

Monitoring on-going vision development in system change programmes

Mattijs Taanman¹, Julia M. Wittmayer² and Henk Diepenmaat^{3,4}

¹Institute for Social Innovation, Rapenburg 8-10, 2311 EV Leiden, the Netherlands; m.taanman@imi.nu

²DRIFT, Erasmus University, Burgemeester Oudlaan 50, 3062 PA Rotterdam, the Netherlands

³Actors Process Management, Prinses Irenelaan 14b, 3708 EL Zeist, the Netherlands

⁴Centre for Sustainability, Nyenrode Business University, Straatweg 25, 3621 BG Breukelen, the Netherlands

Abstract

Visions are considered to be of vital importance for programmes aimed at sustainable systems change. Vision development is a programme management instrument, a programme output, and at the heart of programme learning processes. This article addresses the question what constitutes an appropriate monitoring strategy for vision development activities within system change programmes. Based on action research and literature review on monitoring, evaluation and vision development a monitoring framework is proposed. It is suggested to monitor the programme vision against project visions, societal visions and a set of basic criteria. The monitoring activities themselves are context-sensitive and frequently renegotiated between monitors, programme managers and other stakeholders. The framework is illustrated with a national systems change programme on sustainable agriculture in the Netherlands.

Keywords: evaluation, co-production, sustainable agriculture, transition

1. Introduction

Sustainable agriculture may require a fundamental change in the culture, structure and routines of our current agro-food system. Such processes of fundamental change or system change are referred to as societal or socio-technical transitions (De Haan and Rotmans, 2010; Frantzeskaki and De Haan, 2009). In agriculture as well as in other sectors, programmes are initiated to foster (system) innovation and build new networks and institutions with the aim to influence the speed and direction of transition processes. We will refer to these programmes as system change programmes.

Vision development is seen as a key policy instrument in the governance of transitions (Loorbach, 2007; Rotmans *et al.*, 2001), systemic innovation policies (Hekkert *et al.*, 2007; Smits and Kuhlmann, 2004) and sustainable development (Meadowcroft, 2007, Weaver and Rotmans, 2006). Visions offer an integral frame to orient short-term actions and evaluate programme development. Due to the complexity and multi-actor nature of transitions a realistic and attractive vision can only develop and become known through the interactive process of programming itself. This presents a paradox for innovation programmes: without a vision it is difficult to select, monitor and evaluate the programme activities and projects, but without doing these projects and programme activities, it is difficult to formulate an appropriate vision. This makes vision development an important instrument within programme management, and the resulting visions an important output.

At the same time, vision development is sparsely addressed in programme monitoring and evaluation. This may be the case because vision development and evaluation are usually considered to be disconnected in time: vision development at the start of a programme as part of strategy development and evaluation at the end. When dealing with complex problems however, strategy making, implementation, monitoring and evaluation become recursive and continuous processes (see also the transition management cycle as developed in Loorbach 2007, 2010). In system change programmes it therefore makes sense to also include vision development in the monitoring and evaluation process.

The research objective of this paper is to address this gap and to explore and identify how we can meaningfully monitor and evaluate vision development within system change programmes. The research question addressed is: what constitutes an appropriate monitoring strategy for the vision development activities of system change programmes?

In this article we propose a monitoring framework, based on action research (Reason and Bradbury, 2010) with TransForum, a system change programme aimed at sustainable agriculture in the Netherlands and a literature review in the fields of vision development, monitoring and evaluation. From 2006-2010, the authors and programme management collaborated to develop an innovative form of monitoring that supports the development of a programme vision. The case study is based on participant

observation, monitoring reports and ex post discussions with the involved programme manager. The monitoring activities themselves were based on regular reflection sessions of TransForum programme managers and monitors, informal talks at events organised by TransForum and others. Data collection on the developed indicators was based on interviews with TransForum staff, a workshop with TransForum staff organized by the monitors and extensive review of programme documentation and other sector-related (policy) literature.

In sections 2 and 3 we review relevant literature on visioning, monitoring and evaluation. The role that visions can play in sustainability transitions and the importance of monitoring vision development in programmes (especially system change programmes) is outlined. In section 4 we present a monitoring framework to monitor and support vision development in a system change programme. We illustrate this framework by relating it to vision development activities at TransForum in section 5. Conclusions are presented in section 6.

2. The role of visions in sustainable system change programmes

In this section we describe what visions are and why they are considered to be important in the context of innovation, sustainable development and transition theory. We address the importance of learning, on-going reflection and adjustment of visions.

A vision is a description of an ideal future and expresses a desire for deliberate change (Van der Helm, 2009). Any intentional process of change encompasses a less desirable state of departure, a more desirable resulting state and one or more scenarios to go from one to the other (Diepenmaat, 1997). This threefold intentional pattern is referred to as a perspective by Diepenmaat (2009, 2011) who interprets visions as an essential part.

A vision has several functions in governance literature about sustainability, transitions and innovation systems. Most importantly it offers a 'leitbild': a shared mental image of an attainable future shared by different actors and guiding the action of and interaction between these actors (i.e. the process of change). This leitbild may be able to coordinate new actor-networks without the necessity of strong institutions (Grin, 2006). A vision helps selecting and orienting short-term innovation processes in line with long-term ambitions. This helps to prioritize activities, adequately distribute resources and guide search processes (Hekkert *et al.*, 2007). Next to distributing existing resources, visions

may also be instrumental for marshalling new resources. This includes motivating new actors to engage with the programme and gaining support by influential actors or the larger public. Visions are inherently normative and describe how sustainability is framed and who stands to gain and lose out in the envisioned transition. This means they can also invoke negative reactions (Smith *et al.*, 2005). Visions support thinking about sustainable agriculture on an aggregated level in the long term, which helps to identify trends and structural changes that can impede or accelerate the desired change (Smith *et al.*, 2005).

