiveness of a SML. Echoing Echegaray's findings below, Dendler concludes that consequential legitimacy (i.e. demonstrating positive outcomes, above and beyond the status quo) presents the dominant challenge for standard setting, assessment and communication of a SML but that procedural legitimacy (i.e. participation, inclusiveness) is also an important consideration, particularly given the diversity of actors involved and the existing contestations around the notion of Sustainable Development. Whereas Echegaray maps an incremental evolution for existing labeling schemes, Dendler's work emphasizes that creating institutional mechanisms to enable more sustainable production and consumption can be a highly complex, dynamic and contested process.

**Open questions:** who are the key governance actors in supporting the institutionalization of SCP initiatives; How to develop and implement long-term transformational policies/strategies in short-term political cycles; how to initiate change within the constraints of traditional governance models; how to shift government imperative from immediate economic interests to long-term transformational progress?

### 3.4. Political consumerism and leadership

**Ariztia et al.** analyze ethical consumption in Brazil and Chile. They state that ethical consumption practices are mediated by institutional frames of organizations that promote ethical consumption practices; and are situated in specific local institutional contexts: civil society (especially NGOs), markets (especially CSR), and governments (especially procurement). We see emerging ethical consumption in both Chile and Brazil but these are shaped differently by the interaction between actors from civil society, markets and government domains. In Chile, ethical consumption is driven mainly by (overseas) market forces and dominant actors are large producers, responding to the demands of (overseas) customers and consumers. In contrast, in Brazil, the state has played a central role in promoting ethical consumption practices, especially through public procurement and legislation. The case study highlights the inter-related role of various actors to stimulate change to more sustainable production and consumption, and the sometimes antagonistic, sometimes synergistic, interplay that emerges in different institutional contexts.

**Barbosa et al.** investigate the extent to which political consumerism shapes consumption behavior in Brazil. Focusing on young urban people – those who have “grown up in a context where environmental concerns...[are associated with] lifestyles and consumption choices” – the authors explore the relationship between their consumption practices/discourses and values of political consumerism. Through conducting an extensive survey the authors present evidence that despite high awareness, young urban Brazilians have little individual involvement in regular acts of political consumerism (e.g. boycotts, buycotts, petitions). Instead, consumer organizations collectively represent the interests of individuals. Individual action is hindered by the ‘tragedy of the commons’, manifest in a strong Latin American cultural tradition where only collective action is deemed effective. Interestingly, Barbosa et al.’s findings suggest that family values remain the dominant institutional influence on young peoples’ consumption behavior. Generally speaking, in an age when young people are living longer at home, this arguably delays opportunities for political consumerism to flourish.

**Vinkhuyzen and Vinkhuyzen** acknowledge the role of formal and informal institutions to shape behavior but focus on the role of individuals within organizations, their attitudes, skills and capabilities. Vinkhuyzen et al. argue that in more systemic analyses of sustainable production and consumption the individual’s purpose, style and motivation of leadership tends to get overlooked. The authors review alternative leadership models with respect to the challenges of sustainable production and consumption – uncertainty, complexity and long-termism – and argue that the ‘Moral leadership Framework’ (MLF) of [Anello \(1997\)](#) best encompasses the purpose, style and motivation of leaders to stimulate change in others. More empirical support is needed to evidence this new stream of research, but one can find characteristics of the MLF in the work of others e.g. see [Anantharaman](#) below.

**Open questions:** what is the role of various stakeholders, and what empirical evidence exists for effective leaders in government, business, and civil society in transitions towards more sustainable lifestyles and institutions; what are contextual and cultural

variations in stakeholder engagement in change processes; what are linkages to grassroots innovation and social movements; how to “politicize” consumption on a much larger scale, i.e. raising awareness with consumers, the educational system, social institutions about the political dimensions of consumerism.

### 3.5. Grassroots innovations and stakeholder involvement

**Smith et al.** study processes of grassroots innovations in Latin America, especially Brazil, comparing them with the appropriate technology movement in the 1970s. Grassroots innovations rarely feature in innovation policy design, and yet they provide spaces for knowledge production relevant to policy makers. There are many common characteristics; and the study reveals three contradictions: the tension between locally constructed and adapted and wide replication; the challenge that these socio-technical constellations are adapted to, yet seek to transform local situations; and the tension being project based yet seeking structural changes. They also reflect on knowledge production in grassroots innovation movements: the first tension, framed as grassroots ingenuity, produced ethnographic knowledge; the second, framed as empowering inclusion, produces instrumental knowledge; and the third, framed as structural critique, produces critical knowledge. The production of these three types of knowledge contributes to a better understanding of innovation processes at the grassroots level and offers innovation policy makers the opportunity to reflect more broadly, more inclusively, on shaping technological and social futures.

