Combining backcasting and transition management in the community arena

a bottom-up participatory method for visions & pathways for sustainable communities and consumption[1]

Jaco Quist[a], Julia M. Wittmayer[b], Frank van Steenbergen[b], Derk Loorbach[b]

[a] *Faculty of Technology, Policy and Management, Delft University of Technology, Jaffalaan 5, Delft, the Netherlands, j.n.quist@tudelft.nl*

[b] *Dutch Research Institute for Transitions (DRIFT), Erasmus University Rotterdam; wittmayer@drift.eur.nl*

Abstract

This paper presents the theoretical basis and the methodological framework of the *community arena*, a co-creation tool for sustainable behaviour by local communities and consumers. The community arena focuses on articulating, confronting and connecting individual inner contexts in a participatory process so as to influence both how individuals think as well as how they behave. The premise is that by raising awareness and sensitivity amongst engaged citizens about other ways to look at reality, they open up to new possibilities to think about their individual behaviour in the broader societal context.

After comparing backcasting and transition management, the community arena methodology is described building on elements of transition management, backcasting, as well as adding elements from learning, and needs & capability approaches. As part of an EU funded InContext project the methodology has been tested in three pilot areas in the Netherlands, Austria and Germany; some illustrations from the Dutch pilot in the deprived neighbourhood of Carnisse in the city of Rotterdam are presented, before drawing conclusions and addressing broader relevance of the outcomes.

Keywords; backcasting; transition management; community arena; sustainable living

[1] This paper is part of the FP7 funded InContext 'Individuals in Context: Supportive environments for sustainable living' project, ENV. 2010.4.2.3-1: Foresight to enhance behavioural and societal changes enabling the transition towards sustainable paths in Europe, Grant Agreement number: 265191. More information and downloads can be found at www.incontext-fp7.eu.

1 Introduction

Sustainable development initiated at and supported by the local level was made a key policy issue at the 1992 United Nations Conference on Environment and Development in Rio de Janeiro. One of its main policy documents, the Agenda 21, gives a prominent role to local authorities "because so many of the problems and solutions being addressed by Agenda 21 have their roots in local activities" (UN 1993). The leading role of local authorities was reconfirmed at the 2002 Johannesburg World Summit on Sustainable Development and over the last decades multiple Local Agenda 21 processes have been taken place all over the world. They were adopted and conducted by numerous municipalities in many countries and range from generic vision statements to formal action planning procedures (Selman 2000).

During these years, the merits and shortcomings of the Local Agenda 21 processes have become clearer. Though having lead to previously unknown levels of engagement of citizens, policy makers and stakeholders, LA21 processes did not succeed in getting beyond flagship projects. As a consequence, it has been argued that "widespread citizen engagement is unlikely to continue, unless opportunities for practical involvement are created, products are forthcoming, and encouraging feedback is received" (Selman 2000: 49). This may even lead to citizens getting worn out about participating in local bottom-up sustainability processes. The involvement methods used may raise awareness and participation by focusing on quickly reaching social consensus whilst avoiding areas of possible disagreement, but do not seem to have produced "widespread, deep-seated and long-lasting transformations" (Selman 2000: 49). Explanations include the political marginalization of the processes with no formal political decision power (Geissel 2009), the failure to produce fundamental behavioural changes (Selman 1998) and the focus on environmental issues not taking the business sector into account (Selman 1998, Gibbs et al. 1998). A major issue 30 years after the formulation of the Agenda 21 in Rio is still the start and acceleration of a paradigm shift towards sustainability at the local level.

Developments in transition management en backcasting

Next to Local Agenda 21 processes, other participatory approaches for initiating and supporting stakeholder action on sustainable development have been developed in the last decades. In the Netherlands, Canada, UK, Sweden and Belgium, significant efforts have been and are being undertaken with two participatory approaches, transition management and participatory backcasting in areas such as energy, building, health care, food, mobility and water management.

Transition management has rapidly emerged over the past decade as a new approach addressing complex societal problems and the governance of these problems towards sustainability. It is a participatory learning and experimenting process aiming at creating societal movement that can put pressure on dominant policy (Loorbach 2007, 2010). Backcasting has been 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 & Quist 2011: 747); over the last decades a participatory variety has strongly emerged. Both transition management and backcasting have mainly involved professional stakeholders. Recently, transition management was applied on the local level with citizens (Spekkink et al. forthcoming), while participatory backcasting has also been applied to consumption involving both citizens and consumers since a decade (e.g. Quist et al 2001, Green & Vergragt 2002, Carlsson-Kanyama et al 2007, Kok et al 2006).

The shift towards the local level and consumption and the potential of both approaches for addressing sustainability issues on these topics obviously deserves further exploration, while the interlinkages between transition management and participatory backcasting have also been neglected (Quist et al 2011, Wittmayer et al 2012). To address these interlinkages and the potential of both approaches to contribute to fundamental change towards sustainability at the local level is one of the aims of the EU funded InContext 'Individuals in Context: Supportive environments for sustainable living' project. Another key issue in the InContext project is to

support the transition to sustainable behaviour in local urban communities by aiming for a better understanding of how the inner and outer context on individual and group level interrelate with individual and collective strategies and/or practices. The objectives of the InContext project are (1) to facilitate pathways towards alternative, more sustainable behaviours of individuals and (2) to foster collective activities towards more sustainable communities (Schäpke & Rauschmayer 2012a, 2012b, Piotrowski et al 2012).

This paper presents part of the InContext project and presents the community arena, a new methodology building on transition management, participatory backcasting and social & environmental psychological literature, which has been applied in local communities in three pilot areas in the Netherlands, Austria and Germany by action research teams. The developed methodology is designed in compliance with the conceptual propositions of transition management (Loorbach 2010, Loorbach & Rotmans 2010) and participatory backcasting (Quist 2007, Vergragt & Quist 2011, Quist et al 2011), while insights from learning theories and inspirations from the needs & capabilities approach have been added.

The objectives of this paper are (1) to describe similarities and differences of the transition management and participatory backcasting, and (2) to describe the community arena methodology based on the interlinking transition management and backcasting while it has also been inspired by the needs & capability approach.

This paper unfolds in five sections following this introduction. In sections 2-3 transition management and backcasting are introduced, respectively. In section 4, both approaches are compared while focusing on elements of second order and social learning. In section 5 we describe the community arena methodology, while section 6 presents illustrates the methodology with some results from the pilot in the Netherlands. The final section provides conclusions and discussion.

2 Transition management

Overview

The last years have seen the development of transition research as an interdisciplinary field of study in which innovation studies, history, ecology and modelling are combined with sociology, political and governance studies and psychology. The transitions approach proposes that wicked problems that persist over time require a fundamental change in the structures, cultures and practices of the societal system for the system to become sustainable. The transformative processes of change are called sustainability transitions and take a long-time period (over 25 years) to materialize (Grin et al. 2010, Frantzeskaki & De Haan 2009). Because of the focus on integrated sustainability problems and the applied nature of transition research, the natural interaction between science and policy has led to a continuously co-evolving theory and practice of transition management, following the tradition of post-normal (Funtowicz & Ravetz 1994) and sustainability science (Kates et al. 2001, Kasemir et al. 2003). Transition Management builds on transition theory (e.g. Rotmans et al 2001), which includes the Multi-Level Perspective (MLP) and transitions. The MLP consists of (i) the micro-level of niches in which novelty emerges and grows, (ii) the meso-level of scoio-technical regimes which reflect the dominant ways of consumption and production and contain major sustainability problems, and (iii) the macro-level of the socio-technical landscape, consisting of trends and events in the context of specific socio-technical regimes and its niches and can influence theses. Transitions are then the structural changes, societal process and mechanisms through which novelty in niches matures and becomes mainstream, heavily influencing the dominant practices of consumption and production at the meso-level. Furthermore, Transition Management should be seen as a reflexive governance approach aiming at exploring, initiating and facilitating sustainability transitions, while taking into account system thinking, complexity and uncertainty (Loorbach 2010).

Since its introduction in the Netherlands in 2000 (Rotmans et al 2001), transition management has been widely debated, challenged, tested, and because of this further developed, enriched and embedded in the academic literature. The scientific debate has primarily focused on the theoretical side (Rotmans 2005, Loorbach 2010, Grin et al. 2010, Loorbach 2007; Loorbach & Kemp 2007, Kern & Smith 2007, Sondeijker 2009, Van der Brugge 2009, Van den Bosch 2010, Loorbach & Rotmans 2010).

