

Learning history as an evaluation method for the policy formulation of the Dutch Societal Innovation Agenda on Energy

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Paper for the panel session 'New conceptual and normative approaches for the evaluation of public policy/provisions' of the European Consortium of Policy Research Conference in Potsdam, Germany (10-12 September 2009)

Abstract

The Dutch Government intends to reform the energy-system of the country into a more sustainable system. A policy for achieving this has been formulated in the 'transition' paradigm (Rotmans et al, 2001). Key elements of this paradigm are "long term", "single innovations leading to system innovations", "working with the market", "pilot projects in niche environments".

In the Dutch Energy Transition six Ministries work together¹ with private enterprises and knowledge institutions. One of the main results so far has been the 'Societal Innovation Agenda on Energy' in which funds have been allocated for selected themes and topics. As the 'transition' paradigm is a rather new way of working, the Ministry of Economic Affairs (Ministry of Economic Affairs, 2008) wants to evaluate the process of formulating the "Societal Innovation Agenda on Energy".

The process requires different skills of civil servants, different contact with private enterprise and also different monitoring and evaluation tools (Taanman et al, 2008). TNO has been selected to evaluate this process by making a Learning History. A Learning History (LH) (Kleiner and Roth, 1997) is typically used within organizations to describe and learn from innovation or change trajectories. A LH describes a process with facts, perceptions of people involved and reflection of experts on these facts, thereby creating a context to understand learning experiences. It focuses not so much on accountability of the involved but rather on the ways of improving processes.

TNO (Mario Willems & Elsbeth Roelofs) is currently working on this Learning History which will be finished in August 2009. In the paper for the conference we will present the main findings of the LH in terms of problems encountered in the policy process (and ways of handling them). We will also reflect on the aptitude of the LH method for evaluating these type of policy formulation processes.

¹ These are the Ministry of Economic Affairs, the Ministry of Housing, Spatial Planning and Environment, the Ministry of Agriculture, Nature and Food Quality, the Ministry of Transport, Public Works and Water Management, the Ministry of Foreign Affairs, and the Ministry of Finance.

Introduction:

Modern societies nowadays are encountering large problems in the sphere of energy production and distribution (IPCC, 2007; UNEP, 2007). The Dutch Government therefore intends to realize a sustainable national energy economy. The need for such a change is simple: ‘the Netherlands depends almost entirely on oil that is supplied by countries outside the European Union. This makes the Netherlands vulnerable, and we spend billions of euros extra as oil prices increase. Furthermore, the emissions from fossil fuels are hazardous. Realizing a sustainable national energy economy requires a new innovative way of thinking and acting—in economic, technological, and socio-cultural terms.’ (SenterNovem, 2009)

The Dutch energy policy for achieving a sustainable national energy economy has been formulated in the ‘transition’ paradigm (Rotmans et al, 2001, Rotmans, 2003). Key elements of this paradigm are ‘long term sustainable visions linked to short term actions’, ‘single innovations leading to system innovations’, ‘multi-level –multi actor –multi phase perspective’, ‘private-public cooperation’, and ‘technological innovation intertwined with social innovation’.

The new starting point for the energy policy requires also new methods of monitoring and evaluation. Part of the monitoring framework that is being constructed during 2008 and 2009 are Learning Histories. Learning Histories, as developed by Roth and Kleiner (1997), are originally a method to support organizational learning. That is, to help organizations to learn from their own change and innovation processes. This method is used by the Dutch government to learn from their own critical periods in policy making for the energy transition. This paper reflects upon the results of the application of Learning Histories in the policy making process of the Energy Transition, and the lessons learned in the policy making process itself, which were made explicit.