During the past decades, vision development has increasingly become a process in which not only futures experts, but also industry, consumers and civil society are involved. Currently there is a trend in which foresight moves away from being a single, central activity (like in national foresight programmes) towards coordination between different visions in the science and innovation system where multiple organisations conduct foresight specific to their own needs (Georghiou and Keenan, 2006). The benefit of more distributed and participatory processes of vision development is that individual perspectives become articulated and room is created for shared problem perceptions. If the resulting visions are inspiring and innovative they help to stretch stakeholders thinking, offering a starting point for second order and social learning (Sondeijker *et al.*, 2006). A vision is not just for programme-internal use but also has a programme external function. In an uncertain environment a so-called organizing vision (Burton *et al.*, 1997) serves to coordinate the strategies of different players and to set and build standards (Courtney *et al.*, 1997).

System change programmes address unstructured (Hisschemöller, 1993), or wicked (Rittel and Webber, 1973) problems. These problems do not have a straightforward solution because consensus about the norms and values at stake (which transition to pursue) and certainty about relevant knowledge to solve the problem (how to define and realize this transition) cannot be assumed (Hisschemöller, 1993). Each attempt at creating a solution changes the understanding of the problem (Rittel and Webber, 1973). This means that the effort to transfer and integrate knowledge (i.e. through monitoring) for this learning process will be an on-going effort as the unstructured problem takes on different dimensions and participants change in the course of the programme (Weber and Khademian, 2008). Smith *et al.* (2005: 1507) therefore note that "The process of transformation itself can force revisions to a vision. Indeed, the original vision may be relatively vague and incoherent: simply an orientation or framing of

the problem, around which coalitions can begin to form. It is the process of system innovation that can give it shape and solidity in terms of an envisaged configuration of artefacts and practices that work in a desired way and deliver certain expectations.'

To sum up: a vision should be seen as part of a long-term perspective which includes problem framing, future vision and pathways. It is not only the vision itself that is important but also (or especially) the process through which it is developed. This multi-actor process requires coordination and interaction between perspectives of different actors and, in the case of unstructured problems, is an on-going effort. The developing vision guides and coordinates the actions within the context of emerging coalitions for systems change, but also influences a wider audience.

3. Management, monitoring and evaluation of system change programmes

Based on a bibliometric literature review of programme management Artto *et al.* (2009) identify the implications of uncertainty, complexity and novelty for programme management as key research themes. These issues also play a crucial role for system change programmes dealing with wicked problems.

System change programmes play an active role as intermediaries between individual projects and the larger organizational or societal context. Programme management is characterized by on-going development of the programme as a result of changes and lessons from both projects and the larger programme context (see Pellegrinelli (2002)). Diepenmaat (2011) positions programme management at an intermediate level between project management and societal development, both in terms of actor complexity and sense of direction. In project management, the desired actors, process and outcome are well known and described in advance, while in societal development all three can only be known with hindsight, due to sheer complexity. In programme management a *global* direction is known in advance, but *specific* actors have to be involved and routes and contents to be developed on the way. It is therefore that Van Buuren *et al.* (2010: 676) conclude that 'programme management in practice is often a hybrid of a top-down implemented management tool and an emerging management strategy that gets its meaning from the strategies and interventions of a variety of participating actors from the projects and programme organizations'.

Monitoring and evaluation of system change programmes requires a dedicated approach (Patton, 2010; Rogers, 2008).

The primary reason is that the complexities, large ambitions and associated uncertainties imply that the substantive programme theory and goals are likely to change over time as a result of experimenting, stakeholder interaction and learning. Most approaches to evaluations however require an explicit and fixed model laying out the goals, objectives and how these are related to programme activities. Without, a programme cannot be evaluated against common standards for formative and summative evaluation and result-based management (Patton, 2010; Rogers, 2008).

This recognition of the shortcomings of monitoring and evaluation approaches led to increasing attention for this topic over the last decade (see e.g. Davies, 2004, 2005; Sanderson, 2000; Stame, 2004). Regeer *et al.* (2009) propose six guiding evaluation principles for innovative sustainability programmes:

1. Focusing on the challenging practices and intervention strategies by supporting continuous learning about intervention strategies for sustainable development.
2. Linking monitoring and evaluation to the intervention process by being part of the iterative process of defining, implementing and adjusting interventions.
3. Employ a participative approach to the development of an evaluation framework.
4. Use flexible and context-sensitive indicators to sensitize stakeholders to particular issues.
5. Use indicators to find strategies for multi-stakeholder learning.
6. Make the conditions visible that constrain sustainable development.

The first two guidelines imply that the distinction between monitoring (continuous and routine data collection on processes and outputs) and evaluation (ex ante or ex post judgment outcomes and impacts of a project or programme) fades. The third, fourth and fifth guidelines work especially well if evaluators take an action research approach to their work (see also Patton, 2010). According to Kuhlmann (in Molas-Gallart and Davies, 2006: 72) we need a shift 'away from an objective model of evaluation, in which independent evaluators produce evidence but no recommendations, and toward a model involving evaluators in learning exercises with all stakeholders and providing advice and recommendations as well as independent analysis. In this formative context, the evaluator becomes a facilitator rather than an external expert.'