Some of the main principles of transition management are as follows (Loorbach 2010):

- long-term thinking as the basis for short term policy
- thinking in terms of multiple domains (multi-domain), different actors (multi-actor), different levels (multi-level)
- (social) learning as an important aim for policy ('learning-by-doing' & 'doing-by-learning')
- direct governance towards system innovation besides system improvement
- keeping options open, exploring multiple pathways
- selective participation of so-called frontrunners

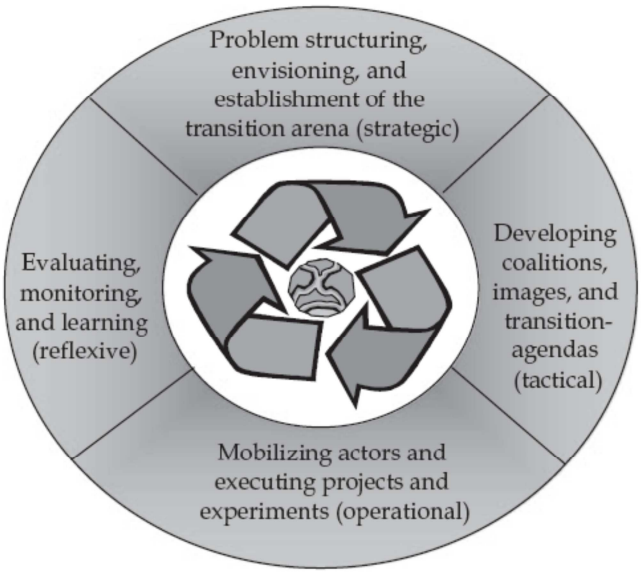

Figure 1: Transition management cycle (Loorbach 2010: 173)

For the implementation of the approach these principles have been translated in an operational model, the so-called transition management cycle (see figure 1). The four components, which correspond to activities on four dimensions: the strategic, tactical, operational and reflexive dimension, are as follows: (i) organize & establish the transition arena and structure the problem under study (ii) develop a transition agenda, images of sustainability and define transition paths; (iii) establish and carry out transition experiments and mobilize the resulting transition networks; (iv) monitor, evaluate and learn lessons from the transition experiments and, based on these, make adjustments in the vision, agenda and coalitions.

These components exhibit specific characteristics (in terms of the type of actors involved, the type of process they are associated with and the type of product they deliver) which makes it possible to (experimentally and exploratory) develop specific 'systemic instruments' and process strategies (such as participant selection, use of different types of policy and process instruments). The idea behind transition management is to create a societal movement through new coalitions, partnerships and networks around arenas that allow for building up continuous

pressure on the political and market arena to safeguard the long-term orientation and goals of the transition process (Loorbach 2007, Buuren & Loorbach 2009, Grin et al. 2010).

The starting point in a transition management process is to structure or reframe an existing societal issue in terms of the underlying problems to go beyond obvious and partial problems. The premise is that sustainability transitions require new ways of thinking and acting, which are intertwined.

Transition arena

The transition arena is a small network of frontrunners (10-15 people) that are identified and selected based on competencies, interests, backgrounds and perspectives. Participation is on a personal basis and not as a representative of an institution or based on an organizational background. These frontrunners can be experts, networkers or opinion leaders and should be prepared to commit and invest time and energy. Within the arena group there should be an equal number of frontrunners from the societal pentagon of the government, companies, non-governmental organizations, knowledge institutes and intermediaries (consulting organizations, project organizations and mediators). It is crucial that participants have innovative power (the power of new ideas), transformative power (the capacity to mobilize others for change) and to a lesser extent reinforcive power (a position within dominant hierarchy) (see Avelino 2011). The latter can be advantageous with an eye on legitimacy and financing of the process of innovation. A transition arena is a societal network of innovation, rather than an administrative platform or a consultative body (Van Buuren & Loorbach 2009). A transition arena demands a critical selection of frontrunners by a transition team, responsible for process and structure of the arena, in which experts on the process and on the transition subject are involved. As an open, evolving process of innovation a transition arena process implies variation and selection: after a certain period of time some people may drop out and others may join in the transition arena.

When such a group of frontrunners has been brought together to focus on a certain transition issue, an attempt is made to reach a joint problem definition on a system level. The core idea is that by making individual perspectives and paradigms explicit and confronting these with each other in a creative strongly interactive process, individual's inner contexts are influenced. It leads to new insights into the nature of the problem(s) and the underlying causal mechanisms which form the prelude to a change in perspective, which is a necessary but insufficient pre-condition to realizing a transition. Based on this new perspective and through discussion and interaction, sustainability visions are generated which primarily include the shared basic principles for long-term sustainable development, leaving room for dissent upon short-and mid-term solutions, goals and strategies. While there is an emphasis on consensus or at least a willingness to cooperate within a common framework, this consensus is only valid within the context of the transition network. Generally, the transition vision will oppose expectations and visions of dominant external actors, and in this sense transition visions are explicitly seeking conflict with vested interests and powers to establish a fundamental debate upon future development, the necessity of fundamental change, and the possibilities of an envisaged transition.

Transition agenda

Visions are an important governance instrument for achieving new insights and starting points, and therefore a change of attractor. The visions created evolve and are instrumental: the process of envisioning is just as important as the ultimate visions themselves. Envisioning processes are very labour-intensive and time-consuming, but are crucial to achieving development in the desired direction. This direction, as long as a sufficiently large group of interested and engaged citizens and other actors supports it, provides a focus and creates the constraints, which determine the room for manoeuvre within which the future transition activities can take place. Based on the sustainability vision, a backcasting tool (in the narrow interpretation) can be applied in which transition paths are developed and a common transition agenda is drawn up. A

common transition agenda contains a number of joint objectives, action points, projects, and instruments to realize these objectives. It should be clear who is responsible for which type of activity, project or instrument that is being developed or applied. Where the sustainability visions and the accompanying final transition images and transition objectives form the guidelines for the transition agenda which is to be developed, the transition agenda itself forms the compass for the frontrunners which they can refer to during their research and learning process.

Transition experiments

Transition experiments form the operational aspect of transition management and are innovation projects with a societal challenge as a starting point for learning aimed at contributing to a transition (Van den Bosch 2010). Putting the transition agenda into practice, transition experiments are by definition focused on experimenting and learning about different options and possibilities in the light of the long-term ambition and vision (Loorbach 2007). The strategies and activities in these experiments relate to short-term and everyday behaviour, decisions and action. At this level actors either reinforce dominating structures, cultures and practices or they choose to restructure or change them. These experiments have a high level of uncertainty and are focused on new combinations and insights. They are searching and learning processes (doing by learning and learning by doing). Ideally, transition experiments offer room for experiment and creativity and are managed in terms of conditions (deepening, niche management) and in terms of diffusion (broadening and scaling-up) (Kemp & Van den Bosch 2006, Van den Bosch & Rotmans 2008). Hence, a transition experiment is not a goal in itself, but an instrument to explore and learn about sustainability and radically different ways of meeting societal needs, now and in the future (Van den Bosch 2010).

Transition monitoring

Transition monitoring & evaluation is the reflective activity of the transition management cycle (Loorbach 2007, 2010). Due to the nature of wicked problems that are tackled with transition management processes, the emphasis of this activity is not on assessment and judgement but on learning. The activities within the transition arena and the transition experiments as well as within transition programmes (which include several transition experiments) are monitored. This is not a one-off activity but a constant flexible engagement with the dynamics at hand and requires reflexive monitoring, which is "the human capacity to routinely observe and understand what you are doing while you are doing it" (Taanman, forthcoming). It is learning in action. Transition monitoring is a cyclical and constant process supporting the learning experiences of the individual and the group who works on initiatives towards more sustainable futures. Also other stakeholders such as sponsors or target group benefit from monitoring. The results of transition monitoring processes help in (better) communicating about the initiative improving it and accounting for it.

3 Backcasting

Overview

Backcasting was proposed in the 1970s in energy studies (e.g. Lovins 1977, Robinson 1990) and later also applied to sustainability planning (e.g. Robinson 1990) and to sustainable organisations (Holmberg 1998). Several types of backcasting can be distinguished (Wangel 2011; see also Höjer et al 2011): (i) target-oriented backcasting, which focuses on developing and analysing target-fulfilling images in which the target is usually expressed as a quantitative manner; (ii) pathway-oriented backcasting in which setting strict goals is considered less important, the focus is on how change can take place and the measures that support the changes like policies, taxes, or behavioural changes; (iii) action-oriented backcasting in which the main objective is to develop an action agenda, strategy or action plan, the focus is on who could bring

about the changes and realising buy-in and commitment among stakeholders; (iv) participation-oriented backcasting (pBC) in which backcasting is used as a creative workshop tool. It must be realised that several types can be combined within a single backcasting study, though in a particular study the emphasis is usually on one or two types. In addition, the variety is even larger, as the term backcasting is both used for an overall approach (e.g. Quist et al 2011, Quist and Vergragt 2006) or for a specific backwards-looking step or tool within a methodology (e.g. Rotmans et al 2001, Van de Kerkhof et al 2003, Van de Kerkhof 2004).