Readers’ guide

In this paper first the background is explained of the Energy Transition policy and its organization in the Netherlands. Secondly, we will give insight into the new ways of monitoring and evaluation that transition policy requires and explain the framework of monitoring for the Energy Transition that is presently developed. Subsequently, the position of Learning Histories in monitoring of the Energy Transition is explained. Then the project ‘Learning and improving the Energy Transition’ is introduced, in which Learning Histories were made to support the monitoring and learning process. Two Learning Histories are described shortly: Experimental gardens for sustainable mobility and Energy in the Built Environment.

The main lessons following from the Learning Histories are presented in the next paragraph. The paper ends with reflections on the use of the application of Learning Histories for the Energy Transitions.

Transition approach

Our society is nowadays faced with a number of persistent problems in domains such as energy, mobility, agriculture, and biodiversity. The persistent nature of these problems is closely related to the fact that the problems arise from patterns and processes that are deeply embedded in, and privileged by, the institutions of state, science, market and society – as well as their mutual alignment. These persistent problems ask for transitions, where societal development breaks away from previous lines of progress. Radical new approaches of for example production and consumption are necessary to influence societal development processes in such a way that in the long-term sustainability ambitions are met.

In a growing body of literature ‘transition’ is defined as a process in which societal functions change structurally and irreversibly over a period of at least one generation as a result of a large number of interdependent economic, social and environmental processes (Geels and Kemp 2000). Efforts to govern transitions are described under the heading of transition management (Rotmans 2003; Loorbach, 2007).

An important feature of the transition paradigm is the multi-level concept. The multi-level concept describes three different levels at which change processes take place: the macro, meso and micro level:

- The lowest level (micro level), is the level at which small scale, innovative activities take place and ‘niches’ are formed (represented by the small circles at the lowest level in figure 1);
- the intermediate level (meso), is the level at which dominant institutions, structures and practices (so-called ‘regimes’) are being challenged by new conformations (‘niches’);
- the top level (macro level) with relative autonomous societal developments (i.e. climate change, oil prices) that determine the playing field of the existing and the new conformations.

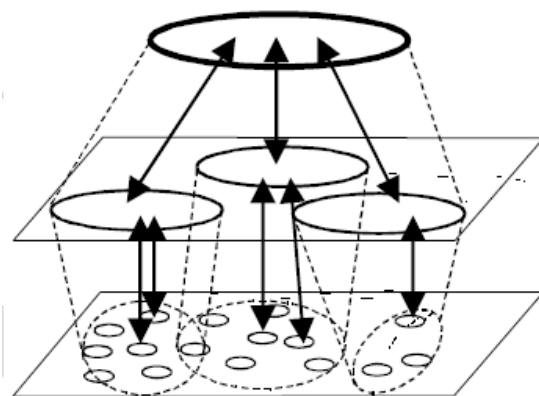


Figure 1. Representation of transition dynamics at the three different levels (Geels and Kemp, 2000; Geels, 2002)

Transitions are driven by the interplay of dynamics arising from each level (Geels, 2002). We will explain this a bit further. The essence of distinguishing the three levels is that it makes explicit that innovation takes place in the interaction between small scale initiatives and the societal conditions. New developments will first take place at a small, relatively modest scale, before they will scale up and result in a breakthrough (or system innovation) in society. In other words: the innovative forces operate bottom up. The society is characterized by a certain stability, formed by institutions, rules and habits. New initiatives and existing institutions are not able to withdraw themselves from the influence of such institutions, rules and habits. In other words: conditioning forces work top down (Weterings, 2008). When the developments at different levels interact and reinforce each other and this results in an irreversible change of the dominant institutions, structures and practices, we speak of a transition.

Transition approach in Dutch policy making

With the introduction of transition and transition management into Dutch environmental policy a new generation of environmental policy has been introduced (Grin 2003; Keijzers, 2000; AER and VROM-Raad 2004). ‘ While first generation environmental policy focused on mitigating the *effects*, and second generation policies dealt with the *sources* of environmental degradation, transition policy is about transforming the *socio-technological systems* producing the more persistent types of problems (Grin and Weterings 2005).