**Echegaray** investigates stakeholder perceptions of solar photovoltaic (SPV) energy in Brazil, both with consumers and business. The study reveals challenges to SPV are low awareness, misperceptions and insufficient communication. Echegaray draws attention to the limitations of eco-labels in addressing these challenges and focuses on the effectiveness of market research in revealing preferences and steering promotion efforts of sustainable technologies. User-input into the design process of labels is highlighted, so too third party support and independent verification of more sustainable outcomes. In addition, greater efforts to educate the public are needed, Echegaray argues, to legitimize a transition to a more sustainable energy supply.

**Open questions:** Could grassroots innovations, or, more broadly, economic democracy spread through civil society activism? How could such movements help to raise awareness and mainstream sustainable technologies; how to evaluate suitability of up-scaling or replication of success cases?

### 3.6. Consumer behavior: modeling, surveys, and qualitative analyses

**Blumerga et al.** modeled energy consumption in the residential building sector in Latvia, and explore the formal role of government in stimulating the adoption and diffusion of insulation. Their underlying micro-economic approach reminds us of the socially embedded and socially constructed nature of the market for domestic energy efficiency and unpacks the multi-faceted role of government to address the costs and benefits experienced by householders. This includes not only upfront investment but also uncertainty costs associated with poor construction work, making agreements with others in multi-occupancy buildings, etc. Simulating the effects of current policy reveal threshold effects associated with supply side bottlenecks and a slowing rate of diffusion following the end of policy interventions. The analysis adds value in highlighting the effects of timing for effective government intervention.

**Zhao et al.** analyze the sustainable consumption behavior of rural residents in China. Based on a large questionnaire they find that the overall sustainable consumption behavior is low, and is influenced by knowledge, behavioral intent, and economic motives; and also by enabling factors like infrastructure (e.g. sewage treatment facility, refuse collection system), a supportive environment and greater supply of sustainable products. Recommendations stemming from the analysis include education initiatives in rural areas to inform and empower residents and more joined-up sustainable consumption policies across government.

**Yuan Wang et al.** also analyze consumer behavior in China, but focus on residents in the urban metropolitan area of Qingdao. They develop a theoretical framework to determine the effect on green consumer behavior of personal influence, knowledge, attitudes, internal and external moderators; and explore whether these effects differ among purchasing, using, and recycling behaviors. Similar to Wang et al.'s findings for rural residents, Yuan Wang et al. find that urban residents engage in green consumer behavior for personal (e.g. economic) reasons rather than collective (environmental) reasons. The regression analysis also indicates that attitudes positively influence buying, while income and perceived consumer effectiveness determines using.

**Veloso and Barbosa** focus on domestic life in Brazil and the gap between what people say about sustainability and their everyday practices. They investigate the awareness of sustainability challenges, and the meanings among consumers of cleanliness, freshness in food preparation, and the use of electric appliances. Their conclusion is that many habits are taken for granted and have negative impacts on the environment. Inertia in these habits stems from their association with moral valuations (e.g. the “good housewife”) and signs of distinction (e.g. more clean = less poor).

**Anantharaman** provides us some ethnographic insight into the collective role of new ‘middle class’ residents in Bangalore, India. To some extent, these “environmentally conscious, socio-economic privileged” residents exemplify the notion of leadership discussed by Vinkhuyzen and Vinkhuyzen. In her description of their actions, Anantharaman highlights how the residents demonstrate some aspects of moral leadership in the way that they serve the common good, promote personal and collective change through invoking environmental discourses and creating new social norms, infrastructures and mechanisms that assist social transformation. She reveals also how this would not be possible without the support of others within and beyond the resident’s homes, who through their livelihood practices (cleaners, municipal waste collectors) play a critical role in producing the systems that make pro-environmental behavior possible. This socio-inclusive approach begs questions about how to learn from these cases and replicate their findings across the expanding middle classes of developing countries.

**Open questions:** how can lessons from emerging Indian middle classes and their limited awareness of some environmental issues be used for analyzing potentialities of grassroots innovations in middle class consumer behavior? How can governments stimulate and then sustain the adoption and diffusion of technologies that have both environmental and social benefits; how can producers of everyday goods and services best take account of consumer practices in their sustainable new product development processes; what is the role of civil society and the media in helping change consumers’ ingrained habits.

#### 4. Reflections and further research

This Special Issue reflects the diversity in the SPaC research field. Because of its global scope, it also highlights regional differences between various areas of the world, in particular how the stage of a country’s economic development matters. It further illustrates the

multiple perspectives on the question of how to analyze the present production and consumption system, and how to conceptualize (systemic) change. Research over the last decades actually has revealed a lot of the mechanisms and lock-ins of unsustainable production and consumption, and the barriers to systemic change.

