# Why and how *transition management* emerges

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## *Introduction*

Transition management (J. Rotmans, Kemp, R., van Asselt, M., Geels, F., Verbong, G., Molendijk, K., 2001) has rapidly emerged over the past few years as a new approach to dealing with complex societal problems and governance in the context of these problems. In the Netherland, UK and Belgium, serious efforts have been and are being undertaken to develop transition policies in areas such as energy, building, mobility and water management. This is the result of a much broader scientific development of transition research as an interdisciplinary field of study in which innovation studies, history, ecology and modeling are combined with sociology, political and governance studies and even psychology. 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 continuous co-evolving theory and practice of transition management (D Loorbach, 2007, p. 282).

Since its introduction into the policy arena, transition management has been widely debated, challenged, tested, and because of this further developed, enriched and grounded scientifically (Hendriks, 2007; Kemp & Loorbach, 2006; Kern & Smith, 2007; D Loorbach, 2007; Meadowcroft, 2005; Paredis, 2007; J. Rotmans, 2006; Shove, 2007; Smith, Stirling, & Berkhout, 2005; Van den Bergh, 2008). After I explain why and how the transition management approach was introduced, this paper identifies the basic elements of transition management that seem to remain relatively stable and uncontested over the past eight years. I will argue that transition management in theory as well as in practice builds upon various scientific disciplines and recent policy innovations, and by integrating and interconnecting these offers a huge step forward. The integrative nature of the concept of transitions to sustainability offers a forum for scientific and policy integration, which, although often difficult and uncertain, in itself is already a big and necessary step.

The actual implementation of the basic elements in a specific context leads to different manifestations of transition management in its practical form. I will argue that this is at the heart of transition management: by actually implementing transition management in a structured co-production process, new insights emerge, are implemented and reflected upon. Even more important is that participants will internalize a more integrated and future oriented way of thinking reflecting more profoundly on actions and plans developed, which in turn makes the collective decisions and governance that comes out of such transition management processes more reflexive. This co-productive learning-by-doing and doing-by-learning approach gives transition management its strength and flexibility. Finally I will reflect upon some core research themes for the future.

## *Transition management in science and policy: where did it come from?*

The term transition is a key term of the fourth National Environmental Policy Plan (NMP4, VROM, 2001), which introduced transition management for the first time as official government policy. The NMP4 can be called a revolutionary policy document, because it

broke with dominant policy traditions and practices and created space for innovative policy experiments with transition management. The NMP4 did not set goals but formulated general societal ambitions, which were believed to require transitions, fundamental changes, in functional systems (J. Rotmans, Kemp, & van Asselt, 2001; J. Rotmans, Kemp, R., van Asselt, M., Geels, F., Verbong, G., Molendijk, K., 2001). The NMP4 was widely discussed within the scientific community in the Netherlands, leading to both support as well as criticism upon the concepts (RMNO, 2000). In hindsight this was the start of an interdisciplinary debate leading up to a new research paradigm and community (J. Rotmans, Grin, Schot, & Smits, 2004).

The question is how this came about. Transition management perhaps was a clear governance philosophy, but not much more than some basic principles were agreed upon. It also was an interesting scientific idea, but far from a theory or paradigm that was easily accepted within scientific disciplines such as policy sciences, economics and behavioral studies. Furthermore no experience in practice was available and, on a more theoretical level, the approach itself could in time be threatening to regular policies as well by promoting 'radical shifts' in thinking and acting. It seems that the process leading up to the NMP4, in which there was close interaction between researchers and government officials, is one of the crucial factors in explaining the success. Transitions and transition management were when they were introduced not only theoretical concepts but also in a sense a mission or belief of policy officials and practitioners. This also provided the basis for further experimentation and theory development.

The government's interest in sustainability transitions stemmed from a learning process leading to a new perspective, in which sustainability required some fundamental changes in functional systems, which in their turn required changes in policy (Kern & Smith, 2007). Problems of climate change, loss of biodiversity, overexploitation of resources, structural uncertainties and several types of risks (health risks related to the use of dangerous, non-natural substances and risks of explosion and accident) were viewed as persistent, which meant that the answers to the problems could only be found in fundamental changes in underlying systems of production and consumption. They required what was called "system innovation" and transition. The analysis underlying the NMP4 that, in terms of long-term sustainability governance, current policies were too fragmented, in need of new instruments and were insufficiently taking into account complexity and uncertainty is evidence that government started to think more reflexively about their own role as well as about transitions and system innovations.

This reflects a change in policy thinking: policy had so far been primarily concerned with an upgrading of existing functional systems, but now the systems as a whole were seen as unsustainable and in need of structural change. This change is an example of policy learning in the context of heterogeneous (adaptive) networks (Nooteboom, 2006) in which informal interaction processes drive development of new insights, knowledge and interaction patterns. System innovation and transition thus became a new focus of policy besides system improvement. Policy became more concerned with development paths rather than with specific outcomes and shifted focus towards facilitating and stimulating

transitions, which raised a number of fundamental questions regarding the possibilities of managing such processes through coordination and governance.