Since the early 1990s it has developed into a participatory approach, especially in the Netherlands[2] (Vergragt & Jansen 1993, Weaver et al 2000, Quist & Vergragt 2006), Canada (Robinson 2003) and also Sweden (Holmberg 1998, Drehborg 1996, Carlsson-Kanyama et al 2007). Other examples of participatory backcasting can be found in various European collaborative research projects (e.g. Kok et al 2006, Kok et al 2011), while related participatory vision development and assessment projects can be found in several countries (e.g. Eames & Egmose 2011; Sondeijker 2009). Though most participatory backcasting studies involve (expert) stakeholders, examples involving citizen, consumers or end-users can also be found. Citizens were involved in vision development and backcasting workshops in sustainable urban planning (Carlsson-Kanyama et al 2007) and in developing and evaluating local and regional energy futures in Canada (Robinson 2003, Robinson et al 2011). Strong citizen involvement was also part of local vision development (Kok et al 2006) and defining sustainability research agendas in the UK (Eames & Egmose 2011). In addition, the 'Strategies towards the Sustainable Household' (SusHouse) project involved societal stakeholders like consumer associations and environmental organisation as well as consumers/citizens (Quist et al 2001, Green & Vergragt 2002, Klapwijk et al 2006, Quist 2007). Experts and stakeholders were involved in visioning and backcasting workshops, whereas three kinds of consumers were involved in focus groups in which visions were assessed and complemented.

Backcasting literally means looking back from the future. It 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 & Quist 2011: 747). It may but does not always include a focus on implementing and generating follow-up activities contributing to bringing about the desirable sustainable futures. It is a normative approach to foresight using desirable or so-called alternative futures, instead of likely or possible futures (Quist 2007). As a consequence, it is very different from regular forecasting, which looks to the future from the present and is not (or only to a very limited extend) normative. Backcasting is particularly useful in the case of complex problems, where there is a need for major change, where dominant trends are part of the problem, where there are side-effects or externalities that cannot be satisfactorily solved in markets, and where long time horizons allow for future alternatives that need time to develop (Drehborg 1996). Moreover, Giddens (2009) has proposed to use backcasting as a sustainable alternative to traditional planning, and as a tool for moving toward alternative futures when dealing with climate change. However, it should be mentioned that several authors only refer to backcasting as the backwards looking step/analysis, while they use other names for the entire approach (e.g. Van de Kerhof 2004).

More detailed overviews of the development and types of backcasting have been provided elsewhere (Quist & Vergragt 2006, Quist 2007, Wangel 2011). These reviews show a considerable variety in backcasting approaches and the way they are turned into methodologies. Variety can be found in the degree and way stakeholder participation is organised, the kind of methods that have been applied within a backcasting framework, the topics and the scale addressed (e.g. local, regional, national, consumption systems, or societal domains), and whether

[2] In the Netherlands participatory backcasting was for instance applied at the 'Sustainable Technology Development Programme' (Weaver et al. 2000), the 'Strategies towards the Sustainable Household (SusHouse)' (Quist et al. 2001, Green & Vergragt 2002), the COOL project dealing with options preventing climate change (Van de Kerkhof 2004), biomass dialogue (Cuppen 2010) livestock breeding research (Grin et al. 2004) and in education (Quist et al. 2006).

the focus is on impact (e.g. Quist et al 2011) or diversity (Cuppen 2010 & 2012). These reviews also show that the key to backcasting is the generation and assessment of normative or desirable future visions or future images. In this way backcasting including all its varieties can be seen as part of a family of foresight approaches that share the development of normative or desirable future images. Literature on backcasting in general neglects aspects of governance and implementation (e.g. Wangel 2011), though this has been addressed in participatory backcasting studies in the Netherlands (Weaver et al. 2000, Quist et al. 2001, Green & Vergragt 2002, Grin et al. 2004, Vergragt 2005, Quist et al 2011).

Methodological framework for backcasting

Key elements of participatory backcasting are (1) stakeholder involvement and dialogue, (2) participatory generation of desirable future visions, and (3) stakeholder learning through involvement, interaction, vision development and vision assessment (Quist & Vergragt 2006, Quist 2007). Backcasting is also characterised by being problem- and system-oriented and by turning visions into immediate actions. It is as an overall approach for which a methodological framework has been developed, consisting of five steps, four types of methods and three kinds of demands (see figure 2).

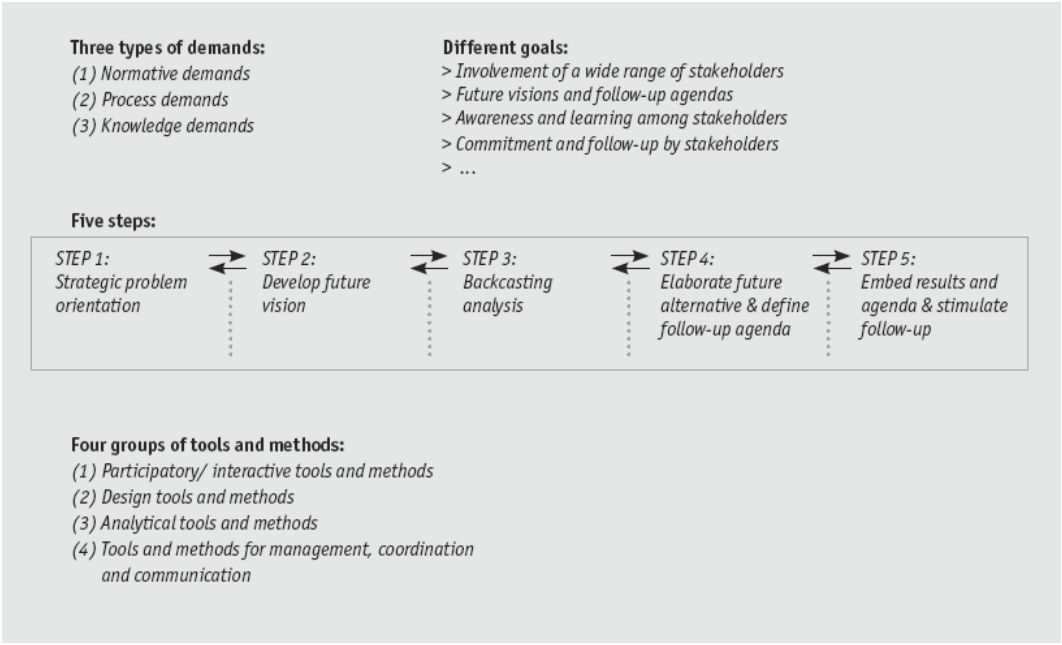

Figure 2: The methodological framework for participatory backcasting (Quist 2007: 232)

The backcasting approach reflected by the framework is not only interdisciplinary (combining and integrating tools, methods and results from different disciplines), but also transdisciplinary in nature, in the sense that it involves stakeholders, stakeholder knowledge and stakeholder values. The framework also distinguishes three types of demands: normative demands, process demands and knowledge demands. Normative demands reflect the goal-related requirements for the future vision, process demands are requirements regarding stakeholder involvement and their level of influence in the way issues, problems and potential solutions are framed and resolved in the backcasting study. Knowledge demands are needed to set requirements for the scientific and non-scientific knowledge strived for and how these are valued one to another. In addition, different goals can be distinguished in backcasting studies, which can not only refer to process-related variables, but also to content-related variables, or to a range of other variables like knowledge and methodology development. Generally speaking, stakeholder heterogeneity is high in participatory backcasting, usually because stakeholders from different societal domains

like business, research, government and society are involved, with the latter including both the wider public and public interest groups. Despite the fact that the steps are presented in a linear fashion in Figure 2 iteration and moving forward and backward between steps is likely to occur.

