

Chapter 1 Conclusions: Change Management for SCP

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1 Introduction

So, at the end of this book we now can try to wrap up what we have learned about the key question we want to solve: how can we stimulate, foster, or force the change to SCP? And what is the natural role of different types of actors? Consistent with the structure of this book we will discuss what we can learn on this from a business, design, consumer and system innovation perspective in the next sections, challenging some simplistic but abounding myths about how this change process could work in a thought provoking manner. However, it is essential to recapitulate first what the goal of the whole SCP project could or should be and to what agendas structure this could or should lead.

2 The goals of SCP and the agenda to be pursued

2.1 Goals

As discussed in chapter 2, SCP – being a sub-topic within the sustainability debate – is not a fully objective notion. Where it is clear that the Spaceship Earth poses boundaries to its exploitation, where these boundaries are and what type of interventions are needed to let social and economic development stay take place within these boundaries often cannot be determined using ‘scientific facts’ alone. There are the optimists that feel that market incentives and human ingenuity will ensure that real sustainability crises are avoided (e.g. Lomborg, 2001). Indeed, the Stone Age did not end for the lack of stones, and Malthus’ population ceiling was surpassed, thanks to the advent of respectively the Bronze Age and the industrial revolution. And there are the more concerned that feel that such breakthroughs will not come automatically, but require hard and conscious efforts.

This lack of scientific certainty is, obviously, is not an argument to ‘let go’ the discussion on SCP or sustainable development. Most companies or individuals take key decisions while they can’t predict consequences ‘beyond reasonable doubt’, as the legal standard in crime law asks. This is true for the couple that considers to marry or to have children, as much for the business leader that deliberates to penetrate or not a market on a new continent. What matters is that on the basis of the best available knowledge, they judge which action to take¹. Any business requiring full certainty before taking action will probably never move and be swiftly surpassed by even the weakest competitor. In sustainability matters the situation is not different. An SCP policy that is ‘Evidence based’ is wise, but an SCP policy that only acts upon ‘evidence beyond reasonable doubt’ would be foolish.

We gave in chapter 2 some points that on the basis of simple metrics or commonly accepted ethical standards seem undeniable elements to pursue on the SCP agenda, and that need deliberate action:

1. A radical reduction of impact per consumption unit should be reached, given the rise of the world population from about 6 billion people now to 9 billion people in the 21st century, and the tremendous wealth per capita rise that many emerging economies and developing countries still have to go through. This reduction can be realised via two routes: smarter production (dematerialisation of products and production) and smarter consumption².
2. Where the SCP agenda may not be the right place to lead the fight for poverty eradication and equity, it must be at least supportive to it. This implies that:
 - a. Compensation for compliance with basic environmental and labor/social standards in supply chains should be ensured
 - b. The potential for ‘Leapfrogging’ in developing economies should be investigated and tested.
3. The reasons for the apparently low efficiency of Western economies for providing high quality life years should be investigated and understood, and its implications be translated into guidelines for organising consumption and production patterns.

2.2 Agenda’s

As discussed in chapter 1, the goals to be pursued play out differently in different types of economy (Hart and Milstein, 1999; Tukker, 2005):

- 1 Consumer economies (Western Europe, the US, Japan) with a high wealth per capita level, and where poverty is all but eradicated (some 1 billion citizens). They should focus on reducing material use per consumption unit, support that in the countries of origin of

¹ Interestingly, it is not uncommon in business literature to describe business development in probabilistic terms like ‘placing a bet’ or ‘investing to play’. Of course such moves are only made when the odds look good, but they also reflect that certainty is absent.

² Manoochehri uses in the Consumption Opportunities report he edited for UNEP (2002) the following elegant division: Dematerialisation (of production) and Optimization (of consumption). The former strategy implies providing the same final service with much less material input and emissions into production and products; the latter strategy aims at changing consumption patterns by making smarter consumption options available, by choosing more consciously and wisely, and by defining an appropriate level of consumption (briefly called: different, conscious and appropriate consumption).

- their imports basic environmental and social standards are met, and improve their efficiency of providing quality of life per unit of GDP.
- 2 Emerging economies (e.g. China), that are rapidly changing and developing fast to modern consumer economies (some 1-2 billion citizens). For them, the main challenge would be to look how they can ‘leapfrog’ directly towards sustainable consumption and production structures without copying the problematic Western structures first.
 - 3 Base of the Pyramid (BOP) economies: economies where the large majority of the people survive on a few dollars per day, and which concern consumer markets that are of relatively low importance to the others in the global system (some 3-4 billion citizens). Here, consumption and production structures have to be fostered that allow for covering basic needs and subsequent sustainable growth.

In combination with the insight that final consumption of food, mobility, and energy/housing drives over 70% of the life cycle impact of consumption (at least in developed economies), all this would lead to a structure for approaching the change to SCP patterns via three dimensions:

1. The type of economy: consumer, emerging, or BOP;
2. Experts and expertise involved: business specialists, designers, consumer scientists and innovation policy experts;
3. Domains: food, mobility and energy/housing as key priority.

SCORE as an EU based project is inevitably biased towards consumer economies. In the next sections we now will summarise and reflect on the analyses of how such change can be fostered from the perspectives central in this book: a business, design, consumer and system innovation perspective.

3 Contributions to change

3.1 Introduction

Part II to V from this book all looked at how changes to SCP could be realised from a business, design, consumer and system innovation perspective. The perspectives are not totally unambiguous. One can interpret them as perspectives of a *science field*, or in the case of business, design and consumers, also as how specific *actor groups* can contribute to change. We could not totally escape this ambiguity in the discussions before, and will not try to do so here either. In the next sections we will summarize for each perspective the following issues:

1. Basic understanding of role/drivers
2. Change model(s)
3. Limitation of the change model(s), policy implications and scattered myths.

The first two issues mainly follow section 2 and 3 of the review chapters of Part II to V of this book. The remaining point tries to bolt down the most important messages for practitioners and policy makers alike in the form of dilemma’s, non-working myths, and other implications.

3.2 Business

3.2.1 *Basic understanding of role/drivers*

The basic role and drivers of business can be briefly characterised as follows. Typically, business is driven by the need to create value for its owners. This is not necessarily primarily a short term monetary issue (though shareholder-owned firms with quarterly reporting obligations may feel significant pressure in this respect); continuity is usually an important factor in this. The business literature shows that various strategies can be followed, to realise such long-term profitability, such as diversification (branding, corporate reputation, developing unique competences, client relationships or solutions), cost reduction (including risk reduction) and market share increase. An interesting specific point for privately owned firms is that they create often also ‘owner value’ by providing an interesting, independent working place or another platform for self-realization.