These changes resulted from various developments in the area of policy, sustainable development and innovation. Prior to the NMP4 there had been internal discussions for some years within circles of government and science on the topic of knowledge, technology and governance. A number of research programs for innovative and sustainable technological solutions had been funded. Examples were the DTO (Sustainable technology Research) program[2] instituted in 1993, followed by EET (Economy, Ecology, Technology)[3] in 1996. Both programs were based on the notion of technology development as societal process and the added value of (technological) innovation for sustainable development. The underlying assumption of the programs was that economic growth should not be unsustainable by definition but that more attention should be paid to possibly negative ecological effects. The DTO program contributed to the revival of long-term thinking and anticipation in technology policies related to sustainable development and introduced the backcasting-scenario methodology into technology science and policy. In general, policy started to broaden the way of thinking about innovation as a purely technological process and started to pay attention to ecological and societal effects of growth and innovation.

This led for example to the establishment of the task group Technology in 1997. This task group named KETI (*Kennis and Technologische Innovatie-Knowledge and Technological Innovation*) was involved in the preparation of the NMP4 and looked not just at technology but also at knowledge and innovation and governance issues. Within this working group, the term 'transitions' surfaced as a new concept to define 'development processes to change existing, undesired situations into new and desired situations' (KETI, 2000). Sustainable development had also been taken up by policy in the 1990s via the establishment of semi-governmental or non-governmental organizations that were made responsible for bottom-up implementation of sustainable development. Partly as a result of thinking promoted by the UN Agenda 21 (UN, 1992), organizations such as the Dutch National Initiative for Sustainable Development (NIDO) were established to stimulate sustainable development initiatives 'bottom-up' (Loeber, 2004; NIDO, 1999).

It was in this context in which several long-term developments in the spheres of policy, research, civil society and business seemed to coincide and lead to the awareness that more than regular policies were needed. The then Minister of the Environmental Ministry, Jan Pronk, gave an interdepartmental team to prepare the NMP4 and come up with a new policy paradigm. Early 2000, Jan Rotmans was formally asked to write a report on transitions, in which he was asked to cooperate with Rene Kemp, senior researcher at MERIT. Both had done work on transitions issues but from a different perspective. Rotmans had a background in Integrated Assessment, Integrated Climate Models and Sustainable Development, while Kemp's experience was primarily in the fields of innovation, socio-technical regimes and technology development. Their collaboration

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[2] http://www.dto-kov.nl/index.htm

[3] www.eet.nl

within in a sense brought together different streams of science with ongoing innovations in policy for sustainable development. The research team, also including Marjolein van Asselt, Franmk Geels, Geert Verbong and Kirsten Molendijk, further built on the multilevel perspective of Rip and Kemp (F.W. Geels, 2002; Rip, 1998), using examples of transitions from Geels and from Verbong (F. W. Geels & Kemp, 2000; Verbong, 2000).

From a scientific perspective, a large number of different sub-disciplines and their respective methodologies and paradigms were integrated into the transition concept as presented in the ICIS-report. Apparently, similar characteristics and problems were encountered in different fields of research, such as climate change research, innovation studies, sustainability science, technology studies and policy sciences. All these disciplines were dealing with issues of multi-level dynamics, multi-actor networks, radical innovation and uncertainty and impossibility of full control. In that sense did the transition concept and the transition management approach not only fit very well in the new emerging scientific discourse around complex societal change processes, but did it also provide focus and direction for this debate by bringing these different schools of thought together. Figure 1 below graphically illustrates this integrative process.
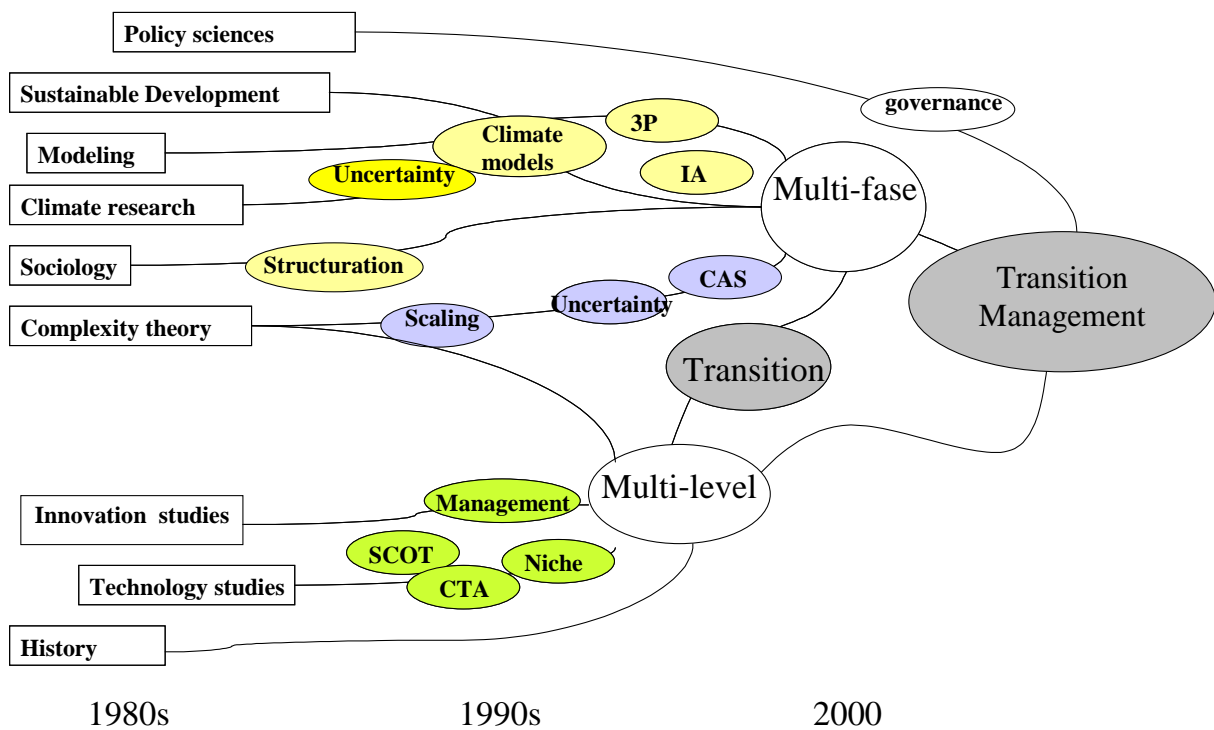