Since 2001, transition policy in the Netherlands resulted in a number of policy programs. The Energy Transition is one of these programs, aimed at realizing a sustainable national energy economy within 50 years. Coordinated by the Interdepartmental Project Board Energy Transition (IPE), in the Energy Transition six Ministries² work together with private enterprises, NGO’s and research institutes. Altogether, seven themes have been defined on which Energy Transition should focus in order to realise a sustainable energy supply:

1. Biobased raw materials;
2. Sustainable mobility;
3. Chain efficiency;
4. New gas;
5. Sustainable electricity;
6. Energy in the built environment;
7. The greenhouse as energy source.

These themes have been chosen because they offer the Netherlands considerable economic opportunities and are feasible for this country (SenterNovem, 2009). For each theme, a so-called Energy Transition platform has been set up. The platforms are public-

² The six Ministries that cooperate in the Dutch Energy Transition are the Ministry of Economy Affairs, the Ministry of Housing, Spatial Planning and Water Management, the Ministry of Agriculture, Nature and Food Quality, the Ministry of Foreign Affairs, and the Ministry of Finance.

private frameworks of cooperation. In the past years all platforms have formulated shared visions on how to proceed along the themes focused on realizing a sustainable energy supply.. They all have created their own thematic transition plans describing what pilot projects to initiate, what policy barriers to tackle, etc.

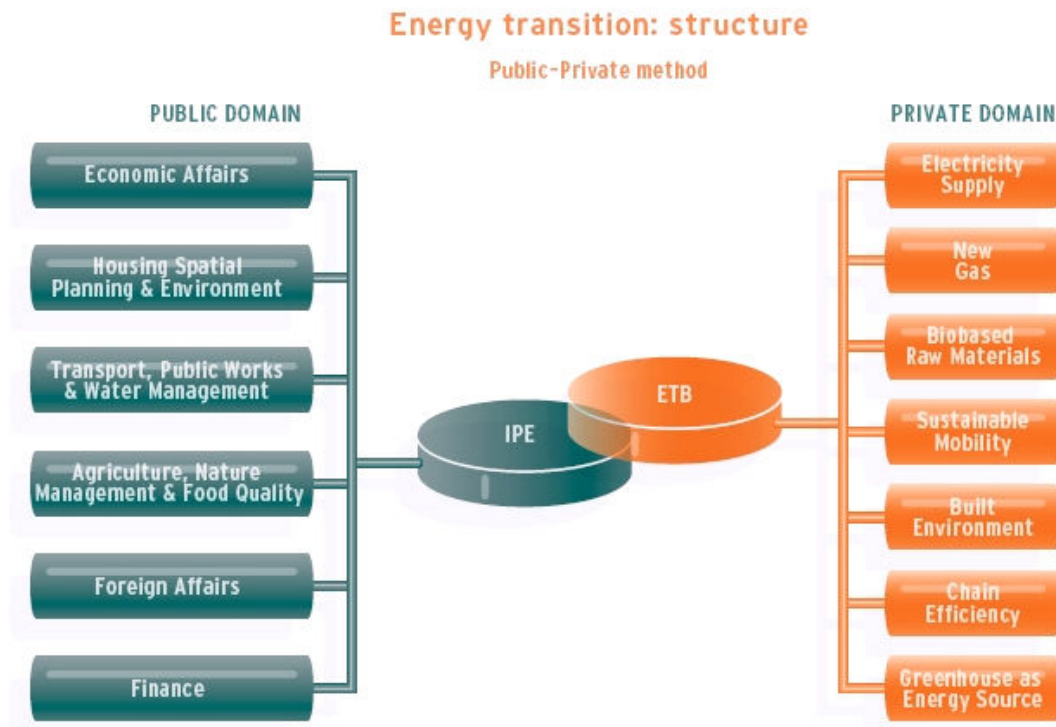


Figure 2. Organisation of the Energy Transition in the Netherlands

Note: IPE = Interdepartmental Projectboard Energy Transition; ETB = Energy Transition Board

Societal Innovation Agenda on Energy: the making of

Following up on the various vision documents and initiatives of the Energy Transition platforms, some of the ministries involved formulated a vision, that can be seen as a reply and follow up of the Dutch government on the vision of the platforms.