Businesses operate in a context shaped by ‘controlled competition’ where the player with unique powers usually captures most value, where external financiers have an important influence on strategy, and ‘lock ins’ hinder change.

3.2.2 *Change model(s)*

Businesses can contribute significantly to SCP. Mechanisms include voluntary schemes like FSC, MSC, and other certification schemes. Such schemes can leverage the power of key and front runner companies in the value chain, to ensure that basic environmental and social sustainability criteria are met. This can work upstream (by taking ‘producer responsibility’ for potential sustainability problems of a product during the use by clients or in the waste stage) or downstream (by applying green or social procurement practices). Related to this is ‘choice editing’: retailers only or mainly allowing sustainable products on their shelves, so that the consumer automatically selects sustainable products using existing routines. Furthermore, new business models that focus on dematerialized value creation can be implemented. And finally, it is probably safe to say that business is usually the strongest factor behind developing and implementing radical innovations, and providing new solutions adapted to a changing societal context³. With radical change being usually seen as the most important solution pathway for tackling sustainability (including poverty) problems of the world, the pivotal role that business can play is obvious. Drivers for such leadership can be enlightened self-interest (current practices do not allow for sustaining the business sector on long term, or scarce environmental resources lead to new business opportunities), tacit or explicit expectations, norms and values in society⁴, or owners that secured already their independency and now want to make a difference for society.

³ See, for instance, how Apple via its iPod and iTunes revolutionised – and dematerialised – the music industry, companies like Motorola, Ericsson and Nokia ‘shaped the future’ by envisioning a world where wireless communication would be the norm, etc..

⁴ Interesting examples here are companies that succeed in ‘hook upon’ a tacit, broadly experienced value among citizens, like the Bionade company in Germany (www.bionade.de). This initially small family business developed a ‘biological lemonade’, and positioned it against the ‘artificial and chemical supported’ regular soft drinks. It became an absolute hype in the German pub scene. A proven tactics of consumer

3.2.3 *Limitation of the change model(s), policy implications and scattered myths*

Still, businesses cannot neglect the business fundamentals. Sustainability improvements quite often are a (smart) reaction to real sustainability-related problems in the environment of the firm: hiking resource prices, emission caps or other boundary conditions already or likely to be set by regulators, tacit or explicit customer expectations about sustainability values, or other boundaries that society at large sooner or later has to deal with. Without such boundaries, it is simply too tempting for companies to make use of any freely available social or environmental ‘commons’ (cf Hardin, 1968). Furthermore, quite some of the ‘change models’ discussed above are incremental or leave at least the incumbent companies firmly in control. This is not without co-incidence: where there have been examples where businesses went through radical change (Hamel and Prahalad, 1994), true radical change more often than not jeopardize the existence and future of the firm at stake. Another problem is that most of the efforts described deal with dematerialisation, efficiency improvement and social improvement at the production and product side of SCP, rather than deliberately making consumption patterns more efficient⁵. Particularly at this consumption side, the logic of our current economic system provides powerful incentives to businesses to continuously stimulate more consumption. The paradigm of growth, measured in monetary units, rewards not only entrepreneurship and progress, but also in essence perverse business behaviour. Examples include externalizing costs (which then have to be paid by society as a whole), bringing hitherto free goods in the market economy (which seemingly enhances GNP and turnover but provides not any additional well-being), and using aggressive marketing approaches that enlarge the aspiration gap, makes people uncomfortable with who and what they are, to stimulate more consumption of products and services⁶.

3.3 Design

3.3.1 *Basic understanding of role/drivers*

Design is a discipline whose purpose traditionally ‘is to establish the multi-faceted qualities of objects, processes, services’, and hence rather product-oriented. This role of design, however is transforming. The traditional product design has been expanded with elements like communication design and branding. Indeed, the added value of such intangible design elements now usually by far surpasses that of the material artefact. The designers involved in SCORE feel themselves more at home

organisations is hence to articulate sustainability and social values and check companies on these in their product testing schemes – a nice example of indirect consumer-business interaction.

⁵ Sometimes, as in the case of iPod and iTunes consumption patterns are influenced, but more as by-product. Raising the volume of consumption and market share is the supreme reigning driver.

⁶ As discussed in chapter 2 authors like Schumacher (1972) and Illich (1978) argue that such developments in fact reduce the freedom and capabilities of consumers. Schumacher even went to far to state that where ‘good work’ should have as a prime goal to help humans to overcome greed, our current economic system actually is depending on fostering such deadly sins.

with even a broader design concept, defining the discipline as ‘a reflective activity aiming to solve problems by developing solutions’. Or in other words: design must not focus on products, but with the problems to which these products and services may perhaps be the solution, i.e. there must be a development of “solution-orientated” design.

Designers (like architects and city planners) have traditionally felt a strong ethical responsibility, related to the insight that human behaviour and development is highly influenced by the design and required behaviour related to artefacts – akin to the notion of ‘lock in’ we will see back in the section on system innovation policy. Paraphrasing Kipling (1899), one could almost speak of the ‘designer’s burden’. With the expanded definition of design, this responsibility now is expanded to the design of societal systems.

3.3.2 *Change model(s)*

Design can contribute via a variety of approaches to sustainable development, at different levels:

- Product design: promoting the use of resources with low impact, and designing products with a low life-cycle impact. These activities typically centre on individual firms and the products they put on the market, and hence products and production rather than consumption patterns.
- Design of need fulfilment systems (‘product service systems’): designing eco-efficient systems that promote equity and cohesion. This is a much wider problem, dealing with firm networks, and even communities and governments. The main avenue for change here seems to foster ‘local-centred distributed economies’ and ‘creative communities’ that via bottom-up action change the world.
- Brand and advertisement design: articulating environmental and social sustainability values of sustainable products and services in a creative and novel way, thereby influencing purchasing behaviour and even consumption patterns in the process.

The first model has become fairly well known and is to a certain extent implemented in business and educational curricula. The second approach is now being experimented with in a limited number of projects. The third approach was already illustrated by the ‘Bionade’ example in the former paragraph.

