

Reflexive Monitoring in Action

A guide for monitoring system innovation projects



Barbara van Mierlo, Barbara Regeer, Mariëtte van Amstel, Marlèn Arkesteijn, Volkert Beekman, Joske Bunders, Tjard de Cock Buning, Boelie Elzen, Anne-Charlotte Hoes, Cees Leeuwis

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We are interested in your experiences and any feedback you may have: barbara.vanmierlo@wur.nl and barbara.regeer@falwvu.nl

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Barbara van Mierlo¹, Barbara Regeer², Mariëtte van Amstel², Marlèn Arkesteijn¹, Volkert Beekman²,
Joske Bunders², Tjard de Cock Buning², Boelie Elzen³, Anne-Charlotte Hoes², Cees Leeuwis¹

1 Communication and Innovation Studies, Wageningen University, Netherlands

2 Athena Institute, VU University Amsterdam, Netherlands

3 Wageningen UR Livestock Research, Netherlands

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A word of thanks

The efforts of a large number of people from various organisations and companies taking part in system innovation projects and programmes have made it possible to create this guide. They shared their visions, dreams and ambitions with us and took us along on their expeditions for making those dreams come true, sharing all the successes, struggles, discomforts and surprises along the way. We have all learned a great deal from that.

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Barbara van Mierlo

LNV project manager, "Monitoring and Evaluating Networks"
on behalf of the RMA team

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PART I

What is Reflexive Monitoring in Action?

Chapter 1. Introduction to the guide

This is a guide about (and for) monitoring projects that aim to contribute to the sustainable development of a sector or region by working on system innovation. In addition to considering the characteristics and the value of this type of monitoring, this book also offers practical guidelines that will help put that monitoring into practice and aid selection and use of the appropriate tools.

New initiatives are appearing everywhere, initiatives with far-reaching ambitions. Within the agricultural sector, for example, there are networks aiming to create ultra-short chains from producer to consumer, in which farmers deliver fresh products (almost) directly to the consumer. This is ambitious because it flies in the face of the trend towards increasingly lengthy and non-transparent chains. Another example is provided by the initiatives for CO₂-neutral cultivation, although electricity consumption generally increases when there is economic growth. Yet other networks of farmers, researchers and water board officials want to close the nutrient cycles completely in order to improve the quality of the surface water. There are also cooperative ventures developing sheds and stalls that are good for animals and for people and the environment.

Sustainable development demands simultaneous changes at many levels of society and in multiple domains: ecological, economic, political and scientific. It requires choices to be made that are radically different from the usual practices, habits, interrelationships and institutional structures. But that is precisely why it is not easy. System innovation projects therefore benefit from a type of monitoring that encourages the 'reflexivity' of the project itself, its ability to affect and interact with the environment within which it operates. This lets them develop new ways of dealing with things, which makes the institutional context change too.

Researchers at Wageningen University and the VU University Amsterdam have been working together on a type of monitoring that they have called reflexive monitoring in action (RMA). If a project wants to realise the far-reaching ambitions of system innovation, then reflection and learning must be tightly interwoven within it. And that learning should focus on structural changes. RMA can contribute to this. It encourages participants to keep reflecting on the relationships between the key items: the ambitions of the project, usual practices and the way these are embedded in the institutions, plus the developments in the system that offer opportunities for realising the ambitions of system innovation.

It is a form of monitoring that focuses on action. The monitoring activity is in fact not a separate activity itself, but is instead more an integral part of the process. Additionally, the insights gained from the monitoring are tried and experimented with in the project's new activities. This allows RMA to help participants keep their ambitions set high (in terms of sustainable development and system innovation). This lets it contribute to coherent, structural change without the route and destination necessarily being mapped out precisely beforehand.

There are essential differences between RMA and other more familiar forms of monitoring and evaluation. The future simply does not develop as predicted, finances are often uncertain, there are often conflicts of interest and people have a tendency to keep plodding along the same old path. Consequently, strategies tend to be developed on the fly rather than at the start and the final objectives often change during the course of a project. Moreover, results often only become visible after a long time. It is therefore not very realistic to have an expert collect data for subsequent evaluation using pre-defined objectives. Participatory types of monitoring and evaluation in which the actors have an equal say can help ensure that participants

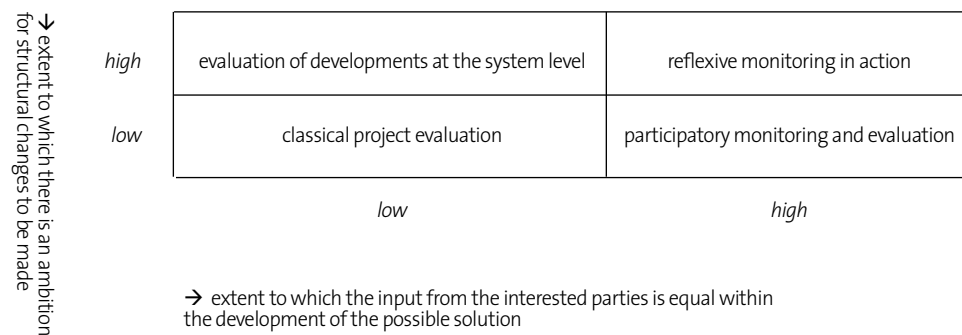


Figure 1.1: The key characteristics of RMA and other forms of monitoring and evaluation.

learn, and learn together. RMA takes it a step further, though. Learning is not the end in itself. It is about learning to tackle the challenges that are encountered in system innovation projects, by developing possible solutions jointly. This allows a system innovation project to contribute to the structural changes that are needed for sustainable development. This can be seen in Figure 1.1.

Experiences with RMA show that it can help participants go a step further than making plans with no obligations, and genuinely get involved with an initiative. It has encouraged investigators to tackle questions more creatively instead of getting stuck in more and more of the same type of studies. Additionally, it has encouraged all kinds of parties involved to look at their networking activities from a broader perspective on barriers within society, so that those activities can then be recalibrated.

This type of monitoring is above all effective when it is closely bound to a system innovation project and is put in place at an early stage. The monitoring activities are then embedded within the project and will be supported by those involved. This guide explains how RMA can be taken on board. The emphasis is on flexibility, rather than on a strictly structured methodology or a rigid sequence of steps. Monitoring for system innovations is customised work: the challenges of the moment determine the best way to implement such monitoring.

Target groups

This manual focuses on three target groups:

1. monitors: these are the people who are (or will be) handling the actual monitoring. They may be monitors with specialist skills, or members of a project team who are assigned this as one of their tasks.
2. project managers: these are responsible for the progress of the project and the realisation of system innovation projects.
3. clients: policy officers who act as the commissioning parties for system innovation projects (i.e. not necessarily as a client in any financial or commercial sense).

Objectives for each target group

For monitors, this guide provides support in:

- recognising situations in which RMA can be useful;
- producing an action plan for monitoring and their own role within it;
- selecting tools that increase the reflexivity of a project;
- the use of such tools.

For project managers, this guide can make clear where RMA can be valuable in formulating the ambitions

of projects and achieving them. It can also help them in the management of the monitoring.

In their role as the clients for system innovation projects, policy officers can use the guide to see what makes this type of monitoring useful. RMA can help clients and managers provide an accountability trail for the project, and help outsiders learn more about the project. Moreover, the guide makes suggestions for the clients about their own role in the monitoring.

Finally, there is a generic objective: this book explains the interrelationships between the monitor, the project manager and the client, making suggestions for all three of them about how to handle these relationships.

Reading guide

This guide is particularly useful for people involved in projects with the following features:

- A high level of ambition in terms of system innovation: the project aims to make a contribution to regional or sector-wide system innovation, in the sense that work is or will be demonstrably done on institutional barriers (system barriers, lock-in, persistent linkages or “wicked links”).
- A heterogeneous network: the innovation is being developed by a heterogeneous group of participants in the project, including farmers, researchers and other parties. Project activities are organised for this diverse grouping, and possibly also for the broader network that may be affected by the innovation.
- A common learning process: the direction chosen for the solution gets multiple actors to behave differently, so that it can be seen as a joint learning and innovation process.

If you are in the monitor role, the best place to start is Chapter 2, which gives a picture of RMA practice. Then you can push on to Part II if you want to make decisions about the whys and wherefores of monitoring. There you can select one or more tools and read their descriptions.

Chapters 3 and 4 are written from the point of view of the project managers and clients, and are useful for matching RMA up properly to their expectation patterns. Chapter 5 is for those who want more in-depth theoretical understanding. It provides insights into the background to reflexive monitoring in action, its value in system innovation projects and the question of how it relates to other forms of monitoring.

We recommend that project managers should start with Chapter 2 to get a picture of what RMA entails in practice, what a monitor does, and why. Chapter 3 has been specially written for project managers, taking a more detailed look at the division of roles and responsibilities between project managers and monitors. The example in the introduction to Part II gives you an idea of RMA in practice, where the monitor has put a wide range of tools into effect. Chapter 4 is useful for getting insights into the perspective of policy officers (in the role of the client) and therefore helps get the expectations and activities more aligned. If you are interested in the theoretical basis of reflexive monitoring in action, we recommend you read Chapter 5.

We would advise clients to start by reading Chapter 4 in particular, because this was written specifically for them. It examines the relationship between learning within a project on the one hand, and accountability and getting the lessons across to third parties as well as possible on the other hand. This chapter refers to specific tools in the guide that are useful for the last two points in particular: accountability and getting the lessons across. Finally, this chapter makes concrete recommendations for your role as the client in RMA. It is useful to read Chapter 3 to obtain a better picture of what project managers will be expecting, which will enable the expectations and activities to be brought more in line with each other.

Chapter 2. Reflexive Monitoring in Action - in practice

Introduction

Reflexive monitoring in action (RMA) is a coherent but not rigidly defined body of basic starting points, principles, attitudes and tools. It also comprises a large number of interventions for stimulating the learning processes within a project. It is important to keep in mind that RMA is not a blueprint or a fixed collection of tools (such as those described in Part II).

In this chapter, we will be looking at the practical side of this type of monitoring in greater detail. We will discuss in turn interventions, the reasons for intervening, the cycles that the interventions are following, basic methods, basic attitudes and the division of roles.

Interventions

Every intervention by the monitor is intended to support the system innovation ambitions. Those ambitions have sometimes been set out clearly in writing, with the project proposal authors in particular being aware of them. In some projects, an integrated design for a new system will be central; for others there may be several different sustainability objectives and yet others may be aimed at breaking a long-standing trend or 'wicked link'. The interaction that occurs when these ambitions are shared with the project participants or others who are involved often makes them more tangible or results in them being rephrased and redefined. When the objectives and activities of a project are not very ambitious at the start, awkward challenges or 'system barriers' that are to be tackled are defined at the point when they arise during the project.

A project team in the greenhouse horticulture sector had, for instance, created an initial project design. They asked the monitor to explore with them whether the proposed activities were in line with the higher ambition of low-emission production. Another question for the monitor within the same project was whether all the relevant actors were involved in the network.

The monitor of a maize cultivation project regularly compared project activities against the (higher) level of ambition and was thereby able to show that the project activities were not always in line with these ambitions.

Every activity associated with monitoring is at the same time an intervention to encourage reflection and learning aimed at system innovation. If for example an interest group is interviewed about its views on the causes of emissions, this will encourage the person being interviewed to consider the topic. These interventions by a monitor (a specialist or a member of the project team) are central to RMA. The term 'intervention' should be taken in a broad sense here. It covers a question or a full interview with a participant, or feedback to the project manager or the network, as well as a complete analysis or facilitating a collective analysis.

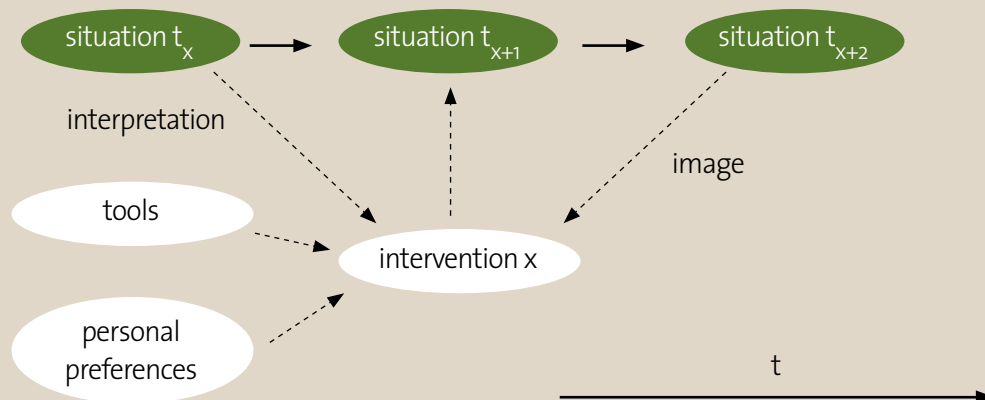
When and how the monitor intervenes depends on the situation (see boxed text). He or she can raise questions or start discussions about issues that are unclear or elusive for a project manager, or issues where the project is not making much progress towards the ambitions. He or she can, for example, point out that the same challenge is being discussed in meeting after meeting without any progress being made. Or perhaps that some participants in the project continue to disagree, without it being clear exactly why they disagree.

The monitor could make the decision to intervene, or the project management or the network could request that he or she should intervene. This may be a specific request, for example to carry out a system analysis at an agreed moment. Or there may be an agreement that the monitor will take action in certain situations, for example if new insights are not resulting in actions.

The monitor is therefore not only an observer but also – indeed primarily – a facilitator who intervenes. He or she encourages participants to reflect upon the relationships between the project and its context, between project activities, and between short-term objectives and long-term ambitions. This lets them break away from the old patterns of thinking and acting, away from the undesirable effects that were associated with them. The monitor can add impetus to this change by holding discussions with participants, asking questions about implicit assumptions, using relevant tools (as described in Part II), giving advice about the composition of the network or the purpose and programme of a meeting, drawing attention to problems and external developments, emphasising the progress within the project, and so forth.

RMA interventions

An RMA intervention is a tangible monitoring activity (intervention x) that is required in a specific situation at a specific moment (situation t_x). Monitors interpret the situation in the system innovation project at that moment and decide whether a change is needed, looking at the desired situation in the short term (situation t_{x+2}). A tangible intervention means that monitors make use of tools that are relevant and available. The way in which they intervene is also based on personal preferences.



Triggers for RMA interventions

In practice, the monitor will always be intervening on the basis of an image of a desirable situation. He or she will for instance take action if there seems to be insufficient mutual trust within the network or if people are being distracted from the long-term ambitions by the everyday details. Every situation will need its own form of intervention.

Each project phase (design, act, record) has its own characteristic situations requiring an intervention to be made. These phases do in fact tend to overlap, in terms of both content and sequence; the best way to look at them is as clusters of activity types. The selection matrix on page 44 shows which monitoring tool is suitable for each of the situations mentioned below.

Design

In the design phase, the project objectives and project approach are formulated, partners and participants are recruited and funds secured. This phase can be associated with all sorts of problems and challenges that RMA can help with:

- an insufficient picture of who the relevant actors are;
- insufficient insight into the interests of the relevant actors;
- a lack of clarity about which actors see what problems, and what solutions they would prefer;
- too few project participants ready to take a leading role;
- too few innovative perspectives among the project participants;
- insufficient willingness to change (feeling of urgency, involvement) among the participants;
- too many opposing positions among the participants;
- participants focused primarily on the barriers rather than the possible solutions;
- lack of clarity about the causes of the persistent problems;
- insufficiently ambitious short-term or long-term goals;
- lack of ambition in the planned activities.

RMA helps in each of these situations and offers specific tools for them (see Part II). More generally, this type of monitoring can play two roles during the design phase. The first is providing assistance in the formulation of ambitious project goals, an action plan that grows organically from them, and flexible milestones for interim evaluations. The second role is selecting project participants in such a way that the range of participants matches the objectives and will help anchor the results.

Act

The 'act' phase comprises research, approaching potential participants, experimenting with a new organisational form or the development of a new product. RMA provides support for the following problems:

- participants adopt a wait-and-see attitude;
- ambitions are diluted, for example because people are being distracted by the everyday details;
- participants do not trust each other enough;
- there is insufficient co-operation between the participants;
- new insights are not converted into actions;
- participants meet resistance from their own organisations or supporters;
- the transition to the next stage is stagnating.

The role of RMA can vary widely in this phase, depending on the dynamics of the project. In general terms, it is important that the participants should reflect on four key aspects at regular intervals, looking in particular at the connections between them: what is the project doing at this moment (activities), what has it already achieved (results), what are the barriers and opportunities in the current system, and to what extent are the activities and results contributing to the ultimate goal of changing the system? This act of reflection makes it possible to adjust the activities if necessary and increases the participants' motivation. In addition, it may help people to understand what institutional bottlenecks are creating friction and how to get things moving again.

Record

An inventory is made of the results when a system innovation project is completed. These results are recorded and sometimes explained: both the anticipated results and the surprises, the positives and the disappointments. Once again, RMA can be useful for the various problems that often arise in this stage. These are:

- milestones (flexible interim targets) have not been defined and recorded;
- a lack of progress or a poor picture of the progress;
- results are not recorded on time or not recorded properly;
- there is too little anchoring of the results or it is done too late at the organisations of the project participants themselves, in the networks or in new rules);
- accountability for project results is postponed or becomes fragmented, so that it remains unclear how effective the project is;
- the lessons and results are insufficiently applicable in other situations.

RMA is extremely useful in this phase. Monitoring can be used to make an inventory of the project results and record them in writing. This allows the project participants to learn from them, the lessons from the project to be anchored in the wider network and its context, and an accountability trail to be provided for the managers to use with the client and the financial backers. It is a good idea to start recording the results as soon as the first project activities are carried out, whether or not they were successful. The monitor and the project team decide jointly what results will be recorded, by whom and in what format. The yardstick when making this choice must be whether the results are relevant in terms of the project goals and system innovation. It does not matter whether these results were expected or not at the start.

The recorded results are useful in the first instance for reflection with the participants, who can then include the lessons learned in their subsequent activities. Additionally, it is sensible to anchor them in the wider context if possible. A project can be justifiably proud if outsiders take over some of the lessons and the new concepts ('continuation of development', as it is known). But how can you achieve that? This already has to be considered when formulating project goals and when putting plans into practice; the monitor checks this and provides support.

Lastly, the project results are also indispensable as input for the final report by the project management to the financial backers and other parties.

Integrated phases

As stated earlier, the three phases are never strictly separated in practice. The project manager or the team may reach the conclusion during the 'act' phase that it would be sensible to make adjustments to the approach. This therefore entails a new design step. One feature of many system innovation projects is an emergent design, one that evolves as it goes along because the possible solutions are largely unknown. Moreover, a project team must aim to get the intended results properly anchored while still in the 'act' phase, or even during the design. This is to ensure that the sought-after 'continuation of development' does indeed occur.

The monitoring cycle

The monitoring – and thereby also the interventions – consists of continuous long and short cycles of four activities: observation, analysis and reporting, reflection, and (where necessary) adjustment of the project activities (Figure 2.1). For each of these steps, the relationship between the project and its surroundings (or the intended system) is key.

All monitoring activities are embedded in the project as far as possible by:

- ensuring they fit in with the project activities, or are even regarded as project activities in their own right; and
- ensuring that they are backed and supported by the project participants.

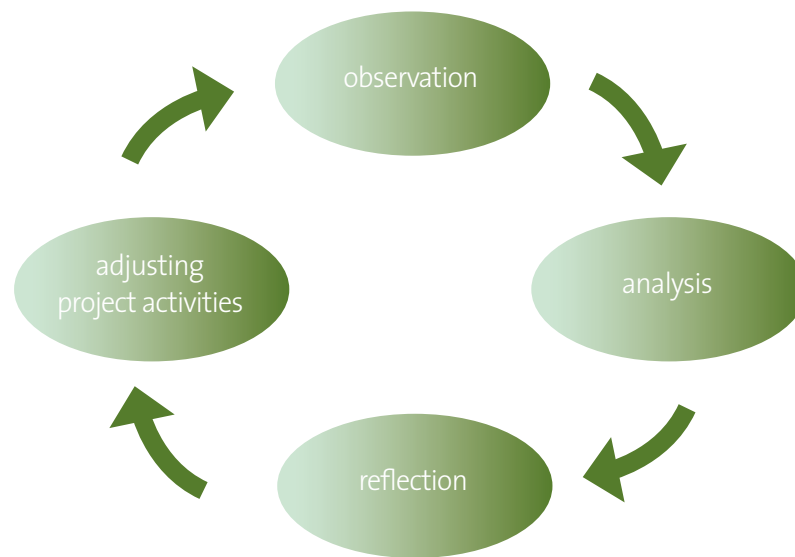


Figure 2.1: The RMA cycle.

Each activity is aimed at both the project (light, on the left) and the system that the project is trying to influence (dark, on the right).

One monitoring activity is observing what is happening in the project and how that relates to what occurs in the current or intended system. The two basic methods of observation, in addition to reading documents, are participatory observation and interviews; please refer to the boxed text for more information. The observation is tuned to suit the project activities. If the project team members are for example sounding out whether a particular party is interested in participating in the project, then this conversation can be expanded to become an interview for generating information for monitoring as well.

The observed facts are then analysed. This can be done by the monitor or the project manager, alone or together with the project participants. A collective analysis does help clarify the various perspectives of the participants. It gives participants the opportunity to set challenges for each other and ask questions. Another aim is to develop sensitivity to the dynamics of the surrounding system and its relationship with project goals or personal goals. In some cases, specific analysis tools can be used, such as system analysis, actor analysis plus causal analysis (see Part II).

The next activity is reflecting. This can cover a multiplicity of topics: assumptions and values, personal actions in the light of the actions of the other parties involved, how aspects of the project relate to what happens in the world beyond, and so forth. It is reflecting on these ideas that lets the team keep the project's level of ambition high. There are for that matter many forms of reflection: an informal bilateral discussion between the manager and the monitor, a planned meeting for reflection after an important activity is completed, or an item on the agenda of a regular project team meeting or a special gathering for all the project participants. Specific meetings may be held for reflection, but two team members may also reflect in a simple e mail.

Reflection may be a reason for adjusting project activities – the last step in the cycle. These may be the activities of a single actor or general project activities.

Anyone who keeps going through this cycle is more likely to become sensitive to signals from the surrounding context and will start responding to them naturally. New perspectives for actions will be seen and absorbed. In short: this cycle improves the reflexivity.

Long and short cycles

Going through a monitoring cycle can be a long or a short process. In a short cycle, the activities may overlap or even take place (almost) simultaneously. A common type of short cycle is as follows: the monitor observes a discussion meeting, analyses it afterwards to see what the key points for attention are, and reflects on it together with the project managers, who then take action. A practical example of a fully integrated cycle is the following: the monitor observes that the project team is ignoring resistance among new team members and asks a question about this at a team meeting; the team members analyse this, reflect upon it and decide to have a thorough discussion again about previous choices within the project.