Although vision development is important (as outlined in the earlier section), it is rarely described as a topic for monitoring and evaluation. This may be attributed to the traditional distinction between policy *formulation* (including

activities like problem structuring, vision development, goal definition and planning), policy *implementation* and policy *evaluation*. Evaluation research on system change programmes regularly approaches the articulation of a programme theory as an evaluation design issue, rather than a topic for evaluation itself (compare the overview of Rogers, 2008). Yet, as Georghiou and Keenan (2006: 762) argue: ‘most evaluations include some form of formative perspective on the future and often have to consider the future implications of the measures they seek to assess. In turn, [visioning] activity generally needs to be informed by a thorough understanding of the past.’ This argument gains in strength for system change programmes where vision development, evaluation and implementation are continuous processes. In these programmes it therefore makes sense to also include processes of strategy making – like vision development – in the monitoring and evaluation process. An inspiring, supported vision can be regarded as an important output of a system change programme.

In their discussion of foresight activities evaluations Georghiou and Keenan (2006) provide relevant lessons that are well in line with previously discussed issues on vision development as a multi-actor learning process. First, they stress that the logic behind vision development should influence the evaluation. If vision development is seen as an instrument to foster network building, learning and co-ordination, this should be reflected in both the evaluation criteria and in the evaluation process. Secondly, they stress that the impact of a vision cannot be assessed without addressing the process and context of the vision development. This includes its relation to other policy instruments (like innovation pilots), the unit of aggregation, the motivation for evaluation and the broader strategic and policy context.

4. Monitoring framework

Based on the literature review above and the action research experiences described in the next section, a monitoring framework for monitoring vision development activities in system change programmes is formulated. The monitoring framework is kept as simple as possible while allowing high flexibility in terms of contexts in which it can be applied.

Vision development is assessed against a set of elemental criteria: whether there is a vision, how this vision is related to the framing of the current situation and pathways, how it defines and deals with sustainability elements and whether it is systemic. Systemic in this case meaning that it describes the change of different actors (multi-actor) on multiple time

scales, in different sustainability domains (multi-domain) and across different level (multi-level).

The developing programme vision is monitored in relation to visions at both project and societal level. Project level visions inform and give rise to a programme vision. At the same time the programme vision guides the usually more specific project level visions, helps identify synergies between projects and offers a frame to judge if and how a project contributes to the programme. Similarly, a programme vision can be used to influence the visions of other societal players, the public at large or powerful change agents like governments, investors, large retailers, etc. but also needs to resonate with societal visions. To do this, the programme vision should be innovative while avoiding marginalization. This leads to two vision development cycles (Figure 1). In the lower cycle, monitoring project-level vision development may lead to bottom-up adjustments to the programme vision. As a consequence, programme management may intervene to align individual projects to its new programme vision, after which the cycle starts over. In the top cycle, monitoring societal visions may inform programme vision development. The adapted programme vision may then be used to influence and more precisely monitor existing societal visions.

This monitoring framework leads to three basic indicators for programme vision development: (1) the development of the programme vision; (2) alignment between the programme vision and project visions; and (3) the alignment between the programme vision and societal visions.

The main function of this monitoring framework is to support the learning and vision development in the programme by providing insight in vision development processes at multiple levels and interpreting the findings and their implications with programme managers. In line with earlier mentioned evaluation literature this requires

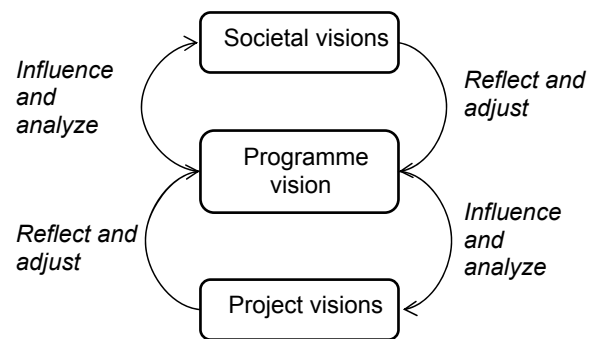


Figure 1. The monitoring framework.

cooperation with the programme managers and other stakeholders involved in this learning process. As surprise and contingencies may be part of this learning process, each monitoring activity is adapted to the particular programme context. This includes choosing whether to focus on the top or the bottom cycle, whether to focus on convergence of project and societal visions to the programme vision (closing down) or on identifying new and challenging insights (opening up).

5. Monitoring vision development for TransForum

Having outlined the framework for monitoring vision development activities in programmes addressing complex societal problems, we now turn to our case study. Vision development was monitored for TransForum, a system change programme in the Dutch agriculture sector. The data for this case was collected during five years in which the authors were involved as action researchers. After shortly outlining the background of TransForum, the monitoring activities are described in four phases.

Background and context

In 2003 the Dutch government initiated the BSIK (Besluit Subsidies Investeren Kennisinfrastructuur) arrangement under which 37 programmes were funded to strengthen the Dutch knowledge infrastructure with respect to 5 key themes, one of which was sustainable system change. As one of the system change programmes, TransForum was initiated to support the transition to more sustainable agriculture. The programme had two objectives: (1) developing a more sustainable perspective for the Dutch agro-sector; and (2) contributing to the necessary change in the knowledge infrastructure to develop such a perspective from 2005-2010 (TransForum, 2007, 2008b). TransForum received €30 million from BSIK funds and an equal amount from companies, research institutes and other stakeholders participating in the projects. TransForum co-financed projects in three interlinked categories: 35 innovation projects, 38 learning projects and 25 research projects. The learning projects reflected on and brought together the lessons from innovation projects and included a range of monitoring activities. The large number of learning projects is proof of the emphasis of TransForum on reflection and learning. Next to the monitoring project on programme-level vision development, there were other forms of monitoring and evaluation that focused on the project level. These included project process monitoring, a project learning history (De Wolf and Hoogland, 2009), 'Networked Learning – Learning from Networks' (Hoes, 2011) and were

based on reflexive monitoring as described by Regeer (2010) and Van Mierlo *et al.* (2010). In the course of the years, TransForum as a programme evolved and changed its focus from supporting projects to learning to an emphasis on visioning. By 2010 TransForum had developed the vision (or in their own terminology *guiding idea*) of 'metropolitan agriculture'. This vision connects the urban area to agriculture by emphasising how they are complementary and their need for each other for a sustainable development of both (TransForum, 2010a). The monitoring activities supported the vision development process.