3.3.3 *Limitation of the change model(s), policy implications and scattered myths*

The development of ecodesign has been supported by stimulation and education programs, and legislative projects like the EU’s Energy using Products Directive, ROHS Directive, and similar product-oriented demands. There where such incentives are absent, the implementation of ecodesign still is limited – apparently just relying on the economic-environmental win-win is insufficient. This probably reflects some points already mentioned in the section on business: internal inertia, not important enough to warrant substantial management attention, and risk-avoiding behaviour. What we found in an earlier, in-depth analysis of implementation of sustainable product service systems, was that there are often sound business reasons for

continuing selling products rather than services. Particularly if one offers a 'result' (e.g. a maximum crop loss) rather than a product (e.g. a pesticide that kills plague animals), a company takes much more responsibilities than before, where often they cannot influence all variables that influence the result (Tukker and Tischner, 2006). And finally, where 'brand design' can be used positively for reaching SCP goals, it can also be used negatively. We refer to the final remarks in the business section on the sometimes perverse role of marketing.

With regard to the broader eco-efficient need provision systems that promote equity and cohesion, the design discipline seems to pay preciously little attention to the implementation question. It seems mostly occupied with clarifying how such 'distributed' and 'localised' communities of production and consumption would look like, rather than wondering which barriers may prevent their widespread development and diffusion. These barriers are in fact those mentioned in the business, consumer and system innovation policy sections of this chapter⁷.

3.4 Consumers/consumer science

3.4.1 Basic understanding of role/drivers

Why do we consume and why do we consume ever more? Even the brief peek into insights from consumer sciences in chapter 13 to 17 shows a reality that is more complex than many probably did realise themselves, but at the same time is still simple enough to be comprehensible.

First, there is the dichotomy between *needs* and *wants*. As portrayed in neoclassical economics, what humans can want is infinite; where others suggest that what humans need is (most probably) finite. Max-Neeff (1991) developed 9 axiological needs, that are finite, few and classifiable, such as subsistence, protection, affection, identity, creation and freedom. These can be met by what he called 'satisfiers', and which can have all kind of forms, including forms with a disproportional ecological footprint⁸. Closely related is the insight that consumption is not only about providing a material base for life. Through consumption, people create identity, confirm their position, pursue dreams, and indeed, may give meaning to life (c.f. Baudrillard, 1981; Jackson, 2004). And marketers know it. Fragrances, designer suits, and branded shoes mainly are image products of which the material production costs and even retail costs are just a fraction of the value paid. The 'needs' approach provides the hope that by smartly choosing satisfiers needs can be met with limited resources. But what is in any case clear, is that it is naïve to ask consumers to 'voluntary downscale' and to give up their desires, without offering them alternative dreams.

Second, there is ambiguity in the understanding about how consumers choose. A popular view is that of the rationally acting, sovereign consumer, who via its voting power on the market decides which producer will have

⁷ Of course this remark has to be seen in context. That a part of the design community has the ambition to develop sustainable systems is positive from a point of view of the SCP agenda. Others leave marketers too much in a leading role and design according to their insights and specification, or find sustainability criteria just a boundary condition too many that prevents them to work out their creativity and wild, beautiful shapes and structures.

⁸ Indeed, there are even satisfiers that are perverse and not

success and not. And sure, there will be markets and product groups where it works like this. But it distracts from the fact that in many cases the consumer's behaviour is driven by a material and social context that leaves often limited choice. Think of commuting, business travel, social norms asking to wear clean shirts and have a shower daily, or the type of products (all produced via a globalised production system) available in the supermarket. Moreover, even where there is freedom of choice humans (and consumers) have to much on their mind to think through every little action they take. Much of what people do, like choosing their pub, shop or brand, is routine behaviour that only is changed during disruptive events, crises or other windows of opportunity (like moving, marrying, changing jobs etc.).

Finally, we have to see the consumer in a dual role. In most western countries he or she is not only a person with voting power on the market, but also in the political arena, or as part of a local community. In this role of citizen, he or she contributes to shaping the norms and values of societies he or she lives in, and can be a powerful agent in bottom-up actions for change.

3.4.2 *Change model(s)*

The description above provides various leverage points for changing consumer behaviour and creation of more sustainable life styles, implementing more sustainable buyer behaviour, and the like:

1. Change in knowledge about products and processes. This implies deployment of informative instruments like ecolabels.
2. Change in attitude. The problem here is that attitude is only very weakly linked with behaviour. [*policy implication lacks*]
3. Change of consumer values. Consumers could be stimulated to forego the dominant treadmill of ever more hedonic life styles, but to choose for quality, voluntary simplicity, etc. Bottom-up movements like 'Slow food' (that focuses on stimulating quality food experiences) or the Centre for the New American Dream (that focuses on 'getting more of what matters' rather than more stuff) are examples of organisations that try to stimulate quality values instead of life styles based on sheer material consumption.
4. Change in symbolic meaning of consumption. This is a variation of the former point, in that sense, that sustainability values (equity, human rights, care for nature) should become a common part of the 'intangible' symbolic value related to consumer goods and firm brands. This implies articulation of such values in society, via government, consumer organisations, or action⁹.
5. Change in habits and routines. One approach is accepting habits, and almost invisibly replacing products and services used for more sustainable ones. The other is using windows of opportunity (see below) to change existing habits.
6. Creating windows of opportunity. The first kind of 'window' is when important changes take place in life, and existing routines are broken anyway. The second kind of 'window' should be created by offering alternative opportunities for current behaviour – that is often so

⁹ In this respect, it was a perfect move of the Secretary General of the UN to launch the Millenium Goals and to embark via the Global Compact on a strategic discussion with industry on how to realise this..

locked in by existing infrastructures, socio-technical systems, etc. Obviously, these alternatives should have at least the same quality in terms of intangible value, fulfilling of dreams, and providing meaning as the existing alternative.