**Figure 1.**     **Transition and transition management as interdisciplinary concepts.**

The transition concept thus provided a framework for scientific integration, but it also offered a common language for interdisciplinary debate which continuous to this day. It triggers discussions and new thoughts about the dynamics of transitions and their governance as much as it evokes ideas and experiments with the implementation. Much debated are for instance the role of individual actors versus the role of regimes and systems structures (a central debate in sociology), the possibilities for assessing and monitoring

ongoing transitions or the debate on the role of research and researchers in processes of social change. These and other debates are not new, but have gained momentum and focus in the Netherlands since the NMP4. The scientific integration and development of the concepts however quickly lagged behind the developments in (policy) practice. Already during the research project leading up to the ICIS-report, a large number of discussions and presentations stimulated the co-production and knowledge exchange between the civil servants and researchers.

In the participatory process that unfolded, both concepts were further developed, in close cooperation and interaction with the NMP4 team. It is an example of co-production of knowledge between scientists and policy makers, in which a mutual language was developed and the transition approach was gradually internalized by the NMP4 team. In the final report, elements suggested by the Ministry were integrated, such as the 'golden tips for policy'. This enabled the NMP4 team to convince the Minister of VROM, Jan Pronk, to adopt the concept as central theme for the NMP4 early 2001. In hindsight, the participatory process around the transitions and transition management study provided the basis for the NMP4 and the transition processes that started afterwards, especially the energy transition. One of the NMP4 members, Peter Aubert, an official for the Ministry of Economic Affairs was at first very critical towards the transition concept. Through the process, he became one of the most active policy officials in contributing to the development of the transition approach and would later on become one of the central figures in operationalizing transition management in the context of the energy transition.

The direct impact of the study by Rotmans et al. that resulted from the intense interaction and participatory approach is reflected by the choice of words in the NMP4 which remained very close to the text of the ICIS-MERIT report (Verbong, 2000). According to the NMP4: "To solve the big environmental problems we need system innovation which may take various forms. The [system] innovation may take the form of a societal transformation process that may take one generation or more. For the transformation to happen, economic, social-cultural and institutional changes are needed that reinforce each other. (…) New parties and innovative technologies play an important role. It is not a matter for the government alone but for the whole of society (…) management of transitions requires a form of process management in which uncertainty, complexity and interdependencies are addressed" (Kemp & Loorbach, 2005).

The NMP4 also borrowed from the ICIS-MERIT report the idea that management of transitions requires the following things:
- To deal with uncertainties, for instance through the use of scenarios.
- To keep options open and deal with fragmented policies: to stimulate knowledge and technological change, to pursue innovation and incremental improvements, to take a multi-domain view with attention to all relevant actors.
- To have a long-term orientation and to use this for short-term policies.
- To pay attention to the international aspects of change processes and find solutions on the right scale.

- A set of specific tasks for the government, namely to stimulate, mediate, engage in brokering services, create the right conditions, enforce its laws and engage in steering.

The transition approach as such brought a new energy to environmental policies, which had lost their inspirational élan during the 1990s. As environmental policy concept, 'transitions' followed 'environmental user space (milieugebruiksruimte)' and opened the way for more creative, innovative and constructive solutions and strategies for sustainability, instead of the regulatory and limiting approaches used before. In the discussions between scientists and policy-makers preceding and after the launch of the NMP4, the idea of transition management slowly became more tangible and was gradually seen as a plausible new policy approach for a number of reasons. The iterative aspects and in-built flexibility took away concerns about future control whilst maintaining an element of management or control. Moreover, it was not directly threatening to existing policy, for example Kyoto policy or innovation policy, allowing the Ministries to pursue their own agendas. It was also difficult for skeptical people to argue against an approach that focused on innovation, learning and sustainability. Finally, it offered a conceptual model for government-business cooperation in which the government could operationalize a role as facilitator in public-private partnerships.

In hindsight, it seems that transition management was this quickly embraced as new policy paradigm in the Netherlands can be explained because of a number of driving factors combined with several crucial moments. In policy, the discussions around innovation, long-term planning, participatory approaches and sustainable development had been ongoing for 15 years, and transition management provided a focus for these innovations. It was however already clear around the introduction of the NMP4 that the success of transition management would depend on committed individuals that would experiment and develop it within their own context. When the cabinet fell shortly after the NMP4 was introduced, the topic quickly disappeared from VROM's agenda and political priority was given to other issues in the area of safety, terrorism and immigration. There were however seeds planted, within the ministries as well as on a regional level and within the scientific community that were this way given the chance to mature somewhat in the shade.