Phase 1: a monitoring pilot 2005-2006

In the period 2005-2006, TransForum was starting up its activities and strongly focused on initiating projects. Most attention went to individual innovation projects. According to a member of TransForum staff in an interview in March 2010, 'the intention was to go on a journey without preconceived goals regarding where this journey would lead us'. This lack of explicit programme vision on sustainable agriculture was a deliberate choice of programme managers. As expressed by a programme manager in this period: 'we do not want an explicit view on what is sustainable and what the agricultural innovation system should look like, at most we want to create this over time. And even then a vision on project level is more important than one on programme level. This is because sustainability is a contextual, political concept, inherently normative.'

In this period, we conducted a monitoring pilot based on indicators from transition management (Loorbach, 2007, 2010). The results were based on document analysis, interviews and active participation in programme activities. In this process, the monitors operated largely independent from the programme managers. The resulting monitoring report recognized TransForum as being strong in exploring a range of local innovations while its potential to contribute to a larger transition process remained underexposed. The report concluded that the programme was little concerned with the question of how innovation projects could add up to a sustainability transition and recommended to pay more attention to vision development and learning on a more aggregated level. This conclusion could be expected because one of the key principles of transition management is starting out with problem structuring and long-term vision development, whereas the programme deliberately started out with such a vision.

Interviews to evaluate the pilot showed that TransForum rejected the conclusions of this monitoring report and questioned the legitimacy of being evaluated against

transition management criteria. Programme management viewed transition management as a top-down approach, whereas they preferred bottom-up learning. For them monitoring was a shared learning process to make sense of complex developments and to develop interventions and not a strict measurement activity by detached monitors.

As a result of these challenges more alignment between monitoring activities and programme development as well as between theoretical concepts and programme strategy was sought by approaching monitoring as a flexible process of co-production between experts and management based on the framework presented in section 4.

Phase 2: towards a programme vision 2007-2008

With the framework in place, the three indicators were described qualitatively with an analysis of internal and external programme documentation, reflection sessions with programme managers and participant observation during programme meetings. The findings were reported in a monitoring report (Wittmayer *et al.*, 2009a) and discussed with programme staff in a vision development workshop in January 2009.

Indicator 1: development of the programme vision

During the first years, TransForum was in a continuous search for its own role in a transition to sustainable agriculture. Therefore, the first programme documents were more concerned with supporting individual projects than with a vision for sustainable agriculture in the Netherlands. This changed in 2008, when the concept of 'metropolitan agriculture' was introduced in programme documents. Later that year, TransForum staff defined 'metropolitan agriculture', the resulting state of the agricultural system, as: 'a deliberately designed system of intelligently connected production sites that use the available resources, conditions and infrastructure in metropolitan areas to produce material and immaterial demands for the same metropolitan area' (Van Latesteijn *et al.*, 2008). Notwithstanding this early definition, the vision was still seen by programme management as a vision in development at a 'TransForum Scientist Day' in January 2009. Although the desired state of sustainable agriculture was largely left open, the current state and problems of the agricultural system were well defined. Next to widely recognized problems of Dutch agriculture as a result of overspecialisation and intensification, the programme documents also took issues like urbanisation and a growing middle class with changing needs in terms of food and green space into account. During the vision development workshop, TransForum staff also voiced

more cultural, institutional and actor-related problems in agriculture like moral resistance against agro-parks, a lack of out-of-the-box thinking, shifting responsibilities and a focus on technological fixes. The workshop stressed that the future of Dutch agriculture required bridging current dichotomies like connecting green space and urban functions, new forms of cooperation and changing roles of actors.

Indicator 2: alignment between the programme vision and project visions

For this indicator, the transition visions of individual projects were compared to the programme vision. Due to a lack of information and access to project level information, the monitors resorted to existing documents and conducted different analyses. These included a qualitative analysis and comparison of short project descriptions against the programme vision, a more in-depth qualitative analysis and comparison of two randomly selected projects from each of the three project clusters (vital coalitions, multifunctional rural areas and international agri-knowledge networks) and a quantitative comparison based on a number of criteria for visions.

Analysis showed that the emerging vision of metropolitan agriculture had a good fit with the largest part of the project portfolio, not at least because it was largely constructed in a bottom-up process. The analysis also illustrated that metropolitan agriculture provides cohesion to the variety of project visions and that there was potential to further enrich the programme vision based on project-level visions. Although the programme learned from the projects the projects could not yet learn about the emerging programme vision as it had not been communicated, according to a project-level facilitator. The visions of six projects which were analyzed in depth showed no explicit time path and half of them did not specify which changes needed to take place on sectoral level and/or did not address the full scope of sustainability in terms of people, planet, profit.

Indicator 3: alignment of programme visions and societal visions

For indicator three, the emerging vision of TransForum was compared with visions on (sustainable) Dutch agriculture drawn up by the Ministry of Agriculture, Nature and Food Quality and other sectoral regime players (Borgstein *et al.*, 2007). This was done by describing a number of visions qualitatively with respect to the set of elemental criteria for visions. The analysis showed that current visions were not sector-wide, but focused on sub-sectors like animal husbandry or arable farming and were often formulated

in rather abstract terms. There was no clear description of what sustainability entailed or what changes were expected from different actors.

The analysis indicated that the sector-wide vision of metropolitan agriculture could add value to the broader debate about long-term change in agriculture. Recommendations for the development of the programme vision that followed from the descriptions of the other players were to be more specific about aspects of sustainability and to address the links between agriculture and other societal systems as well as the relations with other countries.