3.4.3 *Limitation of the change model(s), policy implications and scattered myths*

What is crystal clear from the analysis that applying one of the approaches listed above in itself usually will not do the trick:

- Consumers are not totally sovereign but ‘locked in’ in situations limiting their choices¹⁰.
- Routines and habits may be more important in making choices for which products and service to consume, than rational, conscious deliberation (even in case that full information and transparency in the market exists).
- Simple approaches, like relying on informative instruments, or adjusting prices, will hence not lead to adjusted consumption patterns or behaviour if this implies accepting lower quality and symbolic value, or go counter existing routines that are re-inforced by lock-ins. Facilitating introduction of the Toyota Prius via a tax rebate works. Advertisement campaigns to stimulate car sharing won’t, or only partially, as long as owning a car means superior transport quality and symbolic value.
- Bottom-up initiatives started by consumers usually do need back-up of policy measures to become mainstream.
- Consumers, even as a group, are not well placed to deal with sustainability problems where societal limits have to be set (as may be the case for GWP emissions and fossil energy use)

3.5 System innovation policy

3.5.1 *Basic understanding of role/drivers*

There is a variety of theories that supposes to take a more overarching view on changes towards SCP, and take the systems of consumption and production (and the related institutional setting) as a starting point. The way how a ‘system’ is defined varies highly across theories. Some theories define a system very loosely (e.g. Brezet, 1997). Authors simply state that innovations at the level of a product or single process never can give radical sustainability gains, and that only when broader ‘systems’ are innovated, the degrees of freedom are so large that factor x’ improvements in resource efficiency become possible. Other systems approaches come from theorists in the field of innovation systems. They briefly stated analyse how the relation between factors like education, knowledge development, the availability of venture capital, entrepreneurship and others determines how effective a country is in organising innovation (e.g. Nelson, 1993).

¹⁰ In economic terms, this shows as a rather inelastic demand curve.

Several authors have tried to develop a system concept in a more concrete way for the sustainability field. A fairly accepted approach now is to discern in society:

- A meso-level: regimes (a set of interdependent and co-evolving technologies, symbolic meanings, infrastructures, consumer practices, institutions and expectations) that reflect the mainstream way of doing things in a specific field;
- A micro-level: niches (radical novelties that are not yet widespread, but survive in ‘protected’ spaces, such as small markets where very specific values are relevant, and
- A macro level: the landscape, which consists of very stable boundary conditions that not or hardly can be influenced by the regime (e.g. geopolitical realities like the location of oil resources)

The mutual interdependencies in the regime and the boundary conditions provided by the landscape imply that the regime usually is very stable and changes only incrementally. Only when promising niches are available, internal weaknesses in the regime develop, or ‘events’ change the landscape so that the existing regime does not fit anymore, quick regime changes can be expected.

And finally, there is the approach of complex system theory. This theory is not primarily developed for sustainability problems, but gives unlike the rather qualitative approaches mentioned before a rigid framework of how systems can be characterised and analysed. As in part discussed in chapter 2 basic concepts include stocks, flows, positive feedback loops, negative feedback loops, emergence, etc. There have been few attempts to explain changes in consumption and production systems in terms of complex systems theory, though work in this field is on its way.

3.5.2 *Change model(s)*

The theories in the former section each come to an own change model. The first mentioned approach that declares ‘system innovation’ a precondition to realise sustainability is of less interest, since it gives no real clue how change has to be implemented. The other theories mainly differ with regard to their goal:

- The innovation systems approach is mainly interested in fostering innovation, and not so much in the normative direction of change. It also works mainly through the market, rather than changing the market (as below).
- The system innovation approaches truly try to direct change into a sustainable direction. The main concept applied is the ‘transition management’ concept, that uses approaches like goal oriented modulation, learning by doing and doing by learning, and adaptive management by circles of front runners to make the probably of systems change into the right direction most likely.

The common elements in both approaches are that they see very clearly that the use of regulation, market based instruments, or informative instruments alone are insufficient for systemic change. The real problem is

aligning actions of different actors, removal of market failures, and clearing blockages in the innovation system. Systemic change is also about changing the structure of the system, the mutual relations and feedback loops rules, and goals. In that sense it is obvious that the systems perspective is an essential addition to the other three perspectives: we there saw already too often that an actor group on its own, given the position he or she has in the system, displays logical behaviour that is not in the interest of a change to SCP.

3.5.3 *Limitation of the change model(s), policy implications and scattered myths*

Nevertheless, the system related change models have still severe limitations. Despite their claimed systems perspective, none of these approaches manage to link up changes in P(roduction) and C(onsumption) sufficiently. It still marginalises to a large extent the consumption side, has not yet broken down CP agenda into specific sub-problems and transition processes, which each characterized by different kinds of processes and actors. It is likely that a more differentiated approach to SCP system transitions is needed, rather than aiming for one unified grand theory. Sociological consumption research is strong on consumption patterns but weak on linking this up to production patterns and firm strategizing; policy research is strong on changes in policy regimes and utility systems but weak on both consumption and production. SCP research needs to include all three areas to address system transition processes. A key role for the system transition research towards SCP as opposed to the other approaches presented in this book is to contribute to a better understanding of supply-demand coordination – which ought to make up the very core of SCP research and policy making.

3.6 Postscript: two missing concepts in understanding change in actor behaviour

The former sections gave a fairly comprehensive tour d’horizon in understanding change to SCP. Two theories, particularly relevant for understanding change processes from a business and consumer perspective, have not yet been mentioned:

1. Assuming that businesses and consumers act to some extent rationally, a time gap may occur to transform knowledge to action. The AIDA model is an example of such a description linking scribes this process of transforming awareness into action include the AIDA model: drawing Attention, creating Interest, fostering Desire finally resulting into Action.
2. Closely related are various models that segment actors (consumers and businesses alike) according to speed of change: first movers, followers and laggards.

4 Synthesis: integration via a systems perspective

4.1 Introduction

Table 4.1 summarises the findings from the former section. One can see, that the views on change to SCP from a business, design, consumer and system innovation perspective are highly (and surprisingly) complementary:

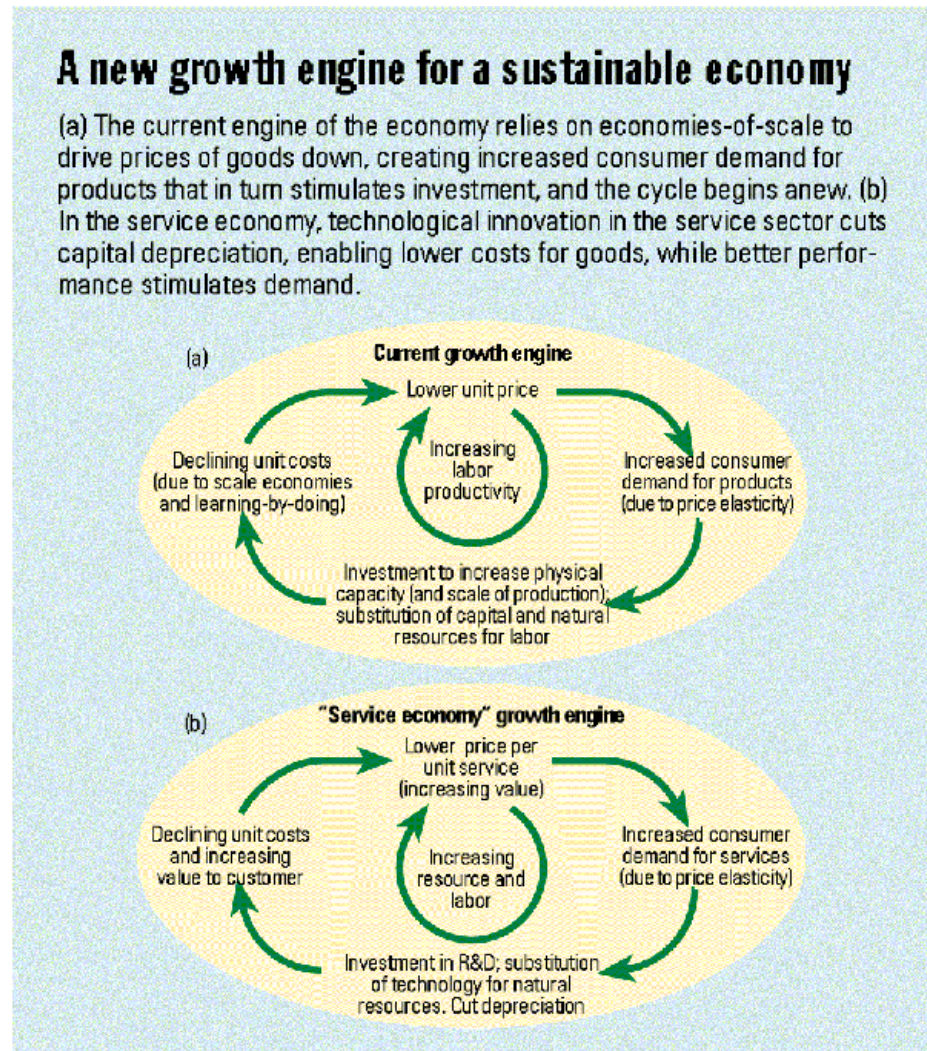
- The business perspective makes clear that business can contribute significantly to SCP via a variety of mechanisms. Yet, also they can only partially influence the system they are part of and hence have to obey business fundamentals and the prevailing paradigm of economic growth. This leads to as such logical but from a sustainability viewpoint less desirable behavior like externalizing costs, bringing hitherto free goods in the market economy, and enlarging the aspiration gap to sell consumers more products and services.
- the design perspective reflects nicely the ‘designers burden’: taking ethical responsibility for the fact that humans live in the world that he/she designed. Strategic design should foster ‘local-centred distributed economies’ and ‘creative communities’ that via bottom-up action change the world. This very much resembles the ‘niche experiment’ approach in system innovation theory, without however acknowledging that there is more to be done for niches to break through than just creating them.
- The consumer perspective of course shows, that consumers can be a driver for change via its voting power on the market, and in their role as political agent and citizen, capable of bottom-up action. But at the same time the consumer faces limits in quality choice, is driven by routines and other boundary conditions. Micro-action has to be followed by macro-action to realize lasting implementation of SCP
- The system innovation theory in fact forms an overarching framework that knits these parts together. It makes clear that businesses and consumers alone have freedom of action, but usually must choose between creating radical new niches, or less radical actions that are ‘compliant’ with the existing regime. It also makes clear the interdependencies between actors, artifacts, knowledge, norms and values, etc. as stabilizing factors in the system. The design perspective clearly pursues the creation of radical new niches, but pays precious little attention to the question how breakthrough and scaling up has to be realized.

This analysis suggests strongly that further recommendations on how change towards SCP has to be organized, can best be discussed from a perspective based on systems theory. Figure 4.1 gives an example why (Ayres, 1998). Where individual actors in the system have some degree of freedom to change their behavior into a more sustainable way, usually their interaction has an inherent logic that keeps a treadmill going – in the example an ever higher material need of society. What is needed as well is a change in feedback loops in the system – typically an action that overarches the behavior of one actor, but that may be realized jointly.

Table 4.1: Review of the role of business, design, consumers and (innovation) policy for SCP