The cycle can also take months or even longer, for example when monitoring system learning (please refer to the indicator sets tool). It is easy to distinguish between the activities in a long cycle, and special monitoring tools are often used. An example of a long cycle is the following: a picture is created at the start of a project showing what problem definitions and ideas about possible solutions exist among the potential participants, as well as their ideas of what the division of roles among them should be. This observation and analysis are used to determine the initial situation. At an interim evaluation two years later, the interviewees are asked about these aspects once again, to see if anything has changed. This is reflected upon at a meeting of the project participants and a decision is made to adjust the project activities. All four activities are therefore taking place during this interim evaluation: observation, analysis, reflection and adjustment.

Basic methods for observation in RMA

Participatory observation is research while participating in the activities of the people being studied. A participatory observer in system innovation projects will in particular attend meetings of the project team, the project participants and network meetings in a broader sense. It is a good idea to agree in advance how the monitor will be presented to the attendees and whether his or her role will be strictly passive or whether it could be active if required.

Gathering information by means of participatory observation is particularly useful when the project managers, the project team and the participants reflect upon it afterwards. One option is for the monitor to give his or her input at the end of the meeting, so that the participants still have the opportunity to discuss it together. Alternatively, the monitor can hold a separate reflection session with the project manager and/or the project team after an important meeting. Finally, the monitor can also decide to provide feedback in writing, even if this is only a short e-mail about the main points.

For more information about participatory observation:

- Bernard, H. R. (2006). *Research methods in anthropology. Qualitative and Quantitative Approaches*. Fourth edition. Walnut Creek USA: Altamira Press.

In-depth interviews are a good way of gaining insights into the assumptions, values and experiences of the project team members, project participants or external parties. As well as a method of research, they are also a way of encouraging reflection. This happens for instance if the monitor provides the stimulus for the interviewee to examine things in greater depth, such as the barriers in the existing system or the interrelationships. Who carries out the interviews and how this is done are therefore important. Having an external monitor do the interviews is particularly sensible when the relationships are fragile or tense. The project participants will see this person as being reasonably neutral.

The project team gets feedback on the results of the interviews. It is recommended that a collective reflection meeting should be held with the interviewees (or a subset of them) after the interviews. If this

goes well, it can provide a significant contribution to the project progress and improve the relationships within the project.

For more information about interviewing:

- Bernard, H. R. (2006). *Research methods in anthropology. Qualitative and Quantitative Approaches*. Fourth edition. Walnut Creek USA: Altamira Press.
- Pretty, J.N., I. Guijt, J. Thompson & I. Scoones (1995). *Participatory Learning and Action. A trainer's guide*. London, IIED.

Basic attitudes of monitors

Monitors must be at the heart of the project if they are to intervene usefully, maintaining a balance between involvement and keeping their distance. They build up and retain trust, so that people will be ready to cooperate when the monitors take action. At the same time, they remain a relative outsider so that they will not be drawn into the dynamics and limitations of the project too much. They can keep enough distance and get a picture of their own implicit assumptions by taking time themselves to reflect and talk matters through with colleagues who are monitoring other projects.

Sometimes there will be more emphasis on greater involvement and sometimes more emphasis on keeping a greater distance. That depends on the monitor's attitude. A monitor can intervene using two basic attitudes: appreciative inquiry and critical analysis. Each has its own pros and cons. Many monitors have a personal preference for one of the two, but an all-round monitor may use either of them, depending on the situation.

You have to sense which attitude you should adopt as a monitor. An experienced monitor is more likely to adopt an appreciative attitude if the morale of the project participants is low after disappointments or discouragement. If the project is running very smoothly, then a critical note may well spur the participants on to even greater efforts. Additionally, over the course of the project, a monitor gets to know who he or she is working with. You know that some people will draw inspiration from appreciative words whereas others will respond to a more critical tone.

Appreciative inquiry

The main feature of appreciative inquiry as a basic attitude is a constructive and exploratory mindset on the part of the monitor. The challenges perceived and listed by the project team or the project participants are key, and the monitor supports them as they tackle these challenges. Depending on the perceived challenges, it is the monitor's role to formulate the desired system changes using the wording, language and world view of the participants themselves. Monitors who adopt this attitude often see themselves as involved participants, right at the heart of the project. They emphasise the ongoing developments and results in order to be able to build upon the aspects that are going well. Critical judgements are postponed to create room for the search for a solution. For example, instead of investigating why the participants are not getting their own organisations or supporters to back the project, the monitor and participants look at it to see where the opportunities are for getting the supporters on board; the monitor may propose starting with one small action that then acts as a flywheel generating momentum for what is to follow. An advantage of appreciative inquiry is that it provides a safe environment for the project participants. It makes them more likely to be prepared to discuss their individual issues and say what they really think is important. Working using the language and the world view of the participants themselves brings the system changes closer to home and makes the system a more significant aspect for the actions. Moreover, this attitude arouses many people's enthusiasm.

It does have potential disadvantages as well, though. Appreciative inquiry makes it more difficult for a monitor to handle or indeed initiate confrontations with the project team. The appreciative process can also become more important than the ambition of making a contribution to system innovation.

Critical analysis

The main feature of critical analysis as a basic attitude is that the monitor's actions are aimed at providing norms and structures. It is centred on theoretical ideas about system innovation; the monitoring is intended to tackle system barriers that are thwarting the objectives and to make the most of opportunities that may be available in the world beyond. Monitors who adopt this attitude see themselves as involved outsiders and measure the developments in the project or broader network using an ambitious yardstick. A practical example: the monitor is using a list of criteria, based on innovation theories, to evaluate every meeting of a small heterogeneous innovation network. She notices that the goal is much more ambitious than the activities that have been started so far, and that they may have to raise their game if they are to achieve the aims. The monitor then points that discrepancy out to the project manager, hammering on about it until a possible solution appears that does meet that ambition.

As far as the system innovation ambitions are concerned, this attitude does have the advantage of keeping the participants on their toes. The emphasis on critical analysis can result in deepening or broadening of the insights within the project team. A pitfall is that it can generate resistance among the participants.

Division of tasks

Because of the complexity of a system innovation project, it is important that the monitors – whether they come from outside the project or are project team members – do not have to fulfil too many other tasks within the project. This is the only way that they can maintain a sufficient distance and provide support for the project and its management in keeping the level of ambition up by asking appreciative questions or holding a mirror up to the project.

Additionally, they must also continually keep fine-tuning the monitoring to match the expectations and activities of others. Their work serves the project's ambitions; they therefore act as a partner for the project manager. If necessary, they challenge the way others (the manager, the project team or the participants) are thinking and acting, and they may make critical statements about the course of the project. A healthy, trusting relationship with the project manager is therefore a requirement.

The project manager is responsible for the entire project and, in cases where there is external financing, is accountable to the client. There are two ways in which the monitor is able to contribute to this accountability trail in all phases of a project.

Firstly, he or she can keep an eye on whether the client's wishes are being properly converted into flexible project goals (during the design phase) and project activities (during the act phase). Where the monitor thinks that this is not happening sufficiently, he or she can intervene within the project – but not by contacting the client! Because it is also very important for the project management to be able to provide a proper accountability trail for the client, such an intervention may result in reflection within the project and perhaps in adjustment of the activities.

Secondly, the monitor can provide input for interim evaluation discussions between the project manager and the client, or for the final report. This means that the monitor does not have a direct relationship with the client, but is able – via the project manager – to make contributions to the steering by the authorities and to accountability.

Chapter 3. A project manager's perspective

Introduction

Project managers are responsible for a project's progress and for the realisation of the project goals. It is therefore their job to react appropriately if unforeseen and undesirable things happen during the course of a system innovation project. The results of a project can also be very different from the expectations. Project managers face a wide range of challenges in keeping a project running smoothly and anticipating a variety of possible problems. Particular challenges are:

- knowing what the problems mean for potential participants;
- ensuring that intentions are turned into commitment;
- ensuring that commitment results in behavioural changes;
- getting the participants to acknowledge that there is a problem;
- making sure that the core aspects of the problem are genuinely being tackled;
- knowing which barriers within the system could jeopardise the project, and keeping an eye on these barriers;
- ensuring that the project tackles these system barriers;
- finding someone who will keep them on the ball and prevent them from getting bogged down in tasks that are urgent but not important;
- selecting someone who can observe from a distance and introduce new insights;
- defining milestones (flexible interim targets);
- providing an accountability trail for the clients and showing the results that have been achieved (even if the project went differently than was anticipated);
- showing that the project has value, what the results are and what has been learned, so that others can also learn from it.

Reflexive monitoring in action (RMA) can help project managers bring this long list of tasks to a successful conclusion. Two general tasks can be distilled from this list:

- Support in the realisation of the ambitious project objectives. RMA can help improve the learning process within a project. It can also provide input for any necessary adjustment of the approach or goals.
- Assistance in providing an accountability trail. It is often not possible to work in a linear way towards specific results in system innovation projects. This is nevertheless usually what the client expects. Additional efforts are then needed to demonstrate that the project has produced valuable results, and what those results are. This is another area where this type of monitoring can help.

RMA offers various tools (see Part II) for helping to achieve these objectives. The emphasis in this chapter is on producing a monitoring plan and dividing the roles and responsibilities between the project manager and the monitor during the project. The boxed text at the end of this chapter contains an overview as well as a number of recommendations for project managers.

Producing the monitoring plan

The reference points for monitoring are provided jointly by the project's system innovation ambitions and the project goals that are derived from them. The monitor's primary role is to keep the project team or group of participants focused on that ambition, which was after all formulated or agreed upon by the team itself. RMA is an intrinsic part of the project.

Before monitoring starts, the objectives and the approach are worked out in general terms. The monitoring approach is closely interwoven with the project plan and is therefore part of the project management. This does not imply that monitoring always starts at the beginning of a project, although that is useful. A monitor does not have to be continuously active either.

The project management first has to decide whether to take on an external monitor or to assign this task to someone within the project team. The monitor subsequently develops a plan for RMA during a number of rounds of discussion in which the project manager and the monitor make sure that their expectations and ideas are aligned.

At the beginning of monitoring, it is useful to define the objectives and approach in general terms to start with, because the monitor is trying to encourage learning aimed at system innovation, and because the obstacles that a project team will encounter cannot be planned beforehand. The project team can discuss this plan at its first meeting and adjust it as necessary; this helps make sure that as many team members as possible acknowledge the effort and its importance, and back it. It is also important to create good contacts between the monitor and the project team members during one of the first meetings. Over the course of time, when the monitor has a better picture of what is happening, a more detailed working plan is made for a shorter timeframe.

The working plan defines the focal points for the monitoring and how it will work: what form it will take, what tools will be used and by whom. The RMA approach is matched up to the planned project activities, the intended participants and the intended interaction points. If the project team intends to hold a round of discussions, for example, the discussion protocol can be expanded to include questions from the monitoring perspective and the monitor can accompany the team members during the interviews. If necessary, additional network activities can be planned specifically for the monitoring. In addition, the monitor will also respond directly and proactively to the developments that take place.

Division of tasks between the project team and the monitor

Because the monitoring is embedded in the project, the monitor and the project team (including the project manager) carry out the RMA together. The project team members also play an important role if an external monitor is brought in. It is precisely then that it is important to make good agreements about the precise division of tasks.

Over the course of a project, the monitoring activities (observation, analysis, reflection and adjustment) may be apportioned between the project team and the monitor in a number of different ways. There are basically four forms:

- 1) carried out independently by the monitor alone;
- 2) carried out jointly by the monitor and the project team;
- 3) carried out by the project team with assistance from the monitor; and
- 4) carried out independently by the project team.

A summary is given in Table 3.1.

If the external monitor does not take part actively in the observation and analysis, he or she can play a useful role in supporting them. This might for example involve providing RMA tools, giving further explanations about them and tweaking them to suit the project so that the project team can get the most out of them. During reflection, a monitor can play both a facilitating role (for example by asking critical questions) and a genuinely participatory role (by helping think things through and talk about them during the project team's joint reflection moments). And although it is the team's responsibility to make adjustments to the project where necessary, there may be reasons for asking the monitor to help take decisions about this.

There are numerous reasons for choosing one of the four ways of dividing the tasks: the amount of time

Monitoring activities	By the project team	By the monitor
Observation	<ul style="list-style-type: none"> • Taking part in joint¹ observations • Independent observation 	<ul style="list-style-type: none"> • Taking part in joint observations • Facilitating observations • Independent observation
Analysis	<ul style="list-style-type: none"> • Taking part in joint analysis • Responding to analyses by the monitor 	<ul style="list-style-type: none"> • Taking part in joint analysis • Facilitating analyses • Independent analysis
Reflection	<ul style="list-style-type: none"> • Joint reflection (one-on-one with the monitor or with the entire project team) • Independent reflection 	<ul style="list-style-type: none"> • Taking part in joint reflection • Facilitating reflection • Independent reflection
Adjustment of project activities	<ul style="list-style-type: none"> • Joint decision-making • Joint action • Independent decision-making about adjustments as a result of the monitoring activities • Independent execution of project activities 	<ul style="list-style-type: none"> • Providing substantive feedback for adjustment • Facilitating adjustments • Taking part in the joint decision-making about adjustments

Table 3.1: Possible divisions of tasks between the project team and the monitor in RMA (slightly amended version of Van Mierlo *et al.*, 2008, pp. 21-22).

that the project members want to spend on monitoring, their competencies and confidence in using the tools, the stage that a project has progressed to, the type of project activities, etc. Tactical reasons can also play a role. It may for example be sensible to have the monitor, as an outsider, handle the interviews with (potential) project participants.

Self-monitoring by the project team

A project team may also decide to monitor itself, for example because it is cheaper to do so. In that case, it is important to make one of the members of the project team explicitly responsible for this. This person must be aware that he or she is playing two roles – those of team member and monitor – in order to prevent the everyday, humdrum details from having an impact on the monitoring. The positioning and content of the monitor role can be helped by agreeing that the project manager and monitor will meet regularly to discuss the progress of the project. This can for example take the form of reflection discussions after important project team meetings or other project meetings.

A limitation for an internal monitor can be that he or she does not have much experience with the capabilities and pitfalls of the role and is unfamiliar with the tools available. Some tools can be learned reasonably well from descriptions given in guides (see for example the dynamic learning agenda in Part II). Others require a certain amount of experience before they can be used well. The internal monitor can learn about them by taking courses or by using someone with more experience as a sparring partner. A project team can also hire in an experienced external monitor temporarily for particular tools.

¹ 'Joint' means by the project manager (or another project team member) with the monitor. 'Independent' means by a project team member or the monitor alone

The project manager-monitor-client triangle

The project manager and the monitor each have their own responsibilities. The manager is responsible for the entire project and, in cases where there is external financing, is accountable to the client. An important and tricky feature of system innovation projects is that they cannot be measured against unambiguous, predefined, fixed end results. This type of project can have valid reasons for changing direction after getting under way. The positive results are sometimes also not the ones that were expected. It is therefore important that a project manager should keep the client informed about the progress in the meantime, particularly if the goals and approach change. A role such as this is new for clients who only expect accountability after the event. It is advisable for project managers to make agreements with the client about one or more interim evaluations as early as the definition phase of the project. This can prevent major problems from arising when the project is at the completion stage, because the expectations have not been met.

The person carrying out the monitoring must also match it up properly to the expectations and activities of those involved. Monitors serve the project ambitions and act above all as a partner or sparring partner for the project manager or the team. If necessary, they may challenge the thinking of the managers or the project team and they may make critical statements about the course that the project is taking.

The monitor does not only help the project team learn new things; he or she also plays a role in the accountability towards the client and in involving the client in the interim. This is done as follows:

- 1) The monitor checks whether the client's wishes are being translated properly into flexible project goals and project activities. If this is not occurring to a sufficient extent, he or she provides feedback to the project manager (not the client). Because it is also crucially important for the project management to be able to provide an accountability trail in the end, integrating the client's wishes into flexible project goals and activities may result in reflection within the project, and possibly in adjustment of the activities.
- 2) The monitor provides input for interim evaluation discussions between the project manager and the client, and for the final report. This means that the monitor does not have a direct relationship with the client, but is able to make contributions to the steering and accountability through the project manager.

Table 4.2 at the end of Chapter 4 provides a summary of the RMA tools that can contribute to the project being able to provide a good accountability trail.

Clients sometimes expect that a monitor will provide an 'independent' evaluation of the project progress. That would be risky: it can damage the relationship of trust between the monitor on the one hand and the manager and team on the other. A clear division of roles is needed: it is the manager who is responsible for the project and reports on it. The monitor can provide input for this. This must be made clear from an early stage.

Recommendations for project managers

- 1) Start thinking about how monitoring and evaluation are going to be done as early as the definition stage of a system innovation project. It may be useful to involve a monitor even in this early phase, particularly in complex projects with participants from widely differing backgrounds. The monitor can provide support for the design of project goals and project activities.
- 2) If a project does not bring an external monitor in, give the responsibility for this specific task to a member of the project team. Avoid this person getting snowed under with other work and hold regular discussions with the monitor, for example in the form of reflection sessions after important meetings. This will flesh out the monitoring role and give the person in question a more clearly defined position.
- 3) At the start of the project, talk to the client (with input from the monitor) about the way accountability is to be handled. Because system innovation projects can take unexpected turns, it is a good idea for the project manager to have a meeting with the client at crucial moments. This keeps the client properly up to date and the likelihood of accountability problems is less.
- 4) Hold regular discussions with the monitor about the division of tasks and responsibilities. Make sure that the expectations on both sides are set out as clearly as possible in order to avoid problems during the implementation where possible.
- 5) Discuss the agreements with the project team, so that everyone is aware of the monitor's role. Amend the agreements if the reactions of the team members give reason to do so.
- 6) Agree with the monitor what will be done when there are differences of opinion, what freedom the monitor has at meetings of the project team or project participants or with third parties. Fundamental points of friction or criticism between the monitor and the project manager or the team are best discussed one on one.
- 7) Ensure that there is a good relationship of trust with the monitor. If this trust is not present, say so honestly and look for another monitor.

Chapter 4. A client's perspective

Introduction

When acting as the client, most policy officers want to know what results the project has produced and how those results relate to the goals (how effective they have been) and the resources used (how efficient they have been). As far as the clients are concerned, this is therefore what monitoring and evaluation are all about. The following quotes underline this way of looking at it:²

“But what... we also want is this: you have situation A and you want to get to B, and from the authorities' point of view we expect that this will always be better or safer or a better quality of life... and so you want to measure what the ultimate effect is of deploying your policy instruments.”

“It doesn't... matter how well you carry out your project: the Minister has to be able to say that it is safer or more sustainable...”

The majority of clients think that it is the project manager's business how the actual monitoring and evaluation is carried out.

Clients believe that monitoring and evaluation can fulfil all kinds of requirements in system innovation projects. What policymakers want is:

- to know what the ultimate effect is of the deployment of policy instruments;
- to be able to keep the minister informed, for accountability in Parliament;
- to tell Parliament and society where the money is going, i.e. transparency in what they are doing;
- to keep abreast of the situation in the meantime and know whether continuing is sensible;
- to be able to steer the project and link developments together in the interim; and
- to gather information for any recalibration of policy objectives.

Reflexive monitoring in action (RMA) was developed – and still is being developed – to encourage participants to learn from system innovation projects, enabling them to make better contributions to structural change. An important question for policy officers is therefore whether this type of monitoring is also relevant to policy, and if so in what ways. The image that many policy officers have of RMA is that it is primarily oriented towards the process and towards learning, but not so much towards results. It is however also possible to use RMA so that it serves both project goals and policy objectives. That is what this chapter is about.

The first topic discussed below is the fact that the authorities have two important objectives for system innovation: not only accountability, but also helping third parties learn from it. After that, we will discuss how RMA can contribute to both these aims. That is expressed in a table of relevant tools for those objectives. The chapter then finishes with a boxed text containing recommendations.

Monitoring and evaluation of system innovation projects

Increasing numbers of projects are starting up in the Netherlands within networks of farmers, researchers, suppliers, water boards and others who are working on sustainable development and the innovation that it demands. The sectors in which this is happening a lot include agriculture. A feature of some of those projects is their ambition to innovate the system in which they are situated. To put it another way, they are aiming for social and institutional innovation in addition to technical innovation. Participants in such projects are aware that they are embarking on a lengthy process.

2. Quotes from interviews held with LNV policy staff for the RMA project.

One characteristic aspect of system innovation projects such as these is that they cannot be used as a classical policy and planning tool. This is due to the nature of system innovation (see Chapter 5). Because the aims include social, institutional and technological changes (which also affect each other), the innovation process is dynamic and non-linear. The outcome is therefore not very predictable. Merely looking to see if preset goals have been attained is not sufficient in a situation such as this. Monitoring and evaluation have to be addressed specifically so that proper accountability for the project is possible.

Another feature that is relevant for policy-making is that system innovations do not occur in the form of a single innovation making a breakthrough. Instead, they arise from a combination of sub-innovations. After a project is completed, the goal should therefore be an ongoing process in which smaller innovations are linked together, in order to generate a sustainable alternative at the system level. This is why it is so important that projects make use of each other's results and that subsequent projects build on what went before. This means that it is crucial that third parties can learn 'across projects'³. Those third parties may be interested parties that are not participating in the project, participants in other projects, or policymakers. Learning across projects is very important for clients, so that they can define or support the more appropriate follow-on projects. RMA can also help here.

We can see from this that RMA serves two purposes for the authorities:

1. RMA helps policymakers provide accountability for system innovation projects to both politics and society, and within their own organisations. On the one hand, that accountability refers to the financial side and on the other, the results – not only the intended ones, but emphatically including the unforeseen. When providing accountability, it is important to realise that the results will rarely be fully sustainable; a partially sustainable alternative may also be a significant step forward. In addition to the assessment of recent effectiveness, an evaluation also creates a point in time when policy can be reassessed: is a project or network already able to stand on its own two feet? And can the financing be stopped, or should it continue?
2. RMA encourages third parties (including the client) to learn across a range of projects. These are then either projects that are similar in nature or that are part of the same portfolio. Unlike accountability, this also requires a picture of the approach taken to the project and the learning and innovation process. Information such as this allows good follow-on projects to be selected for support.

For both these objectives, clients can weigh up the extent to which they also want to be involved in the project developments. That does indeed cost more time than merely being informed afterwards, but it also has advantages:

- it will be possible to make better use of the project results within the context of policy;
- better quality information is obtained, because the whys and wherefores of specific results will be clearer;
- information in the design phase helps define preconditions for projects;
- interim information can be used to reassess policy objectives for the long-term periodically;
- interim updates on progress yield better and more finely nuanced information for useful follow-up actions, including support for subsequent projects.

³ 'Learning across projects' is not the same as 'learning from other projects'. The latter refers to using experiences learned from other projects to help meet the objectives of the current project. Learning 'across projects' involves linking experiences from a range of projects together to create something new. Smaller or 'partial' innovations from different projects can then for instance be bundled together, which can become the starting point for a new project in which that combination is central.

RMA objectives that are relevant to policy – 1: accountability

It is perfectly possible to use RMA to stake out areas that are relevant both for the project and for policy. Overlapping areas such as these are referred to as 'milestones' in this document. Milestones offer a means of measuring the progress of a system innovation project against items that are relevant to policy. The table below gives a summary.