The recommendations of this phase mainly concerned a further sharpening and substantiating of the emerging vision by explicitly connecting it to and embedding it in lessons and visions of innovation projects and societal visions.

Phase 3: enriching the vision 2009

Monitoring experts and programme management agreed that the 2009 programme monitoring activities were to explore the relevance of the emerging vision to societal visions and the further development of the programme vision (Wittmayer *et al.*, 2010a). A more thorough survey of transition visions for agriculture was conducted. Slightly more than 50 vision documents on the future of the Dutch agricultural sector of universities, civil society organizations, research institutes or government agencies, published between 2001 and 2009, were identified. Most of them focused on a subsector or one policy issue and some were considered to be outdated. Monitoring experts and managers selected six visions that seemed particularly relevant. Three of these visions were already described in the previous monitoring activities. This left three ambitious integral visions on the future of Dutch agriculture for comparison with metropolitan agriculture as described in programme documents dated from 2009. The other three visions were drafted by an NGO (Stichting Natuur and Milieu (SNM) [Foundation Nature and Environment]) and two research institutes (Centrum voor Landbouw and Milieu (CLM) [Centre for Agriculture and Environment] and the Landbouw Economisch Instituut (LEI) [Agriculture Economic Institute]). Each reference in these three visions and the TransForum vision to the current and desired state of the agricultural system and to sustainability was identified. The results were coded, resulting in 14 main themes for change in agriculture, related to the culture, structure and practice of agriculture. This allowed comparison between the societal visions and the TransForum vision.

Indicator 1: development of the programme vision

TransForum had taken up activities to develop the notion of metropolitan agriculture further and produced six documents regarding metropolitan agriculture in 2009 alone. The vision was shared for the first time with outsiders of TransForum in detail and the annual report 2008 connected the innovation projects to the emerging vision by pointing to common denominators like removing borders between activities, creating knowledge flows and working on institutional barriers and interventions (TransForum, 2009). The TransForum team specified the vision, which led to publication of the metropolitan agriculture brochure early 2010 (TransForum, 2010a). According to TransForum (2010c) the 'vision concerning metropolitan agriculture – the complex relationship between our urban environment and agriculture – has been brought into sharper focus'. In December 2009, the official website of the international network on metropolitan agriculture, the MetroAgInnoversity, was launched¹.

In terms of structure, the vision on metropolitan agriculture was defined as connecting sub-sectors, actors along the production-consumption chain and the broad societal basis for an agriculture that spans city and rural areas. Envisioned cultural changes described combining economic profit with broader societal goals, a new understanding of 'farmerhood' including their linkage with consumer. Changes in practices included a larger variety of products and services offered by farmers including non-agricultural services like water retention, day care for children or handicapped, tourism and a strong focus on cooperation amongst different parties in the agricultural field. This meant that the scope of metropolitan agriculture covered all 14 themes (although this does not describe the degree of change implied or the clarity of the changes described), see Table 1.

Indicator 2: alignment of programme-level vision and project portfolio

The comparison of the four visions along the 14 themes (see Table 1 for an overview) shows that the metropolitan agriculture covers more themes than the other visions and is in this sense more complete. Themes like coordination and cooperation and different farming practices have been described in detail, whereas other themes like policy, environment and market remained rather vague. Here, inspiration could be drawn from the other visions. A distinguishing feature of metropolitan agriculture is that

¹ TransForum website: <http://www.TransForum.nl/nieuwsarchief/307-nieuwe-website-metroag-innoversity>.

Table 1. Changes implied in the different visions. An X indicates changes explicitly mentioned (Wittmayer *et al.*, 2010a: 37).

	Vision 1 (LEI)	Vision 2 (SNM)	Vision 3 (CLM)	Vision 4: metropolitan agriculture
Structural changes				
Policy	X	X	X	X
Energy	-	X	-	X
Knowledge infrastructure	-	-	-	X
Product chains	-	-	X	X
Market	-	X	X	X
Spatial	X	X	X	X
Demographics, resource prices and other macro-developments	-	-	-	X
Sector boundaries	X	X	X	X
Cultural changes				
'Being a farmer'	X	X	X	X
Thinking based on short-term profits	-	X	X	X
Role of agriculture in society	-	X	X	X
Practices				
Environmentaleffects of farming	-	X	X	X
Coordinationand cooperation	-	-	X	X
Farmingpractice	X	X	X	X

it describes sustainability not only as avoiding negative impacts (e.g. reducing sulphate emissions) but also as realizing positive impacts (e.g. creating new healthcare services in rural areas).

The monitoring report concluded that metropolitan agriculture was comparatively complete regarding the desired change and positive in the way it framed the challenge for the sector as a whole. This makes the TransForum vision a valuable addition to existing visions. On the basis of the analysis, it was recommended to describe the vision in a more inspiring way, to further define aspects like policy and environment, to specify the roles of the various actors and explicitly describe what should change, when and why. It was also suggested to communicate the added value of the TransForum vision in relation to the other visions.

Phase 4: consolidating the vision 2010

The last monitoring phase concerned a period of half a year, with the programme's operational activities ending in December 2010. In this period the programme tried to take stock of its accomplishments. Based on the recommendation of the earlier report, it was chosen to use monitoring in this process in order to converge on a more detailed and widely supported vision. Through eight interviews with TransForum staff in March 2010, their tacit knowledge

about what metropolitan agriculture entails was made explicit. The outcome, based on the interviews and a review of programme documentation was presented as a societal perspective on metropolitan agriculture (Wittmayer *et al.*, 2010b). This meant that monitoring activities strongly focused on indicator one. Based on the interviews and documents the transition towards metropolitan agriculture was defined on 16 different themes, largely the same themes as used to compare the TF vision with other societal visions in the previous phase. In the first half of 2010, TransForum also published a metropolitan agriculture brochure (TransForum, 2010a) and four short movies illustrating the different manifestations of the vision².