In 2006 the new Dutch cabinet was installed. This cabinet launched two government's policy programs: 1) Clean and Efficient: New Energy for Climate Policy and 2) The Netherlands, a country for innovation (NOI). The Clean and Efficient program aims at a breakthrough in the trend of how society uses and produces its energy, and stipulates the policy objectives for 2020. The main goal is to reduce the overall CO₂-emissions by 30%, compared to the 1990 levels. The NOI program focuses on improving the effectiveness of the present knowledge and innovative entrepreneurship to resolve societal challenges.

For both objectives innovation needs to be given a large impulse, since otherwise the objectives will not be met. The Societal Innovation Agenda on Energy comprises the various themes that the Dutch Cabinet will focus upon over the next few years (Ministry of Economic Affairs, 2008). The cabinet decided to primarily focus in the Innovation Agenda upon the acceleration phase of innovations³. The budget that is assigned to the Societal Innovation Agenda Energy is 438 million Euros. Around half of this amount, 210 million Euros, was divided over the seven themes⁴ of the Innovation Agenda Energy (30 million each). The rest of the budget will be allocated more flexibly, depending on the bottlenecks that need to be solved and the dynamic aspects of the market. Per theme an innovation program was developed. In the beginning of 2009 the first couple of innovation programs with a budget of 30 million were approved by the Dutch Ministers.

The Societal Innovation Agenda Energy can be seen as the next step in the policy making process of the Energy Transition after the transition plans of the platforms and the governmental visions of some of the Ministries. In the process of formulating the Societal Innovation Agenda Energy first all transition plans of the Energy Transition platform were analysed by means of a so-called Innovation System Analysis (ISA).⁵ Each transition plan consisted of several so-called transition paths, technological and social innovations that were expected to contribute to realizing part of the sustainable energy system. Some examples of transition paths are: Green gas from biomass and hydrogen, Decentralized energy generation (micro and mini heat sources) and Driving on hydrogen.

The ISA analyses the state of the art of the innovation system for the transition path (i.e. technological and/or social innovation) and gave insight in the barriers and drivers for the successful implementation and diffusion of an innovation in society. Focusing on eliminating the barriers for each transition path, the ISA provided the basis for the framework of the innovation programs within the Societal Innovation Agenda Energy.

In the next paragraph the specific difficulties in monitoring transition and the monitoring framework of the Societal Innovation Agenda Energy will be explained. Furthermore, the position of Learning Histories in the monitoring framework will be clarified.

³ The acceleration phase of innovation is the phase in which the innovation is fully developed and is ready to be applied on a large scale.

⁴ The seven themes are the same themes as the energy transition platforms have: biobased raw materials, sustainable mobility, chain efficiency, new gas, sustainable electricity, energy in the built environment, greenhouse as energy source.

⁵ The ISA is a method that distinguishes seven interdependent and reinforcing key activities. These activities are also called system functions and are necessary for a well functioning technological innovation system, i.e. a successful implementation and diffusion of an innovative technology in society. The functions are called 'experimenting by entrepreneurs', 'knowledge development', 'knowledge diffusion', 'directing the search process', 'creating markets', 'mobilizing resources' and 'creating legitimacy'. If the functions positively reinforce each other, it becomes so-called motors of change. For example: the lobby of entrepreneurs can result in funding that stimulates knowledge development. This enables the execution of successful pilot projects, which has a stimulating effect on other entrepreneurs to use the technology (Hekkert et al, 2007).