## The surprising diversity of transition management practices

It is perhaps not surprising that of the various Ministries involved in the NMP4 the Ministry of Economic Affairs became the strongest proponent of transition management. Until then, this Ministry had never been among the first to adopt new environmental policies and concepts. However, because of the involvement of individuals in the NMP4 process and because of the opportunities for economic innovation and public-private cooperation, transition management became adopted as a new policy experiment. The formal reasons why the Ministry of Economic Affairs got interested in transition management are described in the Ministry's policy white paper "Innovatie in Energiebeleid" (Innovation in Energy Policy) (VROM, 2001, p. 107), but informal reasons have possibly also been decisive. Within the Ministry of EZ, there was a lot of skepticism and resistance against adopting a 'VROM'-concept and the majority of EZ-officials

preferred liberalisation and market-based strategies over an approach in which sustainability and market conditions were important elements. Only very few officials, some of whom were involved in the NMP4 process, managed to create enough room for themselves by creating a new unit for a policy experiment with the aim of policy learning. This team Policy Renewal, was in a sense a niche within the EZ-regime, where transition management for energy was experimented with and gradually developed and diffused within the Ministry. Only when the energy transition process became visible and successful and concrete results were achieved, did more and more EZ-officials start to see the advantages of the approach. The small transition management group that started the energy transition process continually had to ensure the continuation and effectiveness of the process and simultaneously convince their colleagues and superiors to continue support.

Best known is the application of transition management by EZ, and this project has been extensively documented, analyzed and described[4]. There have however been a large number of other experimental projects, all adding to the growing theory and practice of transition management, which have not yet been presented in the scientific community or international arena. These have however, perhaps because of their experimental character and their development in the shade, been at least even more important for the development of transition management so far. It is not possible to describe every transition management process in detail here or to be complete, but I will give a brief overview of a few of the most important projects representative for what is going on at different levels. Unfortunately most websites are in Dutch, but they will nevertheless give an idea of the diversity and scale.

- In Dutch national policy for sectors (agriculture, mobility, energy, water management, recently also health care, building sector)
  *Water Vision: In 2007 the Dutch cabinet formalized the 'water vision'[5]. In this document, prepared by the Department of Water Management in collaboration with a variety of social partners, the challenge of transforming our current water management practices and infrastructure is framed as transition. The vision identifies the qualitative criteria for a sustainable water management considering societal changes such as climate change, changing population and housing etc. They identify 5 core themes (images) for which they are now developing strategies. The next two years a strategic national transition arena will be established to bring the public and political debate further and articulate the transition vision more broadly. Also, preparations are ongoing to introduce an experimentation area (municipalities will probably be able to bid on that) in which experiments with new concepts and approaches will be possible without the confinements of the current institutional and regulatory regime. An experiment in preparation is that of the 'floating city'[6].*

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[4] For example: (Hofman, 2005; Kemp & Loorbach, 2005; Kemp, Rotmans, & Loorbach, 2007; Kern & Smith, 2007; D. Loorbach, Van der Brugge, R., Taanman, M., 2008; Raven, 2004; Van den Bergh, 2008; Verbong & Geels, 2006)

[5] http://www.verkeerenwaterstaat.nl/actueel/nieuws/kabinetsteltwatervisievast.aspx (in Dutch)

[6] http://www.tudelft.nl/live/pagina.jsp?id=81cb25a3-8e3b-497a-9df5-f8019fa392b1&lang=nl (in Dutch)

***Transition Agenda Building***: *a transition arena process for the building sector was initiated in 2006 to develop an inspiring future perspective for the building and construction industry. The context was an innovation program in which mainly projects were implemented at the level of product- and process-innovations in for example design, construction or material use. The transition agenda has been and is being developed in a participatory process in which raising awareness and building up a new overarching and shared paradigm were central elements. Besides a strategic change agenda drawn by innovators from within and outside the sector, it has initiated discussions about the nature and persistency of the unsustainability in our built environment, as well as the magnitude of the transition challenge. The dominant paradigm in the construction and building sector that innovation already takes place and is a matter of months is increasingly questioned by the position that fundamental change is required which will take the sector 15-20 years[7].*

***Health care:*** *in 2006 a project started to transitionize a traditional innovation program in the health-care sector into a transition experiments program. The 80 Million Euro budget is now being invested in experiments that qualify as transition experiments in terms of scope, actor coalition, learning challenges and possible contribution to an over-all transition. The innovation projects are now integrated in a new program called Transition Program Long-term Care[8]. A transition arena with high-level representatives from societal organizations (health-care institutes, financial organizations, political parties, health-care personnel and so on) will start March 2008 to develop an over-all understanding of the persistency of the problems in Dutch health-care and a desirable future direction. Already the tensions between the Ministry responsible for heath-care and the transition program are apparent: the innovative and social approach goes against the culture of incrementalism and control of the Ministry.*

- In Flemish policy (housing and living, and waste management)
  ***Plan C***: *Flemish waste agency OVAM started in 2003 to think about the possibilities for a new generation of waste management that did not focus upon the management of waste but upon the management of production to prevent waste. Under the header of 'material or resource policies', they started an exploratory transition research project (D. Loorbach, Rotmans, Rijkens, & Tempst, 2004) and in 2006, based on this project a transition arena[9]. This transition arena has now drafted a transition vision, images and pathways and is in a phase of broadening and experiments. The vision is based on some central criteria or conditions for a sustainable production and defines the role and responsibilities for waste management and producers.*

