



## Methodological and Ideological Options

## Participatory systems mapping for sustainable consumption: Discussion of a method promoting systemic insights

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## ABSTRACT

The paper describes our usage of and experience with the method of participatory systems mapping. The method, developed for the purpose of facilitating knowledge brokerage, builds on participatory modelling approaches and applications and was used in several events involving both researchers and policy makers. The paper presents and discusses examples of how different types of participatory interaction with causal loop diagrams ('system maps') produced different insights on issues related to sustainable consumption and enabled participatory reflection and sharing of knowledge. Together, these insights support a systemic understanding of the issues and thus the method provides instruments for coping with complexity when formulating policies for sustainable consumption. Furthermore the paper discusses the ability of the method – and its limits – to connect mental models of participants through structured discussion and thus bridge boundaries between different communities.

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## 1. Introduction

When the Brundtland report popularised the concept of 'sustainable development' in 1987, it also emphasised the need for developing more sustainable consumption patterns: "Sustainable development requires that those who are more affluent adopt lifestyles within the planet's ecological means" (WCED, 1987: 9). The commitment to sustainable consumption has been confirmed at the 1992 Earth Summit in Rio, and in a number of programmes initiated by international organisations and governments at all levels since (Berg, 2011; Fuchs, 2013; Fuchs and Lorek, 2005). But the meaning of the concept sustainable consumption as well as the approaches needed to achieve it have been contested in both research and policy. Contrary to the call of the Brundtland Report, most policy programmes are quite far from any serious challenge to the lifestyles of the affluent. First of all, sustainable consumption is not seen to be in contradiction with continued economic growth in rich countries, and there is no mention of reserving consumption growth for poor people. As UNEP states in 2000: "sustainable consumption is *not about consuming less*, it is about consuming differently, consuming efficiently, and having an improved quality of life" (UNEP and CDG, 2000; emphasis added).

Policy documents on sustainable consumption are typically expressions of the ecological modernisation discourse that emphasise win-win strategies: consumption can become more sustainable, new business opportunities can emerge, and quality of life can improve, all at the same time. This should be achieved by increasing the resource efficiency of consumption, encouraged mainly by market-based policy measures. Labelling of green products combined with information campaigns should help consumers to make informed choices and thus make it profitable for business to provide green products. Simultaneously, environmental taxation of resources, in particular energy and water, and of emissions of polluting substances could promote resource efficiency and reduce pollution. The actual toolbox included other instruments like direct regulation (bans on problematic substances, tightening of building regulations) and subsidies to consumers, e.g. for insulation, but direct regulation was not promoted as a part of the win-win repertoire (Christensen et al., 2007).

The focus on improving the efficiency of consumption has been termed 'weak sustainable consumption' (Fuchs and Lorek, 2005), as a differentiation from 'strong sustainable consumption' that would focus on the pursuit of fundamental shifts in consumption patterns and reduced levels of consumption in the rich countries. Considering the results of the first twenty years of consumer-oriented environmental policies, results have surely been achieved. Nevertheless, there are grounds for criticism. For instance, the combination of compulsory energy labelling, energy taxes and information campaigns has increased the

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efficiency of electrical appliances significantly, and various measures have reduced heat consumption per square metre. At the same time, however, critics point to an increase in the number of appliances and the area of heated space that counteract the achieved energy savings. In other cases, like transport and travelling, it has not been politically acceptable to follow the 'recipe': since mobility is considered decisive for economic growth and personal freedom, economic instruments have not been applied effectively, and energy consumption has increased considerably. Many areas of consumption are not addressed by environmental policies, and consumer-oriented environmental policies have not in any way questioned the continued rise in material living standards, the ongoing renewal of consumer goods, or the costly individualisation of consumption.

Around these policy topics a distinct field of research developed over the last 20 years and interacted with policy making (for anthologies see e.g. Jackson, 2006; Princen et al., 2002; Reisch and Røpke, 2004). It has collected knowledge on environmental impacts of consumption, with the consumption clusters of food, mobility and housing identified as having particularly large impacts (Hertwich, 2006). A lot of research applied an individualistic perspective and concentrated on the understanding of consumer behaviour, trying to explain the attitude–behaviour gap and investigating the results of various interventions like taxes, eco-labels and information campaigns. Some research saw a solution in the identification of different consumer groups and lifestyles and addressing them in different ways. Nevertheless, under 'green consumption' it is perfectly possible for consumers to demonstrate their 'greenness' by carrying out a large number of token green practices and simultaneously increase their environmental impacts considerably. Large segments of consumers have developed a sort of 'compartmentalisation' where only some categories of consumption are considered in environmental terms, while much ordinary consumption and increases of normal standards go unnoticed.