4 Comparing Transition Management & participatory Backcasting

From the above descriptions of the two approaches it becomes clear that transition management and participatory backcasting are closely related approaches. Participatory backcasting work of the 1990's was one of the sources for the development of transition management. In transition management practice, backcasting is understood as a single step in the transition management process (the step linking transition vision and the problem definition in the transition agenda building phase) and not as a fully fledged methodological approach (Rotmans et al 2001). Unlike in backcasting, transition management pays more attention to implementation and follow up activities, i.e. by developing coalitions and shared strategies to accelerate and guide changes within the daily context of involved actors and to govern and facilitate the implementation (Loorbach 2007, Loorbach 2010). Backcasting on the other hand has a larger diversity of practices including non-participatory studies and focuses more on the development and evaluation of desirable (alternative) images of the future (Quist 2007, Vergragt and Quist 2011, Wangel 2011; Höjer et al 2011).

In the following we will describe more similarities and differences between participatory backcasting and transition management focusing on elements of learning (i.e. second order learning processes) as this bridges the individual and group level in a participatory process. Table 1 summarises similarities and differences between transition management and participatory backcasting.

Similarities of TM & participatory BC

Both approaches share a strong focus on stakeholder involvement, stakeholder learning and the development and assessment of desirable future visions, including turning long-term visions into actions and action agendas. First and second order learning can be distinguished. In the group setting, first order learning takes place through the introduction of new knowledge whereas second order learning is conceptualised to take place through consciously confronting, questioning and thereby shifting different worldviews and perspectives and their underlying values and beliefs (i.e. interpretive frames; see also Grin and Loeber 2009, Quist 2007). All this happens in a social setting and through interaction, which links to concepts of social learning (see Garmendia & Stagl 2010 for a discussion on social learning, and & Quist and Tukker for an overview of higher order learning in innovation and consumption). In addition, diffusion of learning is important, which takes place through individuals who are able to disseminate and embed it within their organisation or network. This calls for involving, what is in TM being referred to as, frontrunners who have the ability to become such change agents.

Both approaches share the same understanding of societal change as non-linear and uncertain process. A shared activity is the development of normative or desirable future images. Both approaches see the need for iteration between future and present for developing ideas and raising sensitivity to the possibilities of multiple future pathways. Through this visioning process actors are motivated and inspired to develop further action. The vision and learning process aims also to create endorsement for the outcomes of back- and forecasting. At group level it may lead to shared ideas/beliefs, consensus (agreement or win-win) or congruence (win-win in the sense that there is no conflict in interest or values) and lateral change / shifts (moving of actors/persons toward another viewpoint). In higher order learning, indeed a distinction has been made between learning at the individual level and at the group level. It is indeed learning at the group level (Brown et al 2003), which is the seed for change and agency. Here, of course, diffusion of learning is essential, but not easy to achieve (e.g. Brown et al 2003).

A final similarity between transition management and backcasting is the focus on actors or stakeholders, whereas the changes at the actor or stakeholder level are based on changes at the individual level, which will be further discussed in Section 4.3

Table 1: Similarities and differences between transition management and participatory backcasting

Similarities	*Differences*
- Stakeholder participation, focus on actor/stakeholder level - Shared vision development - Higher order learning by involved stakeholders - Turning long-term visions into short-term actions & agendas - - Stakeholder commitment to results & agendas	- TM is rooted in transition theory building on the Multi-Level Perspective, BC is agnostic about system innovation theory and niches - TM has a stronger focus on developing a shared problem definition - In TM implementation and follow-up is key, whereas in BC it is more an add-on - BC has larger methodological diversity, TM has a more focussed profile

Differences

There are several differences too. First of all transition management is rooted in transition theory building amongst others on the multi-level perspective which outlines that novelty starts in niches and may replace or adjust the dominant regime (Grin et al. 2010, Grin et al. 2011). By contrast, backcasting is not rooted in a particular social system theory and is agnostic if novelty starts in a niche or in the regime itself (Vergragt & Quist 2011). Secondly, in transition management the group process of developing the sustainability narrative including problem description, transition vision and pathways are as important as the narrative itself – being part of the learning process of the transition arena participants. Backcasting primarily focuses on the process of delivering and analysing an inspiring vision linked to certain pathways and not so much on the process and the other components of the sustainability narrative. Thirdly, the focus on experimentation and generation of follow-up activities is one of the key aspects of transition management, while within backcasting diffusion activities contributing to bringing about the generated desirable sustainable futures are still an add-on. And finally, backcasting shows a larger methodological diversity, whereas transition management has a stronger and more focused profile.

The individual level in TM & participatory BC

Interestingly, participatory backcasting, as well as transition management assume higher order learning at both the actor and group level (Quist 2007, Van de Kerkhof 2004, Loorbach 2007, Loorbach 2010). Also diffusion of learning and learning outcomes through actors and individuals present in the backcasting or visioning processes is crucial for implementation and spin-off (e.g. Quist et al 2011, Brown et al 2003), whereas in TM this has been defined as empowerment of frontrunners (Avelino 2011). In fact, TM and pBC are both supporting the exploration of individual inner contexts (values, norms, motivations, problem definitions, expectations, ambitions and preferred solutions) in a group setting, while relating this process to the broader societal context.However, the individual inner context, empowerment and the (individual) learning processes are underexplored in TM and pBC

It is the absence of these aspects within TM & pBC that is addressed in the InContext project, which explicitly aims to enrich usual approaches of transition management and participatory backcasting with the inner context of behaviour, i.e. the needs, values, beliefs of individuals in case of sustainability transitions in general and sustainable ways of behaviour and living in particular (Schäpke & Rauschmayer 2012a, 2012b).

Building on Max-Neef (1991), Schäpke & Rauschmayer[3] (2012a, 2012b) distinguish between fundamental human needs that are abstract, few, and finite in number (such as freedom, affection, or subsistence, e.g. food, water, shelter) and strategies to satisfy needs (such as: having a car, caring for kids, eating a sandwich). This differentiation allows for the hypothesis underlying InContext that people can change their strategies in a more sustainable direction once they are aware of their needs and can themselves differentiate between their needs and their strategies used to fulfil these needs.

Schäpke and Rauschmayer (2012b) have proposed a circular model based on the capability approach (Sen 1985, Nussbaum 2000, Pick and Sirkin 2010) and the norm-activation model of Schwartz & Howard (1981) (see Figure 3). The capability set of a person describes the behavioural alternatives a person can choose from. It can be considered as the behavioural strategies available to a person to meet his or her needs. When deciding on which behaviour to carry out, the proposed model highlights the role of for instance awareness, attitudes and norms in the personal decision process.

Two types of feedback processes are proposed (see Figure 3). First, experiences with behavioural strategies affect individual perceptions of achievable behaviour (perceived self-efficacy), desirable and expected behaviour (attitudes, norms), perceived opportunities and skills, and also leads to learning, experiences and knowledge. Learning may not only contribute to intrinsic empowerment of participating individuals, but also to an increased capability set. Second, behavioural strategies affect the outer context aspects, e.g. by maintaining or questioning social or political institutions and policies or by changing the impacts of consumption on natural resources. As Schäpke and Rauschmayer (2012a) argue, this second feedback loop leaves room for the idea of co-evolution and joint development of inner individual and outer context aspects and behavioural strategies. In general, the impacts of individual behaviour changes on the outer collective context is rather low, but at the collective level the outcome of transition arena processes may include such feedback.

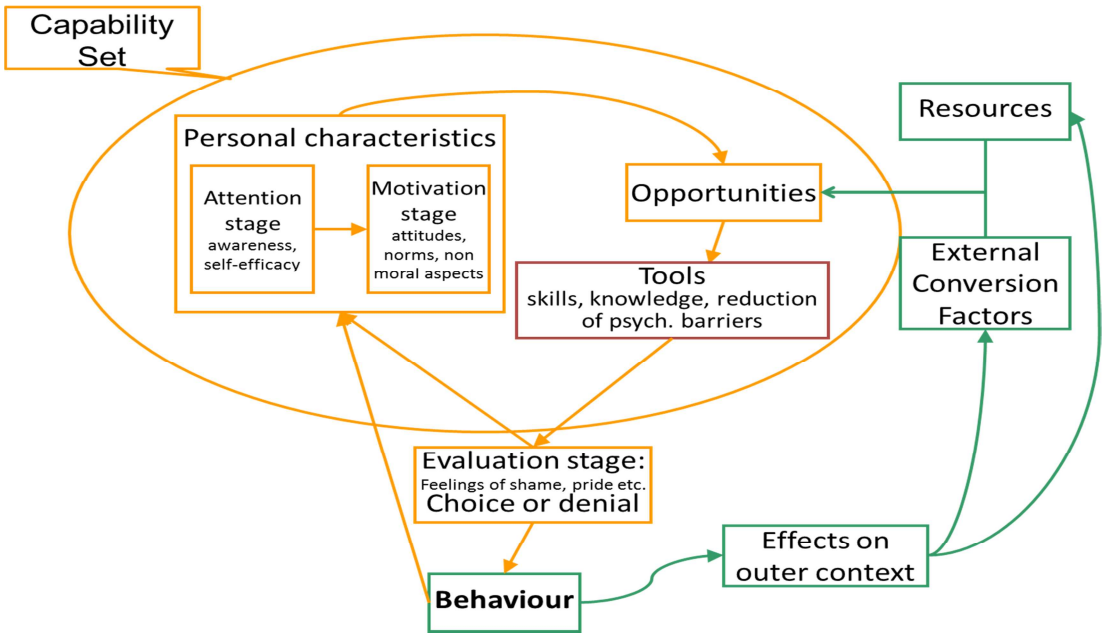

*Figure 3: Dynamic norm activation capability and feedback model (source: Schäpke and Rauschmayer 2012b) Caption: inner context: **orange**, outer context: **green***

[3] The current and next paragraphs build on Schäpke and Rauschmayter (2012a, 2012b), Rauschmayer et al. 2013 and Schäpke et al. 2013; we would like to acknowledge their thinking and writing.