Markers that are relevant to the project	Relevance to policy
The key project challenges and possible solutions, including for example whether the possible solution contributes towards sustainable development.	Contributes towards policy objectives. Provides points of reference for specifying evaluation criteria.
Changes in the attitudes of farmers and other project participants that offer additional possible solutions.	Relevant for policy implementation and steering based on innovation targets. This increases the space available for solutions.
Changes in the interrelationships that lead to greater openness and recognition/acknowledgement of each other's positions.	Important for policy implementation, coordination and backing. It will be easier for actors from different backgrounds to find overlapping areas of interest.
A first or subsequent detailing of a common effort towards sustainable development.	Relevant for policy objectives and benchmarking / evaluation criteria. Efforts aimed at sustainability will become more concrete.

Table 4.1: Examples of milestones: markers that are relevant for the project and to policy.

The content of these milestones is provided by positioning them in the context of the sector or area that the project is focusing on. The question is then for example one of defining the baseline from which farmers' attitudes are changing. For each change, you then determine whether the direction of change is towards sustainable development.

Milestones are a type of measurement that can be used to evaluate and assess the project. This means that they are also an important guideline for the project manager in formulating the approach to the project. It is therefore important that the milestones should be defined by the project manager and client jointly as early as the project design stage. The monitor can play a facilitating role in this.

The effects and outcomes of a project are therefore not the ultimate aims, but markers in a longer process of system innovation. It is possible to shift away from the agreed milestones where there are good reasons for doing so. Not achieving certain objectives does not in itself mean that a project has failed – as long as it has still demonstrably managed to make progress towards sustainable development. All those involved need to put the concrete, predefined policy objectives that a system innovation project is intended to contribute towards into perspective to some extent.

This demands rather different efforts from the clients to what they are used to making in a project. It requires greater involvement in the formulation of objectives, activities and milestones, and in the interim discussions about adjusting them, should that be necessary. Attending a monitoring activity occasionally (such as a reflection session or an eye-opener workshop) is another option for getting a picture of how the project is developing, what it is producing and the significance of the project in policy terms. It is important that clients give an early indication of what their involvement will be, so that their own expectations can be brought into line with those of the project manager.

RMA objectives that are relevant to policy – 2: learning across projects

A single project will never yield the coherent institutional changes that are needed for sustainability. It is therefore important that clients, other institutional actors or parties involved in other projects should learn from that particular project so that the insights obtained from it can be taken on board in other projects.

If policy workers who are responsible for different projects within a coherent portfolio speak to each other regularly, the practical benefit of this is that transfers of individuals result in less of a loss of knowledge.

In particular, narrative monitoring tools – ones that ‘tell a story’ – are good for promoting learning by third parties. An eye-opener workshop at a meeting can be very useful; the audiovisual learning history and reflexive process description are suitable for remote learning (see Table 4.2). The output – video clips, process descriptions – shows how the project participants put their problems into words, get the fundamental questions onto the agenda and resolve them, thereby improving and strengthening the project. Because the learning experiences have been put into context in the stories, third parties are able to translate the lessons into their own contexts.

A prerequisite is that the project team and the project participants are ready to share their learning experiences. There may be resistance to this among the project team or participants. They may be worried that clients will interpret it negatively or that other projects will run off with their good ideas. Clients can stimulate openness by adopting a constructive attitude.

Using monitoring tools for policy objectives

The left-hand column of Table 4.2 lists all the tools that are detailed in Part II of this book. Columns two and three provide an overview of the contributions that these tools can make to the two policy objectives discussed above. Clients can use this table when discussing the objectives and overall approach to monitoring with the project managers. The practical details are then left to the project manager and monitor.

In addition, clients can use the table to preselect the tools that they themselves would like to use or would like to be used to stimulate learning across projects or between projects and policy. The descriptions of the tools can be found in Part II of this guide if you want to familiarise yourself with them further. Sometimes, more than one tool may be relevant. Personal preferences or specific prerequisites (such as the available time or experience with a tool) are then the deciding factors.

Table 4.2: Contribution of monitoring tools to policy objectives.

Tool	Policy objective 1: points of leverage for accountability	Policy objective 2: points of leverage for learning from projects and across projects / at the policy level
System analysis	<ul style="list-style-type: none"> • The results of analysis at the start (if supported by the client) can provide: 1) focus on temporary system innovation project objectives, 2) milestones at the system level for (interim) evaluation. • Results of final or interim analysis provide explanations for the effectiveness of project activities, or the lack thereof. • The policy context is part of the analysis. The matrix used offers a great deal of information in very condensed form. 	<ul style="list-style-type: none"> • Participants can use the analysis results and compare them against comparable systems. • The role of the authorities with respect to system characteristics that maintain the unsustainable situation is made clear and can be reflected upon.
Actor analysis plus causal analysis	<ul style="list-style-type: none"> • The results of analysis at the start (if supported by the client) can provide: 1) focus on temporary system innovation project objectives, 2) milestones at the micro level for (interim) evaluation. • The results of interim analysis provide options for alternative strategies for attaining system objectives after all: justification for the redefinition of project activities. 	<ul style="list-style-type: none"> • Participants can use the analysis results and compare them against comparable systems. • The role of the authorities and the relationships with the institutional parties (and other projects) are made clear. Taken as a whole, they affect both the options and the obstacles for system change towards sustainability. • Early insights into the scope of the network that will influence the success of sustainable change,

	<ul style="list-style-type: none"> • Results of analysis on completion provide an accountability methodology for the project activities regarding the relevant changes in strategy for attaining the system objectives. • The policy context is part of the analysis. The analysis offers a great deal of information in a very condensed form, clarifying the complexities and at the same time making it possible to select the key focus. 	<p>offering opportunities for the parties to help think through the challenges in the project, in order to participate and to learn. These insights also encourage people to think about solutions that go across institutional borders and responsibilities.</p>
Dynamic learning agenda	<ul style="list-style-type: none"> • Gives an indication of the challenges perceived by the participants and how effectively they have been tackled. • Is written from the appreciative inquiry point of view; the milestones are stated explicitly and assessed. 	<ul style="list-style-type: none"> • Reflects the dynamics of the project and the specific challenges (and the reformulations of them) in recognisable project terms. Gives third parties insights into potential pitfalls in the execution of a project. • Changes in the indicators over time give an indication of effectiveness.
Indicator sets	<ul style="list-style-type: none"> • The indicators selected by the project manager and client act as milestones. • Changes in the indicators over time give an indication of effectiveness. These can be in a very condensed form. 	<ul style="list-style-type: none"> • The role of the authorities with respect to system characteristics (as part of the indicator sets) that maintain the unsustainable situation is made clear and can be reflected upon.
Reflexive process description	<ul style="list-style-type: none"> • Gives a qualitative, chronological description of the progress or undesirable stagnation, based on various indicators. The policy context is part of the description. The short description can be condensed into just a few A4s; the normal description is fine as an appendix. 	<ul style="list-style-type: none"> • Gives a qualitative, chronological description of the progress or undesirable stagnation, based on various indicators. Gives outsiders a detailed picture of the process as a whole, with all the steps taken, both forwards and backwards.
Audiovisual learning history	<ul style="list-style-type: none"> • Tells the story from the point of view of the various participants. Shows how the progress and changes have unfolded and how the participants have experienced them. • The timeline in a story is expressed explicitly and the 'boundary markers' are made clear. • Themes can be used to obtain more information quickly about specific parts. • Yields a concrete product, i.e. a web tool with two or three video clips, that can give outsiders an impression of the project in a short timeframe. • Gives an authentic picture of the project: the participants themselves are doing the talking, without it being 'polished' for a scientific report. 	<ul style="list-style-type: none"> • Visual representation of knowledge gained through experience helps outsiders learn indirectly, by translating the lessons to their own situations. • Visualisation triggers learning in a different way than reading reports does, thereby creating a greater learning effect. • Themes can be used to obtain more information quickly about specific parts.
Eye-opener workshop	<ul style="list-style-type: none"> • The 'eye-openers', one of the workshop results, are an indication of where a project is coming from and how far it has got. • Participation in the workshop can contribute to the way in which the client (e.g. a policy officer) can provide accountability (in documents for the minister, for informing Parliament). 	<ul style="list-style-type: none"> • Was in fact originally developed to let participants in other projects or policy staff learn, based on the timeline method. • Aims to prevent the learning experiences being seen as mere platitudes, by letting the outsiders see the project as insiders. Requires outsiders to be ready to take part in the workshop.

Recommendations to clients for the use of RMA

1. Ask those applying for system innovation projects to incorporate this type of monitoring in the plans, including the requisite capacity and competencies.
2. Discuss the objectives with the project manager from both the project and the policy perspectives. Look for the overlaps between them: the milestones.
3. Discuss with the project manager what milestones are important for the project. The descriptions of the indicator sets in Part II can be used to see what RMA indicators are interesting and useful. Also discuss the way in which the indicators are to be employed. Do not lose sight of the fact that institutional change and system innovation cannot always be expressed in terms of numbers.
4. Talk directly only with the project manager and not with the monitor, in order to keep the relationship of trust between the monitor and the project team intact.
5. Make clear agreements with the project manager about interim points and the way in which consultations and reporting are to be handled.
6. Discuss progress together with the project manager and any others at agreed moments. Base this on the agreed milestones and study (together) whether or not adjustments are needed.
7. Ask for feedback on the authorities' role (either stimulating or inhibiting) in the realisation of sustainable development.
8. Bring the parties together to enable learning 'across projects' (within their own organisations as well). These may be people from similar projects, or alternatively from projects that may be able to make use of each other's results. Develop a strategy and approach for letting these parties learn from each other. Table 4.2 provides suitable tools for this.

Chapter 5. The theoretical basis of RMA

Introduction

This chapter is about the foundations of reflexive monitoring in action (RMA). The main aim of RMA is to stimulate learning processes in projects that focus on system innovation. We will therefore first give a brief description of the features of system innovations; the challenges for projects that have system innovation as their goal will then follow directly from that. These challenges impose special requirements on monitoring and evaluation (M&E). What those are and the extent to which various methods meet these challenges will be discussed in the light of various M&E approaches and methods.

The challenges for system innovation projects

If the development of a sector or geographical area is to be deemed 'sustainable', it must simultaneously reduce the environmental burden, be economically viable and socially acceptable and – where applicable – promote animal welfare. Innovation generally focuses on just one element at a time. It encourages agricultural entrepreneurship, for example, or reduces the emissions of hazardous substances into surface waters. However, an improvement in one area can actually be damaging for other areas. Take air scrubbers in the livestock farming sector: these reduce ammonia emissions, but the farm's energy consumption will increase and animal welfare is adversely affected because the livestock have to remain in the sheds permanently.

The multiple ambitions of sustainable development imply that a single change is insufficient and that more is required than technological innovation alone. Changes are also needed in terms of social and institutional aspects. The chains may have to be configured differently, for instance, or there may be a need for new actors to participate; perhaps the relationships between the actors will need to change. This is what is referred to as system innovation (Elzen and Wieczorek, 2005).

The majority of systems have never been planned, but have arisen historically because the individual actors – each working from their own perspective – have aligned their activities. Specific technical solutions, ways of acting and institutions with their formal and informal rules have all become 'natural' for all the parties. A self-perpetuating system such as this is known as a lock in situation. It is difficult for innovations to break through in such a situation, particularly if things have to change in several places at once. Resistance to innovation can appear at a number of different places.

Projects that would like to contribute to system innovation, working against that resistance, want to do justice to that complexity by opting for an integral ambition. A process of 'learning by doing' is used to explore whether a new part of the system can work in practice, and if so how. This means paying attention to technical, institutional and network-related aspects. A single project will rarely be sufficient to force that kind of system to change. A series of projects is needed, each building on its predecessors' results. Managers of system innovation projects therefore face very specific challenges (van Mierlo *et al.*, 2010; Regeer *et al.*, 2009b):

1. The results of project interventions cannot be defined beforehand. They arise over the course of the project from the complex interactions between all kinds of processes, i.e. they are 'emergent properties'. This is because there are no clear cause-and-effect relationships. A project is therefore not only about implementing what has been agreed, but also about a series of cycles of planning, acting, observing, reflecting, and then planning again. This is not easy for managers whose experience is above all with the straightforward execution of project plans. Many participants are also accustomed to (and expect) what is known as 'rational planning'.

2. The definitions of the problems, paths of enquiry/exploration and solutions will be changed by the interactions with project participants and external actors. This lack of anything to get a grip on demands a great deal of flexibility from managers. They must be capable of allowing changes, and sometimes even of going in completely new directions.
3. In this uncertain and complex situation, it is impossible for project managers to keep aiming steadily for the same target: innovation with an eye on sustainable development. They will have to switch continuously between concrete activities and their intended long-term effects, as well as keeping a clear picture of the relationship between the two.

The value of monitoring for system innovations

The challenges faced by system innovation projects also impose specific requirements on monitoring and evaluation (van Mierlo *et al.*, 2010; Regeer *et al.*, 2009b). The central aim of this type of monitoring is to increase the reflexivity of a project. A system innovation project can be deemed reflexive if the network of those involved develops new ways of acting while the institutional context is changing too (and partly as a result of this). That is important, because innovation networks and actors are never functioning independently of established institutions that are maintaining unsustainable practices.

To put it in more concrete terms, the monitoring of system innovation projects must be capable of:

1. providing support for complex projects without predefined goals in the design, the adjustment of plans and the activities or interventions, while at the same time it is clear that the objective of sustainable development can only be achieved in the longer term;
2. facilitating a collective learning process by querying the values and practices of project participants and other actors; and
3. providing a stimulus for work on coherent, institutional changes, within and via the project, that contribute to sustainable development.

Put in more everyday terms, this type of monitoring ensures that the ambitions of an innovation project remain at (or are increased to) a high level – ambitions for system innovation. This counteracts the tendency to revert to familiar patterns of thinking and acting.

Not the usual monitoring

Monitoring for system innovations as described above is not the same as the familiar approaches to M&E. To make that clear, we will discuss the following three basically distinct approaches below:

- result-oriented M&E
- constructivist M&E
- reflexive M&E

Table 5.1 gives a summary of the key features of these approaches.

	Result-oriented	Constructivist	Reflexive
<i>Goal</i>	Accountability and steering	Learning and making adjustments to activities	Learning how to contribute to system innovation
<i>Paradigm</i>	Reality can be defined objectively	Reality is constructed by interaction and negotiation	A new reality has to be developed
<i>Focus</i>	Predefined objectives	Meanings and values, based on negotiations	Putting the prevailing values and institutional settings up for discussion

Table 5.1: Characteristics of three M&E approaches (Arkesteijn *et al.*, 2007; van Mierlo *et al.*, 2010).

Result-oriented M&E puts the emphasis on effectiveness and on monitoring and evaluating the results against the objectives, which are often defined in advance. Predefined indicators are often used to measure the progress.

This monitoring and evaluation is often based on what is known as an intervention logic (*programme theory*), i.e. based on assumptions about how the project interventions can yield the intended results. Methods used in this approach are LogFrames (IFAD, 2006) or Logic Charts and the more flexible '*theory of change*' (Davies, 2002; Grantcraft, 2006; Anderson, 2005).

The assumptions of this approach are applicable to projects that start with clearly defined objectives and plans; they are therefore less suited to projects that define and develop the objectives and plans in consultation with those involved. In addition, this approach leaves little room for a joint learning process. A strong point, though, is the logical thinking: it forces project managers to explain where they want to contribute and how they believe they can do so. This is undoubtedly also important for interactive processes focused on system innovation. Making the intervention logic explicit – doing so jointly with the people and organisations involved where desirable – provides good opportunities for learning at the project level, adjusting the intervention logic and planning better interventions in future. The approaches in which complex systems thinking is used as the starting point, as for example is done by Rogers (2008), are particularly relevant.

The *constructivist* perspective assumes that there is more than one reality. After all, actors do impute significance to phenomena from different perspectives. Those meanings are exchanged and continue to take shape through interaction and negotiation. Constructivist M&E therefore focuses strongly on learning together and sharing experiences.

Achieving objectives is not the primary aim. It is about letting the actors determine the agenda together, or letting them learn together. In general, these are participatory approaches. Examples are fourth-generation evaluation (Guba and Lincoln, 1989), learning histories (Kleiner and Roth, 1996) and responsive evaluation (Stake, 1983). The MSC method (*most significant change*) can also be included here (Davies and Dart, 2005; Dart, 2005).

The power of constructivist methods resides above all in the sharing of perceptions, which provides new insights and strengthens the relationships within a project or network. The emphasis on learning is valuable for system innovation projects, and the recognition that multiple 'realities' may exist suits the ambiguous nature of sustainable development. However, constructivist methods base their monitoring on the current perspectives and the goals of the people involved, which are often at odds with the need to put the institutional preconditions up for discussion and to develop other, radically different realities. After all, it is precisely these existing perspectives that may be part of the problem.

Over recent years, *reflexive M&E* – also known as *mode 2 monitoring* – has become increasingly popular as a new approach (Grin and Weterings, 2005; van Mierlo *et al.*, 2007; Regeer, 2009a). This approach is intended in particular for initiatives that are aimed at encouraging system innovations. The primary question here is whether the project activities are specifically stimulating those learning processes in the network that result in changes to practices and in the way these practices are embedded in institutions. Participants in an innovation project can influence one another if they investigate and understand each other's driving forces and the developments in the surrounding system. Reflection on the relationship between the project and the system (or the systems) is promoted as a consequence, as is reflection on the relationship between short-term results and the long-term ambitions. Those involved can learn from the exchange of ideas and

reflection, which benefits the reflexivity of the project. A number of methods are being developed that focus on the reflexivity in this way, such as Reflexive Process Monitoring (RPM) (van Mierlo *et al.*, 2007) and the Interactive Learning Approach (Regeer *et al.*, 2009b). This RMA guide is the result of cooperation between the researchers who are developing and applying these two methods.

RMA is based on constructivism. It is, however, more normative than the existing constructivist M&E methods: it embraces clear norms for the projects that are to be monitored in terms of the long-term objective (i.e. sustainable development), the process (a common learning process) and the project approach (the creation of beneficial conditions).

PART II

Tools for Reflexive Monitoring in Action

Introduction

This part of the guide describes seven tools that you, in the role of the monitor, can use for reflexive monitoring in action (RMA). These are:

- I. system analysis;
- II. actor analysis plus causal analysis;
- III. dynamic learning agenda;
- IV. indicator sets;
- V. reflexive process description;
- VI. audiovisual learning history;
- VII. timeline and eye-opener workshop.

The descriptions can be used for applying the tools. To this end, each tool's description gives details of how it works, its added value in specific situations and the ways in which it differs from other, comparable tools. In addition, each chapter gives ideas for how to approach it and a step-by-step plan, suggestions for avoiding pitfalls and examples from practice.

Before going on to the descriptions of the tools, this introduction covers the following:

1. a brief explanation of why these tools in particular were chosen;
2. an aid to help you make your own selection from the seven tools: the selection matrix.

Tools for Reflexive Monitoring in Action

Several tools may be used during the ongoing cycles of observation, analysis, reflection and adjustment of the activities in RMA. Please refer to the boxed text for a practical example.

The tools that have been selected for this guide fit in with the central features of RMA: they help keep the level of ambition high and are suitable for ensuring that all participants have an equal say (please refer to Figure 1 to remind yourself of this). Although the tools are also appropriate for other forms of monitoring and evaluation, we only refer to it as reflexive monitoring in action if they are part of an approach in which regular collective reflection takes place, looking at the relationship between short-term objectives and long-term ambitions, project activities, project effects and the surrounding system, as described in Chapter 2.

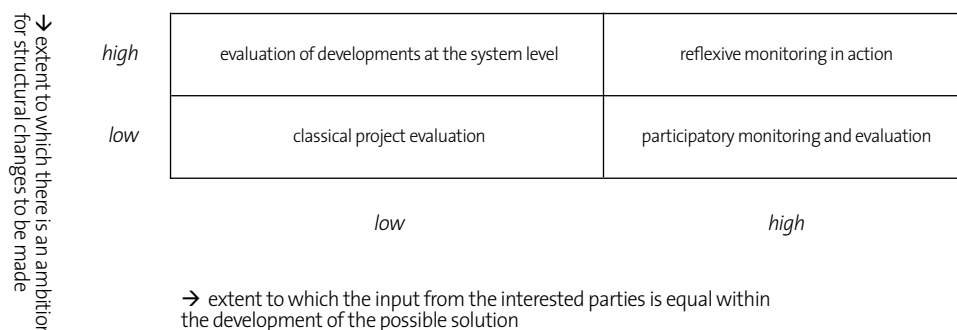


Figure 1: The key characteristics of RMA and other forms of monitoring and evaluation.

Some of the tools selected already existed; others have been developed especially. The existing tools are well suited to keeping the ambitions of system innovation projects at a high level, even if this is not what they were originally intended for. They have been modified to some extent to make them effective when used as an RMA tool. This applies to the combination of actor analysis plus causal analysis (Klinkers, 2002; Inayatullah, 2003; Robitaille, 2004) and the audiovisual learning history (Kleiner and Roth, 1996; Kleiner and Roth, 1997; KWF, 2008). In addition, some tools have been specially developed for maintaining a high level of ambition in complex innovation processes, precisely because this was not a central feature of existing methods. The new instruments that we are introducing here are system analysis, the dynamic learning agenda, indicator sets, reflexive process description and the eye-opener workshop, which continues where the timeline method leaves off (Wielinga, 2007).

Depending on the tool used, participants may not necessarily have an equal say. The ones that are particularly well suited for arranging that input from all parties involved is placed on an equal footing are system analysis, actor and causal analysis, the dynamic learning agenda, the timeline and the eye-opener workshop. When indicator sets, reflexive process descriptions or an audiovisual learning history are used, additional feedback and reflection with all those involved is required if they are to have equal input.

Example: The use of RMA tools in a project about maize

There has been a project in operation in the south-east of the Netherlands since 2007 that aims to reduce the emissions of crop protection chemicals from maize fields into the surface water. The participants are a water board, the contract workers' organisation, the livestock farmers' organisation, the supply sector and the manufacturers of crop protection products. Two project managers (the project team) are supervising the project. A monitor was added to the project from the beginning in order to help the project's reflexivity.

Initially, the monitor observed meetings of the project participants using indicator sets as the framework. She had discussions with the project team after the meetings in order to provide feedback based on observations. At one particular moment, the project participants were talking at cross purposes and getting nowhere, not putting all their cards on the table. On request from one of the project managers, the monitor then held bilateral discussions with all the participants in order to get a better picture of how they defined the problems and their interests and the possible solutions that they envisaged. This showed that not everyone felt that the emissions were an urgent problem. A number of the participants also did not see any role for themselves in the possible solutions.

These conclusions were passed back to the project manager in question, who presented them at a meeting of all those involved. Once those conclusions had been stated so precisely, the participants were able to talk about them again and take a decision about continuing. They also took action pretty much immediately. From that moment on, the participants were much more active in the network and they came up with activities in which they themselves could play a role.

During the first round of discussions, the system analysis that the monitor had made was also discussed with a number of the participants. This led to two of the participants producing more radical possible solutions than had been discussed in the meetings up to that point.