Aspect	Business	Design	Consumers	System Innovation Policy
Key understanding of role and drivers	<p>Maximizing shareholder value by diversification (branding, corporate reputation, developing unique competences, client relationships or solutions), cost reduction (including risk reduction) and market share increase</p> <p>Alternatively: creating 'owner value' by providing a working place or platform for self-realization.</p> <p>In a context shaped by 'controlled competition' where the player with unique powers usually captures most value, where external financiers have an important influence on strategy, and 'lock ins' hinder change</p>	<p>Design is a discipline whose purpose traditionally 'is to establish the multi-faceted qualities of objects, processes, services'. Via adding (intangible) brand and advertisement design this is now transforming itself to a reflective activity aiming to solve problems by developing solutions'. Designers are seen as having a responsibility for shaping consumption patterns and society at large</p>	<p>Consumption can be framed as fulfilling Needs (in principle limited) versus Wants (in principle unlimited)</p> <p>(Consumption is not only about material need fulfillment, but also about symbolic value, creation of identity, meaning of life, and dreams. Consumer choice can be framed as rational and sovereign, behaviour being a function of attitude, intentions and behavioural control. But it can also be seen as driven by routines and embedded in social practices ('ordinary consumption')</p> <p>Humans are both buyers/consumers and political actors/citizens</p>	<p>There are various relevant system concepts. The <i>innovation system</i> concept is interested in understanding development and diffusion of innovation, and argues that for this the right mix of knowledge infrastructure, entrepreneurship, risk capital, launch markets etc. must be in place.</p> <p>The <i>system innovation</i> concept sees a partly locked-in, interdependent mainstream regime of technical artefacts, user practices, infrastructure, values; a niche level with novel practices, and a landscape that moulds the degrees of freedom of the regime.</p> <p>Regimes hence usually change incremental.</p> <p><i>Complex systems theory</i> gives a more formalised systems view in the form of stocks, flows, and feedback loops, emergent properties, etc.</p>
Change model: drivers for change to SCP	<p>Environmental crises and prices forcing change</p> <p>Tacit or explicit consumer/citizen expectations about firm behaviour, articulated by action, consumer groups, or policy</p> <p>External drivers and pressures: green public procurement, regulation etc. setting minimum standards</p> <p>CFO's wanting to show 'noble leadership'</p> <p>Voluntary action: labels (MFC, FSC, Energy), CSR, 'choice editing'</p> <p>Translated into new business models and radical innovative products and services.</p>	<p>Contribute to SCP by</p> <ol style="list-style-type: none"> selecting resources with low impact, designing products with low impact, designing need fulfillment systems with low impact, and design for socio-ethical sustainability. Development of alternative intangible dreams, symbolic value, etc. via branding and advertising. Developing and promoting of local based and network structured initiatives ('distributed economies by creative communities') 	<p>Influence the values, attitudes and knowledge of consumers, the symbolic aspects related to consumption, and the factors that shape habits, routines, or force 'obliged' consumption. Be sensitive for available windows of opportunity or create them.</p> <p>Use also the consumer in its role as citizen to foster change via local action, articulation of sustainability values, and political choice</p>	<p>The different system concepts have different change models. The most relevant are:</p> <p><i>Innovation systems</i>: create an innovation dynamo by putting elements of the innovation system in place. It is not normative but aimed at improving competitiveness</p> <p><i>System innovation and transition management</i>: involve front runners in a process of goal oriented modulation, learning, adaptive management</p> <p>Common elements: change is evolutionary, path dependent and interactive; goes well beyond addressing market failures but addresses systemic failures, tries to learn about how to create new and better feedback loops, etc</p>
Limit of the role: drivers for change away from SCP	<p>Business fundamentals must prevail; certain goals can only be met via framework changes</p> <p>The competitive market system also rewards companies that make people dependent via the promotion of greed, fear, and addictions, that externalize costs, and draw hitherto non-market goods into a market context</p>	<p>There is little thought about scaling up, and how such experiments can overcome the formidable barriers posed by consumer and business interests. Indeed, the whole chapter fails to discuss this point.</p> <p>Branding can also be used to promote greed and materialistic life styles.</p>	<p>Since often the consumer is <u>not</u> sovereign, one-dimensional instrument like education, articulation of values and information, or pricing for SCP will <i>only</i> work if the alternatives available give the same quality, symbolic value, and meaning as the original practices.</p> <p>Bottom-up action has to be re-inforced by framework change for lasting effects.</p> <p>Consumer wants are probably not limited.</p>	<p>System innovation theory has a high hope that power of front runners, or new insights created with powerful actors, is sufficient to foster systemic change. But systems change creates losers, and they may promote lock ins <i>negative</i> for SCP if in their interest. This reflects that understanding of how to stimulate goal-driven transitions is still weak: not all relevant actors relevant for radical innovation could be involved, alignment of change power may prove impossible, the role of planning/negotiation versus knowledge and learning is not clear</p>
Dilemma's	<p>'Tragedies of the commons' and 'Prisoners dilemmas' like long term sustainability vision versus shareholder reporting systems that reward short term profits.</p>	<p>Traditional designers don't like to loose freedom by additional design specifications related to sustainability criteria or design just what marketers ask.</p>	<p>The world can cover everybody's needs, but not everybody's greed</p>	<p>Change via (moulding) the market ('innovation systems') versus change via staging processes outside the market ('systems innovation')</p>

Figure 4.1: A new growth engine for a sustainable economy (from: Ayres, 1998)



Note: This paper are *draft* conclusions from the first SCORE workshop, April 2006, Copenhagen. The review papers of the four perspectives were generally ready in November 2006. Particularly the integrative analysis across these reviews, that follows in the next sections, will still be subject to significant reflection and revision after the presentation and discussions during the November 2006 SCORE conference in Wuppertal and the December 2006 ISEE consumption workshop in Delhi. The result will form the concluding chapter of the book based on presentations from the Copenhagen workshop.

4.2 A brief characterization of relations in production and consumption systems

When analyzing the relations between consumption/consumers, production/business, and politics, quite some scholars have depicted system structures with feedback loops that seem to leave depressingly little room for SCP governance and policies (e.g. Fuchs and Lorek, 2005). After an initial warning, we will try to depict the main message here.

The warning is that, obviously, that societal interactions have a complexity that may surpass even the capabilities of the brightest minds. Too often people applying systems thinking created rather simplistic and mechanistic views on the world, made unacceptable generalizations across cultures and countries, or developed predictions with an air of certainty that did not honor the complexity at stake. Indeed, in fact complex systems theory indicates that when such systems are characterized by dynamic and other complexities they usually show emergent properties, show hence behavior and interactions that cannot precisely be predicted or foreseen, and as a result defy top-down control. Where at the same time the systems analyst may be lured into the feeling that he or she has insight and control, exactly since he or she tries to oversee the whole.

Having said this, an here an attempt to describe how the aforementioned interactions roughly work.

The basic paradigm that underlies the current Western capitalistic system that dominates the world is the following. It is firmly rooted in a belief that (continuous) economic growth is essential and good, and that there is no limit to progress. Private ownership and a high level of private and personal responsibility for personal well-being are essential feats; only by tapping on such 'controlled self-interest' humans are stimulated to develop themselves, do useful work, perform efficiently, to develop and apply novel ideas and innovate and so on. It is not for nothing that 'people who really made it', as movie star, business tycoon, or sports icon, are seen by many as the ultimate role models. Where this system allows for accumulation of wealth, power and capital, this is seen as acceptable since the overall progress in society ensure that the extra wealth 'trickles down' also on those who ended up on the somewhat lower rankings in the race. The dominant co-ordination mechanism between production and consumption is the free market; powerful institutions like the WTO, EU, and other intra-governmental organisations ensure that market protection where it still exists is gradually abolished, also in areas that until recently were seen as 'public goods'¹¹. Other important elements in the basic value system are fostering individual freedom and democracy, and that basic subsistence should be available for humans¹².

Against Fuchs and Lorek (2005), but also others (e.g. Schumacher, 1973) suggest feedback mechanisms that hinder a strong SCP policy. In brief, they

¹¹ Think e.g. of electricity production, public transport, postal services and broadcasting organizations in Europe.

¹² As e.g. recently articulated by the UN Millenium goals (UN, 2006). Some authors fear however that the democratic system and system of individual freedom is put under significant pressure by the reaction of governments to terrorism. Where this threat may be genuine, authors also fear that those in power use it to enlarge control, thereby going counter the basic idea behind democracy (distribution of power).

state that to realize consumption objectives that include status, definition of identity, and establishment of belonging, requires in the modern globalised worlds more material stuff than where local social networks dominated. The messages about sustainable behavior are widely overpowered by the messages promoting material consumption, amongst others by portraying role models that are able to consume beyond the wildest expectations of normal human beings. The desire for material consumption is hence deeply entrenched in consumer behavior and social practices. Industry, from their part, is all too willing to fulfill these needs (and developed powerful approaches via branding, advertising etc. to stimulate them). More production implies more turnover and more profit. And where in theory business models exist where intangible value is created, the globalised economy is characterized by a high level of competition, mass markets, and a high pressure to externalize costs. And given this lack of consumer and business support for strong SCP measures (in terms of e.g. limiting consumption), it will be difficult to expect too much action from government in this respect. This would go counter the wishes of voters and important industrial lobbying organizations¹³. Last but not least, from intergovernmental organization (IGO) precious little can be expected in this respect, since the IGO's responsible for sustainable development have no or hardly sanctioning and enforcement capacity.