Reflection on the case study

As the description clearly indicates, TransForum is more about the process of discovering than about implementing a vision. Through continuous learning and experimenting a vision about sustainable alternatives to current unsustainable agro-food regimes emerged.

² See TransForum website: <http://www.TransForum.nl/nieuwsarchief/327-nieuw-vier-korte-filmpjes-die-verschijningsvormen-metropolitane-landbouw-illustreren>.

Developing a programme-level vision on long-term sustainable agriculture was not the first priority at the start of the programme. In 2005 and 2006, the focus was on projects and visioning was a bottom-up process in which programme management deliberately created room for a diversity of visions at project level. From 2007 on, programme managers become engaged in a visioning process by drawing on elements of existing visions both from project level and from societal level, embodied in the then open concept of metropolitan agriculture. The resulting vision about sustainable agriculture helped to provide more structure to the programme including a reformulation of project-level goals. Over time this vision of metropolitan agriculture became more detailed and was increasingly used to advocate sector-level change. The role of TransForum changed accordingly from focusing on individual project implementation and facilitation, to deliberately instigating portfolio and network level learning (i.e. across individual projects and change agents), to becoming a change agent oriented at the larger dynamics of the agro-food system. Towards programme dissolution, the programme focused on converging on a single, detailed vision.

The various monitoring activities observed and supported the vision process throughout the years. Initially a more detached role of the monitor was chosen in which indicators derived from theoretical frameworks that were new to the programme were used to assess programme process. The lessons learned from this pilot resulted in the need for a different monitoring framework. The discussions with the monitoring team on the importance of vision development have helped sensitize TransForum to vision development. Monitoring results were used to discuss ways to improve the vision through additional workshops and other meetings. In each phase, programme managers and transition researchers renegotiated which information was salient to the vision development activities of that particular period. In the second phase, monitoring activities supported a process of opening up by making explicit a wide range of visions inside and outside the programme. In phase three the focus was on the alignment between the emerging programme vision and the societal visions. The analysis of other visions on sustainable agriculture showed that metropolitan agriculture is a more integral and innovative vision.

The case study shows that the monitoring framework including the three indicators is suitable to plan, describe, monitor and support vision development at TransForum. Only in phase two all three indicators were monitored and especially in the third phase the monitoring focused on the relation between the programme and societal vision, while most programme management activities focused on

the project level. Reflecting on the context in which the monitoring activities took place, several reasons for this difference in focus can be considered. Firstly, TransForum programme staff at start was wary of granting the monitoring team access to their projects, reasons being that a number of researchers was already involved at project level. Secondly, experiences of the monitoring experts with other system change programmes and their theoretical background made them inclined to stress the importance of the larger context in which the programme operated (Wittmayer *et al.*, 2009b). These differences between the monitoring experts and programme managers may have helped to balance out the vision development process by generating attention for areas otherwise overlooked.

These points bring up the role of trust and different perspectives in monitoring. The monitoring was a result of negotiation between experts and programme managers who each had their own perspectives on what constitutes relevant information. In this process a balance was sought between salience for programme management and critical distance. The pilot phase illustrates that too much distance may hamper both management use and legitimacy. Too little distance on the other hand would have postponed reflection on the programme vision from the perspective of other societal visions (as was advocated by the experts). Trust seems a precondition for dealing with these different perspectives. In order to perform their monitoring activities, the experts had to restore trust with programme management after the monitoring pilot. This makes trust a precondition for social learning processes to address the wicked and unstructured problems the programme is set up to deal with.

6. Conclusion

In contrast to the importance attributed to visions and on-going learning in sustainable development and systems change, little attention is paid to monitoring and evaluating processes of vision development in systems change programmes. This raised the question what constitutes an appropriate monitoring strategy for vision development in system change programmes. We have proposed a framework and presented a case study using this framework.

In these final conclusions we would like to reflect on the external validity of the proposed framework and opportunities of this framework for evaluating the contribution of systems change programmes to sustainability transitions.

In complex systems change processes – like sustainability transitions – continuous vision development guides individual actions and supports learning and coordination within and outside a programme. This led to the proposition of a monitoring framework with three indicators: the development of the programme vision, the alignment between the programme vision and project visions and the alignment between the programme vision and societal visions. In terms of process, monitoring is approached as a flexible co-production process between monitoring experts and programme management aligned with the changing information needs of the programme. The monitoring framework informs on-going vision development by drawing attention to the diversity of visions in projects and the larger programme context. The added value of the approach is illustrated for the case of monitoring vision development at TransForum

The monitoring framework was appropriate for TransForum because of its emphasis on complex problems and systems change through learning from diverse innovation projects with a multitude of actors. These aspects can also be found in other programmes, like development programmes with many local partners (Guijt 2008), adaptive ecosystem management programmes (Brunner and Clark, 1997, Ringold *et al.*, 1999), (EU-initiated) innovation programmes (Molas-Gallart and Davies, 2006; Smits and Kuhlmann, 2004), etc. Other studies on comparable programmes also indicate that the TransForum strategy – in which a long-term vision was constructed through primarily bottom-up learning processes during programme implementation – is as valid a strategy as starting with vision development before programme implementation (Van den Bosch, 2010; Wittmayer *et al.*, 2009b). These studies also show that programmes that start with a vision, still change and modify their visions, suggesting that the framework may also be appropriate for these programmes, although the sequence of monitoring activities may differ. This implies that the monitoring framework may not be appropriate for all programmes, but does serve a relevant niche.