Almost eighteen months later, the monitor held another round of discussions with the participants to find out what effects they had seen in themselves and in others. The monitor wrote a reflexive

process description to let them share these insights into the effects with each other and perhaps with other parties, and as input for subsequent steps. This description was discussed in a collective reflection meeting. Some participants concluded that they would have to take extra steps if they were really to make a contribution to institutional changes.

RMA tool selection matrix

Which tool is the most suitable one to use depends on:

1. the phase that a project is currently in;
2. the concrete situation in a project: are there problems that are threatening the project ambitions?

The following selection matrix lists a large number of situations that can loom large in a project. These are there to help you make an initial selection of suitable tools. Several suitable tools are listed for almost every situation. For any specific project, there will probably be one that fits just that little bit better than the others.

You can use the matrix as follows:

1. Ask yourself what situation you need a tool for, and look for an appropriate description in the first column (more than one description may be applicable) *or* Determine which phase the project is in and see if the situations listed in the corresponding part of the first column have occurred.
2. Look in the subsequent columns to see which tools – marked with an X – are suitable for helping these situations to progress.
3. Read the descriptions of the corresponding tools and make a further selection. The preferred tool will depend on personal preferences, planned project activities and any preconditions.
4. Before making a decision, discuss the reasons for your choice and the preconditions for it to work with the project manager and, if appropriate, others who are involved.
5. Read the description of the selected instrument again if necessary, follow up any references and apply the tool.

The matrix can also be used for making a monitoring plan. Its purpose is then more for general orientation about the current phase of the system innovation project being monitored and the situations that could yet arise. The appropriate tools and their descriptions then give an impression of the options and the effort required. They can then be included in a plan, either as planned elements or as optional elements of reflexive monitoring in action.

Table 1 Tool selection matrix

RMA-TOOL	System analysis	Actor analysis plus causal analysis	Dynamic learning agenda	Indicator sets	Reflexive process description	Audiovisual learning history	Timeline and eye-opener workshop
SITUATIONS IN EACH PHASE							
Design							
<i>> Network composition</i>							
An insufficient picture of who the relevant actors are	X	Xa		X			
Insufficient insight into the interests of the relevant actors		Xa					
A lack of clarity about actors' perspectives on problems and solutions		(Xc)	X				
Too few project participants ready to take a leading role		(Xa)					
Too few innovative perspectives among the project participants		(Xc)					
Insufficient willingness to change (urgency, involvement) among the participants		Xac	X				
Too many opposing positions among the participants	X	Xc	(X)				
<i>> System approach</i>							
Participants focused primarily on the barriers rather than the possible solutions	X	Xc					
Lack of clarity about the causes of the persistent problems	X	Xc	X				
Insufficient ambition in the short-term or long-term goals	X	Xc	X				
Lack of ambition in the planned activities	X	(Xc)	(X)				
Act							
Participants adopt a wait-and-see attitude			X	X			X
Ambitions being diluted, e.g. because of distraction by the everyday details	X	Xc	X	X			
Participants not trusting each other enough		Xc				X	X
Insufficient co-operation between the participants		(Xa)				X	
New insights not converted into actions			X	X			
Participants meet resistance from their own organisations or supporters		(Xa)		(X)		X	X
Transition to the next stage stagnating			(X)	X	X		
Record							
Milestones have not been defined and recorded	X	Xc	(X)	X	X	X	X
Lack of progress or a poor picture of the progress		Xc	X	X	X	X	X
Results not recorded on time or not recorded properly			X			X	X
Anchoring of the results is insufficient or is done too late	X	(Xc)	(X)		X		
Accountability for project results is postponed or becomes fragmented			(X)			(X)	X
Lessons and results are insufficiently applicable in other situations			X	X	X	X	X

X: primary function of a tool; (X): secondary function of a tool; Xc: causal analysis; Xa: actor analysis

I. System analysis

Introduction

The design phase of the project is in full swing. In your role as manager or monitor, you would like to get a picture of the causes of the persistent problems that are going to affect this project, and of the activities that could make a useful contribution to system innovation. This is typically a situation in which system analysis could be helpful.

System analysis is a tool that provides insights into the actors and factors that are working against the transformation to a more sustainable system: the inhibitors – the system faults or barriers – as well as the actors and factors that are actually encouraging that transformation: the driving forces and the system opportunities. Insights into all these actors and factors are necessary if a good project is to be designed. System analysis is incidentally only worthwhile if the (potential) project participants see the existing system as a problem and would like to contribute to the transition to a more sustainable system.

A monitor (or project manager) can carry out a system analysis on the basis of discussions or interviews with project participants, or the analysis can take place in a collective workshop with the project team or the project participants. The advantage of a collective analysis with all the participants is that the analysis is a joint product and will therefore be more readily accepted by the participants. At the same time, a collective analysis gives the participants a picture of each other's ideas about the barriers and opportunities, and participants will probably be more likely to tackle the barriers and make the most of the opportunities.

For the collective analysis, the monitor (or project manager) makes a matrix of actors and relevant system characteristics. The barriers and opportunities indicated by the participants are placed in the matrix. The participants then discuss them with each other. Finally, the participants discuss what the implications of the analysis are for the activities.

A collective analysis takes about half a day. This is even possible in larger groups of 10 to 15 people, as long as there is an experienced facilitator keeping the discussion on the right tracks.

What makes it different from causal analysis?

Both types of analysis provide an overview of system barriers and opportunities that can be altered, but the system analysis focuses more on structural barriers that need to be tweaked. There is also a difference in output: system analysis yields a system overview with coherent barriers and opportunities; causal analysis produces diagrams with cause-and-effect relationships.

Approach

System analysis comprises a number of steps:

1. preparation of the matrix;
2. an inventory of system barriers and opportunities;
3. analysis;
4. reflection.

A more detailed explanation of the steps is given below, focusing on a collective analysis. Monitors can also carry

out steps 1, 2 and 3 on their own, using information from interviews and discussions for step 2. The monitor then presents the analysis to the project team or the network of project participants for reflection (step 4).

Step 1. Preparation

First of all, you adjust the framework (see Table I.1) to suit the project you are dealing with. The horizontal rows of the framework comprise a number of system characteristics (see boxed text) while vertically there are various organisations that perpetuate the system barriers and/or play a part in the creation of system opportunities. The row headings always remain the same, but real-world parties that are important to your project must be filled into the columns. If for example you are working on emission-free maize cultivation, then you could use ‘maize growers’ as the header for the first column. The other parties in the chain could then perhaps be ‘suppliers of minerals and crop protection products’ and ‘manufacturers of minerals, herbicides and pesticides’. The governmental bodies could then for example be the ‘Ministry of Agriculture, Nature and Food Quality’ and ‘Water Board’ and so forth. You can then use the matrix for the collective analysis workshop – please refer to the steps below.

Explanation of the system characteristics:

The knowledge infrastructure facilitates or obstructs access to and development of research and knowledge.

The physical infrastructure facilitates or obstructs physical or virtual accessibility and the way actors operate.

‘Legislation and regulation’ refers to the formal rules that can promote or hinder innovation, such as technical standards, employment legislation or the legal framework.

‘Values, norms and symbols’ refers to the political and economic climate and the culture of a country, region or sector, and to social norms and values.

Interaction can be too intensive, meaning that the actors’ relationships become so tightly intertwined that nobody can take the first step, and their view of reality will be distorted; it can also be too loose and too narrow in scope, so that people are unaware of each other’s visions.

The market structure refers to the system barriers and opportunities that arise due to a range of market phenomena such as monopoly, oligopoly, supply and demand.

	Businesses	Consumers	Chain partners	Governmental bodies	Knowledge institutions	Interest groups
Knowledge infrastructure						
Physical infrastructure						
Legislation and regulation						
Values, norms and symbols						
Interaction						
Market structure						

Table I.1: System analysis matrix (based on Klein Woolthuis *et al.*, 2005).

Step 2. Inventory of system barriers and system opportunities

This step allows the workshop to begin. An alternative possibility is that you, from the position of monitor or project manager, carry this step out yourself, using interviews with the participants as a source of information. You formulate two key questions focusing on the system innovation ambitions of the project. The first question is “Why are the current practices still not sustainable?” This can be specified in more detail, for example “Why is there still such a high level of antibiotic use in animal husbandry?” The second question is “What developments, internal or external to the system, can help the project to be a success?”

After giving a good explanation of the purpose and working method, you examine whether there is agreement on these key questions and reformulate them if necessary. Then you ask all workshop participants to write down the system barriers and system opportunities (as they perceive them) on Post-its or similar adhesive notes; each barrier and each opportunity is on a separate piece of paper, with one colour for the opportunities and another for the barriers.

Step 3. Analysis of the barriers and opportunities

You put the framework (see Table 1.1) up on the wall and give a brief explanation. You ask the participants one by one to place their Post-its with barriers at appropriate locations on the grid. Ask them to explain precisely why they are putting the barriers there, under that actor and/or that system characteristic. Subsequent participants try as far as possible to cluster the system barriers that they have identified with barriers that have been pinpointed by others (see photo).



While putting the stickers in place, you can give the participants the task of asking each other critically why they see something as a barrier, and whether or not it may be a symptom of a deeper underlying cause. This may improve the reflectivity of the participants.

If, despite this, symptoms are listed rather than genuine barriers, then the analysis needs more depth. Keep asking about each symptom, drilling down until you can no longer go any ‘deeper’ and therefore appear to have come up against a real barrier. Replace the stickers for the symptoms with stickers for the genuine barriers.

In our maize case study, the participants might say that the growers do not have sufficient knowledge of, are not bothered about or have no interest in alternative options. The question is: why is that so? If the lack of knowledge is because there has not been enough research, ask them why no studies have been performed. If it is due to a lack of money, why has no money been allocated for it?

Check whether the participants believe that the analysis of the barriers is correct and complete. Ask if all the Post-its have been stuck in the correct places and whether all the barriers have been mentioned.

Then you ask the participants to come up again one by one, but now for the opportunities stickers, which – as noted earlier – are a different colour to the barrier stickers. It is a good idea to ask more questions to see if participants are still mentioning symptoms here. If it is noted for example that the growers do already have a great deal of knowledge, you then ask how that knowledge was acquired. If the answer is that sufficient research has already been done, you should again ask how that has come about, and so forth. Then check to see if the opportunities analysis is complete.

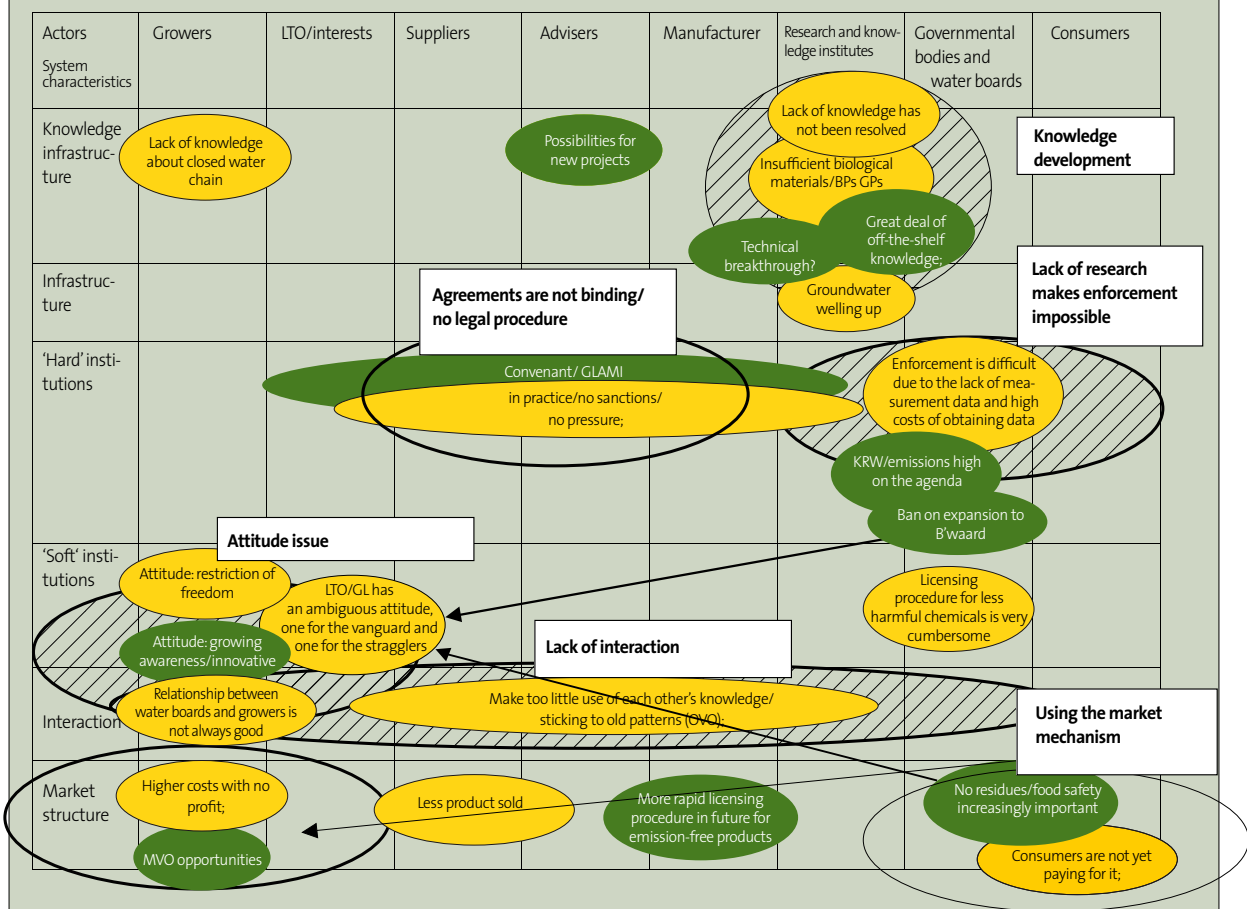
Ask if it is correct that any empty cells there might be empty, both for the opportunities and the barriers. When in the role of monitor or project manager, feel free to add missing barriers and opportunities yourself. After all, you are looking at it from a different perspective to the participants.

You now have a nicely populated matrix, with Post-its that will mostly be in clusters. Now analyse it further with the group to see if collective terms can be thought up for the clusters of barriers and clusters of opportunities – which are the most important, and what relationships there are between the barriers and the opportunities. A detailed example of such a diagram is given on this page.

Detailed example of a system analysis:

A project team working on low-emission greenhouse horticulture thought up a number of activities fairly intuitively. However, because the team wanted to get a better picture of the system barriers and opportunities before making a definitive choice of activities, a system analysis was performed with the project team, under the guidance of a monitor.

The illustration below shows the results.



The green/dark ovals describe opportunities for low-emission greenhouse cultivation; the yellow/light ones are the barriers. The white boxes contain the 'collective terms' for clustered barriers and opportunities. The arrows symbolise the relationships between barriers and opportunities. The cross-hatched areas represent the activities that the project team has proposed: the team suggested for example that the water board should set up a local measurement programme aimed at knowledge development in order to investigate the emission pathways and quantities. In addition, they also intended to bring the various actors together regularly in order at least to encourage temporary interaction between the parties.

Step 4. Reflection

As a final step, you reflect together with all the participants on the question of what the analysis means for the project activities. What opportunities must be grasped? What barriers must be overcome? And above all, how and with whom? Are there perhaps other parties elsewhere who could breach the remaining barriers or make use of the other opportunities? Who else might it be possible to invite to become part of the network?

If the project activities have already started, an important question is whether they match up nicely with the barriers and opportunities identified. And if not, what next?

Pitfalls and solutions

Pitfalls

A system analysis is being carried out although the participants do not see the current system as being problematic, or do not see a future system as being any better. This produces a confused analysis.

The participants list only the symptoms of system barriers and opportunities, such as “there’s no money for further research” or “the farmers’ level of knowledge is insufficient”.

There is resistance to the analysis within the innovation network because (current or planned) network activities are not focused on the barriers and opportunities that have been revealed.

The analysis is carried out by a homogeneous group, for example physical scientists or technical people, giving the analysis a substantial bias.

Participants feel that the system analysis is complex. This particularly happens if the monitor or project manager carries out the analysis, based on interviews and observations.

The participants interpret system opportunities as possible solutions.

Solutions

First make an inventory of the problem as experienced by the participants and see what they feel about the project ambitions.

Try to break through this by asking why.

Discuss this risk as a possible scenario before you begin the analysis. It is not about shooting current activities down in flames, but about developing more useful activities.

Attempt to carry out the analysis (based on interviews) using a heterogeneous group. If that is not possible, encourage the group to think outside its own closed box and put themselves in other people’s shoes.

Explain the analysis step by step in the feedback.

Explain that it is about external developments at the system level that could increase the chance of the project succeeding.

Other applications

A system analysis is not only useful for exposing the causes of persistent problems and designing activities; it can also help with other difficulties within the project.

Design:

An insufficient picture of who the relevant actors are

The system analysis gives a picture of which actors are hindering the transition to a new and better system, and which are encouraging it. This can be a reason for involving particular actors in the project.

Too many opposing positions among the participants

In a collective system analysis, the participants exchange their visions of the system, plus all the barriers and opportunities that they perceive in it, each from their own position within the network. This makes them more capable of seeing things from each other's point of view, which can result in ideas for possible new joint solutions. Ultimately, a system analysis can result in common ground being found for a vision of the system, the barriers and the opportunities.

Participants are focused primarily on the barriers rather than the possible solutions

A system analysis followed by a good discussion can in fact reveal barriers (system faults) to be 'solutions in disguise', i.e. themes on which work is required.

Too little ambition in the short-term or long-term goals

The system analysis makes clear whether the project objectives are ambitious enough when compared against the barriers and opportunities encountered.

Lack of ambition in the planned activities

The system analysis also casts light on the level of ambition of the network's own activities. Activities do after all have to make a contribution to resolving (or learning to live with) the institutional barriers, or must make the most of an opportunity.

Act:*Ambitions become diluted, for example because people are getting distracted by the everyday details*

Discussing a previous analysis for a second time may freshen up the participants' motivation. If there is not yet a system analysis to return to, one can still be made, using the collective variant.

Record:*Milestones have not been defined and recorded*

A system analysis actually lets you define the future milestones. You define the system barriers and system opportunities that are central to the project. You then take a regular look at what the work done to date has delivered, and whether there are new barriers and opportunities that need attention.

Anchoring of the results is insufficient or is done too late

A system analysis gives a picture of institutional barriers and opportunities. Concentrating on this type of barriers and opportunities is precisely what lets you anchor genuine change instead of just tackling the symptoms. If this problem looms large in a project that did not have a system analysis performed early on, then the motto is 'better late than never'! It will still be beneficial for anchoring the project results.

Practical experiences:**Emission reductions in greenhouse horticulture**

The relatively clean image of greenhouse horticulture was disrupted in 2005 by the RIZA (the Institute for Inland Water Management and Waste Water Treatment) in its report entitled *Emissies van gewasbeschermingsmiddelen in de glastuinbouw* (Emissions of crop protection products from greenhouse horticulture). The RIZA concluded, "Despite the targets for the use of crop protection chemicals for 2010 already having been achieved, there are still a lot of problems with water quality in greenhouse horticulture areas involving a large number of active compounds."

These conclusions were one of the reasons that the *Telen met Toekomst* (Farming with a Future) practice network took the initiative for a project entitled '*Emissiereductie in de glastuinbouw*' (Emission reductions in greenhouse horticulture). The project team of researchers quickly came up with ideas about who should take part and what activities were required. A system analysis was performed to investigate where the system barriers and system opportunities lay and to see if the direction currently being taken was indeed sensible.

Before the analysis, the project team members held a series of interviews with possible participants, in order to find out whether these actors agreed that the current system had a problem that required attention urgently and what possible solutions they could see.

Guided by the monitor, the step-by-step plan above was used. The project team members questioned each other very critically about the underlying causes of supposed barriers and opportunities. This added depth to the analysis. One person could question what another saw as a system barrier. The result was that the team began to track down deeper-lying causes of the problems.

At the end of the analysis, it turned out that the proposed activities and actors did indeed largely cover the opportunities and system barriers. The fact that no single actor had the mandate to measure emissions of chemical compounds and minerals accurately and investigate them was seen as a crucial system barrier. This meant that little was known about the scope of the emissions and the pathways that the products took. It was also noted that the problem owner, the water board, had very little contact with the growers and the manufacturers of the chemicals. There was also a major opportunity: the auction houses are looking for products with low residue levels, and this is something that the growers cannot afford to ignore.

This exercise released a great deal of energy, primarily because the analysis supported the project's plans: to start a pilot with the water board, the herbicide and pesticide manufacturer, the growers and the growers' organisation, in order to get a better picture of the scale of emissions and the pathways. In addition, the project looked for points of contact with market parties who were aiming for low-residue products; however, they turned out not to be interested in taking part.

II. Actor analysis plus causal analysis

Introduction

As a monitor or project manager, you may get the feeling during the design phase that some of the members of the project team have a restricted view of their contribution and role. One may see himself only as an adviser on various substantive aspects; another only takes action when something needs organising. Discussions and progress seem to be determined by those who have the most to say, based on their own contribution or expertise. As a result of this, there is no shared vision about the role that this project has in contributing to a longer-term ambition, namely system innovation. There are two reasons for this superficiality:

1. A limited picture of the way the project is embedded in the wider system (i.e. the various social parties and institutions). This wider insight is needed in order to obtain a better understanding of the role of the fields of expertise in the project team. That also incidentally enables particular fields of expertise to be identified that are lacking. Expansion of the project team or the network of participants may then be necessary.
2. A limited picture of the factors at the system level (and their interrelationships) that are holding back the project. This insight is needed for building on the project description: what should be done? What items are we going to tackle and in what order? What exactly are the key items and the peripheral issues? And will this contribute to the desired system innovation or not?

An actor analysis provides insight into which actors are playing a role within the system, and who should be involved with the project and in what way. A causal analysis provides genuine understanding of factors that are holding back the project. In the causal analysis, 'why' questions are used to gather reflective answers systematically, thereby allowing the causes of problems or stagnating processes to be determined at increasingly deep levels. The answers can then be glued together to produce a coherent schema of cause-and-effect relationships: the causal tree.

What is the difference between a causal analysis and a system analysis?

System analyses use a predefined matrix for identifying *clusters* of structural causes of problems. Causal analyses are good at revealing *hierarchical cause-and-effect relationships*. It produces *diagrams* in which the symptoms are at the top and the deeper-lying causes at the bottom. The relationships are constructed using logic rules. Each connecting line from top to bottom represents an answer to the question "why" or "what is the underlying cause of this?" If you read the tree upside down, from the roots to the top, then it provides insights that are structured as: if <the lower argument> is the case, then one consequence is <the associated higher argument>. Working on solutions for problems that are high up in the causal tree is merely tackling symptoms temporarily. The causal analysis shows what the best and worst areas to put your efforts into, from an effectiveness point of view. A good project strategy focuses on aspects that are as low as possible in the tree but are still changeable, thereby resolving the higher-placed symptoms at one fell swoop.

Approach

Actor analysis and causal analysis can in particular bear fruit when it comes to learning together and sharing insights about the approach when they are used within a team or together with the project participants. However, the monitor or project manager can carry out the same analysis steps as ‘homework’. He or she can then introduce the results as a discussion item in various project phrases.