  ***DuWoBo***: *A transition arena for sustainable living and building started in Flanders in 2004, to develop a vision and shared agenda to accelerate and guide the transition to sustainability in this area[10]. The project was also a first experiment with the*

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[7] http://www.psibouw.nl/pagina_subsite6.asp?L=2&id=10166 (in Dutch)

[8] http://www.tplz.nl/portal/default.aspx (in Dutch)

[9] http://www.ovam.be/jahia/Jahia/pid/1607 (in Dutch)

[10] http://www.lne.be/themas/duurzaam-bouwen-en-wonen/algemeen/transitiemanagement-duwobo (in Dutch)

*transition approach outside the Netherlands. The two-year project leading up to the transition agenda and broad network finished in 2006, but still continuous to this day. The transition agenda serves as shared framework for debate in a broadened transition arena (facilitated by one of the core partners in the initial project) and for action in various transition projects and experiments. Their transition agenda is also being acknowledged by the Flemish government and gradually being translated into increasingly practical and concrete measures, policy recommendations, actions and lobby.*

- At the regional and city level for governments (Parkstad Limburg, Provinces of Zeeland and Utrecht, Rotterdam, Almere)

  ***Parkstad Limburg***: *the first experiment with the transition management approach and the project in which the transition arena methodology originated* (D Loorbach, 2007). *A group of regional actors with stature and influence produced a regional transition agenda which reframed the regional identity and position, identified a desirable future direction and suggested seven pathways for this transition. The vision 'Op Hete Kolen' (On Hot Coals, referring to the mining history of the region) was quickly embraced by the local municipalities constituting the region and social partners. Shortly afterwards, the decision was made to formally cooperate and further develop and implement the transition agenda. An existing organization (the Development company Parkstad Limburg) was restructured based on the seven themes and is to this day still active as central player in the region to stimulate and facilitate the regional transition. Much has been achieved since the end of the formal transition arena project: a new élan has been introduced in the region, more space for innovation and entrepreneurship has been realized (a.o. through the regional governmental cooperation), and various innovations suggested in the transition agenda in housing, education and health-care have been realized*[11].

  ***Rotterdam Climate Initiative***: *what started out of political pragmatism is now turning into a transition program for the Rotterdam region*[12]. *The high ambition of a 50% CO2 reduction in 2025 has been translated into an innovation program with a variety of projects relating to sustainable energy, mobility, housing and industry. The program is being supported by the city's four central institutions in charge of urban and industrial policies and planning. Quickly however, more strategic actors in the RCI program started to realize that more than an innovation program would be required to simultaneously change the existing regional energy-, mobility- and housing regimes as well as to break through the fragmented institutional structures. A projects is ongoing to transitionize the RCI program.*

- At innovation program and project level (Psibouw, Transumo, Transforum, People Movers)

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[11] http://www.ontwikkelingsmaatschappij-parkstad.nl/page.php?pagID=169&men1ParentID=179 (in Dutch)

[12] http://www.rotterdamclimateinitiative.nl/NL/English/?cid=6 (partly in english)

*Urgenda: various innovation programs in the Netherlands have been shifting focus from micro-level innovation to system-innovation and transition[13]. The transition network has initiated a shared initiative called 'Urgenda'[14] (urgent agenda) in which the ten innovation programs (representing an innovation budget of over 500 Million Euros) combine their agenda's into a roadmap for a (physically and spatially) sustainable Netherlands. A transition arena including high level public, political and business representatives will this year start to deepen the vision of a sustainable Netherlands and create public awareness and initiative. The transition arena includes individuals such as the CEO of TNT post, a leading sustainable project developer, a well known media figure, a Cradle to Cradle pioneer and so on.*

- In the science-policy community
  *KSI, Drift and CCT: These transition arenas, experiments and agendas (and many other) have been closely related to the development of theory and transition research, mostly the research done within the Knowledge Network on System Innovations and Transitions (www.ksinetwork.nl) and the Dutch Research Institute for Transitions (www.drift.eur.nl). In fact, the implementation of the transition management approach and its underlying principles in a wide variety of application domains and at different levels of abstraction has been actively used by transition research as a testing ground for the approach. Together with practitioners and domain-experts, theoretical ideas and assumptions were tested and based on experience and reflection refined, extended or discarded. This way a rapid build up of new knowledge, practical experience and competences became possible and a lively 'transition community' of policy practitioners and researchers emerged. This community is supported by an intermediary organization called the Competence Centre for Transitions (http://www.senternovem.nl/Competentiecentrum_transities/English.asp).*

## Common features

The above-mentioned selection of transition projects gives an idea of the diversity, but also of the common features of transition management. In every sector, system, region or program a reframing and restructuring process takes place starting from the initial questions: what is the problem in terms of transition and what is the challenge? It seems every time that a search process based on transition management starts from these questions, and then by itself transforms thinking and eventually practices in that specific context. The strength of transition management thus lies in the generic nature of the analytical basis (the basic principles and framework), which allows competent practitioners and researchers to co-develop innovative governance strategies and approaches tailored to a specific complex societal problem. Not from the idea that all complex problems should be solved similarly, but from the idea that all complex problems exhibit similar patterns, mechanisms and dynamics. Based on these, new and more innovative forms of governance can be developed and implemented which in turn

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[13] For example: www.psibouw.nl, www.transumo.nl, www.levenmetwater.nl, www.habiforum.nl, www.curnet.nl, www.transforum.nl

[14] www.urgenda.nl

leads to new theory development. It is therefore clear that transition management is now defined, underpinned and implemented differently that in 2001, but also that this in turn will continue to evolve.