Progress and monitoring of the Energy Transition

Like any governmental policy program the Ministry of Economic Affairs wants to monitor the impact of the Energy Transition policy. But working in the ‘transition’ paradigm is a rather new way of working, requires different skills of civil servants, different contacts with private enterprises and other stakeholders, and also different monitoring and evaluation tools (Taanman et al, 2008). Policymaking in the transition paradigm is characterized as ‘learning by doing with a long term aim’. Monitoring the impact of transition policy raises several methodological problems, because of the characteristics of both transitions and transition management.

What type of societal process are we actually monitoring when monitoring a transition? ‘Societal transition can be viewed as the process through which society (represented as a complex adaptive system) changes from one dynamic equilibrium to another.’ (Taanman et al, 2008, p.5).

The first difficulty in monitoring transitions is the timeframe in which they take place. Some transitions take place well within a decade, but more often the change takes place over a period of one or two generations. This composes the second and the third difficulty for transition monitoring: the dynamics of the system are the result of complex patterns of interaction between of actors, factors and trends, etc. These complex patterns influence the transition of which many cannot be influenced directly by transition management. Besides, many of these elements cannot easily be distinguished beforehand or during the process of monitoring (Taanman et al, 2008). Therefore, monitoring the impact of transition policy takes time, because the result of the policy takes one or two generations to become visible. Moreover, monitoring or evaluating such a complex change as a transition makes the attribution of changes to the transition policy very hard to make clear. The Interdepartement Program Board of the Energy Transition (IPE), part of the Ministry of Economic Affairs, thus cannot suffice with traditional ways of monitoring in terms of realized energy savings or CO₂- reduction. This would make the impact of the transition policy visible only after one or two generations, if it would be possible to make the impact visible at all.

Summarizing, monitoring and evaluating transitions requires a new type of monitoring with a new starting point.

As explained before when discussing the multi level perspective, the essence of a transition is that innovation is the offspring of the tension between small scale initiatives and dominant confirmations in society. The importance of monitoring and evaluation for the Energy Transition is threefold:

- communication: making explicit the most important results of the Energy Transition;
- public or political legitimacy of the money spent;
- learning by doing in order to strengthen the impact of the transition process.

Table 1. Positioning of the various monitoring instruments in the Energy Transition (Weterings, 2009, p.1)

TARGET GROUPS	Energy Transition Board, Energy Transition platforms	IPE	Top level civil servants	House of Parliament	Public
OBJECTIVES					
A. Communication				Vital Signs	
B. Legitimation		input & output			
C. Learning and improving	progress impact				

The Ministry of Economic Affairs monitors the progress in the innovation programs in three different ways. The first method is called ‘vital signs’ and describes the best practices in the Energy Transition. This can be successful projects, approaches and experiments carried out within the innovation programs. The objective of Vital Signs is to make good practices explicit and to transfer knowledge about these practices to other stakeholders.

The second method is a ‘database’ in which key elements (impacts, successes, barriers, etc.) of all projects are collected. The third method is the making of Learning Histories as a method of describing the processes of working in critical periods within the Energy Transition.

This last approach aims at supporting programmanagers in their role as change agents in the energy transition. The approach focuses on how the activities of the transition platforms, IPE and program managers can accelerate the transition (Weterings, 2008).

In figure 3 you see a representation of the different levels in the Energy Transition that monitoring tries to distinguish and address:

1. the level of society (macro level in multi perspective);
2. the level of the policy program Energy Transition with IPE and the transition platforms as two sublevels;
3. the pilots and projects that are initiated and influenced by the Energy Transition.