Saying it differently, the community arena focuses on articulating, confronting and connecting individual inner contexts in a participatory process so as to collectively reflect on (un-) sustainable perceptions and behaviour, as well as the outer context. The premise is that by raising awareness and sensitivity amongst engaged citizens about other ways to look at reality, they open up to new possibilities to think about their individual behaviour in the broader societal context and to enhance opportunities for changing the inner and outer context in pursuit of sustainability through individual and collective processes of learning and empowerment. Whereas the model of Figure 3 offers an opportunity to connect concepts like capabilities, opportunities, behavioural strategies and attitudes and norms to concepts of learning and empowerment at the actor and group level, it still needs further development and conceptualisation as well as further integration into the community arena methodology.

5 The community arena methodology

While other processes such as the Local Agenda 21 were not producing "widespread, deep-seated and long-lasting transformations" (Selman 2000: 49) this is what the community arena is aiming for by making space for individuals to reflect on their inner context in relation to broader societal changes to sustainability. As a co-creation tool for sustainable behaviour by local communities the community arena builds upon insights of transition management, backcasting and social and environmental psychology, and it has been inspired by the feedback model shown in Figure 3. The community arena focuses on articulating, confronting and connecting individual inner contexts in a participatory process so as to influence both how individuals think as well as how they behave. The premise is that by raising awareness and sensitivity amongst engaged actors (i.e. citizens, professionals and business) about their own and other people's needs as well as other ways to look at reality, they open up to new ways of thinking about their individual behaviour in the broader societal context (i.e. higher order learning). This should result into processes of reflection on individual and group level allowing for new behavioural strategies to emerge on how individual and groups needs are met and also into experiments with innovative practices as alternatives to established ones.

Within the community arena approach we distinguish five phases, preceded by a pre-preparation phase. Each of these phases has a different objective in the process; they consist of transition management and backcasting exercises as well as methods addressing the inner context and include a minimum of five participatory meetings (for an elaborate description see Wittmayer et al. 2011).

	Phases of the Community Arena	
	Key activities	**Key output**
0. Pre-preparation	A. Case orientation B. Transition team formation	A. Initial case description B. Transition team
1. Preparation & Exploration	A. Process design B. System analysis C. Actor analysis (long-list and short-list of relevant actors) incl. interviews D Set up Monitoring framework	A. Community Arena process plan B. Insightful overview of major issues/tensions to focus on C. Actor identification and categorisation + insight inner context D Monitoring framework
2. Problem structuring & Envisioning	A. Community arena formation B. Participatory problem structuring*	A. Frontrunner network B. Individual and shared problem perceptions & change topics

	C. Selection of key priorities D. Participatory vision building*	C. Guiding sustainability principles D. Individual and shared visions
3. Backcasting, Pathways & Agenda Building	A. Participatory backcasting* & definition of transition paths B. Formulation agenda and specific activities* C. Monitoring interviews	A. Backcasting analysis & transition paths B. Transition agenda and formation of possible sub-groups C. Learning & process feedback
4. Experimenting & Implementing	A. Dissemination of visions, pathways and agenda B. Coalition forming & broadening the network C. Conducting experiments	A. Broader public awareness & extended involvement B. Change agents network & experiment portfolio C. Learning & implementation
5. Monitoring & Evaluation	A. Participatory evaluation of method, content and process* B. Monitoring interviews	A. Adapted methodological framework, strategy and lessons learned for local and EU-level governance B. Insight in drivers and barriers for sustainable behaviour

*Figure 3: Phases of the Community Arena; * meeting*

Phase 0: Pre-preparation

Part of this phase are two activities, case orientation and the formation of the team initiating and leading the team, the so-called transition team. The case orientation is a first exploration of the context within which a community arena is to take place which includes social, ecological and economic features of the context as well as active involvement of actors in the context. The transition team is the core driver of the process and should consist of 3-5 members, a strategic and content based mix of employees of the initating organization, experts in the field under study, transition management experts, change-oriented representatives from the local government and process facilitator. The tasks of the transition team are quite demanding and time-consuming; the team not only prepares, documents, analyses, monitors, co-ordinates, manages, facilitates and evaluates the whole process, but also chooses the participants and feeds them with background information and detailed knowledge. It brings together the various parties, is responsible for the internal and external communication, acts as intermediary in discordant situations and has an overview of all the activities in and between arena meetings.

Phase 1: Preparation and Exploration

In the crucial phase of preparing the stage for the frontrunners, several activities can be distinguished, process design, system analysis and actor analysis as well as setting up a monitoring framework. The transition team is getting together to determine the process design written up in a community arena process plan (output 1A) which includes the basic set up of the community arena (amount of meetings, methods used, mode and level of documentation), the time planning (amount of meetings), the communication, and other topics such as relating the arena process to relevant ongoing (policy) processes.

Both, the system and the actor analysis serve as giving insight into the local context by describing it as a system. The transition team delimits system boundaries and selects relevant stocks of the system (social, environmental and economic capital e.g. labour force, infrastructure, air quality, housing stock) along which the system is described also in time. In combination with the actor analyses this first phase is the foundation of the process and serves

as a starting point for monitoring the behaviour and input for the arena meetings. The main function of the actor analysis in this phase is to prepare the selection of participants for the transition arena. Ideally, the group is a mix of 'frontrunners' who combine creativity and imagination with the openness to evaluate and appreciate other perspectives and 'enlightened' regime actors (resource holders). It should include a diversity of competences, types of power and backgrounds.

A last activity includes the setting up of the monitoring activities. The monitoring & evaluation framework helps to adjust and improve the community arena process, to communicate with stakeholders, to justify investments to investors and to learn (participants and transition team).

Phase 2: Problem structuring and envisioning

This phase starts after the arena participants are selected (based on the actor analysis) and invited to join. In a first step the community arena is formed, and thereby a frontrunner network created (output 2A). This frontrunner group meets twice in phase two, once for a participatory problem structuring and once for the selection of key priorities and the participatory vision building.

Through a strongly interactive process a joint perception of the problem and a joint definition of the main change topics are reached in the first meeting (output 2B). The open discussion is based on the system analysis and the formulation of the main transition challenges. A secondary objective is to create commonality between participants. The selection of key priorities is one of the key activities of the second meeting which focuses on the formulation and discussion of a shared vision. In the meeting, all kinds of ideas for the future emerge. Some will be embraced and elaborated in a lively discussion; others won't be picked up (yet) by the group. A good starting point for selecting key priorities is the shared problem perception, which is translated into guiding sustainability principles (output 2C). These are the general principles formulated by the frontrunner network for a sustainable community and individual behaviour (e.g. self-responsibility, rewards for sustainable behaviour, individualized sustainability behaviour).

During the second meeting the focus is on the formulation and discussion of a shared vision. The vision is based on the consolidated problem perception and change topics as well as the guiding sustainability principles. During the meeting there are several moments for (critical) self-reflection. Facilitated by appropriate methods, frontrunners can reflect on their own needs, become aware of their strategies and their capability to influence their local environment and what this means for the vision. This way the inner context can be analyzed as well, resulting in both a shared and individual vision (output 2D).

Phase 3: Backcasting, Pathways and Agenda Building

In the next phase the arena builds upon its problem definition and its shared vision to develop actions and targets. During this phase, the interests, motives, and policies of the participants come out into the open; there are negotiations about investments, and individual plans and strategies are fine-tuned (Loorbach 2010). This is done in two participatory meetings, with the first focusing on participatory backcasting and the definition of transition paths.