We now define a transition management as a deliberative process to influence governance activities in such a way that they lead to accelerated change directed as sustainability ambitions. Transition management is thus defined as meta-governance: how do we influence, coordinate and bring together actors and their activities in such a way that they reinforce each other to such an extent that they can compete with dominant actors and practices? Transition management is thus about creating space (in a sense: governance niches) for innovative governance at all levels, as a strategy to develop alternatives to the regime. Transition management anticipates increasing pressures on the regime level (e.g. predevelopment phase) or tries to provide a more fundamental reflection and long term orientation while the process of change in underway (e.g. acceleration phase).

By engaging in the implementation of transition management, an immediate need form more structured and methodological detail became apparent. Over time, a large number of 'systemic instruments' were developed, tested and refined: the transition arena, transition visions, the transition agenda, transition experiments and so on. All these instruments were conceptualized based on a combination of an integration of theoretical insights, practical experiences so far and have been further developed through testing and reflection upon experiences. Examples are the transition arena and transition visions. The transition arena concept is theoretically based upon insights from complexity and innovation theory (on the innovation potential of newcomers), policy sciences (participatory methods and processes) and other disciplines (methodology for participatory processes). It is practice based in terms of which individual competences that need to be involved, group composition and size, manageability of such a process etc. Similarly, the transition vision is and instrument based on insights from the literature (on scenarios, role of guiding visions/Leitbilder) and from practice (what works, inspires?).

Transition management has thus evolved into a generic governance approach with specific practical instruments and methods. James Meadowcroft describes transition management as follows:

*'Fist, the theory has a modular structure, with several elements being combined to produce the whole. Particular components include: the image of the transition dynamic with the distinct stages of the transition process; a three level analytical hierarchy of 'niche', 'regime' and 'landscape' that provides a framework for understanding transition processes; a basket of future oriented visioning devices (goals, visions, pathways and intermediate objectives); a practical focus for activities (arenas and experiments); and a broad 'philosophy of governance' that emphasizes decision-making in conditions of uncertainty, and the gradual adjustment of existing development pathways in light of long term goals'. (D Loorbach, 2007)*

## Basic tenets

The broad 'philosophy of governance' is captured by the basic tenets for complexity governance that evolved from the limited set of principles initially formulated (a.o. 'keeping options open', 'dealing with uncertainties', 'multi-level-approach', 'multi-actor strategy' (Meadowcroft, 2007, p. 4)). For more detail and grounding I refer to other publications, but I here briefly sketch these basic tenets.

1. The dynamics of the system create feasible and non-feasible means for governance: this implies that substance and process are inseparable. Process management on its own is not sufficient – insight into how the system works is an essential precondition for effective management. Systems-thinking (in terms of more than one domain (multi-domain) and different actors (multiactor) at different scale levels (multi-level); analyzing how developments in one domain or level interact with developments in other domains or levels) is necessary to be able to take into account such possible means and leavers for governance.
2. Long-term thinking (at least 25 years) as a framework for shaping short-term policy in the context of persistent societal problems. Since societal transformations take long-time periods and long-term system dynamics are more important for understanding the nature and direction of transitions, the link between long- and short-term is inevitable. This means processes of back- and fore-casting: the setting of short-term goals based on long-term goals and the reflection on future developments through the use of scenarios.
3. Objectives should be flexible and adjustable at the system level. The complexity of the system is at odds with the formulation of specific objectives. With flexible evolving objectives one is in a better position to react to changes from inside and outside the system. While being directed the structure and order of the system are also changing, and so the objectives set should change too.
4. Creating space for niches in transition arenas and transition experiments. A niche is a new structure, a small core of agents, that emerges within the system and that aligns itself with a new configuration. The new alignment is often the emergent property of the system. An emergent structure is formed around niches to stimulate the further development of these niches and the emergence of niche-regimes.
5. A focus on frontrunners. In this context we mean with frontrunners agents with peculiar competencies and qualities: creative minds, strategists and visionaries. These frontrunners are active at different levels of scale and in very different areas, be it within business, government, science, societal organizations or in everyday life. Frontrunners are able to generate dissipative structures in complex systems terms and operate within these deviant structures. They can only do that without being (directly) dependent on the structure, culture and practices of the regime.
6. Guided variation and selection. Diversity is required to avoid rigidity within the system. Rigidity here means reduced diversity due to selection mechanisms which means that the system cannot respond flexibly to changes in its environment. Rather than selecting innovative options in a too early stage options are kept open in order to learn about the pros and cons of available options before making a selection. Collective choices are made "along the way" on the basis of learning experiences at

different levels. Through experimenting we can reduce some aspects of the high level of uncertainty so that it leads to better-informed decisions.

7. Radical change in incremental steps. Radical, structural change is needed to erode the existing deep structure (incumbent regime) of a system and ultimately dismantle it. Immediate radical change, however, would lead to maximal resistance from the deep structure, that cannot adjust to a too fast, radical change. Abrupt forcing of the system would disrupt the system and would create a backlash in the system because of its resilience. Incremental change allows the system to adjust to the new circumstances and to build up new structures that align to the new configuration. Radical change in incremental steps thus implies that the system heads for a new direction towards new attractors, but in small steps. To reconcile these seemingly incompatible aspects of radical versus incremental change is at the core of transition management.