4.3 Influencing relations in production and consumption systems

In one of her many enlightened writings, Donella Meadows, pupil of system analysis guru Jay Forrester and co-author of 'Limits to Growth', listed 12 (initially 9) places to intervene in a system ranked in order of influencing power (Meadows, 1999; see box 1). For the sake of simplicity (and with the danger of simplifying too much), we pragmatically group them below in 4 main categories, using them as a kind of 'completeness check' and inspiration to think of less common policy instruments: .,

1. Interventions changing technical characteristics
2. Changes in incentives and institutions (affecting feedback loops)
3. Creating or enhancing self-organising capacity in the system
4. Adapting goals and paradigms from which such goals have been developed.

¹³ Which touches upon another imperfect element of democracy. Winning elections has become highly dependent on having ample access to mass media. This implies that politicians have to have good relations with mass media, and in various states where there is no regulation that distributes media access to competing political parties, have to buy access to them. This, in turn, implies that political parties depend on significant financial support – which only can come from business. Inevitably, this leads to influence of business on policy. The fact that in the Netherlands the US ambassador is a business owner who had no experience in foreign politics, but did donate millions of dollars to the Bush electoral campaign, is just one of the less harmful examples of what can happen.

Box: Clusters of leverage points

(adapted from: Meadows, 1999)

Interventions changing technical characteristics

(9) Constants, parameters, numbers (subsidies, taxes, standards). *For example, climate parameters may not be changed easily (the amount of rain, the evapotranspiration rate, the temperature of the water), but they are the ones people think of first (they remember that in their youth, it was certainly raining more). These parameters are indeed very important. But even if changed (improvement of upper river stream to canalize incoming water), they will not change behavior much (the debit will probably not dramatically increase).*

(8) a: The size of buffers and other stabilizing stocks, relative their flows and b: the structure of material stocks and flows, such as population age structures. *Buffers can improve a system, but they are often physical entities whose size is critical and can't be changed easily. A system's structure may have enormous effect on operations, but may be difficult or prohibitively expensive to change. Fluctuations, limitations, and bottlenecks may be easier to address. For example, the inhabitants are worried about their lake getting polluted, as the industry releases chemicals pollutants directly in the water without any previous treatment. The system might need the used water to be diverted to a waste water treatment plant, but this requires rebuilding the underground used water system (which could be quite expensive).*

c: [the length of delays relative to the rate of system changes]. *Information received too quickly or too late can cause over- or underreaction, even oscillations*

Changes in feedback loops, incentives and institutions

(7) The strength of negative feedback loops, relative to the effect they are trying to correct against. *A negative feedback loop slows down a process, tending to promote stability (stagnation). The loop will keep the stock near the goal, thanks to parameters, accuracy and speed of information feedback, and size of correcting flows. For example, one way to avoid the lake getting more and more polluted might be through setting up an additional tax, relative to the amount and the degree of the water released by the industrial plant. The tax might lead the industry to reduce its releases.*

(6) Driving positive feedback loops. Positive feedback loop speeds up a process. *Dana indicates that in most cases, it is preferable to slow down a positive loop, rather than speeding up a negative one.*

(5) The structure of information flow (who does and does not have access to what kinds of information). *Information flow is neither a parameter, nor a reinforcing or slowing loop but a loop that delivers new information. It is cheaper and easier than changing structure*

(4) The rules of the system (incentives, punishment, constraints).

Creating or enhancing self-organising capacity in a system

(3) The power of self-organization. *Self-organization describes a system's ability to change itself by creating new structures, adding new negative and positive feedback loops, promoting new information flows, or making new rules*

Adapting goals and paradigms from which such goals have been developed.

(2) The goals of the system.

(1) The mindset or paradigm out of which the goals, rules, feedback structure arise.

(0) The power to transcend paradigms

Furthermore, we think it is useful to link instruments and actions to the actor that is best place to embark on it. Given the problems related to true paradigm shifts (as discussed in the former section), we think it is very important to formulate the goals to be reached with these actions and instruments as positively contributing to the position of the actor in the prevailing socio-economic paradigm. Elaborating on Manoochehri's Consumption Opportunities report (UN, 2001)¹⁴:

¹⁴ *Note for this draft:* note that we loose now the position of design. This is to some extent justified since designers either do a job in business (ecodesign, product-service business modelling) or develop schemes for bottom-up niche structures, which fall here under consumers.

1. Business: pursuing resource efficiency and basic social standards. This goal fits very well with the prevailing paradigm that business is in fact expected to improve efficiency continuously, and also to comply with basic social standards.
2. Consumers: being empowered, stimulated and capable of exercising conscious choices. Also this is in line with the prevailing paradigm of individual freedom and sovereignty. Where consumers in fact are not sovereign, this should be promoted and fostered.
3. Policy: co-developing framework realizing the above mentioned goals, and creating the infrastructure and stimulates sustainable choice.

These two lists now can be put in a matrix, in which policy instruments and actions are placed. We will discuss them in the next section, including some examples of mechanisms that resulted in radical sustainable change towards SCP.

4.4 Examples of instruments and patterns of change

The analysis shows that action is required at all levels. Obviously, traditional measures like internalising external costs, abolishing perverse subsidies and setting standards will help. Yet, these are merely examples of approaches falling in the box of ‘changing incentives and institutions’. Their effects usually can be predicted with a reasonable certainty. Real radical change is probably too difficult to predict, and for this, approaches are needed that ‘enhance the self-organising capacity’ of the system. Such ‘learning’ approaches are nothing new for business: business guru’s like Hamel and Prahalad (1994) and managers like de Geus (1997) have become world famous with their books ‘Competing for the future’ and ‘The Living Company’. They all conveyed that the future would always be too complicated and unpredictable to plan a reaction on expected external change, so that learning and adaptive management would be the only realistic option left. Authors like Kemp in this book have expanded such approaches for organising change ‘management’ across different actor groups, such as different businesses, intermediaries, government and consumer groups involved in a specific sector. The idea is that such groups strategically interact, agree on the strategic direction of change, and adjust tactics along the way in a learning by doing, doing by learning approach.