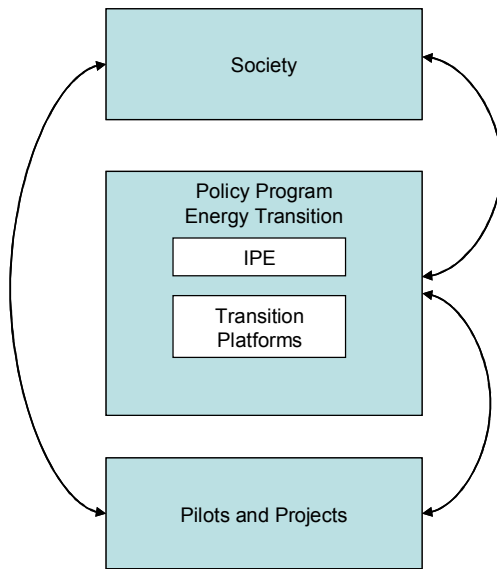


Figure 3: Transition program in between the societal processes and innovation projects

Learning History: continuous learning by researchers and stakeholders

In this paragraph we will go into further detail about Learning History as a method, and its role in monitoring and evaluation of the Energy Transition.

Origin of the Learning History

The Learning History is a method developed by MIT researchers Roth and Kleiner (Roth, Kleiner, 1995) in the tradition of ‘organizational learning’ (Senge, Schon) and action research (Aygiris). The method aims at supporting organizations in learning from their own change and innovation processes (‘create a collective history’). It can be considered as an organizational reflection and documentation process in which researchers and the stakeholders in the organisation work together as an insider/outsider team. ‘The learning history approach helps the subjects to assess and evaluate themselves as researchers capture the data which also allows the larger learning process to be documented.’ (Roth, Senge, 1996, p. 97).

The way of working in the Learning History process creates ‘jointly told tales’ that describe work issues and learning experiences from multiple and sometimes contradictory perspectives. As Roth and Senge state it: ‘Learning Histories are proven to be effective in engaging and influencing readers, because of the extensive use of participants’ own narratives to capture their own coherent stories about complex realities.’ (Roth, Senge, 1996, p. 97) A Learning History focuses not so much on accountability of the involved, but rather on the ways of improving processes and ways of working.

Structure of the Learning History and the learning process

In a Learning History three levels can be distinguished:

- factual events;
- perceptions of stakeholders on these events;
- reflection on the events and perceptions of the researchers or other non-involved experts.

In general the following approach is taken (see also figure 4).

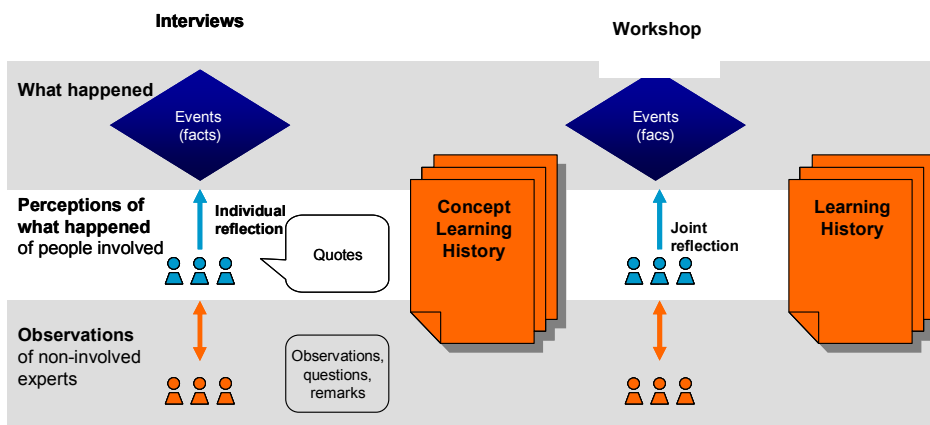


Figure 4. Schematic representation of the process in making Learning Histories ©TNO

The factual events and perceptions of stakeholders are gathered by document analysis, interviews and workshops. The interview reports are transcriptions of the interviews and are sent back to the interviewees for comments. The results of all these activities is the basis for a concept Learning History, which is discussed in the research team and with other non-involved experts. This results in a number of reflective questions and remarks that can be placed in the concept Learning History. This second concept is discussed in a workshop with the interviewees and other stakeholders. The aim of this workshop is to give the stakeholders the opportunity to reflect collectively on what has happened and is described in the Learning History. The reflective questions and remarks are often the starting point for more in-depth discussions about the experiences and lessons learned. After the discussion of the Learning History in the workshop a finalized version of Learning History presented with conclusions and recommendations of the researchers.