This paper argues that the development of coalitions that pursue a similar vision and influence the wider public debate are valued as important programme outcomes. This makes the monitoring framework relevant to provide accountability to programme commissioners (or the public at large) who are not only interested in whether a vision is developed but also in why and how. Also, the monitoring information is a valuable input for ex post programme evaluation and the planning of future systems change programmes addressing the same or a similar societal context.

The monitoring approach presented is markedly different from planning-based monitoring approaches that consist of routine data-collection on prior defined objectives, milestones and (SMART) goals. These planning-based monitoring approaches result in objectified and often aggregated quantitative information ideal for accounting purposes. In contrast, the more developmental monitoring presented identifies different perspectives on what long term goals should be and how these relate to each other and change over time. This emphasizes the social and political aspects of systems change and seems especially useful for actors like programme managers who are directly involved in programme development. Its emphasis on negotiation leads to more explicit questions about legitimacy and subjectivity (who negotiates and monitors and with which interests?). At the end of the day however, ‘the appropriateness of a particular type of method is a function of its congruence with the type of problem under investigation’ (Dunn, 1988: 724). Acknowledging that sustainable innovation programmes work on complex (societal) issues implies continuous learning about desirable and realisable long term changes. Our framework has been shown to contribute to dealing with this challenge.

Acknowledgements

The authors would like to thank Flor Avelino, Sander Mager and two anonymous reviewers of the Journal on Chain and Network Science for their comments on an earlier version of this article. They also would like to thank TransForum staff for the fruitful cooperation in the transition monitoring project. The research leading up to this publication was funded under the BSIK arrangement.

References

- Arto, K., M. Martinsuo, H.G. Gemuenden and J. Murtoaro 2009. Foundations of programme management: a bibliometric view. *International Journal of Project Management*, 27(1): 1-18.
- Borgstein, M.H., H. Leneman, L. Bos-Gorter, E.A. Brasser, A.M.E. Groot and M.F. van de Kerkhof 2007. *Dialogen over verduurzaming van de Nederlandse landbouw; ambities en aanbevelingen vanuit de sector*. Wageningen, Wettelijke Onderzoekstaken Natuur and Milieu, WOt-rapport 44.
- Brunner, R.D. and T.W. Clark 1997. A practice-based approach to ecosystem management. *Conservation Biology*, 11(1): 48-58.
- Burton Swanson, E. and N.C. Ramiller, 1997. The organizing vision in information systems innovation. *Organization Science*, INFORMS: Institute for Operations Research. 8: 458-474.
- Courtney, H., J. Kirkland and P. Vigueri 1997. Strategy under uncertainty. *Harvard Business Review*, 75(6): 66-79.

- Davies, R., 2004. Scale, complexity and the representation of theories of change. *Evaluation*, 10(1): 101-121.
- Davies, R., 2005. Scale, complexity and the representation of theories of change: part II. *Evaluation*, 11(2): 133-149.
- De Haan, J. and J. Rotmans, 2010. Patterns in transition: understanding complex chains of change. *Technological Forecast & Social Change*, 78: 90-102.
- De Wolf, P. and C.T. Hoogland, 2009. *De Sjalon*. Wat hebben we geleerd. TransForum, Zoetermeer, the Netherlands.
- Diepenmaat, H., 1997. Trinity, model-based support for multi-actor problem solving, PhD Thesis, University of Amsterdam, the Netherlands.
- Diepenmaat, H., 2009. Een filosofie van de maatschappelijke praktijk. Parthenon, Almere, the Netherlands.
- Diepenmaat, H., 2011. Multi-actor procesmanagement in theorie en praktijk. Parthenon, Almere, the Netherlands.
- Dunn, W.N., 1988. Methods of the second type: coping with the wilderness of conventional policy analysis. *Policy Studies Review*, 7: 720-737.
- Frantzeskaki, N. and J. de Haan, 2009. Transitions: two steps from theory to policy. *Futures*, 41: 593-606.
- Georghiou, L. and M. Keenan, 2006. Evaluation of national foresight activities: assessing rationale, process and impact. *Technological Forecasting & Social Change*, 73: 761-777.
- Grin, J., 2006. Reflexive modernization as a governance issue, or designing and shaping *re*-structuration. In: Voss, J.-P., D. Bauknecht and R. Kemp (eds.) *Reflexive governance for sustainable development*. Edward Elgar Publishing, Cheltenham, UK.
- Guijt, I., 2008. Seeking surprise: rethinking monitoring for collective learning in rural resource management. Wageningen University, Wageningen, the Netherlands.
- Hekkert, M.P., R.A.A. Suurs, S.O. Negro, S. Kuhlmann and R.E.H.M. Smits, 2007. Functions of innovation systems: a new approach for analyzing technological change. *Technological Forecasting & Social Change*, 74: 413-432.
- Hisschemöller, M., 1993. *De democratie van problemen*. Vrije Universiteit, Amsterdam, the Netherlands.
- Hoes, A., 2011. Inside the black box of agricultural innovation projects. Exploring the interactions between farmers, greenhouses, scientists, pigs & neighbourhoods. Phd thesis, Vrije Universiteit, Amsterdam, the Netherlands.
- Loorbach, D., 2007. Transition management. New mode of governance for sustainable development. International Books, Utrecht, the Netherlands.
- 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.
- Meadowcroft, J., 2007. Planning for sustainable development: Insights from the literatures of political science. *European Journal of Political Research*, 31: 427-454.
- Molas-Gallart, J. and A. Davies, 2006. Toward theory-led evaluation: the experience of European science, technology, and innovation policies. *American Journal of Evaluation*, 27(1): 64-82.
- Patton, M.Q., 2010. *Developmental evaluation*. The Guilford Press, New York, NY, USA.
- Pellegrinelli, S., 2002. Shaping context: the role and challenge for programmes. *International Journal of Project Management*, 20(3): 229-233.
- Reason, P. and H. Bradbury, 2010. *Action research. participative inquiry and research*. Sage, London, UK.
- Regeer, B.J., 2010. Making the invisible visible. Analysing the development of strategies and changes in knowledge production to deal with persistent problems in sustainable development. BoxPress, Oosterwijk, the Netherlands.
- Regeer, B.J., A.-C. Hoes, M. van Amstel-van Saane, F.F. Caron-Flinterman and J.F.G. Bunders, 2009. Six guiding principles for evaluating mode-2 strategies for sustainable development. *American Journal of Evaluation*, 30(4): 515-537.
- Ringold, P.L., B. Mulder, J. Alegria, R.L. Czaplewski, T. Tolle and K. Burnett, 1999. Establishing a regional monitoring strategy: the Pacific Northwest forest plan. *Environmental management*, 23(2): 179-192.
- Rittel, H.D. and M.B. Webber, 1973. Dilemmas in a general theory of planning. *Policy Sciences*, 4: 155-169.
- Rogers, P.J., 2008. Using programme theory to evaluate complicated and complex aspects of interventions. *Evaluation*, 14(1): 29-48.
- Rotmans, J., R. Kemp and M. van Asselt, 2001. More evolution than revolution, transition management in public policy. *Foresight*, 3(1): 15-31.
- Sanderson, I., 2000. Evaluation in complex policy systems. *Evaluation*, 6(4): 433-454.
- Smith, A., A. Stirling and F. Berkhout, 2005. The governance of sustainable socio-technical transitions. *Research Policy*, 34(10): 1491-1510.
- Smits, R. and S. Kuhlmann, 2004. The rise of systemic instruments in innovation policy. *International Journal of Foresight and Innovation Policy*, 1(1/2): 4-32.
- Sondeijker, S., J. Geurts, J. Rotmans and A. Tukker, 2006. Imagining sustainability: the added value of transition scenarios in transition management. *Foresight*, 8(5): 15-30.
- Stame, N., 2004. Theory-based evaluation and types of complexity. *Evaluation* 10(1): 58-76.
- TransForum, 2007. *Midterm review: self-evaluation* TransForum. TransForum/De Beuk, Zoetermeer, the Netherlands.
- TransForum, 2008b. *Van 'transitie duurzame landbouw' naar 'shared value development for metropolitan agriculture'*. Werkplan TransForum 2008-2010. TransForum, Zoetermeer, the Netherlands.
- TransForum, 2009. *Jaarverslag TransForum 2008*. TransForum, Zoetermeer, the Netherlands.
- TransForum, 2010a. *Landbouw en stad: een duurzaam samenspel*. TransForum, Zoetermeer, the Netherlands.