An equivalent of this at more local level is fostering what Jackson called ‘small group community management’, by enhancing the role of local production-consumption systems. This allows for more intimate interaction and mutual adjustment, than in impersonal and globalised systems.

Table 4.2: Review of instruments and approaches per actor for realizing SCP

Aspect	Business	Consumers	Government/System Innovation Policy
<p>Interventions changing technical characteristics</p> <p>Changes in incentives and institutions</p>	<p>Pursuing resource efficiency and complying with basic social standards</p> <p>Implementing resource-efficiency enhancing approaches like ecodesign, cleaner production, etc.</p> <p>Voluntary labelling (e.g. MSC, FSC)</p> <p>Self-regulation like charters, responsible care, etc.</p>	<p>Being empowered, stimulated and having the opportunity of exercising conscious choice</p> <p>Implementing technical fixes (energy reducing measures, etc.)</p> <p>Exercise conscious choice, alone or in groups</p>	<p>Co-developing the mentioned frameworks, and creating infrastructure that stimulates sustainable choice</p> <p>Stimulate pro-sustainable choice, of equal quality as alternative traditional choices</p> <p>Abolishing perverse subsidies</p> <p>Internalising external costs</p> <p>Implementing green public procurement</p> <p>Setting regulatory social and environmental standards</p> <p>Ensure healthy boundaries for advertisement</p> <p>Foster interdependency from business</p>
<p>Creating or enhancing self-organising capacity</p>	<p>Contribute to local 'distributed' self organised production-consumption systems</p> <p>Strengthen 'competing for the future' capabilities</p>	<p>Build local, 'distributed' self organised production-consumption systems that embark on 'small group community management'</p>	<p>Foster 'Transition management' approaches and enable learning platforms across actors about if and how SCP goals should be met</p>
<p>Adapting goals and paradigms</p>		<p>Articulate existing SCP-supporting goals via e.g. consumer organisations:</p> <ul style="list-style-type: none"> • compliance with basic environmental standards • 'making poverty history' <p>Experimenting with alternative paradigms, e.g. 'slow food', 'simple living', and</p>	<p>Articulate existing SCP-supporting goals via e.g. 'leading by example', institutions like Global compact:</p> <ul style="list-style-type: none"> • compliance with basic environmental standards • 'making poverty history' <p>Collect evidence if the current 'growth of GNP driven' paradigm works best for creating long, high quality lives (compare Happy Planet Index report)</p>

[Note: to be completed]

But probably equally important is to articulate sustainable norms and values that in the mean time, against all odds, now seem commonplace in Western societies. Although consumers show a rather limited willingness to pay for it, the prevailing paradigm does not accept grinding poverty, social exploitation, and is susceptible for environmental quality. To put it simple: people and companies that don't comply with these norms, usually have something to explain. Articulating such norms, such as cleverly has been done via the Millennium goals and Global compact, is hence another important way of realizing SCP goals (UN, 2006).

Finally, probably the most difficult approach of all is questioning the underlying 'growth' paradigm of Western society itself. At the same time, if analyses like the Happy Planet Index approach (Marks et al., 2006), or experience with alternative lifestyles as propagated by e.g. the New American Dream would provide evidence that economic growth does not foster a higher quality of life, smaller or larger adjustments of this paradigm may take place. Investigating to what extent the growth paradigm really brings humanity forward, is hence another avenue that should be pursued when fostering SCP.

Where all these approaches probably have their role, it is unlikely that there is one single recipe or one single mix of approaches always will work. The following examples show that radical change can take place via very different pathways:

1. In the Netherlands, coffee certifier Utzkapeh rocketed in just 5 years from 0 to 25% market penetration in 2005. Their approach is to ensure basic social and environmental performance in the coffee production sector, but without paying a fixed price premium (as e.g. Fair trade organizations do). Interestingly, the Utzkapeh logo is not actively advertised. Roasters, the most powerful players in the coffee chain, understand in the mean time very well that consumers see such basic qualities as inherent to a quality brand – just as a good car does not rust in its first year. Here, we see interplay of tacit consumer expectations being picked up by a dominant industry player that causes the change.
2. In Switzerland, in the 1990s virtually overnight almost the full agricultural branch shifted towards organic farming or semi-organic precision farming (Belz, 2004). In a very long preparatory phase since the 1960s, via various routes experience had been gained with organic and semi-organic production-, certification- and retail systems. But for these niches to become mainstream, a financial upheaval had to take place. Under new GATT and WTO rules, Switzerland was forced to abolish support for regular farmers – only support for sustainable farmers was still allowed. The rest is history.
3. And in Germany, the Bionade firm successfully hooked upon tacit needs of consumers that are grounded in sustainability values, such as health and chemical free production. Combined with smart branding, the small firm created a whopping success.

5 Conclusion

So, what are the final conclusions of this book? The change to SCP is on the one hand a complex business, and on the other hand some clear rules can be discerned. These include:

1. Radical change usually takes a long period and ‘command and control’ approaches usually will not work. Indicative planning and developing ‘strategic intent’ with a process of learning by doing along the way is likely to be much more successful.
2. A process of ‘visioning’ and experimentation, particularly when it is not totally clear into which direction the change has to go, is essential.
3. ‘Flagship’ (niche) experiments with new practices and systems should ideally be stepping stones for potential future new socio-technical constellations.
4. Radical improvements that do not require change of consumer behaviour (e.g. a zero-energy house) are probably easier to implement than improvements that require change.
5. Consumer behaviour change is only likely if the three components are addressed simultaneously: motivation/intent, ability and opportunity.
6. The alternative opportunity should at least be as attractive as the existing way of doing things – not only in terms of functionality, but also in terms of immaterial features such as symbolic meaning, identity creation, and expression of dreams, hopes and expectations.
7. The motivation/intent must not only be addressed by traditional methods such as incentives and education, but also via small group community management and exemplifying normative behaviour by role models. Since motivation/intent is often unconscious, special attention to how to overcome the role of habits is needed.
8. Given the above, there is usually no ‘silver bullet’ that realises the radical change to sustainability. The different workshop reports in chapter 3 to 5 reflect the need to apply policy mixes that range from informative instruments, via price incentives, to regulatory pressure.

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