Actor analysis

The monitor can suggest for example that an actor analysis should be carried out by the whole team. A matrix of four rows by four columns (see Table II.1) is drawn on a large sheet of paper. Discussing it as they go, the participants can put the names of actors on it using Post-its. This takes perhaps 20 minutes (for 4 to 5 participants) or three quarters of an hour (10 participants). Allow plenty of time immediately after this for reflection and for operational conclusions and agreements.

Step 1

Three organisational levels are shown in the matrix:

- the individual and small niche initiatives (e.g. ‘farmer X’) are at the bottom;
- above that is the institutional level, like municipalities, Chambers of Commerce, banks, water boards, charitable foundations, associations, NGOs;
- at the top is the governmental level: the national authorities and inspectorates, etc.

The headers for the three columns are based on the presumed interests of these actors: ‘proponent’ and ‘opponent’, with ‘neutral’ in the middle.

Get the participants to write down the names of people and organisations from the project’s surrounding context on yellow Post-its, stating who will benefit from the project objective and who it will cause problems for (e.g. because they might lose their jobs) or who will not see any significant consequences. This takes a maximum of five minutes.

Take the set of stickers from one of the participants and ask him or her which cells the individual Post-its should be stuck in. Then ask the other participants if they agree with this placement (and discuss it if not) and if they have any of the same stickers that can be placed on top of the Post-its that have already been placed (and do so if there are any). Then continue with a second participant, sticking their Post-its on the matrix as indicated.

When everyone’s stickers are on the matrix, reflect jointly on the question of whether this overview is complete. Authorities and national institutions are often hardly mentioned, because people think that in practice they do not have much to do with them. Ask why the topmost of the three rows is so poorly populated: is it not also possible for nationally implemented policy to be relevant to sustainable development? This expands the horizons from the day-to-day project work to the entire system and the changes that are taking place within it.

	Positive interest (proponent)	Neutral (bridging)	Negative interest (opponent)
Authorities			
Institutions			
Individual, niche			

Table II.1: Matrix for actor analysis.

Step 2

Now ask the participants to put the system level of sustainable transitions and powerful actors behind them, and switch their focus to the project itself.

Which of the actors that are now in the matrix:

- (a) are already closely involved with the project?
- (b) could be a source of hindrance to the project *during* its execution?
- (c) could be a source of hindrance to the project *after* it is complete (thereby forming an obstacle to sustainable implementation)?

The monitor circles these actors using variously coloured marker pens (e.g. green for A, red for B, blue for C).

Step 3

Ask the participants to think about the relationships between these highlighted actors. What do we know about:

- (a) the direction in which the money flows? – the financial power and dependency;
- (b) the direction of hierarchical control? – formal power and dependency;
- (c) the direction in which the information flows? – the knowledge network, in which power and dependency can also play a role.

Draw the appropriate arrows between the actors.

This completes the output of the actor analysis.

Step 4

The project team uses this inventory to decide which actors and in particular which people should be invited to participate. Various forms of participation can be distinguished: in the project team, in network meetings, in regular workshops, as a speaker or a sponsor for important events such as openings. The project manager or monitor should record the argumentation. This will be useful later on in monitoring reports and project evaluations.

Step 5

The project team and the monitor divide the task of approaching these new project participants for an exploratory interview amongst themselves. These interviews can be used for testing the assumptions: are the actors' positions with regard to the project and system innovation indeed as had been anticipated? The interviews can also inspire opponents to shift to a neutral position or even become proponents. The interviews may also identify new, relevant actors.

Step 6

Put 'network information' on the agenda of subsequent meetings of the project team as a new fixed item. Use this to keep the network up to date and be sure you all stay alert for new prime movers.

You can also carry out the actor analysis in parallel working groups. That will make clear whether the groups are thinking along the same lines as the core team. A group may also prove able to offer additional information.

Causal analysis

The tasks in causal analysis can be split up three ways: the group does the work, supervised by the monitor or project manager (option a); the group and the monitor or project manager distribute the work (option b); or the monitor or manager does the work largely on their own (option c).

- a) In this variant, the group constructs the lines of the argumentation themselves. This takes about one hour if there are four participants. There is then joint reflection lasting about half an hour covering the high-priority objectives, the conceivable interventions and identification of the actions, and the institutions, actors and team members to be involved.
- b) In the mixed variant, step 1 (see below for the precise content) is done in groups, taking about 15 minutes. The monitor or project manager then produces an integral reconstruction based on this (see step 2). Allow 2 to 3 hours for this. Reflection on this reconstruction is then done at the next meeting. This variant is useful if there is not much time available for step 1. It is also a good idea when there are more than four or five participants, because a larger group will soon spend more than an hour discussing and ‘solving the puzzles’.
- c) The monitor or project manager can trace the lines of the argumentation himself or herself and can construct the causal tree based on all sorts of material that has been collected (interviews, and group discussion, audio and video recordings). This variant is not described explicitly below.

Step 1

Write the *central problem* that is threatening the project’s ambitions at the top of a large sheet. For example, “The system innovation of project X is threatening to misfire”. The participants are given a stack of Post-its. For the sake of simplicity, we will call the participants Peter (P), Marie (M), David (D) and Nicola (N). Ask them to stick their blank Post-its on an A4 sheet as shown in Figure II.1.

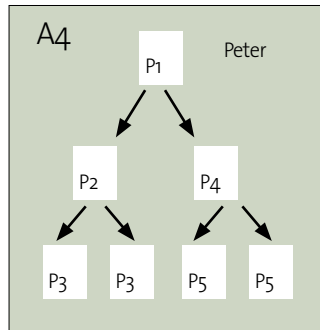


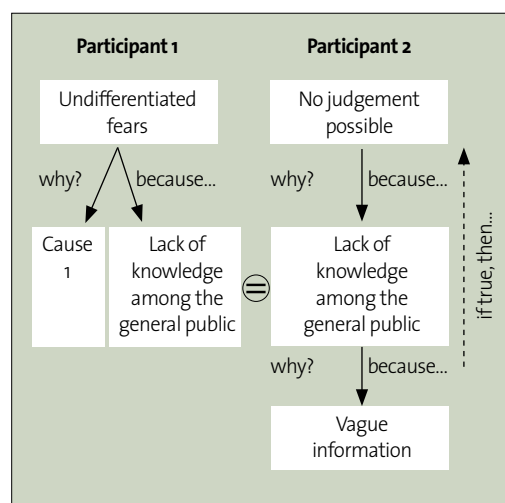
Figure II.1: Participant Peter sticks the blank Post-its on an A4 sheet and numbers them with his initial (P) and sequential numbers 1 through 5. This shows that P2 and P4 are the lower-level causes of P1. The stickers labelled P3 are the underlying causes of P2, and so forth.

The other participants then get five minutes to write down the causes and underlying causes of the general bottleneck as keywords on the individual Post-its.

Step 2a (belongs with option a, the group approach)

Collect up the stickers with the top-level causes (i.e. the ones labelled P1, M1, N1 and D1) and stick them provisionally next to each other on the large sheet as primary causes under the *central problem*. Ask the group whether these, in their opinion, are indeed the direct causes of the main problem. Some will look similar and can be merged. The more participants with different viewpoints take part, the more complete this top series will be. It is also conceivable that Nicola will place a cause at level 2 (N2), i.e. one layer down, whereas Peter had it at level 1

Fig. II.2: Synonyms as connecting nodes.



(P1). She is therefore distinguishing an intermediate cause between the general problem and cause P1. In such an event, the monitor takes the lower argumentation series, Nicola's in this case, by shifting P1 downwards to the position of N2, sticking the proposed cause N1 at the place thus made free, just under the central problem. Now work out the detail of the second layer of deeper-lying causes. Under cause M1 (from Marie) there are two deeper-lying causes (M2 and M4). The same applies for David's stickers (D). Every now and again, the Post-its of two participants will be pretty much the same: synonyms or duplicates. If N4 and D4 say the same thing, they are a node. This means that the initial causes N1 and D1 both derive from the same underlying cause N4/D4. Keep an eye open for this kind of duplicate, because they create the interconnections between the participants' main categories. You can use them to connect the four individually completed A4 sheets into a network (see Figure II.2).

Repeat this method for the third level by sticking Post-its such as P3 under P2. Ask if anyone has synonyms for these that could once again create nodes.

The causal tree is complete once all the Post-its have been transferred from the A4 sheets to the large sheet and have been connected up with cause-and-effect lines. The process often reveals connections that nobody had thought of originally. Add these in over the course of the discussions, for example as a new Post-it for an intermediate step. The causal analysis is after all not an end in itself, but a means to an end: understanding the causes of all the obstacles and problems. Be ready to modify it as insights improve.

Above all, listen carefully to the stories behind the keywords that are on the stickers. It is important that the participants recognise and embrace the broad lines of the causal tree. The keywords must therefore fit in well with the discussions, avoiding not only manipulation but also the suggestion of manipulation. A good feel for language is important.

Step 2b

(belongs with option b, with the work divided between the group and the monitor or project manager)

The team exercise ends once the Post-its on the A4 sheets have been filled in, i.e. after a mere five minutes. The monitor or project manager should take the A4s and use them later to make the reconstruction, as described under step 2a. Look for causes and arguments that are comparable but may have sometimes been worded differently. These are nodes where the various lines of argumentation converge. Because interpretation is important here, we recommend doing it as a team of three, if possible with the reports and texts within reach. Encode the individual lines first using letters or colours, so that it is possible to put the lines back into the original configuration at any time during the construction process if that should prove necessary. Interobserver reliability can be increased by carrying out the constructions independently of one another, analysing the discrepancies and reformulating the interpretations. Finally, discuss the resulting diagram with the participants for the purposes of external validation.

Step 3

The following hints may help to improve the readability of the diagram:

- a. Give multi-step reasoning priority over 'short cuts' that skip one or more of these steps, unless there are reasons in principle why the two routes differ. Reasoning involving multiple steps will ultimately make the same causal connection, but in a way that puts more flesh on the bones of the content. This recommendation also helps keep the diagram simple.
- b. Use straight lines where possible, without bends and curves.
- c. Arrange all the clusters of argumentation in such a way that you minimise the number of lines crossing each other. PowerPoint has the 'connectors' tool to help do this, allowing you to shift the blocks (the Post-its) any way you choose without breaking any of the lines. If the lines do end up crossing each other, try to keep the angles at which they cross each other constant throughout the diagram.

Step 4

Invite the group to challenge the robustness of the causal tree. The construction of the causal analysis must of course be internally logical and consistent with factual or scientific knowledge. In addition, the logic must also be consistent with the pictures of all those who provide input. Test the logic of the scheme by running through the steps top-down, using the criterion of whether it is “logical that the next step in the diagram shows a lower-level cause.” If so, is it also true that it can be seen bottom-up as “logical that the higher step can be understood as a consequence of the lower-level step”?

Step 5

Once the causal tree is ready, invite the project team or the wider network to reflect on it. This will boost their creativity and inspiration. Question: “What is still missing and what additional lines can still be drawn?”

Then give each of them three stickers and ask them to place them on the three key issues. To put it another way, “Which issues need to be addressed?” Look to see which issues have been given a lot of stickers and which have not got very many. Ask why that is, and reflect on the arguments stated.

Finally, pick the topic that has the most stickers and discuss the following three questions:

- what possible solutions can be considered?
- who can resolve or help resolve this issue? In other words, in terms of the actors (refer to the actor analysis), whose move is it next?
- how can we assist that actor, so that the existing system leaves room for our innovative project?

Detailed example of a causal analysis:

VWS (the Dutch ministry of Health, Welfare and Sport) asked whether it should regulate or facilitate biotechnology and other new techniques, and if so how. Based on literature studies and actor analysis, a series of workshops involving experts and the public were set up. In a causal analysis, the participants put together the deeper reasons and argumentation as to why various forms of biotechnological innovation might or might not be desirable within the Dutch medical care system. Figure II.2 (see page 56) shows how the arguments of the various participants could be connected together so that some of their arguments were (roughly) the same (step 2).

Figure II.3 shows part of the argumentation tree. This lists nine problems at five causal levels.

Assuming that the chain of cause and effect is correct, this would then be suitable for strategic planning and prioritisation: after all, intervention is only needed in box 3, right at the bottom, in order to reduce all the other bottlenecks and concerns. Ultimately, the ministry chose to subsidise solutions for two ‘higher-level’ problems too (boxes 1 and 2) in order to strengthen the resolving effect of the upper four boxes.

In addition to ‘not a very positive image within society’, there were five other themes, each of which had an extensive causal tree beneath. These individual

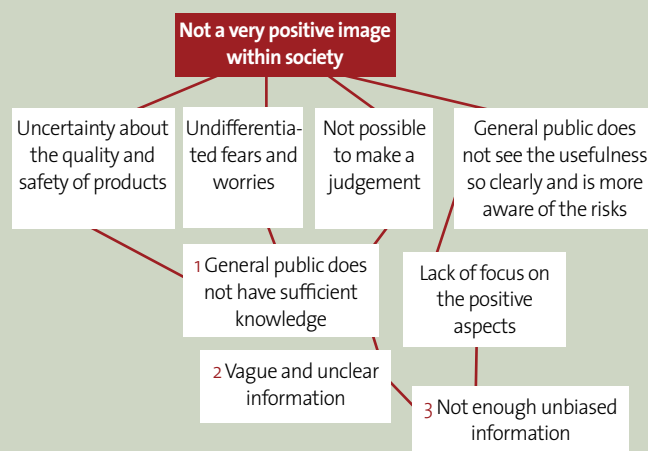


Figure II.3: Four primary causes with three layers of underlying causes beneath them.

causal trees can also be merged together into a causal analysis because they contain references to common underlying problems (see Figure II.4).

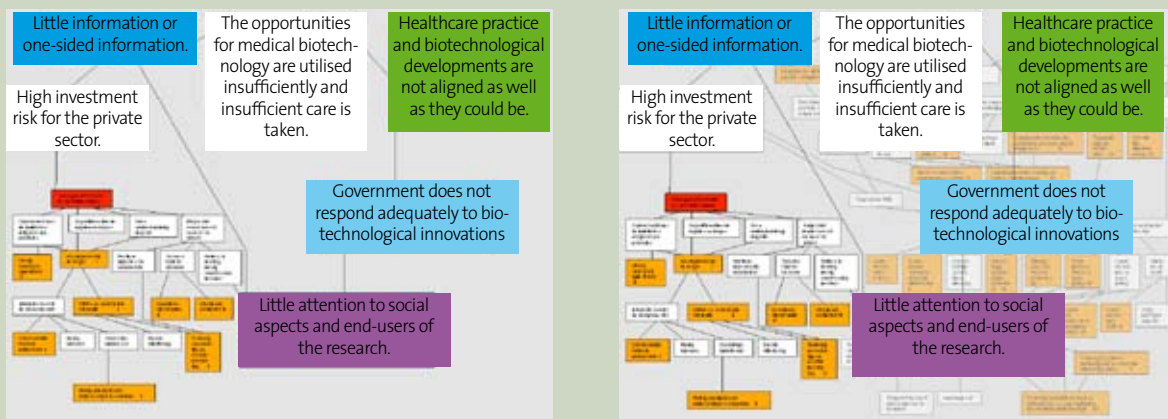


Figure II.4: Various problems and their associated causal trees are sometimes interlinked, which might expose the central assumptions and errors in the system.

Pitfalls

Incorrect interpretation of the intended causal relationship.

Negative formulations such as 'not', 'too little' and 'none' are mixed with positive ones such as 'should show more initiative.'

The chosen keywords in the causal tree do not cover the (associated) subject matter of the underlying discussion.

Relationships that were mentioned by the group are complemented by the project office with the lines that seem to be/are a logical consequence. This blurs the awareness of what the group brought to the party and what the analyst has added.

Ideologically formulated causes sometimes turn up in the discussions (such as 'incompatible with solidarity').

Solutions

It is helpful to use wording in informal language that refers to such relationships, such as 'therefore' and 'consequently'. Reformulate such statements as 'X because Y'. Work in a team and present each other's constructions to the group. Also compare audio or video recordings against the written reports. Present the results to the participants for validation.

First get a consistent picture of all the problems, concerns and stoppers, along with their underlying causes. Once that has been done, look for statements that can in fact be formulated as a solution and (using a different colour) connect them with the associated problem in the problem analysis, with an eye on a solution strategy in the next phase.

As a test, explain the causal tree to a critical audience, some of whom were at the meeting and others of whom were not.

Highlight the relationships that were added later, for example using a different colour or line type, so that they can be used as new input in a subsequent step ('co-creation in the second instance').

Put these at the bottom of the causal tree, in the normative layer, and examine how these value-based orientations drive the more concrete topics at the higher levels. The higher-level topics can be tackled more effectively by the project.

Other applications

Design:

Insufficient willingness to change (feeling of urgency, involvement) among the participants

During the startup phase, actor analysis and the causal tree are appropriate tools for ensuring that all participants, from their various perspectives, are going to subscribe to a single perception of the problem definition and the mission.

Too many opposing positions among the participants

A participant may often implicitly believe that another participant's approach – be it legal, economic, technical or whatever – is not making a contribution to the common mission. A causal analysis will make clear that all these positions are making a contribution.

Lack of clarity about the causes of the persistent problems

A causal analysis makes complexity comprehensible. It puts process-based questions such as 'where are we now?' and 'where are our priorities going to lie' in context. This framework makes it possible to unmask false dilemmas (e.g. 'if you choose X, you cannot do Y'). The variety of paths in the causal tree makes it possible to reflect in an ordered fashion on possible interventions and the anticipated effects.

Participants are focused primarily on the barriers rather than the possible solutions

The causal analysis, which is a joint product, can make 'third way' solutions visible that had until that point been invisible to the individual participants.

Act:

Participants not trusting each other enough

When parties have conflicting interests, a causal analysis can help people think outside the usual boxes and put themselves in another person's shoes. In that event you perform the causal analysis step-by-step as a 'write and shift' exercise, like this:

Suppose there are five stakeholders. All five of them have a blank Figure II.1 in front of them. All participants formulate cause 1 at the same time (referred to as 'P1' in Figure II.1). They all then pass their A4 sheets on to the right. This person then fills in cause 2, the next neighbour fills in cause 3, and so on through to 5. This means that everyone is working together on five causal trees, but always following lines of argumentation set in motion by others.

Ambitions become diluted, for example because people are getting distracted by the everyday details

Technical process problems – such as obtaining financing or agreements – can have a common underlying cause, such as the absence of permits. A causal analysis can reveal this connection. Tackling these kinds of deeper-lying process problems should be a priority, because that ultimately contributes to resolving all the day-to-day problems higher up in the causal tree. Both the technical partners and the project managers will endorse this urgency, which therefore provides a common starting point.

Record:

Lack of progress or a poor picture of the progress

If a causal analysis has been made in the design phase, it can help find alternative paths if things start to stagnate. Suppose that the authorities are not willing to cooperate in an experimental exemption from the rules. The causal tree can help find routes that circumvent the permit problem and minimise the stagnation.

Milestones have not been defined and recorded

Causal analysis can provide a framework for looking back at the path that the project has taken. This enables you to look systematically at the process choices, the reasoning behind them, the expectations and scientific hypotheses and the outcomes – and learn from them.

Practical experiences:

TransForum project 'LandMarkt' 2009

LandMarkt (meaning Country Market) is a covered market place with a low access threshold where retail trade and the catering sector are integrated. LandMarkt specialises in tasty, natural products from the local region, fresh every day. This market cuts out the middlemen as far as possible from the food chain, offering farmers and growers a direct, high-margin sales channel to the consumer. It is an organisational concept that results in a unique product range at a good price, brings in knowledge and inspiration on the shop floor and opens up substantial potential for distinctive marketing. The concept is centred on the experience and quality of food, value for money and ease for the consumer. A visit to LandMarkt is a surprising experience. For instance, every LandMarkt has its own butcher and baker, and the salads, fresh pasta and ice cream have been made by the providers themselves. There is a large open kitchen in the centre. Wonderful seasonal salads, a hearty hotpot or a thick slice of bread with farm cheese; the cooks prepare it while you wait. You can take it home or eat it on the spot. LandMarkt encourages its customers to make different and more conscientious choices, and it produces sustainable food that is clearly sourced and accessible for everyone. LandMarkt is creating a transparent food chain around its branches – food from local people for local people.

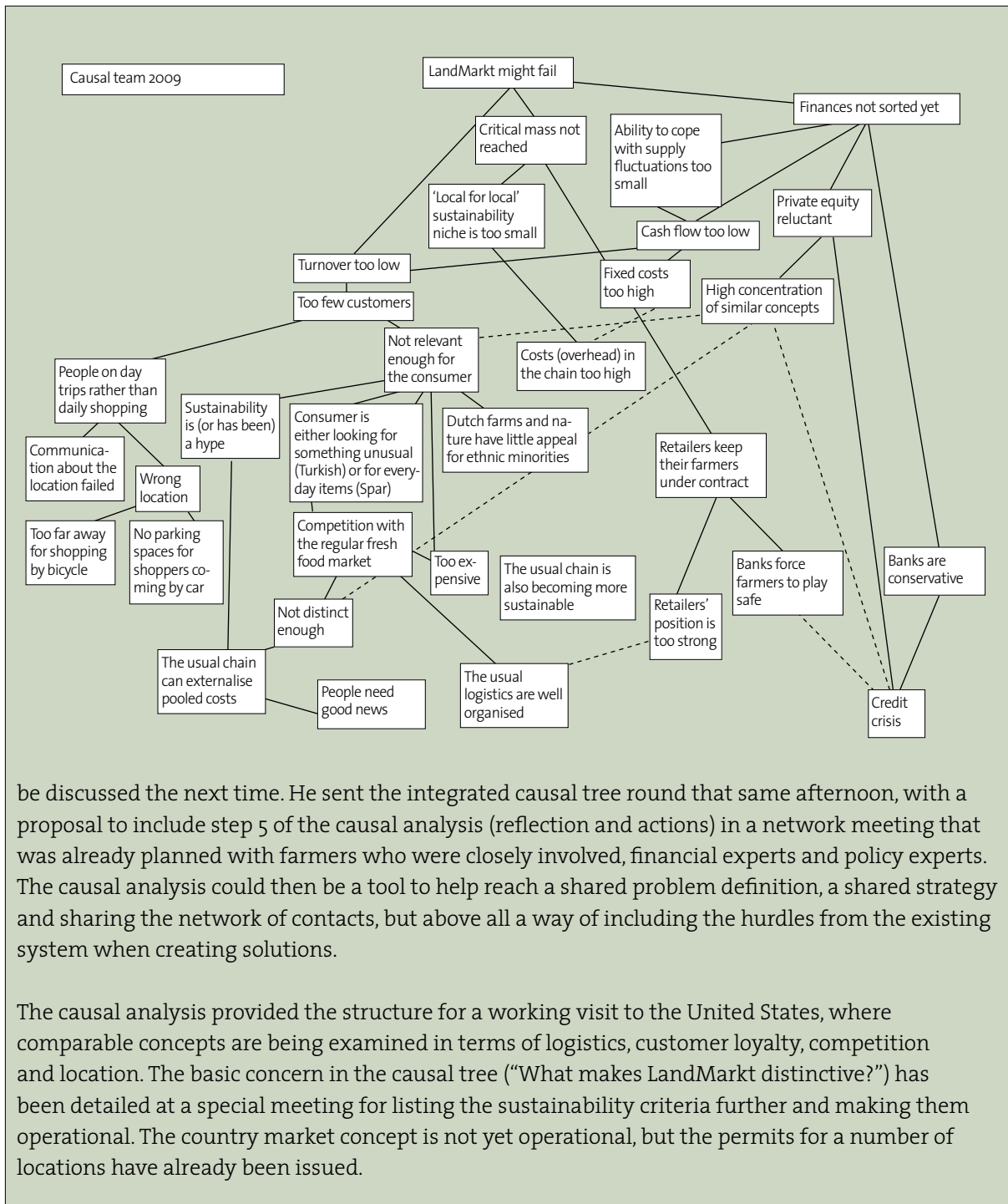
Startup phase: At one of the first meetings of the core team (four people), the person who was taking the lead with the concept gave a summary of the progress of his negotiations with five municipalities for locations where a LandMarkt could be started up. The monitor signalled that there was a risk that reports such as this might produce nothing more than local, temporary success stories. He therefore proposed spending three quarters of an hour on an exercise for getting more of a grip on the relationship between this niche initiative and the desired impact at the system level.