In the field of technology and production a lot of progress has been reached, especially through government policies that curb emissions through regulations, levies, and communication and branding. Companies have increasingly internalized sustainability to the point that it often becomes part of their core business values and operations. However, below the glossy surface of sustainability reports much still needs to be addressed. On a deeper level, companies are still driven by the profit motive, and by their institutional shareholders that look at profits on the ultra-short term; and ultimately, by the greediness of the actors on the financial markets. As long as that system is in place, companies will externalize environmental costs, produce more and more stuff that they try to sell to consumers; and operate as if sustainability science does not exist. It is hopeful that there seems to be an upsurge of B-companies, cooperatives, and other forms of non-shareholder ownership (Kelly, 2012), which ultimately could undermine this mechanism. However, governments are often misinformed and support the existing business practices under the guise of “growth”, employment, and well-being for all. Part of the dynamics of the degrowth movement is to deconstruct these myths, but a lot needs to be investigated, and viable alternatives are not easily imagined, let alone achieved.

In the field of understanding and changing engrained consumption habits and consumerist lifestyles, we have hardly scratched the surface. For a long time governments have shied away for addressing consumption, partially it would be perceived as overly heavy-handed interference in people’s private lives. “Consumer sovereignty” still rules; and consumption has taken the place from notions as community, citizenship, responsibility, social capital, and the like. We now know that we cannot change enough by addressing individual consumers, and that giving them information is woefully inadequate. We now know that we should reach the consumer emotionally, but this is an even more individualistic approach, that cannot change the system. Sustainable consumption is often seen as “reducing consumption”, which is obviously not popular.

It is fortuitous that there are a lot of citizens who take responsibility with experimentation of different lifestyles, less motorized transport, small but conformable houses, eating sustainable food, investing in sustainable investment opportunities; but is this enough. The question of mainstreaming is not so loud in this special issue; but it lingers below many of the papers. How could governments mobilize more support for their sustainability strategies, without being voted out of office at the next elections? How could prosumers’ self-organization scale up without losing its sustainability edge? (Smith, 2007). Could a social movement be envisaged that aims at peoples’ long-term well-being, equity, and sustainability without splintering in manifold different issue organizations? How to find the right language to frame the issues in a way that speaks to a majority of people? How to use the educational system, the mass media and the social media in a way that supports the movement towards sustainability?

All these questions are more trans-scientific than scientific. What we need is not only a lot of research into all the details of SPC research arena; but we also need bold thinking that addresses these transdisciplinary and even trans-scientific questions. The present Special Volume and the people behind it have made a start; and we invite you all to join the effort: by writing papers, attending workshops and conferences, contacting us, or otherwise.

## Acknowledgements

The authors thank their GRF-SPaC colleagues for suggestions and comments.