Based on the sustainability vision developed, a process is initiated in which a backcasting analysis is conducted for each of the visionary images, and one or several transition paths are developed (including questions such as what needs to change, who is necessary for this change). The output is a backcasting analysis and transition paths (output 3A). Transition paths are possible routes from the present towards sustainable images and behaviour and have the same timeframe as the vision, i.e. 2030. They connect the long-term vision to the short-term action.

During a fourth meeting feedback on the final drafts of the backcasting analysis is received as well as a common agenda defined. The different perspectives on how to reach the vision and images can not only be elaborated into transition paths, but also into more short-term specific

activities, i.e. a transition agenda (output 3A). The members of the community arena are divided into different sub-groups (e.g. on visionary images, transition paths, activity-related). Step-by-step, the sub-groups will organize their work themselves. Based on the outcome of the backcasting, the sub-groups formulate an agenda, elaborate on transition paths and finally translate the agenda into activities. The agenda forms the long-term context for short-term activities and policy. The transition team and the frontrunners can choose to involve a broader group of people in this meeting, by inviting relevant parties and asking the arena-participants to invite people from their networks.

The outcome of this phase functions as a compass for future actions and experiments. By building coalitions and networks in the next phase the conditions for desired experiments are designed. Ultimately this leads to influencing behavior, policy making and lobbying. During this phase the second interview, leading to new insights on changes in the inner context of the individual participants are conducted (output 3C).

Phase 4: Experimenting and implementing

In this phase the process opens up to the public through e.g. the dissemination of visions, pathways and agenda in order to keep arena participants from abandoning the process and to create and maintain support from external actors such as general public, policy makers, interested stakeholders (output 4A). Also in this phase, strategic coalitions should be created around the subgroups established in phase 3. This change agent's network (output 4B) broadens the overall network. Specific activities as well as transition experiments should be performed through the existing networks of arena participants. This ensures on the one hand direct involvement of these frontrunners and on the other that experiments based on input from previous phases (visions, agenda, etc.). Efforts focus on creating a portfolio of related experiments which complement and strengthen each other as much as possible (output 4B). Support by policy makers can be guaranteed via an external steering group or a supportive policy arena.

A third activity relates to the operational level of transition management, the carrying out of transition experiments and actions (output 4C) aimed at deepening, broadening, and scaling up existing and planned initiatives and actions (Kemp & Van den Bosch 2006, Raven et al. 2007; Van den Bosch & Rotmans 2009, Van den Bosch 2010). The importance of short-term activities is of great importance for commitment and enthusiasm towards an arena process. The experiments have a high level of uncertainty and are focused on new combinations and insights as answers to societal challenges. They are searching and learning processes (doing by learning and learning by doing). During this phase the behaviour of the participants is monitored also. In how far are their strategies changing? Which side experiments and actions do participants undertake next to the arena-process?

Phase 5: Monitoring and evaluation

Monitoring and evaluation (of process and content) are key elements in this methodology with its focus on learning. This last phase is not sequential as the others, as monitoring is a cyclical and constant process and is performed throughout the process. Monitoring supports in communicating results to the public, in justifying investments to stakeholders and investors, in learning (participants, transition team), and importantly in adjusting the process if necessary (process design and substance of e.g. meetings, paths and experiments can be adjusted when needed).

6 Pilot projects: the Dutch district of Carnisse

Introduction

The community arena methodology is currently being applied through an action research approach in three local communities in Austria, Germany, and the Netherlands respectively. In selecting these pilots, a strategy of diversity and variety has been employed, as can be seen from the characteristics shown in Table 5. This exploratory approach allows for learning from the differences in the pilots, thereby increasing the range of learning.

Table 5: Some characteristics of the three pilots

	Finkenstein (A)	Wolfshagen (D)	Carnisse (NL)
Inhabitants	8.509	13.840	10.533
Type of community	Market town consisting of a conglomerate of twenty-eight villages of which six are dominant, situated on the border of Austria with Slovenia	Rural town (with a core city and eleven rural districts), situated in the centre of Germany	Urban neighbourhood of Rotterdam, situated in the West of the Netherlands
Characteristics	Decentralised structure, conflict of interest between tourism, population and industry, hardly any community meeting facilities, two language groups	High percentage of commuters, population decline, frontrunner in renewable energy, fading city centre	Deprived neighborhood, high turnaround of inhabitants, severe budget cuts threaten the continuation of major community facilities, around 170 nationalities, lots of considerable moving

Overview community arena process in Carnisse

This part is based on Wittmayer et al (2012, 2013a). Rotterdam is the second city of the Netherlands, counting almost 600,000 inhabitants, 127 nationalities, and until recently was the world's largest port. It is a heavily industrialized area. The city is divided by the river Maas (and the old harbour area) into a South and North part. Neighbourhoods on the south bank were historically and still are the place where immigrants move into the city. Instead of an aging population, Rotterdam has a very young population which has a relatively low level of education and a high level of unemployment.

The pilot project area is one of the neighbourhoods of Rotterdam called Carnisse. Carnisse became a city neighbourhood with the extension of the city and the harbour on the left bank of the Maas around 1900. Houses were built until roundabout 1950. Carnisse (as part of Rotterdam South) is listed in 2007 as one of the 40 neighbourhoods that the national government in the Netherlands labelled 'neighbourhoods of extra interest' ('aandachtswijken'). These neighbourhoods are all seen as having problems in multiple domains (social, physical and economical). The neighbourhood, together with seven other neighbourhoods in Rotterdam South, is still labelled as such and receives special attention and funds from the national government.

The context of Carnisse in 2011 is characterized by recent cost reductions and government cuts and a withdrawal of the welfare-state. Although old welfare structures are dismantled there is still a high level of (non-) governmental activity as well as a long history of participatory processes and interventions by professionals and/or researchers. The inhabitants of Carnisse who took part in the process (either through interviews or as arena participant) expressed their frustration on these phenomena, but were also eager to relativize the picture of a deprived

neighbourhood by pointing to the many initiatives that are arising from within the community. When looking at sustainability in terms of social, ecological and economic sustainability, the emphasis in Carnisse is on the social aspect of this triangle. For the selection of potential arena candidates the focus was on frontrunners within Carnisse, which are individuals who are passionate about their neighbourhood, who are active in the neighbourhood, those with new ideas and creative actions. This group consists of a diverse set of people (inhabitants, artists, local entrepreneurs, public officials, etc.

The Community Arena process started in August 2011. The period until February 2012 was marked by a high level of activity of the transition team in the neighborhood, doing interviews, attending meetings and getting acquainted with the locality. As of February 2012 the arena meetings took place and until May 2012 a problem description, a vision and first ideas for pathways and measures had been formulated. This vision was presented to a broader audience in the neighborhood in November 2012. During the same time a first experiment had been start, the preservation and re-opening of the local community center. In February 2013, an evaluation meeting took place where the participants evaluated the process and the outcomes and formulated future ambitions. Below focus is put on vision development and backcasting pathway meetings.

Problem Structuring & Envisioning

During the first meeting held in February 2012, the problem analysis (i.e. system analysis) was presented and the main topics of interests were identified through a group discussion. Each of the topics had multiple meanings and they were as follows: powerful/-less policy, rich and turbulent history, government cuts, diversity, connections, and maintenance of housing. In the two following meetings in March and April 2012, the participants explored their needs with regard to the community center (the focus of the action arena trajectory) as well as drew up a vision for the neighborhood for 2030 in which the community center plays an important role. The vision is called 'Blossoming Carnisse' and includes the following topics: 1) …to living with each other, 2) …to a green sustainable oasis, 3) …to diverse housing styles, 4) …to places for everybody, and 5) …to working together for blossoming.

Backcasting & Agenda Building

In May 2012, a forth Community Arena meeting was held with a focus on backcasting and developing pathways from the future vision back to the present. After having discussed and reached an agreement on the vision, three small groups worked on exploring pathways for the six topics of the vision. Under guidance of a facilitator, their task was to come up with change elements, specific activities and key actors, which were written down in a scheme. Towards the end, the transition team asked the frontrunners what they would like to do with the presented and developed ideas, vision and pathways. The idea of a neighborhood conference emerged in a group discussion. All initiatives, residents, entrepreneurs and professionals of the neighborhood were to be invited to discuss and extend on the vision and the pathways developed so far and to collaboratively come up with a neighborhood agenda.