- TransForum, 2010c. Annual report TransForum 2009. TransForum, Zoetermeer, the Netherlands.
- Van Buuren, M.W., M.J. Buijs and G.R. Teisman, 2010. Program management and the creative art of coepetition: dealing with potential tensions and synergies between spatial development projects. *International Journal of Project Management*, 28(7): 672-682.
- Van den Bosch, S., 2010. Transition experiments, experiments that can contribute to sustainability transitions. Erasmus University, Rotterdam, the Netherlands.
- Van der Helm, R., 2009. The vision phenomenon: towards a theoretical underpinning of visions of the future and the process of envisioning. *Futures*, 41: 96-104.
- Van Latesteijn, H.C., A. Veldkamp, A.C. Altvorst, P.J. van, Beers, H. de Boon, R. Eweg, A. Fischer, E. Jacobsen, A. van Kleef, S. Mager, H. Mommaas, P.J.A.M. Smeets, L. Spaans and J.C.M. van Trijp, 2008. TransForum: organizing the transition towards metropolitan agriculture. TransForum, Zoetermeer, the Netherlands. Available at: http://www.transforum.nl/en/images/stories/presentaties/tf_organizing_ma_v2_-_hvl.pdf.
- Van Mierlo, B., M. Arkesteijn and C. Leeuwis, 2010. Enhancing the reflexivity of system innovation projects with system analyses. *American Journal of Evaluation*, 31: 143-161.
- Weaver, P.M. and J. Rotmans, 2006. Integrated sustainability assessment: what is it, why do it and how? *International journal of Innovation and Sustainable Development*, 1(4): 284-303.
- Weber, E.P. and A.M. Khademian, 2008. Wicked problems, knowledge challenges, and collaborative capacity builders in network settings. *Public Administration Review*, 68(2): 334-349.
- Wittmayer, J., H. Diepenmaat and S. Mager, 2009a. Transitie monitoring 2008-2009 ten behoeve van TransForum. DRIFT Erasmus University/TransForum, Rotterdam/Zoetermeer, the Netherlands.
- Wittmayer, J., H. Diepenmaat, S. Mager and K. Andeweg, 2010a. Metropolitane landbouw vergeleken. Transitie monitoring TransForum 2009-2010. DRIFT Erasmus University/TransForum, Rotterdam/Zoetermeer, the Netherlands.
- Wittmayer, J., H. Diepenmaat, S. Mager and K. Andeweg, 2010b. Metropolitane landbouw in 16 punten. Transitie monitoring TransForum 2010. DRIFT Erasmus University/TransForum, Rotterdam/Zoetermeer, the Netherlands.
- Wittmayer, J., N. Bressers and H. Diepenmaat, 2009b. Sturen op duurzame mobiliteit! Transitie monitoring bij Transumo. DRIFT Erasmus University/ Transumo, Rotterdam/Zoetermeer, the Netherlands.