Because time was limited, half an hour was spent brainstorming an actor analysis. In the first instance, the macro level in the matrix (the authorities) remained empty. This was then filled in: European agricultural policy and international trade agreements implicitly stimulate increases in scale. During the reflection, the actors outside the existing network were identified. Students studying for masters degrees held interviews with these actors to see whether the actor's views of these institutions as proponents or opponents were correct, and what their actual

underlying arguments would be for being in favour of LandMarkt or otherwise.

The causal analysis was then done in fifteen minutes as a 'write and shift' exercise. The monitor collected the completed sheets in order to put the tree together himself, agreeing that it would



be discussed the next time. He sent the integrated causal tree round that same afternoon, with a proposal to include step 5 of the causal analysis (reflection and actions) in a network meeting that was already planned with farmers who were closely involved, financial experts and policy experts. The causal analysis could then be a tool to help reach a shared problem definition, a shared strategy and sharing the network of contacts, but above all a way of including the hurdles from the existing system when creating solutions.

The causal analysis provided the structure for a working visit to the United States, where comparable concepts are being examined in terms of logistics, customer loyalty, competition and location. The basic concern in the causal tree (“What makes LandMarkt distinctive?”) has been detailed at a special meeting for listing the sustainability criteria further and making them operational. The country market concept is not yet operational, but the permits for a number of locations have already been issued.

III. Dynamic learning agenda

Introduction

In the role of monitor or project manager, you are facing quite a challenge during the 'act' phase of the project to keep both the long-term objectives and the short-term concrete action perspectives in view. Experience teaches us that system innovation projects often get stuck at the stage of identifying the problems, with concrete perspectives for actions remaining out of the picture. The converse also happens, probably more frequently: the project team expends a great deal of energy on concrete activities without reflecting on the contributions that these make to system change, which is the project's ambition. The dynamic learning agenda is a tool that helps system innovation projects link long-term aims to concrete perspectives for actions by formulating the challenges that arise, recording them and keeping track of them.

The dynamic learning agenda encourages participants to continue working on change. The learning agenda is a concrete object, a brief document containing the challenges that the project is facing at that moment. These challenges are summarised in learning questions. In addition, it is a tool for commencing and supporting the dialogue about the challenges faced by the project. The agenda is dynamic because it is modified over the course of the project. As soon as a challenge is no longer relevant, the associated learning question disappears from the agenda (see Figure III.1: question B). It often turns out that questions have to be formulated differently over the course of the process. In addition, new challenges are added to the agenda (such as questions E, F and G). Questions such as question A that remain on the agenda for a longer period (months) will probably represent persistent problems.

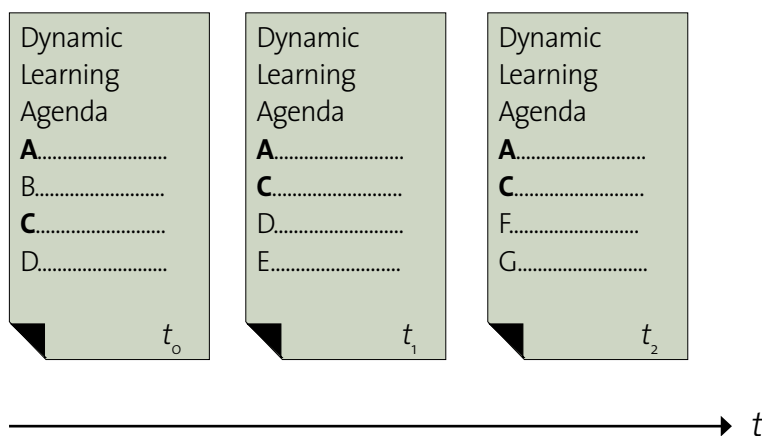


Figure III.1: Representation of a dynamic learning agenda.

Your task as a monitor is to put into words the problems that the project participants are experiencing while aiming to achieve the ambitions. They have to be expressed as system properties, without losing track of the words and vocabulary of the project participants. The agenda casts light on the system changes that are needed in order to achieve the ambitions. It is important that you formulate the system changes as learning questions for the group itself, so that work on these changes becomes an integral part of the project. This way, environmental factors that are hampering the project will no longer be seen as properties of an external system, but rather as points of leverage for the strategies that the project needs to develop.

A practical example: Eric is working on a system innovation project in sustainable agriculture. At one of the project meetings, he cries out, “But the farmers aren’t cooperating! All they want are increases in scale!” This situation ends up on the dynamic learning agenda in the form of a question: “How can I ensure that the farmers cooperate?” Those present at the meeting note that this formulation gives too little insight into possible solutions. Following on from that, the monitor facilitates a dialogue in which the situation is clarified using questions such as “Why do farmers want increases in scale?” and “What benefits will a farmer get from this project?” Finally a number of specific questions are placed on the learning agenda, such as “How can we link the goals of this project to farmers’ concerns?” This has changed the unwillingness of the farmers that Eric experienced from an external system characteristic into a point of leverage for the project to help shape the interaction between the project and the farmers. Eric’s frustrated outburst evolves into a second-order learning question: a question that reflects on your own framework and actions.

It is part of your role as a monitor to take the challenges experienced by the participants and use them to formulate the desired system changes using the language and world view of the participants themselves. The project participants will then interact with other actors in the same way. This initiates learning processes in the wider network.

It is incidentally also possible to maintain a dynamic learning agenda for this broader network. This renders the broader anchoring of learning within the network visible.

Comparison with system analysis, actor analysis and causal analysis

System analysis, actor analysis and causal analysis can also be used to formulate the challenges of the project. The difference is that the dynamic learning agenda (1) identifies the challenges quickly, (2) links the challenges to perspectives for actions, (3) keeps track of the changes in those challenges, and (4) records the learning process of the various actors.

Combination with system analysis, actor analysis or causal analysis

System analysis and actor analysis or causal analysis can be used together with the dynamic learning agenda. This allows the challenges that have been identified by one of these three forms of analysis to be used as input for a dynamic learning agenda. The monitor does then need to translate the challenges into second-order learning questions, or get the project members to do so.

Approach

The questions that are on the dynamic learning agenda are based on the challenges mentioned by the project members. In the monitor role, you can reconstruct these challenges on the basis of participatory observation at project team meetings or interviews. Another option is to have the challenges put into words during a network meeting. System analysis (tool I) and causal analysis (tool II) are also suitable methods for getting a picture of the challenges.

The dynamic learning agenda defines the learning pathway during the project itself, so that reflection and learning can become an integral part of the project. The document can also be used for a joint review of the entire project history as well as for reporting purposes.

A step-by-step description is given below of how you (the monitor), can use a dynamic learning agenda.

Step 1

From the very first interaction with the project participants onwards, listen to what they experience as hindrances, struggles and challenges. Identify the aspects of their comments that can be meaningful from the system innovation point of view (see the detailed example in III.2). Express these aspects as second-order learning questions; this is important because system change also requires changes in your own framework and actions. You can do this by analysing notes or reports. You can also formulate the questions together with the project participants by probing further to uncover the nature of the situation. Combine your own knowledge of system innovation here with sensitivity for the project participants' point of view. The result of this first step is an initial version of the dynamic learning agenda.

Step 2

Make use of the agenda as an aid during project meetings. A whole pile of statements, actions, plans, ideas and annoyances will be mentioned in meetings such as these. The dynamic learning agenda can help structure and order this 'clutter' using second-order learning questions. You can carry out this analytical activity afterwards, but the dynamic learning agenda will additionally help you to intervene during meetings in order to make the connections continuously between that 'clutter' and the second-order learning questions. The two activities will give rise to a new version of the learning agenda. Some questions are persistent and will remain on the agenda. Provisional answers will be formulated for others, often phrased in terms of activities. Yet other questions will disappear from the agenda because merely stating the question provides enough insight for effective action to be taken.

Step 3

If a question remains on the agenda for a longer period, then it is worthwhile making an effort with the project team to consider this persistent question thoroughly. The greater depth of understanding that this results in may lead to various large or small interventions. It can also result in a meeting of the people and organisations concerned, at which the question is tackled. In the role of monitor, you are also able to bring in new expertise by doing research yourself and giving a presentation about it, or by calling in an external expert.

Step 4

The project team discusses the dynamic learning agenda in all its subsequent meetings, and adjusts it as necessary. You might for example look back at questions for which activities have been formulated. What results have these yielded? Can the questions be taken off the agenda? Do new questions have to be added? This process produces a new version of the agenda each time. Do keep the old version, because it describes the results and the lessons. Those are also useful for accountability purposes and for other system innovation projects. You should therefore always put a new date on the agenda.

Step 5

Because you are not present in the monitor role at all meetings, you can get the project participants to update the agenda themselves. Ask the participants to send you the latest version after each meeting. This gives you an extra means of remaining up to date about the developments in the project.

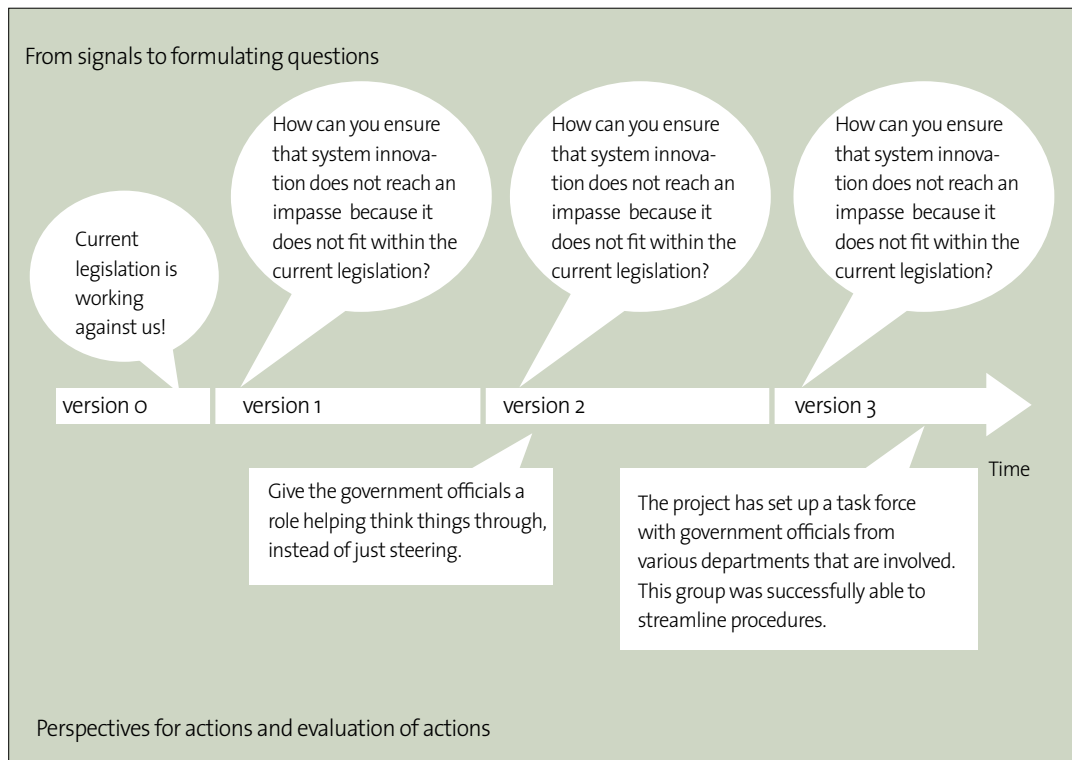


Figure III.2: Detailed example of a question on a dynamic learning agenda.

Pitfalls and solutions

Pitfalls

The agenda does not have the backing of the project participants.

Having too many questions is demotivating.

Solutions

Fine-tune it to fit the participants' perspectives and use their vocabulary and world view.

Make sure that the learning agenda only contains second-order learning questions, from the perspective of system innovation. Make sure that these are the essential questions for this project.

Other applications

In addition to being applied as described above, the tool is also useful in the following situations:

Design:

A lack of clarity about actors' perspectives on problems and solutions

A dynamic learning agenda can be constructed at the start of the project based on interviews with the various actors. Their perspectives (formulated as learning questions) are made clear and can also be tracked throughout the process.

Lack of clarity about the causes of the persistent problems

Transforming problematic situations from the perspective of system innovation into second-order learning questions generates insights into the underlying causes.

Insufficient ambition in the short-term or long-term goals

The dynamic learning agenda helps the project to make the contribution to system change explicit and to develop it with an eye on sustainable development.

Act:*Participants adopt a wait-and-see attitude*

It is important that participants understand right at the start of the project which system characteristics are hindering the achievement of their goals. The dynamic learning agenda addresses such characteristics and encourages the formulation of perspectives for taking actions. This helps (new) project participants in the reflection process and in starting up activities.

Ambitions become diluted, for example because people are getting distracted by the everyday details

If a project is threatening to get stuck in a rut discussing the regular short-term project activities, then the dynamic learning agenda can give provide insight into the underlying processes and flesh them out to produce second-order learning questions. This keeps the system innovation perspective clearly in the picture.

New insights are not converted into actions

The dynamic learning agenda forces the project to formulate actions and perspectives for actions when challenges are encountered. Moreover, it is possible to look back during meetings at the progress and the effectiveness of planned actions.

Record:*Lack of progress or a poor picture of the progress*

Sometimes participants forget the initial situation, as well as the gains made along the way. Reminding people what it was like during the startup period and recalling the challenges and successes of the project helps to obtain realistic insights into the progress made.

Results are not recorded in time or not recorded properly

The dynamic learning agenda records the project results continuously and efficiently.

Lessons and results are insufficiently applicable in other situations

The dynamic learning agenda records the project's experiences, particularly the actions that were deemed to have been successful. Other system innovation projects are able to learn from this.

Practical experiences:**The Agromere dynamic learning agenda**

The aim of the Agromere project is to make the concept of urban agriculture more real. It is doing this by developing a new form of urban development that connects and integrates the worlds of urban development and agriculture. The project is located in the Almere region, which has instructions to build 60,000 houses. The ultimate aim is to create a district in which town and agriculture are integrated. The project group consists of researchers from Wageningen UR.

The starting point for the dynamic learning agenda was the questions and challenges as formulated during the restart meeting on 20 February 2008. The agenda periodically gives a picture of which questions have been answered (knowledge questions in particular), which are being dealt with, and which have not yet been addressed.

Comparing the versions of the agenda dated February 2008 and May 2008 let the project members and the monitor see directly which challenges the project had focused on and which challenges had been given less attention. For instance, it could be seen that a lot of energy had been expended in getting a clear picture of the project's objectives and activities. Less attention had been paid, however, to the wider context within which the project was located. The monitor therefore decided to ask the project members to consider the project's wider context.

IV. Indicator sets

Suppose that you want to follow the learning and innovation process while carrying out a system innovation project and ensure that there is regular reflection, so that the project activities can be adjusted in good time if there is reason to do so. The indicators that are discussed in this chapter are a good tool for doing this. They help view the process in a way that is relevant for system innovation. The indicators that are used relate to the quality of the learning and innovation process in a network. To be able to make a contribution to system innovation, project participants need to do more than change their own individual routines and roles: they must also learn to cope jointly with institutional barriers. These desirable results are expressed as observable indicators.

The indicator sets comprise two main groups: effect indicators and process indicators. The effect indicators refer to the learning and innovation process itself. A diagnosis based on the effect indicators shows whether the process needs to be strengthened (see Table IV.1). The points of leverage that can be used to strengthen the process are examined using the process indicators. This second group of indicators refers to the conditions for learning within an innovation project or innovation network (see Table IV.2).

Unlike the other tools in this guide, the indicator sets are not just an instrument for guiding processes. They also function as ‘a pair of glasses’ enabling you to look at processes in a specific way. Using indicators with theories about innovation processes as their foundations makes this a theory-driven form of monitoring. The use of the indicators therefore demands more effort and preliminary work from the monitor than the other tools do. To be able to work with the underlying theories, the monitor will have to delve into them. This chapter gives numerous references for the purpose.

The indicator sets are not an independent instrument. They are always used in combination with other activities and may be used in combination with tools for reporting (such as the reflexive process description), observing and reflecting.

Comparison with the dynamic learning agenda

The use of indicators based on theories about innovation processes is a theory-driven form of monitoring. This approach is not suitable for monitors who believe that the topics that are relevant must be determined entirely by the participants. They would be better advised to use the dynamic learning agenda, which offers scope for this.

Approach

A useful and responsible way of using the indicator sets consists of various steps that can be repeated several times:

- 1) research;
- 2) analysis;
- 3) discussion;
- 4) reporting.

The indicator sets provide focus and structure in each of these steps. It is important to have a good understanding of the underlying concepts if the indicator sets are to be used properly. Step zero therefore involves the monitor learning about the indicators.

It is incidentally also possible to choose a quick and dirty approach rather than research and analysis, particularly for the process conditions. This can be done by getting a number of the project team members or participants in an innovation project to give scores for indicators and then immediately progress to a discussion. It is still possible to decide afterwards to continue to observe and to analyse in more detail if necessary (see example). The more detailed approach is described step by step below.

Step o: learning about indicators

We are giving an explanation of the background to indicators here to help you learn about them. The indicators are based on theories about learning and innovation processes. The effect indicators are defined at both the actor level and the network level (of project participants). A distinction is also made between (1) learning, (2) acting and (3) institutional change. 'Learning' looks in particular at the changes in those concerned: how they perceive the problems and what possible solutions they are open to.

The process indicators are subdivided into three groups relating to (1) network development, (2) interaction within the innovation network and (3) system approach. Each of these groups can then be broken down in turn into a number of sub-categories.

Effect indicators

As RMA is focused on innovation projects that organise heterogeneous networks, the main thrust of the indicators is aimed at the network of project participants, rather than the actor level. The primary question when detailing the effect indicators is how the ambition of system innovation can be translated into 'ideal' results that are within the scope of the project, given the limitations in throughput time, participants, the sphere of influence and so forth. There are indicators for learning, acting and institutional change at both the network level and the actor level.

The first indicator for learning at the network level is *convergent learning*. This occurs if the actors develop visions and solutions for problems that are complementary to one another and if they work closely together when changing their goals and objectives¹.

Learning at the actor level is in the first instance *second-order learning*, i.e. the objectives, interests, norms and values are modified as well as the visions on solutions and strategies (Argyris and Schön, 1996). Although second-order learning is relevant, it may be the case that the relatively stable institutional setting remains unaffected. *System learning* is therefore an additional indicator: actors learn to redefine structures that are hindering their aspirations for sustainable development and to see where there is room for change (Loeber, van Mierlo, Grin and Leeuwis, 2007). Actors may then for example actually start seeing features of the current crop protection and fertilisation systems as opportunities rather than as de facto barriers, and attempt to change those features or to achieve innovation nevertheless within the given context.

	Learning	Acting	Institutional change
<i>Network</i>	Convergent learning	Complementary changes in routines	Coherent institutional changes. A joint approach to institutional barriers
<i>Actor</i>	Second-order learning System learning	Changes in routines An individual approach to institutional barriers	A single/stand-alone institutional change

Table IV.1: Effect indicators.

¹ This concept takes the idea that congruence within a policy network (extending over all actors involved in an area of policy) arises as the consequence of a policy measure and translates it to the level of a heterogeneous group of participants who are organised around a project (Grin and van de Graaf, 1996). In both congruence and convergent learning, the key point is that new, complementary forms of thinking and acting and mutual relationships arise.

The concepts used for cognitive learning have their counterparts in the actions. For convergent learning, these are *complementary changes in routine thinking and acting*; for second-order learning they are changes in routines and for system learning they comprise an *individual approach to institutional barriers*.

There must also be institutional changes in addition to changes in thinking and acting. The indicator at the network level is that there are *coherent institutional changes* or a *joint approach to institutional barriers*. There can also be *institutional change* for a single participant. Institutional changes are incidentally only relevant when they are linked to barriers to sustainable development, for example a situation that is locked in or a wicked link such as the one between growth in incomes and increased energy consumption.

Process conditions

Process conditions offer project managers points of leverage for encouraging convergent learning and coherent institutional change. These are at the project group level: they are conditions for questioning – or daring to question – the implicit assumptions, underlying values and so forth that underpin current practices². The following indicators are used for network development:

- *building a heterogeneous network*: the input from various perspectives on a problem and the confrontations between those perspectives challenge participants to express their assumptions and values explicitly;
- the presence of *prime movers*, participants who are producing the impetus for innovation and stimulating innovation processes and who dare to take risks;
- *involvement* of participants in the central problem; and
- *a sense of urgency* among the participants.

Network development	Building a heterogeneous network Prime movers Involvement and a sense of urgency among (potential) project participants
Interaction	Trust between project participants Mutual readiness to reflect
System approach	Ambition in the objectives for contributing to system innovation Activities aimed at the perceived system barriers

Table IV.2: Indicators for process conditions.

For interaction, these are:

- *trust* between the project participants, and
- *a mutual readiness to reflect*, to listen to each other's views, interests, experiences, and so forth.

A particular type of process condition concerns the project approach. The indicators for this derive from the idea that projects targeting system innovation run the risk of optimising the current system rather than creating a new one. Preventing this would seem to be a task for the project management, although other actors will of course be involved in it in practice as well. The indicators are rather like additional requirements imposed on the management, namely a system approach consisting of:

- *ambition* in the project objectives for making a contribution to system innovation, in the sense that there is a basic assumption that sustainable development in the sector also requires institutional change

² These process conditions derive partially from the two points of leverage for network management: the development (structure) of a network and the interaction between the members of a network (de Bruijn and ten Heuvelhof, 2002).

- focusing the project activities on *perceived system barriers*³. This prevents a system innovation project's level of ambition from dropping and also improves the motivation and involvement of the participants.