Concurrently with the individualistic-oriented consumer research, more sociological and anthropological perspectives were developed (Gronow and Warde, 2001; Southerton et al., 2004). Here the embeddedness of consumption activities within wider social, economic and technological frameworks was emphasised, and the interplay between systems of provision and consumption practices was explored. So far this strand of research has not been influential in policymaking, but this may be about to change. The limited results of the win-win and individualist strategies in terms of the overall environmental impacts of consumption contribute to a search for different approaches (cf. Spaargaren, 2011: 814), including those that would work 'behind the back' of consumers (see also the 'fit and forget' metaphor of Van Vliet et al., 2005). Examples of some recent developments in different directions include: (i) individualistic-oriented research that increasingly takes 'context' into account (Thøgersen and Grønhoj, 2010); (ii) more policy-oriented advice that goes beyond the traditional ABC (attitude–behaviour–choice) by utilising sociological concepts of social practice and exploring novel concepts of agency (Shove, 2010); (iii) bottom-up experiments with more sustainable consumption and production patterns that call for studies on the possibilities for scaling up (Seyfang, 2009); (iv) more 'systemic' conceptions of production and consumption as socio-technical systems and their transitions, originating in sociology as well as science and technology studies and aiming at institutional actors (Geels, 2004; Shackley and Green, 2007).

The objective of the EU-funded project that lies behind this paper was to tap the learning potential of this debate between various discourses and strands of research on sustainable consumption involving researchers and policy makers. In the frame of the project we tested the usage of systems thinking methods for the purpose of knowledge brokerage between science and policy to help 'manage the contradictions of sustainable consumption and economic growth'. This paper aims to contribute to the discussion on the use of systems thinking approaches for sustainable consumption by presenting the method of participatory systems mapping (PSM), developed for the purpose of the project, and discussing the insights into problems related to sustainable

consumption produced by the method. Although we adopted a 'strong' working definition where sustainable consumption is considered in a global perspective and not through improved resource efficiency of consumption,<sup>1</sup> we did not push for a specific understanding of consumption, but rather expected that PSM would expose a plurality of systemic aspects to facilitate policy-relevant learning – that, for example, consumers can be understood not only in their role of buyers on a market, but also as practitioners that carry out meaningful practices and, at the same time, fulfil roles in broader socio-technical systems.

The next section describes our systems thinking approach and the intellectual roots of the PSM method and our use of causal loop diagrams (CLDs) as well as the project context in which it was used. The third section explains the theoretical concepts behind PSM, summarises our process-related experience with CLDs and exemplifies and discusses insights produced within PSM sessions. In the fourth, concluding section we provide a wider outlook and highlight some of the challenges of PSM.

## 2. Systems Thinking and the Method of Participatory Systems Mapping (PSM)

Systems thinking is a discipline developed from feedback concepts of cybernetics and servomechanism engineering theory (Senge, 1990) and spanning a number of schools and a range of approaches. It provides a framework for holistic thinking while addressing complex societal issues. The core of systems thinking is seeing 'wholes' instead of 'parts', making sense of interrelationships between system components to understand what drives the dynamic behaviour of the system, i.e. the changes in stock and flow variables or even of the structure or purpose of the system over time. One of the key tenets of systems thinking is that behaviour of the system is latent in its structure, i.e. it is through the structure of interconnections between their elements that systems produce their own behaviour over time, and that the actual function or purpose of the system comes into being (Meadows, 2008).

In the area of natural resource management, research has incorporated notions of systems thinking since at least the early 1940s, and particularly since the publication of *The Limits to Growth* (Meadows et al., 1972). The importance of systems thinking has been increasingly recognised by scholars also for designing policy solutions for issues characterised as problems of (un-)sustainable consumption (see, e.g., Klingert, 1998; Timmer et al., 2009; Prinnet, 2011). In terms of problem analysis, Timmer et al. (2009b; see also Mont and Power, 2010a,b) suggest to use system dynamics to focus on the system of a household that, embedded in larger systems, is a field intersected by various driving forces. Prinnet (2011) on the other hand suggests an 'iceberg' model in which consumption and production patterns are responsible for specific social and environmental impacts, yet themselves are embedded in larger systemic structures (such as culture, institutions or policies) and underlying mindsets. The SYSCONS research project (Nemecskeri et al., 2008) used the approach of complex adaptive systems to analyse the various macro-systems (such as physical environment, ecosystems, culture, market and regulation, or technology) which limit and motivate behaviour of various actors in sustainable consumption and production systems. Instead of policies trying to change actors' behaviour the authors suggest to "influence the evolution of various macro-systems in a way that it will change actors' behaviour favourably" (p. 125). In terms of more concrete suggestions for policy responses, Klingert (1998) used a system dynamic macro model to simulate substitution

<sup>1</sup> Sustainable consumption is thus characterised along three objectives: a reduction of the overall consumption of resources to steer the socioeconomic system away from natural limits; the ethical challenge of redistribution of resource appropriation from rich to poor within and between nations; and the striving to achieve well-being, quality of life or a 'good life' (buen vivir) (see Scholl, 2011).

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