7 Conclusions & discussion

This paper has systematically compared Transition Management and backcasting and it can be concluded that there are many shared elements, as well as differences. It became clear that both approaches have a lot in common such as e.g. the focus on vision building as a guideline for short term action and the understanding of social change as complex and non-linear. The synthesis showed that both approaches are also complementary in certain aspects, e.g. the methodological diversity of backcasting and the focus on follow-up activities and network broadening of transition management.

By adding individual aspects from capability approach & needs-opportunities approaches, the more sophisticated Community Arena methodology could be developed enabling to address local communities and consumers better for addressing sustainability issues by enhance participation at the local level and in transitions to sustainable lifestyles and sustainable consumption. The community arena is meant as a co-creation tool for sustainable behaviour by local communities. It assumes a reflexive learning and experimenting process, through which frontrunners develop a shared sustainability vision of their community and initiate actions towards its fulfilment. This process includes reflections on individual inner contexts in a group setting so as to influence both how individuals think as well as how they behave. These learning processes, achieved through consciously confronting, reflecting and questioning different worldviews and perspectives and their underlying values, attitudes and beliefs (interpretive frames) of individuals, may lead to changes in individual inner context and individual as well as collective behaviour.

The community area has been tested in three local communities in Austria, Germany, and the Netherlands. The Dutch case is a deprived neighbourhood in Rotterdam from which some results have been presented. Further methodological and conceptual evaluation is partly available, but further substantiation is needed. Interesting points are to what implementation has been achieved and can it can be stimulated and embedded. Also, further connecting the community arena methodology to the needs & capabilities feedback model on aspects influencing individual behaviour has been done and will be reported on in other papers at this workshop.

Acknowledgement

This paper is part of the FP7 funded InContext 'Individuals in Context: Supportive environments for sustainable living' project, ENV. 2010.4.2.3-1: Foresight to enhance behavioural and societal changes enabling the transition towards sustainable paths in Europe, Grant Agreement number: 265191. More information and downloads can be found at http://incontext-fp7.eu/home. Useful suggestions by Niko Schäpke on the section on the individual level are greatly acknowledged.

References

Avelino, F. (2011) Power in Transition. PhD-Thesis. Erasmus Universiteit Rotterdam.

Brown, H. S., Vergragt, P., Green, K., & Berchicci, L. (2003). Learning for Sustainability Transition through Bounded Socio-technical Experiments in Personal Mobility. Technology Analysis & Strategic Management, 15(3), 291-315.

Carlsson-Kanyama, A., Dreborg, K.H., Moll, H.C. & Padovan, D. (2007) Participatory backcasting: a tool for involving stakeholders in local sustainability planning. Futures, 2008 40: p. 34-36

Cuppen, E., (2010) Putting perspectives into participation: Constructive conflict methodology for problem structuring in stakeholder dialogues, PhD thesis, Free University of Amsterdam.

Cuppen, E. (2012). Diversity and constructive conflict in stakeholder dialogue: Considerations for design and methods. Policy Sciences 45: 23–46.

Drehborg, KH (1996) Essence of backcasting, Futures 28 (9): 813-828.

Eames, M. and J. Egmose (2011) Community foresight for urban sustainability: Insights from the Citizens Science for Sustainability (SuScit) project. Technological Forecasting and Social Change, 2011. 78(5): p. 769-784.

Frantzeskaki, N., and H. de Haan, (2009), Transitions: Two steps from theory to policy, Futures, Vol.41, pp.593-606.

Funtowicz, S. O. and J. R. Ravetz (1994). "The Worth of a Songbird – Ecological Economics as a Post-Normal Science." Ecological Economics 10(3): 197-207.

Garmendia, E. & S. Stagl (2010) Public Participation for Sustainability and Social Learning: concepts and lesions from three case studies in Europe, Ecological Economics (69): 1712-1222.

Gatersleben, B.& C. Vlek (1998). *Household Consumption, Quality of Life, and Environmental Impacts: A Psychological Perspective and Empirical Study*. In: Noorman, K.-J.; Schoot-Uiterkamp, A.J.M.: Green households? Domestic consumers, environment and sustainability. London, Earthscan.

Geissel, B. 2009 Participatory Governance: Hope or Danger for Democracy? A Case Study of Local Agenda 21, Local Government Studies, 35: 4, 401-414

Gibbs D., Longhurst J., Braithwaite C., 1998 Struggling with sustainability: weak and strong interpretations of sustainable development within local authority policy. Environment and Planning A 30: 1351-1365

Giddens A (2009) The politics of climate change, Polity Press, Cambridge UK.

Green K & P. Vergragt (2002) Towards sustainable households: a methodology for developing sustainable technological and social innovations, Futures 34: 381-400.

Grin J, Felix F, Bos B & S. Spoelstra (2004) Practices for reflexive design: lessons from a Dutch programme on sustainable agriculture, International Journal of Foresight and Innovation Policy 1: 126-149.

Grin, J. & Loeber, A., 2007. Theories of Policy Learning: Agency, Structure, and Change. In F. Fischer, G.J. Miller & M.S. Sidney (eds.) Handbook of Policy Analysis. Theory, Politics, and Methods. Boca Raton: CRC Press.

Grin, J. Rotmans, J and Schot, J.W. (2010) Transitions To Sustainable Development – Part 1. New Directions in the Study of Long Term Transformative Change., New York: Routledge Taylor and Francis Group.

Grin, J. Rotmans, J. and Schot, J.W. (2011) On patterns and agency in transition dynamics: Some key insights from the KSI programme Environmental Innovation and Societal Transitions 1: 76–81

Guillen-Royo, M. (2010), *Realising the 'wellbeing dividend': An exploratory study using the Human Scale Development approach*, Ecological Economics, 70(2), 384-393.

Höjer M, A. Gullberg, R. Pettersson(2011), Backcasting images of the future city-Time and space for sustainable development in Stockholm." Technological Forecasting and Social Change 78(5): 819-834.

Holmberg, J (1998) Backcasting: a natural step in operationalising sustainable development, Greener Management International 23: 30-51.

Jolibert, C., M. Neef, F. Rauschmayer, and J. Paavola (2011), *Should we care about the needs of non-humans? Needs assessment: a tool for environmental conflict resolution and sustainable organization of living beings*, Environmental Policy and Governance, 21, 259-269.

Kasemir, B., J. Jager, C. Jaeger and M. Gardner, Eds. (2003). Public Participation in Sustainability Science. Cambridge, Cambridge University Press.

Kates, R. W., W. C. Clark, R. Corell, J. M. Hall, C. C. Jaeger, I. Lowe, J. J. McCarthy, H. J. Schellnhuber, B. Bolin, N. M. Dickson, S. Faucheux, G. C. Gallopin, A. Grubler, B. Huntley, J. Jager, N. S. Jodha, R. E. Kasperson, A. Mabogunje, P. Matson, H. Mooney, B. Moore, T. O'Riordan and U. Svedin (2001). "Environment and development – Sustainability science." Science 292(5517): 641-642.

Kemp, R. & S. Van den Bosch (2006) Transitie-experimenten. Praktijkexperimenten met de potentie om bij te dragen aan transities. Essay 01. Delft/Rotterdam, KCT.

Kern, F. & A. Smith (2007), Restructuring energy systems for sustainability? Energy transition policy in the Netherlands, Energy Policy 36 (2007) 4093–4103.

Klapwijk R, J Knot, J Quist, Ph Vergragt (2006), Using design orienting scenarios to analyze the interaction between technology, behavior and environment in the SusHouse project, in: PP Verbeek, A Slob (eds) User Behavior and technology development: shaping sustainable relations between consumers and technologies, Springer.

Kok K., M. van Vliet, I. Bärlund, A. Dubel and J. Sendzimir (2011) Combining participative backcasting and exploratory scenario development: Experiences from the SCENES project. Technological Forecasting and Social Change, 78(5): p. 835-851.

Kok K, M. Patel, D. S. Rothman and G. Quaranta, (2006) Multi-scale narratives from an IA perspective: Part II. Participatory local scenario development. Futures, 2006. 38(3): p. 285-311.

Loorbach, D. (2004) Governance and Transitions: A Multi-Level Policy Framework based on complex systems thinking. Berlin: Conference on Human Dimensions of Global Environmental Change.

Loorbach, D., 2007. Transition Management: New Mode of Governance for Sustainable Development. Utrecht: International Books.

Loorbach, D., (2010), Transition Management for Sustainable Development: A Prescriptive, Complexity-Based Governance Framework, Governance: An International Journal of Policy, Administration, and Institutions, 23(1), 161–183.