Step 1: research

The indicator sets provide topics for research that can be detailed to produce points of observation for participatory observation or topics for the design of an interview questionnaire. The key questions for this are:

- What indicators are relevant?
- How can I make them tangible enough that observation is possible? (see Table IV.3)

Which method is best suited for the research depends on the situation: have meetings been planned, and do their agendas suggest that they are suitable for observing the points for observation? Triangulation with interviews may be desirable in order to explore a couple of critical topics in greater depth, or to look at the nature of the relationship between the participant at the meeting and his/her organisation or the people behind him/her. If there are no communal meetings, interviews will generally be sufficient. These will however provide less insight into the readiness for mutual reflection, for example, than observation at a meeting will.

Issue	major				minor
Trust					
I do not mind putting my cards on the table with this group					
The others will keep their promises					
Presence of prime movers					
I think that there is an important member of the group who can encourage the other parties and get the wheels turning					
Mutual readiness to reflect					
I like listening to what the other parties have to say					
I like urging the other parties to say more					
I do not mind putting ideas of my own up for discussion					
Involvement					
I feel very much involved in the search for a solution for (emissions/sustainable weed control)					
Sense of urgency					
The search for a solution for more sustainable X is in my opinion very urgent					

Table IV.3: Example showing the process conditions as a quick scan.

Step 2: analysis

The process indicators are concerned with the presence of process conditions in an innovation project/network at a given moment. Examining them at several points in time also makes it possible to analyse whether they are developing positively or negatively.

³ The concept of a system barrier or system fault has been borrowed from Klein Woolthuis *et al.* (2005). This refers to system characteristics that hinder innovation.

Effect indicators are always about development. A comparison against a previous situation or questioning participants about whether they have experienced a change are ways of determining whether learning has taken place. In the former case, it is sensible to make a sort of baseline as soon as monitoring starts. To do so, create a picture of the perspectives that (potential) participants and influential actors from the sector have on the problems, system barriers and solutions.

Some process indicators cannot be determined directly on the basis of the observations. It is only possible to determine whether a heterogeneous network is being developed, for instance, by comparing the perspectives of participants against each other on concrete points: do they match, are they complementary, or do they conflict?

Neither is it possible to make an analysis at the actor level of the effect indicators at the network level. To obtain a picture at the network level, you must first go back to the individuals and then make a comparison between their (changed) perspectives or actions. Convergent learning, for example, has occurred if the individual perceptions have changed and are not mutually exclusive.

Step 3: discussion

The analyses from step 2 provide input for a discussion between the network managers and the monitor, or in a larger group. One of the possibilities is that the monitor can provide verbal feedback based on the analysis; another is that the results that have been recorded in writing (step 4) are read out first, so that those present can reflect on them during the discussion. (Please refer to chapter 2 for details of organising reflection meetings.)

Step 4: reporting

The results of analyses and reflections using indicators are recorded in documents that in turn also make use of the indicators. In a reflexive process description, the indicators are the anchors for a chronological narrative about the episodes within a system innovation project. This does not shy away from making judgements about the progress and the disappointments. (For more details, please see tool V, the reflexive process description.)

	Episode 1	Episode 2
Building a heterogeneous network	Increased	Stable
Prime movers	Present	Present
Involvement and a sense of urgency among relevant actors	Increased	Decreased
Trust between network actors	Increased	Decreased
Mutual readiness to reflect	Increased	Increased
Ambition to contribute to system innovation	Low	Higher
Activities aimed at the perceived system barriers	Unknown	Partial

Table IV.4: Representation of the project process in tabular form – fictitious example.

Another form of report is a table in which brief words or pluses and minuses are used to give a picture of the project progress. This does not incidentally say anything about how extensive the underlying analysis is. Please refer to Table IV.4 for a fictitious example.

Pitfalls and solutions

Pitfalls

The monitor uses jargon.

Expecting that there will be an off-the-shelf solution in cases where process conditions are not met and learning processes are inadequate.

Wanting to make use of indicators when no network has yet been built.

Assuming that the process conditions are only important in the initial phase of a project.

Interpreting the statements made during an interviews with participants as the positions adopted by their organisations or supporters.

Solutions

Reformulate the indicators in familiar terminology, or give an explanation of the indicators, or formulate the indicators together.

Temper the expectations among the managers before starting, consult the literature about process management if appropriate actions are not available, or create space for solutions to be generated.

Check the relevance of indicator sets.

Carry out a quick scan of the process conditions regularly and carry out additional research if required.

Ask about the relationship with the organisation or the people behind a participant during interviews or meetings. Hold additional interviews with the management boards or members if necessary.

Other applications

In addition to being applied as described above, the tool is also useful in the following situations:

Design:

An insufficient picture of who the relevant actors are

During the design phase of the project, the process condition indicators help project teams to orient themselves towards a broad, heterogeneously composed network of project participants. Diversity of visions and ideas is more important than whether all interested parties are represented. In addition, it is important to have prime movers in the network. The effect indicators can be useful when defining baselines, for instance for problem definitions from the various participants: do the participants – or potential participants – see the current situation as a problem? And if so, why?

Act:

Participants adopt a wait-and-see attitude

The indicators for the process conditions suggest investigating whether the wait-and-see attitude is related to a lack of trust, readiness for mutual reflection, involvement, or a sense of urgency. They help you to check whether the wait-and-see attitude is related to one of these conditions. Merely discussing these topics with the people concerned can resolve the problem. If not, then it will at the very least show the way to go in subsequent actions.

Ambitions become diluted, for example because people are getting distracted by the everyday details

The indicators for a system approach suggest making a distinction between the ambition in terms of the objectives (in the shorter or longer term) and the ambition in terms of the activities. Regular reflection, in the light of the ambitions, on the relationship between the objectives and the activities will help tackle this problem or even prevent it.

New insights are not converted into actions

This can also arise due to a lack of trust, readiness for mutual reflection, involvement or a sense of urgency – assuming that the insights are themselves correct. Reflecting on these process conditions with the entire network or separately with each of those involved can be useful here. It is also a good idea to reflect on the question of what kind of learning is involved: is convergent learning taking place, or second-order learning, or system learning? Understanding that can help the discussions on this point, because each type of cognitive learning is associated with its own way of behaving differently, and each has its own problems.

Transition to the next stage stagnating

One of the initial questions that looms up in this situation is whether there had been any network learning in the previous stage. The effect indicators can be used to examine the extent to which participants are already formulating new problem definitions and other objectives, taking on other roles, starting to cooperate in order to tackle specific institutions, and so forth. If this is not happening, reflection on the matter can still lead to lessons being learned or suggested directions for interventions or alterations to planned project activities so that the previous stage can be rounded off properly after all. It is also useful at this point to examine whether the process conditions for learning are present.

Record:*Milestones have not been defined and recorded*

Because they have a broad scientific basis, effect indicators are ideal for formulating milestones. Answers can be given to questions such as: have lessons been learned by the participants? Has it been second-order learning for just the odd one of those involved, or can it already be deemed convergent learning and coherent institutional change? Have the parties involved started moving, and if so, at which points in time and because of which project activities?

Lack of progress or a poor picture of the progress

The effect indicators cover a series of effects that may be seen quickly in the short term, or only become visible in the longer term. They can therefore be used to assess the progress (or lack thereof) in system innovation projects from just a few months through to a number of years after the start of serious project activities.

Lessons and results are insufficiently applicable in other situations

The effect indicators make the lessons visible using characteristics that are generally applicable to system innovation projects (for example in the reflexive process description). This means they can also be used by other projects.

Practical experiences:**Maize Project in the south-eastern Netherlands**

There has been a project in the south-east of the Netherlands since 2007 aiming to reduce the emissions of crop protection chemicals from maize fields into the surface water. The project team and the monitor used the indicator sets as a guideline for analysis and reflection. The indicators were also the basis for the reflexive process description (tool V).

At the start of the project, the project team members and the monitor together drew up a quick scan of the conditions for the learning process. They were then able to determine what had to happen first. The individual project team members each gave a score separately to all the

participants on a checklist containing the indicators for the process conditions. They based this on the discussions that they had had with the participants up to that point. A picture that began to loom large was that the participants did feel *involved with* the problem but that they felt relatively little *urgency* when it came to tackling it. It was also noted that the participants were keeping their cards close to their chests (which could have indicated a *lack of trust*) and were not putting much effort into doing anything, even if they were saying the right things. The project manager therefore asked the monitor several months later to hold interviews to get a better idea of the problems definitions that the project participants had adopted and what was motivating them to take part.

During these interviews, the effect indicators acted as a guideline for creating a baseline of problem definitions, possible solutions, roles and objectives. These interviews were repeated two years later to determine the extent to which the thinking and actions of the participants had changed. This revealed that they had accumulated many new insights (first-order learning) and that three of the participants had implemented *internal institutional changes* in their own organisations and had taken on other roles in the network (*second-order learning*). The first *system learning* steps could also be discerned in the network: at an experimental level, the participants had started tackling two system barriers.

In addition, the indicator sets – particularly the effect indicators – were used as guidelines for reflection discussions between the monitor and the project team. Once every six months, the monitor and the team went through the indicators to discuss the progress of the project, with the leading question being: who can we see taking steps? Talking about this was illuminating. The project team members and the monitor had rather different ideas about this, which led to discussions that went back and forth and ultimately provided deeper insights. The journals that the project manager and monitor kept acted as references in these discussions.

What sometimes caused irritation for the project manager was the monitor's jargon, to such an extent that the project manager actually asked the monitor to stop using phrases such as system faults and system barriers. However, not much later, the project manager himself started talking in these terms!

Another recurrent theme in the reflection meetings was the gap between insight and action. The monitor and project manager, for instance, noted regularly that the participants felt no sense of urgency. "You can observe that there is not much *sense of urgency*," sighed the project manager, "but the question is, what can you do about it? How can I ensure that there is a sense of urgency and involvement? I want to know what my next step should be. I want something I can get hold of and take action on."

When civil servants were invited to attend a special meeting, the sense of urgency increased immediately. This was a useful lesson for both the project manager and the monitor in terms of the indicators: inviting the civil servants along increased the *heterogeneity of the network* – very temporarily, but very effectively – and the participants felt the urgency of the problem more.

Cow Power

The aim of the Cow Power project (Kracht van Koeien, 2007-2009) was to develop integral, sustainable dairy farming systems. The design was largely produced by the project team, consisting of researchers from Wageningen UR Livestock Research. Intermediate results were presented a couple of times to a platform consisting of the various parties that were involved, including farmers' representatives, provincial and national policy makers (in the fields of the environment, spatial planning and animal husbandry), animal welfare groups and researchers. Creative design sessions were also held with interested parties and a number of 'wildcards' who had no direct involvement with livestock farming. The project team used this input and its own research and experience as the basis for three designs, assisted by an architect and one researcher who was also a livestock farmer. The final result was presented to Gerda Verburg, the LNV minister (Agriculture, Nature and Food Quality). This produced positive responses from both within the sector and elsewhere. A variety of dairy farmers wanted to start using parts of the designs.

Over the course of the project, the monitor used the indicators primarily as a sort of 'sensitiser' for asking questions about the project plans and activities. A key indicator was *building a heterogeneous network*. When putting together the platform and the creative sessions, the monitor raised the question of the heterogeneity of these groups a number of times: was the composition suitable for the objectives of the meetings in question? Querying the composition led the project team to reflect on the purpose of the meetings as well. This resulted in a number of adjustments in the objectives and changes to the list of people invited to attend. Using this indicator also altered the position of the Animal Protection Society. They had made critical statements at the first meeting of the platform and had then no longer turned up. In the interests of network heterogeneity, the monitor suggested it might be good to start talking to the Animal Protection Society again, in order to make clear that animal welfare was an important design criterion. That discussion got the Animal Protection Society to commit itself more to the project.

The designs themselves, however, were developed by a homogeneous team of researchers. Although there was initially a high *level of ambition* in the objectives, focused on system innovation, there was the risk that the parties involved, who would ultimately have to implement the changes, might have difficulty associating themselves with the ambitions. It was possible to address this point using the effect indicators, which show that a network of heterogeneous actors in a joint learning process have to develop a solution further (*convergent learning and coherent institutional change*). The monitor urged the project team to reflect on what would have to happen (and could happen) after the end of the project. To ensure that those involved would at least see a number of attractive aspects in a particular possible solution, he suggested presenting the visions of the future in a more open fashion than the project team had planned, by giving a few details of the solutions. The team thought that this was risky: it could compromise the radical nature. However, they did finally go along with this proposal (a fine example of *mutual readiness to reflect*). The less detailed visions of the future turned out to work well during the subsequent creative sessions. On the one hand, they were sufficiently open for the various parties to be able to agree to them, and on the other hand they were still sufficiently different from the current system.

V. Reflexive process description

Introduction

You are the project manager or monitor, and your project has already been running for a while. You would like to take a fresh look at the process to gain or regain the overview, to record crucial moments and changes, and to get input in order to progress. This is where the reflexive process description can be helpful.

The reflexive process description is a representation of the process in specific terms using predefined indicators (see also tool IV, the indicator sets). It is written by the monitor. The process description aims to support analysis and encourage reflection within an innovation project, but it can also serve as input for reporting to the client and for sharing the lessons learned with third parties.

If you are the monitor or project manager, you can make the description at the end of the project, in order to record the entire process. You can however also do this 'on the fly'. In that case, you will also be able to use the description for an interim review during the process if necessary.

Making a detailed process description can take up a lot of time. An alternative is an abridged process description consisting largely of tables (see box V.2 for example).

Comparison of a reflexive process description and a learning history

Both tools record the process for reflection and/or reporting. In a reflexive process description, the format of the learning history has been deliberately inverted. Instead of working from an angle that stays as close as possible to the participants, by quoting them, the developments are indicated directly in a reflexive process description by the use of predefined indicators (please refer to the indicators in Tables IV.1 and 2, under tool IV). A process description should therefore preferably be written by a monitor. It is also highly normative, aimed at getting the project participants to think outside their own boxes.

Approach

A reflexive process description states the process in terms of predefined indicators. The obvious author is the monitor, because project participants or project team members cannot be expected to have sufficient time or to be sufficiently far removed from the action – i.e. a relative outsider – to be able to make such a description.

The monitor makes a theoretically based assessment of what is going well and what is going less well. Is the network sufficiently heterogeneous, for example? Is second-order learning taking place too, rather than merely first-order learning? In addition, this tool gives room for both the monitor and the project managers to reflect on the process, the role of the monitoring, and the theory used.

A step-by-step plan for this instrument is as described below.

Step 1: preparation

The decision to make a process description should really be made right at the very start of the project. The reason for this is that you, as the monitor, want to make use of the reports, interviews, observations, your own

diaries or those of the project manager, and so forth in making the process description. If these items are not available, it is more difficult to make a process description, given that you can easily have forgotten what was going on six months ago, what the perspective of the participants was, and other relevant facts.

In addition, it is important that you get a full understanding of the indicators and start making brief descriptions of the process during the project, so that you maintain a good overview of the developments and of any changes among the participants. You can also keep a project diary, or you could alternatively ask the project manager to do this.

Step 2: writing

Even before writing, you use the collected material to analyse what episodes can be distinguished so far. These episodes can be distinguished from one another because something changed in terms of process indicators or learning effects within the project team, or within the network of project participants, due to internal or external influences. The urgency of the problem can for instance have suddenly increased dramatically due to new legislation or new policy. Or, to take another example, the level of trust within the network may have increased or decreased due to a number of conflicts between participants.

Once you have made the breakdown into episodes (see box V.1 for an example), you can start writing. Sometimes there will be new insights as you work, and you can then alter the episodes. The events and developments are described in terms of process indicators and effect indicators. In order to give an impression, here is a paragraph from a process description:

*“During the meetings, it became clear that some of the parties were keeping their cards close to their chests; **the level of trust and the readiness to reflect** were poor. This is also one of the reasons why the project team asked the monitor to hold a number of interviews. In the first instance, it was not clear whether the project’s **ambitions** stretch to contributing to system innovation; this is also due to the fact that the scale of the problem was not yet clear.”*

Step 3: reflection

After writing down several episodes, you can reflect on the process description together with the project manager, the project team, or all the project participants. The central questions of this reflection are: do you recognise the episodes and the analyses of the changes in process conditions and effects, as shown here? What do the analyses mean for the progress of the project and the network from now on?

The project team or the project participants may sometimes see the process description as confrontational, precisely because this puts the process under the magnifying glass and therefore shows the group exactly what they have been doing over the recent period.

You can then include the results of this reflection in the process description, or ask the project manager or participants to write their own reflections.

If you follow the project for a long time as its monitor, it is possible – depending on your own requirements or those of the project manager – that you will make several versions of the process description. There could for example be a version that describes the process from its inception up to moment A, and a subsequent version following the process from the start through to a later moment B, and so forth.

The process description can trigger alterations in the activities. Additionally, it may provide input for the accountability trail for the client and for learning by third parties; this latter item is only possible if all the project participants and project staff are open to it. Other people in similar projects can learn from this, precisely because the process is so well described within its context.

Box V.1 Example of a breakdown of a detailed process description

1. Introduction
2. A brief look at 'Reflexive Monitoring in Action'
3. Process description
 - 3.1 The maize case study: problem outline, background and approach
 - 3.2 Episodes
 - 3.2.1 Episode 1: Do we have a problem, and who should take on which role?
 - 3.2.2 Episode 2: A detailed investigation of the problem
 - 3.2.3 Episode 3: Action!
 - 3.3 A review of the process
4. Conclusions and the challenges ahead
 - 4.1 Conclusions
 - 4.2 Challenges
 - 4.3 What can other networks learn from the maize network?
5. Reflections by the network and the project leaders

Box V.2 Example of an abridged process description: the South-east Netherlands Maize Network, episode 2**Explanation of the process indicators (see Table 5)**

The *involvement* of the parties with the problem has increased substantially in the second episode: the problem has been sketched in broad lines and the degree and pathway of emissions have been examined further through the pilot. The livestock farmers in the area are getting involved in the project later on in this episode; perhaps a first step towards getting them committed to the problem. The commitment of the advisers is less clear.

Little seems to have changed as regards the *urgency* of the problem. There is a common problem that requires a solution, but almost nobody feels that it is urgent. The *trust* between the participants in the network has grown thanks to all the exchanges and conflicts/challenges in the first episode. The 'outer circle' of the network – in particular the contract workers and the livestock farmers – are starting to trust the pilot more. Initially, part of this outer ring of livestock farmers did not have much confidence in the pilot. "If we take part, the measures will soon become obligatory or the data will be used against us." Sharing the first results with the livestock farmers (and contract workers) through small groups (centred on local authorities) in the field seems to have established an upward trend for the level of trust. The *readiness to reflect/exchange* perspectives has increased along with this trust. In the inner circle, people are still sometimes challenging each other in a robust fashion, as for example shown in the critical attitude of the organisation representing livestock farmers' interests, or the critical questioning of the pilot

Process indicators	Episode 2
Network development	
Building a heterogeneous network	+
Prime movers	+
Involvement	+
Sense of the urgency of the problem	+/-
Interaction	
Trust between the actors	+
Mutual readiness to reflect	+
FwF system approach	
Ambition to contribute to system innovation	+
Activities aimed at perceived system barriers	+

Table 5: Process indicators for episode 2.

scheme by the herbicide manufacturer. The project management's *ambition* is to make a contribution to system innovation, and the water board and the manufacturer of the crop protection products are investigating how they can influence the system. The water board is trading very cautiously here, stating that the costs and benefits must be examined carefully. The pilot is focusing on important *system barriers*: "the level of emissions and the pathways are not clear" and "no sanctions/incentives".

Explanation of the effect indicators (see Table 6)

First-order learning (doing things differently) is occurring for all parties. The initial results of the pilot in particular provided new insights into the emission routes. *Second-order learning* (doing different things) has been noted in particular at the water board, the herbicide manufacturer, and the organisation of contract workers. They are taking on different roles and starting to work outside their own mandates and objectives, although still doing so within the project. The initial steps towards *system learning*, fighting the barriers/making the

most of opportunities, are also being taken there. This does not mean that internal institutional change has taken place straight away. The water board is indeed now taking a closer look at its own measurement policy, but this has not (yet) been reflected in policy changes. Internal policy changes at the contract workers' organisation had already started before the pilot commenced. They want to take a more proactive role; that also applies to this emission project. Internal institutional change has not been observed at the other parties.

Convergent learning has been taking place within the network; the parties have reached a common definition of the problem and have chosen to examine the problem in depth together, although this has not yet produced common possible solutions. This will have to be a later step.

The parties are *working jointly* on two related system barriers (that the degree and route of emissions are not clear/no studies are being performed, and that no sanctions/incentives are possible) and on the interaction bottleneck. This is being done as a project, which means that further studies will have to be made into how the work on the three bottlenecks can be made more *institutional* in nature, so that the changes are permanent (see also the system analysis for episode 2).

Effect indicators	Episode 2
Actor	
First-order learning	++
Second-order learning	+
System learning	+
An individual approach to institutional barriers	-
A single/stand-alone institutional change	+
Network	
Convergent learning	+
A joint approach to institutional barriers	+
Coherent institutional changes	-

Table 6. Effect indicators for episode 2.

Pitfalls and solutions

Pitfalls

The longer the project goes on, the more extensive the process description becomes. People then no longer read it.

The monitor's description is too remote from the project participants, so that they are unable to make much of it.

Solutions

Produce short project descriptions with greater regularity and discuss them with the project manager, or use tables instead of a description.

Reduce the distance by discussing the indicators and the underlying theory with the project manager and/or the participants.

Pitfalls

Confidential reflections in the process description cannot be shared with third parties.

Solutions

Discuss whether or not the process description can be shared with third parties beforehand with the project manager and the network, and make the process description as anonymous as possible.

Other applications

In addition to the application described above, the tool is also useful in the following situations that can arise during the ‘act’ and ‘record’ phases:

Act:

The transition to the next stage is stagnating

Producing a process description and reflecting upon it with the project manager and/or the network takes you through the process once again, step by step. This can let a process description help you choose the right follow-on step.

Record:

Lack of progress or a poor picture of the progress

The process description shows the project manager and the network clearly what progress has been made, expressed using indicators.

Anchoring of the results is either too little or too late

A system analysis is part of the process description, in that it provides information for the process indicator “project is aimed at perceived system barriers”. Discussing the process description can therefore help anchor the results.

Lessons and results are insufficiently applicable in other situations

Because a process description describes the (process) results in terms of indicators, the results and the lessons are in general very useful for other networks and projects. As long as they are made anonymous, the indicators are in principle also usable in providing an accountability trail for the client.

Practical experiences:**BGood**

The aim of the BGood project, carried out by the Animal Sciences Group of Wageningen UR in 2006-2007, was to find new ways of restoring the contact between livestock farmers and the general public/consumers. First, a number of people outside the sector were interviewed to gather overall ideas about communications processes that could bridge the gap between livestock farmers and the general public. A number of meetings were organised with increasingly large numbers and increasingly heterogeneous sets of participants. The core question for the monitor was whether the process approach within the project was actually helping achieve the final goal, and how. The process description tool in particular was used for the monitoring. The project manager felt that this was extremely useful. It gave a different view of the way the project team was functioning, which was useful for his own evaluation of the project. Information from the process description was also used by the project management as supporting material to show what the

project had achieved, both in the accountability trail for the client (LNV) and for a wider audience (through four booklets). The monitor believed that making the process description was very useful, because it forced him to reflect accurately on what had happened. This revealed that many activities during the monitoring itself had been carried out implicitly to a very large extent; the attempt to express them more explicitly gave a good picture of all sorts of loose ends. That helped formulate the research questions for the third phase more precisely.