## References

- Akenji, L., 2014. Consumer scapegoatism and limits to green consumerism. *J. Clean. Prod.* 63, 13–23.
- Alcott, B., 2005. Jevons' paradox. *Ecol. Econ.* 54 (1), 9–21.
- Almeida, C.M.V.B., Bonilla, S.H., Giannetti, B.F., Huisingh, D., 2013. Cleaner production initiatives and challenges for a sustainable world: an introduction to this special issue. *J. Clean. Prod.* 47, 1–10.
- Alperovitz, G., June 13, 2011. *The New Economy Movement, the Nation*. <http://www.thenation.com/article/160949/new-economy-movement#> (accessed 06.09.13.).
- Anello, E., 1997. *Distance Education and Rural Development: an Experiment in Training Teachers as Community Development Agents*. University of Massachusetts Amherst.
- Barber, J., 2010. *Still Waiting for Delivery: a Review of Progress and Programs in the 10-Year Framework*. Prepared for the International Coalition for Sustainable Production and Consumption. Integrative Strategies Forum, Silver Spring, MD <http://icspac.net/documents/StillWaiting5.pdf> (accessed 06.09.13.).
- Brown, H.S., Vergragt, P.J., 2008. Bounded socio-technical experiments as agents of systemic change: the case of a zero-energy residential building. *Technol. Forecast. Soc. Change* 75, 107–130.
- Brown, H.S., Vergragt, P.J., Cohen, M., 2013. Societal innovation in a constrained world: theoretical and empirical perspectives, chapter 1 of. In: Cohen, M., Brown, H., Vergragt, P. (Eds.), *Innovations in Sustainable Consumption: New Economics, Socio-technical Transitions, and Social Practices*. Edward Elgar, Northampton, MA, pp. 1–27.
- Buechler, S.M., 1990. *Social Movements in Advanced Capitalism*. Oxford University Press, ISBN 0-19-512604-1.
- Innovations in sustainable consumption. In: Cohen, M., Brown, H., Vergragt, P. (Eds.), *New Economics, Socio-technical Transitions, and Social Practices*. Edward Elgar, Northampton, MA.
- Geels, F., Schot, J., 2007. Typology of sociotechnical transition pathways. *Res. Policy* 36, 399–417. Great Transition Initiative <http://gtinitiative.org> (accessed 06.09.13.).
- Halkier, B., 2013. Sustainable lifestyles in a new economy: a practice theoretical perspective on change behavior campaigns and sustainability issues, chapter 10. In: Cohen, M., Brown, H., Vergragt, P. (Eds.), *Innovations in Sustainable Consumption: New Economics, Socio-technical Transitions, and Social Practices*. Edward Elgar, Northampton, MA, pp. 209–228, pp. 1–27.
- Harris, J., 2013. The macroeconomics of development without throughput growth, chapter 2. In: Cohen, M., Brown, H., Vergragt, P. (Eds.), *Innovations in Sustainable Consumption: New Economics, Socio-technical Transitions, and Social Practices*. Edward Elgar, Northampton, MA, pp. 31–47.
- Herring, H., Sorrell, S. (Eds.), 2008. *Energy Efficiency and Sustainable Consumption: the Rebound Effect*. Palgrave Macmillan.
- Hsueh, J., 2012. *Systemic Change Process Map*. MIT Sloan School of Management.
- Kelly, M., 2012. *Owning our future: the emerging ownership revolution*. J. Genera. Econ. (Berrett Koehler Publishers Inc., San Francisco).
- Lebel, L., Lorek, S., 2008. Enabling sustainable production-consumption systems. *Annu. Rev. Environ. Resour.* 33, 241–275.
- Lorek, S., Barber, J., Onthank, K. (Eds.), 2013. *Global and Regional Research on Sustainable Consumption and Production Systems: Achievements, Challenges and Dialogues*. Workshop Report of the Global Research Forum on Sustainable Production and Consumption, June 13–15, 2012 (Rio de Janeiro).
- Mont, O., Heiskanen, E., Neuvonen, A., Lähteenoja, S., 2014. Sustainable lifestyles 2050: stakeholder visions, emerging practices and future research. *J. Clean. Prod.* 63, 24–32.
- Princen, T., 2005. *The Logic of Sufficiency*. MIT Press, ISBN 026266190X, p. 401.
- Quist, J., Thissen, W., Vergragt, P.J., 2011. The impact and spin-off of participatory backcasting: from vision to niche. *Technol. Forecast. Soc. Change* 78 (5), 883–897.
- Røpke, I., 2013. Ecological macroeconomics: implications for the role of consumer-citizens, Chapter 3. In: Cohen, M., Brown, H., Vergragt, P. (Eds.), *Innovations in Sustainable Consumption: New Economics, Socio-technical Transitions, and Social Practices*. Edward Elgar, Northampton, MA, pp. 48–64.
- Schneider, F., Kallis, G., Martinez-Alier, J., 2010. Crisis or opportunity? Economic degrowth for social equity and ecological sustainability. *J. Clean. Prod.* 18 (6), 511–518. Introduction to this special issue.
- Sekulova, F., Kallis, G., Rodríguez-Labajos, B., Schneider, F., 2013. Degrowth: from theory to practice. *J. Clean. Prod.* 38, 1–6.
- Seyfang, G., Smith, A., 2007. Grassroots innovations for sustainable development: towards a new research and policy agenda. *Environ. Polit.* 16 (4), 584–603.
- Seyfang, G., 2009. *The New Economics of Sustainable Consumption: Seeds of Change*. Palgrave Macmillan.
- Shove, E., Walker, G., 2010. Governing transitions in the sustainability of everyday life. *Res. Policy* 39 (4), 471–476.
- Smith, A., 2007. Translating sustainabilities between green niches and socio-technical regimes. *Technol. Anal. Strat. Manage.* 19, 427–450.
- SPREAD project <http://www.sustainable-lifestyles.eu/publications/publications.html> (last accessed Sept 6th, 2013).
- Vergragt, P.J., Quist, J.N., 2011. Backcasting for Sustainability: Introduction to a special issue. *Technol. Forecast. Soc. Change* 78 (5), 747–755.
- Victor, P.A., 2008. *Managing without Growth: Slower by Design, Not Disaster*. Edward Elgar.
- Victor, P.A., 18 Nov 2010. *Questioning Economic Growth*, vol. 468, pp. 370–371. <http://www.web.ca/~bthomson/degrowth/peter-victor-na-nature-11.pdf> (accessed 06.09.13.).