8. Learning-by-doing and doing-by-learning. Social learning (Social Learning group, 2001) is a pivotal aspect of societal transition processes, aimed at 'reframing', changing the perspective of actors involved. Two important components are learning-by-doing (developing theoretical knowledge and testing that by practical experience) and doing-by-learning (developing empirical knowledge and testing that against the theory). Social learning in transition processes stimulates the development of visions, pathways and experiments that form a new selection environment.

9. Anticipation *and* adaptation Anticipating future trends and developments, taking account of weak signals and seeds of change acting as the harbingers of the future, is a key element of a pro-active, long-term strategy as transition management. This future orientation is accompanied by a strategy of adaptation, which means adjusting while the structure of the system is changing.

The table below gives an idea of how the basic tenets developed between 2000 and 2008.

| 2000 | | 2008 |
| --- | --- | --- |
| | | |
| Long-term guides short-term | | • System analysis and envisioning<br>• Build-up of societal networks and pressure<br>• Long-term visions, complex system thinking |
| Multi-actor | | • Transition arena, transition vision<br>• Societal support, pressure and visions<br>• Fronrunners with different perspectives and backgrounds |
| Multi-level | | • Integrated system analysis<br>• Transition agenda<br>• Complex societal system approach |
| Keeping options open | | • Transition agenda, transition experiments<br>• Multiple future images, transition paths<br>• Networking and coalition building |
| Dealing with uncertainties | | • Transition scenarios<br>• Transition paths, flexible goals<br>• Evaluation and adaptation |

| Focus on experimenting and learning | | • Learning-by-doing<br>• Participatory policy development<br>• Reflexive monitoring and evaluation |
|---|---|---|
| | | |
| | | |
| | | |

## Transition management framework and cycle

The challenge with transition management is to translate the relatively abstract management rules into a practical management framework without losing too much of the complexity involved and without becoming too prescriptive. We have attempted this by designating transition management as a cyclical process of development phases at various scale levels. The core idea is that four different types of governance activities can be distinguished when observing actor behavior in the context of societal transitions: strategic, tactical, operational and reflexive. In short, these different types can be described as:

• Strategic: activities at the level of a societal system that take into account a long time horizon, relate to structuring a complex societal problem and creating alternative futures often through opinion making, visioning, politics
• Tactical: activities at the level of sub-systems that relate to build-up and break-down of system structures (institutions, regulation, physical infrastructures, financial infrastructures and so on), often through negotiation, collaboration, lobbying etc.
• Operational: activities that relate to short-term and everyday decisions and action. At this level actors either recreate (Giddens would say 'structure') system structures or they choose to restructure or change them
• Reflexive: activities that relate to evaluation of the existing situation at the various levels and their interrelation of misfit. Through debate, structured evaluation, assessment and research societal issues are continuously structured, reframed and dealt with

These different activities are present without active transition management. The idea behind this governance typology is that it can serve as basis for actually influencing ongoing governance activities. These activities 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 exploratively) develop specific 'systemic instruments' and process strategies (see also Loorbach 2007, Chapter 5 for details). These instruments and the process strategy in which they are embedded are captured in the so-called transition management cycle, which consists of the following components[15]: (i) structure the problem in question and establish & organize the transition arena; (ii) develop a transition agenda, a vision of sustainability development and derive the necessary transition paths; (iii) establish and carry out transition experiments and mobilize the resulting transition networks; (iv) monitor,

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[15] For extensive description of these activities see: (D Loorbach, 2007; D. Loorbach & Rotmans, 2006)

evaluate and learn lessons from the transition experiments and, based on these, make adjustments in the vision, agenda and coalitions. According to our experiences so far, there is no fixed sequence of the steps in transition management as Figure 2 suggests and the steps can differ in weight per cycle. In practice the transition management activities are carried out partially and completely in sequence, in parallel and in a random sequence.
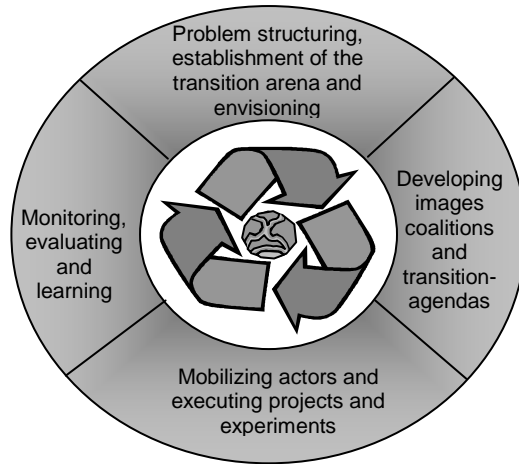


**Figure 2: Transition management cycle (D Loorbach, 2007)**

In effect transition management comes down to creating space for frontrunners (niche-players and regime-players) in transition arenas, forming new coalitions around these arenas, driving the activities in a shared and desired direction and develop coalitions and networks into a movement that puts societal pressure on regular policy. In the transition management framework activities related to the content (systems analysis, envisioning, agenda building and experiments) are linked to activities related to the process (network- and coalition building, executing experiments and process structuring). The preferred actors to be involved (based on the necessary competencies) and instruments (like scenario's, transition-agenda's, monitoring instruments etc.) are derived from this framework.