Southeast Netherlands Maize Project

The monitor supported and monitored this project for three years. It aims to combat excess emissions of maize herbicides into the surface water. During these support activities, she wrote several versions of the process description and discussed them with the project team. Experience revealed that the team members often did not read the process description thoroughly, because it was rather lengthy. The feedback from the project manager's own manager (the programme manager) was that he was unable to do much with the process description; his opinion was that in the first instance the effects were not sufficiently visible.

The manager of the maize project himself thought that the discussions that followed the process description in particular were worthwhile: *"This type of discussion, the discussions we have afterwards, are something I do find very valuable. You do see things differently, and you do see different things to me or the PPO researcher."* [Praktijkonderzoek Plant en Omgeving = Applied Plant Research - ed.] *"During the meetings, I was very much focused on the process: is everything going well? The PPO researcher has a lot to say about the technical details and the content, whereas you see it all from a greater distance. That lets you look at things from a perspective that is just a little bit different. You keep hammering on about tackling system barriers, for example, and keep an eye on that. And you were the one who said after that first meeting that we were going round in circles, when I thought that we were progressing nicely. That did get me thinking again, and made sure that I came up with a concrete action plan."*

The monitor made an abridged process description for the project's participants. This description was shared with the participants during a special meeting, and two groups reflected on what the description meant for the continuation of the project. Two of the participants called the description 'confrontational'; their actions – or rather, the lack thereof – were clear from the text. Other participants said that they would like to do more brainstorming next time about solutions for the so-called system barriers in a small group.

During the discussion, about half the participants stated that they were uncomfortable about sharing this information with other projects (third-party learning). This was because the description made all too clear that the project often took two steps forward and then one step back.

VI. Audiovisual learning history

Introduction

Recording the learning experiences that a project has generated in an accessible and attractive way is quite a challenge for the monitor or project manager. The project results are often described in conceptual terms (for example in scientific publications) or in management terms (in reports and memoranda). The 'personal' history of the project, however, can be lost in this process. The challenges that the project participants encountered along the way, the choices that they made and the lessons they learned – such aspects are not expressed enough in the conceptual and management texts. Yet recording these narratives of experiences is precisely what is crucial if the project members are to learn from their own experiences and from those of each other. Participants in other comparable projects can also benefit from this record of experience and knowledge.

The audiovisual learning history fulfils this need. Participants can use this tool to put their learning experiences into words and record their knowledge and experience on video. The audiovisual learning history is different from other tools because it is audiovisual in nature. It creates an accessible and attractive product that not only gives the viewer insights into the abstract learning experiences within the project, but also into the struggles and questions faced by the project team members. The visible presence of the person who has gone through the learning experience can let them act as a source of inspiration or role model for the viewer.

Comparison with the eye-opener workshop

There are areas of overlap between the audiovisual learning history and the eye-opener workshop. Both tools are about transferring knowledge and experience to others. The differences are as follows:

- (1) once the material for the audiovisual learning history (AVLH) has been made, it can be used in workshops almost any time and anywhere;
- (2) the AVLH approach gives project participants the opportunity to record their stories personally and in detail;
- (3) the AVLH is a more intensive project in terms of the time and materials required;
- (4) skills such as filming and editing are required for an AVLH.

Combination with the eye-opener workshop

The AVLH combines well with the eye-opener workshop, as is explained in step 8 later on. During that step, the video fragments are shown to a selected group, consisting of project participants and 'outsiders'. This group reflects on the content of the video material and translates it into lessons for their own situations.

Approach

In an AVLH, project participants describe the high points, low points and key moments of the project in their own words. These snapshot descriptions have to remain as close as possible to the project context and experiences, so that outsiders will be able to relive the moments, as it were.

The development of an AVLH consists of three phases. In the first phase (steps 1 through 4), the narratives

and experiences of the project participants are filmed. These images are condensed into short fragments in the second phase (steps 5 and 6). In the final phase (steps 7 and 8), the video material is released. All the steps are described below in terms of recommendations to the monitor.

If the AVLH is used to encourage the internal reflection process, step 8 is carried out together with the project participants. This step involves joint reflection on the fragments in a workshop setting.

Step 1

There may be a need within a project for the learning experiences to be recorded in another way than just in reports, because those so often disappear into a drawer. Another reason could be that project participants believe that what they are doing is so special that it should be preserved for posterity, i.e. should be recorded. This could for example relate to the struggles that the mixed group has had while learning to work together. In situations such as this, the monitor can suggest using the AVLH as a tool.

Step 2

There are various ways of gathering material. You can choose project participants as your interview candidates because they are important for the specific matter of the learning history. Relevant questions here are the extent to which somebody has been involved, the extent to which this person knows about the key moments of the project, whether they talk freely or are more reticent, or how they may appear on camera. You can also choose to have the interviews and recordings fit in with the activities that are already taking place, such as workshops. In the latter case we would however recommend doing the filming outside the workshop context, because group processes are very difficult to depict.

Step 3

When you discuss the interview beforehand, look back over the project together with the participant who is to be interviewed. Determine together what the key moments were, and what the most interesting way of describing them might be. Make clear that the descriptions given in the interview that is to be videoed must stay close to the experiences of the interviewee, and that the context of the problem also needs to be expressed explicitly. Explain this using examples from the discussions beforehand. If you are not taking on the interviewer role yourself, make sure that the preliminary chat is particularly extensive and detailed. This helps make the real context of the learning experience clearer.

Step 4

Record the descriptions of the key moments. Ideally, a second person should operate the camera and act as the director. After the initial discussion, get this person to take the initiative and find a suitable place for recording. You should all pay attention explicitly to finding a suitable location that helps get the learning experiences across and where filming will not be interrupted. While the recordings are being made, the second person is the director and will for example stop recording if the picture or sound quality are not good enough.

Ask participants who are being interviewed to describe the most crucial moments once again in their own words, in a way that will be understood by a viewer who has no prior knowledge. Ask for descriptions of the actions: what happened, how they reacted, and how they felt. If you decide that only the interviewee will be in the picture, it is important that you yourself cannot be heard in the recordings – not even making encouraging sounds.

Step 5

Select usable video material. Two important selection criteria are:

- a) the statements must be interesting and relevant, and
- b) the technical quality of the picture and – more importantly – the sound must be good enough.

Step 6

Get an editor to assemble the recordings, so that a healthy number of short film clips varying from 20 to 90 seconds are produced in which the key moments and learning experiences of the project participants are expressed. Any video editing programme can be used. Present these fragments to the interviewees for their approval. If they have any comments, alter the selection of clips.

Step 7

The material can now be used in two ways.

The first is to arrange it in such a way that the clips merge into a single whole creating a narrative in which all the various perspectives can be seen. This is a kind of “the making of” film, guiding the viewer past the relevant themes.

The other way of getting the experience/knowledge across to outsiders became available more recently: publish the short clips in a web environment. A good search engine will then let the users browse through the material themselves, discovering the experiences that are important for them. A skilled site developer or system builder is indispensable when putting a suitable, dynamic web environment together.

Step 8

The video clips only become meaningful if they are used sensibly. One suitable context for this, for example, is the eye-opener workshop (see tool VII). Workshops such as these can be held with the project’s own participants or with participants from other system innovation projects. Show the clips during the workshop session using a timeline or themes. Ask the participants to reflect on the images and to formulate eye-openers that are relevant for them.

Completed example of an example audiovisual learning history

An audiovisual learning history was made of the project Regionale Versketens (Regional Fresh Food Chains). Here is a screenshot, to give an impression of it.



Figure VI.1: Images from the audiovisual learning history of a project, with a selection of clips for a specific question.

Pitfalls and solutions

Pitfalls

Interview is too superficial.

Interviewee is not open enough.

Interviewee does not feel comfortable while being filmed.

Solutions

The quality of the interviews is critical if the audiovisual learning history is to be of value. It is therefore crucial to bring in skilled interviewers who can look for the underlying motives and feelings.

Make sure that the interview environment is comfortable. Do not have anyone else present at the interview, other than the interviewer and the camera operator. You can additionally agree that information from the in-depth interview will in the first instance be treated as confidential. There can also be a contractual clause stating that the filmed material will not be published without the interviewee's consent.

Many people are not at ease when a camera is pointed at them. The interviewee may also find it strange to be directed as they tell a story. Try to put the interviewee at ease by giving a clear indication of the parts of the story that have to be recorded, explaining that a directed interview such as this – with a spontaneous chat beforehand – produces the most usable video material.

The video material is poor quality.

Arrange for a good camera and an experienced camera operator. Additionally, it is advisable to find a suitable location for filming before the interview. The learning experiences will not come across well unless the lighting and sound are good and the surroundings are appropriate.

Monotonous video material.

Zoom in and out while recording, so that close-ups alternate with pictures from a little further away (medium close-ups). Also take ambient shots to display the project's atmosphere, such as shots of the project location or the interviewee's work environment, for example. These can be edited into and between the interviews.

Expectations for the quality of the final film are too high.

Make clear from the start that this will be a technically unambitious product. You can emphasise this (as well as lowering the threshold for joining in with the AVLH at the same time) by using a very simple camera.

The project participants feel that the film is too sensitive and do not want the video material to be published.

Take your time. After a year, or after the project is completed, the film material will often be deemed to be less sensitive and can then be published after all.

Other applications

The audiovisual learning history can be used in various situations during the 'act' and 'record' phases. The AVLH is a suitable monitoring tool in the following situations:

Act:

Participants do not trust each other enough

Viewing and discussing the film fragments together with the project team or the project participants (step 8) generates insights into and understanding of each other's positions, fears, emotions, cultures and backgrounds. Mistrust is reduced if these underlying motivations and positions are shared.

Insufficient co-operation between the participants

Watching film clips in which another person talks about their own learning experiences creates insights into their point of view. A joint discussion of these insights results in a common narrative that does justice to the various frames of reference and values of the project participants.

Participants meet resistance from their own organisations or supporters

If colleagues within or the membership of the participants' organisations see and discuss the videos of the project, with its challenges, key moments, successes and low points, they will get to know the project and appreciate it more. Resistance will then decrease.

Record:

Milestones have not been defined and recorded

During the interviews, the project participants state which events they have perceived as milestones. Because several project participants are doing this individually, the video images give a broad picture of the progress of the project.

Results are not recorded in time or not recorded properly

Interviewing several project participants, or all of them if possible, lets you define a range of results. The audiovisual documentation gives clients a picture of the course the project is taking and the results.

Lessons and results are insufficiently applicable in other situations

The audiovisual learning history encourages 'learning from the experiences of others', by communicating the learning experiences of the project. Target groups can for instance be reached through an eye-opener workshop.

Practical experiences:**Audiovisual learning history of 'Regional Fresh Food Chains'**

The monitor got involved in the Regionale versketens (Regional Fresh Food Chains) project when it was in a hectic phase. This project was developing new sales channels for farmers who produce sustainable products. The project team members were businessmen who were busy setting up their own new company. The hectic nature meant that there was not much time for reflection. The monitor decided that AVLH was the tool to use to ensure this did still happen. The businessmen did in fact need recording and reflection, but did not appreciate textual output. In addition, video images can record more aspects of the experience/knowledge that is expressed (for example tone of voice and facial expressions) than mere text can.

Once all the project participants had been interviewed, the monitor held a workshop with them at which they reviewed and discussed selected video material. A lively discussion arose about the differences and similarities in the visions that they had adopted. In addition, they reflected on the focus of their narrative. Looking back at their own stories, one project member remarked that they had been primarily formulating challenges that were important for the farmers. The goal of the project had been a more consumer-driven approach. This observation led to a re-orientation of the project activities: after the workshop, the focus was more on the consumer.

VII. Timeline and eye-opener workshop

Introduction

The monitor or project manager may find it valuable to reflect, along with the participants, on the challenges, successes and learning experiences of the project. Another important task is to get these lessons across to others, such as clients, other project managers and colleagues. Because these 'outsiders' are not familiar with the experiences acquired by the project, the more generic insights that the participants have gained may seem to them to be self-evident. It is for example pretty obvious that mutual trust has to be created. But why it is so difficult and how it can nevertheless be achieved are insights that are worth getting across.

The timeline method¹ provides a working format for expressing the challenges, successes and learning experiences explicitly, together with the project participants.

The eye-opener workshop is an additional tool for turning outsiders into project insiders, as it were. The experiences and results of the project are narrated in detail during the eye-opener workshop. The participants then reflect on the events, each from their own perspective. This lets them extract the lessons from the project experiences that are significant for their own situations. It is therefore not the monitor or project manager who determines which lessons are relevant, but the (potential) knowledge recipient. A timeline or eye-opener workshop takes at least three hours and is done with a small group (between three and eight participants).

Comparison with the audiovisual learning history and other tools

What distinguishes the eye-opener workshop from other monitoring tools is the interactive transfer of learning experiences, in contrast to the (textual) reports and the audiovisual learning history.

The timeline, combined with the eye-opener workshop, does have an overlap with the audiovisual learning history. The transfer of experience/knowledge, both internally and externally, is central to both tools. However, the differences are that the eye-opener workshop (1) is face to face, (2) is aimed at a specific, small target group and (3) takes far less time to prepare.

The timeline and the eye-opener workshop can incidentally be combined very well with the audiovisual learning history. The film fragments that are gathered for the latter can be used to tell the story of the project in the workshop.

Approach

The timeline and the eye-opener workshop are extensions of each other. The biggest difference is that the timeline is done with project participants, and the eye-opener workshop with outsiders. The eye-opener workshop can build on the results of reflecting on the timeline.

¹ This approach was developed and described by Eelke Wielinga and others in the Netwerken in de Veehouderij (Networks in Animal Husbandry) programme (Wielinga *et al.*, 2007).

Timeline

The timeline workshop is suitable for getting project members to reflect jointly on project events. Depending on the duration of the project and the number of participants, a timeline workshop will take about 2 to 4 hours. The timeline workshop can be led by the monitor or project manager.

Step 1

As part of the preparation, the monitor collects up information about all the project events. Study the project documents and hold interviews. Even if you have been involved intensively with a project for a longer period of time, you will have to examine all the data again in order to construct a timeline. You can also ask the project manager to put together the timeline.

Step 2

At the workshop, list the project events chronologically. (The manager could also do this.) A sheet of paper is hung up on the wall showing a timeline; mark the various events on it. Do not interpret and analyse the events at this point, but tell it as a straight story, almost in a childlike style: "And then... and then..." Ask the participants to make associative notes as they listen. During this phase, you should let the project members speak only in order to correct the story or to complete it.

Step 3

Once you have listed all the project events, get the project members to say whether the story is correct and complete. After they have approved it, the participants get 15 to 30 minutes for themselves to interpret the events. They determine what they have felt were key moments and highs and lows within the project. Additionally, the participants analyse this initial intuitive assessment for themselves. Why was there a high point just then? Or, why was there friction at that point? These short reflections are written as keywords on Post-its.

Step 4

These individual interpretations are then shared. The facilitator (preferably not the person who told the story of the timeline) asks the participants to select the three key comments from their Post-its. After the first participant has shared and explained his or her important remarks, the facilitator asks whether others have also put comments about the same event in their top three. The Post-its are stuck onto the timeline at the appropriate point. Events that appear to have been interpreted differently are discussed for longer. Discussing these differences of interpretation often yields insights into conflicts that had never been expressed. Finally, any remaining Post-its – i.e. ones from outside the top three – can also be placed on the timeline.

Step 5

The way the workshop is concluded depends on its objective and placement within the project. Possible endings are:

- making choices about follow-on steps, based on what has been discussed;
- drawing up a new version of the dynamic learning agenda (see tool III);
- jointly formulating a project narrative that participants can pass on to others;
- writing a project narrative as an evaluation, listing the key highs and lows, for use in a final report.

The results of the timeline workshop can also be used as input for an eye-opener workshop.

Eye-opener workshop

The eye-opener workshop is good for letting outsiders learn from the experiences of system innovation projects. The aim is to extract insights from the project experiences that the workshop participants can benefit from in their own situations. It is based on the idea that the monitor or project manager cannot determine what is relevant for others: this has to be done by the (potential) recipients of the knowledge themselves. The workshop itself (after the preparation and introduction, steps 1 and 2) takes at least three hours and can be subdivided into three parts. In the first part, the project narrative is told (step 4). During the second part, reflections on the narrative are shared (steps 5 to 7). Finally, the participants can make use of the insights internally in their own contexts (steps 8 and 9).

The eye-opener workshop can be used in a variety of situations.

- a comparable system innovation project that has just been started up and needs hints and ideas;
- a programme wants to develop generic lessons based on the project experiences;
- a specific target group wants to identify relevant lessons. They will learn from this, and the results can be used for wider communication to people who were not involved in the project but would like to learn from it.

Step 1

The monitor can produce a project narrative, alone or with members of the project team. This can be based on the timeline, or it may consist of the key substantive and technical results. Put this narrative into words yourself, or get somebody else who knows about it to do so, for example a scientist who has carried out research for the project. You can also use audiovisual material if there is any available (see tool VI and Figure VII.1). Choose a point of focus for the story, depending on the objective of the workshop. The focus may for example be on the key moments, the highs and lows, or specific actual results.



What is Biopark Terneuzen?	How does the biomass power plant work and what makes this system unique?	Why was this system chosen?
What are the costs and benefits of a biomass power plant?	What research did Jan Broeze carry out for Biopark Terneuzen?	What follow-up questions has research into Biopark Terneuzen brought to the fore?
WUR also did research into the Biopark Terneuzen greenhouse cluster. What were the results?	Are the results of the research also usable elsewhere?	What are the most important learning experiences for Jan Broeze?

What is Biopark Terneuzen?

Figure VII.1: An audiovisual representation of a scientist's project narrative.

Step 2

Explain the workshop programme at the start. Then ask the participants to introduce themselves, state their learning objectives and give an indication of how familiar they are with the project being discussed.

Step 3

Hand out the project narrative on paper, but tell it verbally too. If it is in the form of a timeline, hang it on the wall, with the events marked on it. In contrast to the timeline workshop, you can put a bit of emotion into telling the story this time, to get the participants interested and empathising with you. Telling the story takes half an hour to forty-five minutes. Ask the participants to make as many notes as possible on the hand-out as they listen: associations, ideas, eye-openers, questions, feelings, and so forth.

Step 4

Give the participants fifteen minutes to put their own reflections in order. Get them to write these reflections (at least ten of them) down on Post-its in short phrases, keywords or questions.

Step 5

Ask the participants to choose their most important eye-opener. They share these eye-openers with each other. The other Post-its are then discussed, for example chronologically or per person or per theme, depending on what seems most sensible. Finally, ask the participants what information they are still missing. What further knowledge do they need in order to be able to answer questions relating to their own field of work? Discuss how this additional information can be obtained. Step 5 takes one to one and a half hours.

Step 6

Get the participants to think about which eye-openers are relevant for their own situations, and why. Ask them to express these eye-openers as 'lessons for the future'. Then ask them what changes they are going to make in their current situations as a result of the lessons from the workshop – their individual agendas for action. The participants then get quarter of an hour to think about these lessons for the future and their action agendas, and to make notes. Finally they each get a maximum of five minutes to share both aspects, the lessons and the agendas.

Pitfalls and solutions**Pitfalls**

Not enough openness among the participants.

The narrative of the project story (timeline) is interspersed with analyses or opinions.

People are afraid to list the lows and therefore ignore them.

Solutions

Carry the exercise out in a small team. This creates a confidential environment, and everyone gets sufficient room to share their reflections. You can in addition agree that all statements will be treated as confidential.

Ask the narrator (and any others who may speak) to stick to the actual events. It is important that the listeners can form their own opinions about the story.

It is often awkward to discuss the low points if the project is still ongoing. The project manager wants to leave participants from other projects or programmes with a good impression. An open attitude is easier to adopt once the project has formally been concluded.

Other applications

The timeline and eye-opener workshop can also be used during the 'design' and 'act' phases. We have given a description below of how the workshops can be used in various situations.

Act:

Participants adopt a wait-and-see attitude

It is important that the participants identify with the project and get a picture of the perspectives for action. The timeline can help familiarise participants with the project. There are always reasons why a project is started. Sharing information about the origins of the project helps new participants develop a bond with it.

Participants do not trust each other enough

Participants can have different interpretations and reflections on the project's events. A timeline workshop gives them an opportunity to share these interpretations and reflections with each other. This gives participants a better understanding of each other's reactions, which strengthens the mutual trust. It should be noted that a certain degree of trust already has to be present before the workshop can be held.

Participants meet resistance from their own organisations or supporters

An eye-opener workshop can effectively turn colleagues and other members of the participant's organisation into project insiders. They will start to appreciate the project more, because they have obtained insights into the challenges, key moments, successes and low points. This appreciation will reduce the level of resistance.

Record:

Milestones have not been defined and recorded

Milestones are identified, shared and discussed by the participants in both timeline meetings and eye-opener workshops.

Lack of progress or a poor picture of the progress

This often occurs because participants forget the initial situation, as well as the gains made along the way. Reminding people what it was like during the startup period and recalling the challenges and successes of the project helps to obtain realistic insights into the progress.

Results are not recorded in time or not recorded properly

The project narrative that is produced by a timeline workshop can be recorded in writing or audiovisually. The same applies for an eye-opener workshop with participants from other projects who are sharing their own experiences. These tools both provide space for documenting the qualitative results.

Too little time spent (or spent too late) on accountability for the project results

The eye-opener workshop can be held with the clients. The advantage here is that they are able to indicate which results they believe are relevant, from their context. Clients often list other results or events as being effective.

Lessons and results are insufficiently applicable in other situations

The eye-opener workshop is particularly suitable for this, as was explained in the introduction.

Practical experiences:**Sharing the Nieuw Gemengd Bedrijf learning experiences with TransForum**

A number of staff members from the TransForum programme said that they would like to know more about the experiences of the Nieuw Gemengd Bedrijf (NGB, New Mixed Business) system innovation project. They could use that knowledge to develop their programme theory about innovation strategies further. In addition, they could use the insights for the other system innovation projects that were in their portfolio.

NGB is an 'agropark' – an agricultural business park – that is being planned in North-east Limburg. The challenge was to share the experiences of NGB in such a way that TransForum could extract lessons from it relating to their own problems. This was not easy, partly because TransForum was positioned quite some distance from the project, and partly because the focus of the project was much more specific than that of the programme.

The eye-opener workshop tool was used in order to tackle this challenge. The following questions were posed to gain greater depth and for later evaluation (step 7):

- Which of the insights of NGB differ from the current programme theory of TransForum?
- Which of the insights of NGB help extend the current programme theory of TransForum?

The answers were then added to the programme theory.

The eye-opener workshop turned out to be a successful method for getting the TransForum staff to absorb the insights of NGB and record them in their programme theory. One member of staff stated for instance that she had learned that it is probably more important, when clustering agricultural companies and industry, to produce a robust design than to produce one that is optimised in terms of the technical aspects.

The workshop was so successful that it was agreed that the learning experiences of several projects should be anchored in the programme theory of TransForum using eye-opener workshops.

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