Loorbach, D., and Rotmans, J., (2010), The practice of transition management: Examples and lessons from four distinct cases, Futures, Vol.42, pp.237-246.

Lovins AB (1977) Soft energy paths: toward a durable peace, Friends of the Earth Int / Ballinger Publishing Company, Cambridge MA.

Max-Neef, M. (1991), *Human scale development: conception, application and further reflections*, The Apex Press, London, New York.

Nussbaum, M.C., (2000) Women and human development: The capabilities approach. Cambridge: Cambridge University Press.

Pick, S., Sirkin, J. (2010). Breaking the Poverty Cycle: The Human Basis for Sustainable Development. Oxford, Oxford university press.

Piotrowski R, Quist J, von Raggamby A, Rauschmayer F, Wittmayer J, Bauler T (2012) Pathways to Sustainable Living in Times of Crisis: Experiences from the EU action research project 'InContext, `, in: Lorek, S. & Backhaus, J. (Eds.) (2012) Sustainable Consumption During Times of Crisis. SCORAI Europe Workshop Proceedings: First Trans-Atlantic SCORAI Workshop, May 1, 2012, Bregenz, Austria. Sustainable Consumption Transitions Series, Issue 1., pp. 168-189.

Quist J, Knot M, Young W, Green K & P. Vergragt (2001) Strategies towards sustainable households using stakeholder workshops and scenarios, Int J of Sustainable Development (IJSD) 4(1): 75-89.

Quist J (2007) Backcasting for a sustainable future: the impact after ten years, Eburon Publishers, Delft NL, ISBN 978-90-5972-175-3.

Quist, J., W. Thissen, and P.J. Vergragt, (2011) The impact and spin-off of participatory backcasting: From vision to niche. Technological Forecasting and Social Change. 78(5): p. 883-897

Quist J Tukker A (2013) 'Knowledge Collaboration and Learning for Sustainable Innovation and Consumption: overview and introduction to the special issue, Journal of Cleaner Production 48, 167-175, http://dx.doi.org/10.1016/j.jclepro.2013.03.051 .

Robinson J (1990) Futures under glass: a recipe for people who hate to predict, Futures 22: 820-843.

Robinson J (2003) Future subjunctive: backcasting as social learning, Futures 35: 839-856.

Robinson J., S. Burch, S. Talwar, M. O'Shea and M. Walsh, (2011) Envisioning sustainability: Recent progress in the use of participatory backcasting approaches for sustainability research. Technological Forecasting and Social Change. 78(5): p. 756-768.

Rotmans, J., Kemp, R. & M. van Asselt (2001). More evolution than revolution. Transition management in public policy. Foresight, Vol. 3, No. 1: 15-31

Rotmans, J. (2005). ''Societal innovation: between dream and reality lies complexity'. Inaugural Address, Erasmus University of Rotterdam, Rotterdam.

Schäpke, N., and F. Rauschmayer (2012a), *Foundations for a common approach*, Deliverables of the EU-Project InContext, 45 pp., http://www.incontext-fp7.eu/download.

Schäpke, N., Rauschmayer, F. (2012b) Addressing Sufficiency — Including altruistic motives in behavioural models for sustainability transitions. UFZ Discussion Paper 2012-17. Online: http://www.ufz.de/export/data/global/45182_17%202012%20Schaepke_Addressing%20Sufficiency_gesamt_internet.pdf.

Schäpke, N., Omann, I., Mock, M., Wittmayer, J., von Raggamby, A., (2013) Supporting sustainability transitions by enhancing the human dimension via empowerment, social learning and social capital. SCORAI Europe Workshop Proceedings: Pathways, Scenarios and Backcasting for Low Carbon and Sustainable Lifestyles.

Schwartz, S. H., Howard, J. A. (1981) A normative decision-making model of altruism. In: Rushton, J. P. & Sorrentino, R. M. (Eds.) Altruism and helping behaviour. pp. 189-211. Hillsdale New York: Erlbaum.

Selman P (2000) A sideways look at Local Agenda 21, Journal of Environmental Policy & Planning, 2: 1, 39-53

Selman P 1998 local agenda 21: substance or Spoin? Journal of Environmental Planning and Management 41: 5, 533-553

Sen, A.K. (1985) Well-being agency and freedom: The Dewey Lectures 1984. Journal of Philosophy 82: 169-221.

Sondeijeker, S. (2009). Imagining Sustainability. Methodological Building Blocks for Transition Scenarios. PhD Thesis. Erasmus University Rotterdam. (Downloadable here: http://repub.eur.nl/res/pub/17462/Saartje%20Sondeijker.pdf)

Spekkink, W., Eshuis, J., Van Steenbergen, F, Roorda, C. & Loorbach, D. (forthcoming) Tensions and dillemas in area based transition governance.

Taanman, M. (forthcoming) Looking for transitions. A monitoring approach to improve transition programmes. Phd Thesis, Erasmus Universiteit Rotterdam.

UN (1993) http://www.un.org/esa/dsd/agenda21/res_agenda21_28.shtml

Van Buuren, A. and Loorbach, D. (2009) Policy Innovation in Isolation? Conditions for policy renewal by transition arenas and pilot projects. Public Management Review. 11, 375-392.

Van den Bosch, S. (2010) Transition Experiments. PhD Dissertation, Erasmus Universiteit Rotterdam.

Van den Bosch, S. & J. Rotmans (2008) Deepening, Broadening and Scaling up. A framework for steering transition experiments. Essay 02. Delft/Rotterdam, KCT.

Van der Brugge, R. (2009) Transition dynamics in Social-Ecological Systems. The case of Dutch water management. Phd Thesis, Erasmus University Rotterdam.

Van de Kerkhof M, Hisschemoller M, Spanjersberg M (2003) Shaping diversity in participatory foresight studies: experiences with interactive backcasting on long-term climate policy in the Netherlands, Greener Management International 37: 85-99.

Van de Kerkhof M (2004) Debating climate change: a study of stakeholder participation in an integrated assessment of long-term climate policy in the Netherlands, PhD thesis, Free University, Amsterdam.

Vergragt, P.J. and J. Quist, (2011) Backcasting for sustainability: Introduction to the special issue. Technological Forecasting and Social Change. 78(5): p. 747-755.

Vergragt, P.J. and L. Jansen, (1993) Sustainable technological development: the making of a Dutch long- term oriented technology programme. Project Appraisal. 8(3): p. 134-140.

Wangel, J., (2011) Exploring social structures and agency in backcasting studies for sustainable development. Technological Forecasting and Social Change. 78(5): p. 872-882

Weaver P, Jansen L, Van Grootveld G, van Spiegel E, Vergragt P (2000) Sustainable technology development, Greenleaf Publishers, Sheffield UK.

Wittmayer, J., Van Steenbergen, F., Quist, J., Loorbach, D. & C. Hoogland (2011a) Deliverable 4.1. The Community Arena: A co-creation tool for sustainable behaviour by local communities. Methodological guidelines InContext, THEME FP7 – ENV. 2010.4.2.3-1: Foresight to enhance behavioural and societal changes enabling the transition towards sustainable paths in Europe, Grant Agreement number: 265191.

Wittmayer J, F van Steenbergen, L Bohunovsky, S Baasch, J Quist, D Loorbach, Cn Hoogland (2011b) Pilot projects getting started: Year 1 Status Report, Deliverable 4.2, WP 4 – Scenario and back-casting exercises by three communities: pilot projects, THEME FP7 – ENV. 2010.4.2.3-1: Foresight to enhance behavioural and societal changes enabling the transition towards sustainable paths in Europe, Grant Agreement number: 265191.

Wittmayer, J., van Steenbergen, F., Baasch, S., Feiner, G., Omann, I., Quist, J., Loorbach, D. (2012) Pilot projects on a roll. Year 2 pilot specific reports. Deliverable 4.3. InContext: EU ENV.2010.4.2.3-1 grant agreement n° 265191.

Wittmayer, J.M., N. Schäpke, G. Feiner, R. Piotrowski and S. Baasch (2013b) Action Research for Sustainability. Reflections on transition management in practice. Research Brief/Deliverable 5.2. InContext: EU ENV.2010.4.2.3-1 grant agreement n° 265191.

Wittmayer, J., F. van Steenbergen, S. Baasch, G. Feiner, M. Mock & I. Omann (2013a) Pilot projects rounding up. Year 3 Pilot-specific report. Deliverable 4.4. InContext: EU ENV.2010.4.2.3-1 grant agreement n° 265191.