In each of the activity clusters, coalition and network formation is of vital importance combined with the systemic structuring and synthesizing of discussions. The transition arena is meant to stimulate the formation of new coalitions, partnerships and networks that together create a new way of thinking. Mostly, coalitions emerge around transition pathways or experiments, or around specific sub themes, where sub-arenas arise. The very 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.

In managing transitions, the 'what' and 'how' questions are intertwined. This means that the content is explicitly linked to the process itself. Analyzing the dynamics of the complex societal system, trying to grasp its dynamic behavior, unfolds possibilities to

influence its dynamics in a certain direction. This leads to opportunities for managing the system, using innovative instruments to use the windows of opportunities created in the system. However, insight into the complex dynamics of a societal system is necessary but not sufficient. We also need to understand how to organize a process with multiple actors (both individual and collective) with different interests from diverging perspectives. New forms of governance deal with this kind of multi-actor, multi-domain and multi-level processes.

## *Learning-by-doing: what next?*

It is clear that there is no panacea for societal unsustainability: sustainability cannot be defined in general nor can it be enforced in a traditional sense. In a modern network society there is a huge diversity of problems, solutions, perspectives, interests and knowledge. It is also no longer possible or desirable to enforce social changes top-down, so that modern society is in need of new mechanisms to simultaneously foster and stimulate diversity, and provide a flexible selection environment based on collective demands and desires. The only way to develop a more sustainable society is through a process of development in which our current values and societal regimes are fundamentally reflected upon and simultaneously on a local level experiments are used to explore alternative futures. This societal model of learning-by-doing and doing-by-learning can be directed and structured by using the transition concepts.

A key insight of transition management experiences over the past few years is that engaging societal actors in a specific way in debate about ongoing transitions in their respective sectors leads to the development of new discourse. Actors develop with each other a systemic understanding of the complex problems in their area, which enables them to reflect upon the sustainability challenges in terms of 'transition'. Without ever actually being able to determine whether there is actually a transition going on, or in what specific phase of transition a sector is in, it at least provides actors with a shared language and focus to guide their actions. Based on the idea that in modern society self-organization (or in the context of transitions 'self-innovation' is perhaps a better term) will become increasingly dominant, transition management tries to develop arenas, processes and strategic agendas that facilitate, stimulate and guide action.

A key notion in transition management is that of 'creating space'. Besides financial, institutional and mental space on an individual or project level, it is also about creating space within a societal regime. Transition management is therefore about build-up as well as about break-down. The understanding of the persistency of a problem and about the challenge this poses has proven to be a crucial element in creating awareness about and space for more radical alternatives amongst regime actors. The public pressure that can be build-up through transition management along with the positive long-term agenda that come out of it seems to be a productive way of developing societal 'systems of governance' in which policy plays a specific supporting role (rather than a commanding one).

I need to stress here that transition management has left the idea of control and truth or certainty. This has been explicit since the beginning, but through the experiences in practice we now are beginning to see the conflict and problems that relate to this. We could say that modern society is build upon modernist ideas of control and objectivity. This 'regime' increasingly seems to be in conflict with the post-normal, post-modern or sustainability regime in which local contexts, worldviews and uncertainties are basic elements. This conflict becomes especially apparent in civil servants involved that struggle with their role, scholarly debate about the value of integrated analyses and a normative choice for sustainability as frame, and a societal debate about the need to enforce sustainability. Part of the approach of transition management is to discuss and diffuse the understanding of the world as complex and diverse and that in such a context norms and values need to be discussed, developed and explored continuously. Transition management thus not only aims to develop visions and agenda, but through that also to build-up competences, knowledge and capabilities to deal with modern society in a pro-active way.

## *Conclusions and core themes for the future*

It is impossible here to draw conclusions in a classical sense, other than that transition management has already come a long way and seems interesting enough for further exploration. The progress made in practice as well as the theoretical developments shows that modern times require experimental, innovative and multi-disciplinary and participative forms of governance like transition management. In line with the philosophy we cannot be certain about this, but transition management seems to be in tune with present society, research and policy. We are however also a long way from realizing a sustainable society, which means that there are ample challenges for the future. Without going into full detail, two themes seem to be central for future debate in this area: power and people.

Transition management so far mainly focused on the predevelopment phase of transitions: transition arenas with frontrunners structuring societal problems, developing transition visions and transition experiments. In the Netherlands at least, but arguably also in the broader European context, there now seems to be a socio-political momentum for change. Theoretically speaking, the transitions in several sectors (in the Netherlands: energy, water management, agriculture) are moving to an acceleration phase in which a structural regime transformation takes place. It is however, also based on historical evidence, not unlikely that the existing structures and interests prevent the changes from diffusing, or that the societal support is not articulated and/or mobilized. The crucial challenge for transition management will therefore be for the coming years to engage regime actors in the process and develop societal pressure so that the newly emerging niches and the innovative regime actors can co-create new societal regimes.

Wherever this process will go, it seems clear that the basic rationale driving much of the sustainability science, reflexive governance and transition management discourse is a direction which needs to be further explored. Through engaging in structured debate, being confronted with other perspectives and values, and taking a more experimental and

innovative approach, individuals and organizations are seduced to broaden their view and this way gradually become part of the process of sustainable development. In this perspective, it is not so much the idea that we need to change towards a specific goal, but that we need to deal with and think about societal change in a specific way. In doing so, the natural process of societal change becomes more reflexive and geared towards sustainability, in effect becoming sustainable development itself.

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