The project ‘Learning and improving the Energy Transition’

The Ministry of Economic Affairs (.i.e. IPE) assigned TNO to make the first step in executing the third level of monitoring: to evaluate part of the policy making process of the Energy Transition by making four Learning Histories.

Objectives and focus of the project

The objectives of this project were:

- Exchanging and documenting lessons learned in the development of the innovation programs of the Societal Innovation Agenda Energy;
- Making accessible the lessons learned in the development of the innovation programs to the program teams of other innovation programs and to the management of IPE;
- Formulating ‘ Best Practices’ in the development of the innovation programs.

The Learning Histories were initially focused on the policy making process of formulating the innovation programs of the Societal Innovation Agenda Energy (June 2008-December 2008). However, after the first contacts with the civil servants involved in the development of the innovation programs, it was concluded that it was impossible to comprehend the lessons learned without understanding what has happened before. Therefore, the period was extended to the start of the vision and strategy development in the transition platforms.

For the Learning Histories the development of four innovation programs was selected: the innovation program Biobased Raw Materials, Experiments for Sustainable Mobility, Energy in the Built Environment and the innovation program Precision Agriculture.. The selection criteria for the innovation programs were 1) that the innovation program was developed, so the development process could be studied; 2) the development process seemed to have successful elements which would be interesting to study; 3) coverage of all six Ministries involved.

The project started in January 2009 and will be finished in August 2009.

Course of the project

The project was divided into five steps:

1. document analysis of the innovation programs selected;
2. time line workshop;
3. round of in-depth interviews with stakeholders;
4. reflection on first concept of the Learning History;
5. workshop: discussion of second concept of the Learning History with the stakeholders.

Each step will be briefly explained below. The project started with document analysis of the four innovation programs. Then a workshop was organised for all the innovation program coordinators and transition platform secretaries. The objective of the workshop was to make a timeline of the development of the selected innovation programs and make the lessons learned explicit. Subsequently, for each of the four programs 4-6 stakeholders

were interviewed. Interviewees were the innovation program coordinator of the different Ministries and the transition platform secretary for every Learning History, the chairman of the transition platform, platform members from industry, members of the management of IPE of the Ministry of Economic Affairs and members of the innovation program development teams. The interview reports were checked by the interviewees. After this step the concept Learning Histories were drafted. These concepts were commented upon by the researchers themselves and two experts in the field of transitions and innovation management. These remarks and questions were incorporated by the researchers in the second concept of the Learning Histories. The second concepts of all four Learning Histories were extensively discussed in a workshop for all the innovation program coordinators and transition platform secretaries. The objectives of this second workshop were to exchange the lessons learned, and to deepen the insights from the Learning Histories. After this workshop, the Learning Histories were finalized.

Results

In this paragraph two of the four resulting Learning Histories will be presented in brief. The first Learning History (LH) describes the coming about of the innovation program on sustainable mobility. The second Learning History describes the innovation program on Energy in the built environment.

Learning History 1: *Development of the innovation program Experimental gardens for Sustainable Mobility*

The history of the development of the innovation program Experimental Gardens for Sustainable Mobility can be divided in four periods:

1. *The founding fathers of the innovation program* (2002-February 2007). This period comprises the development of the vision and strategy by the platform Sustainable Mobility, subsequently by the Ministry of Transport, Public Works and Water Management until the moment that becomes clear that the Societal Innovation Agenda Energy will be developed.
2. *The road to the Societal Innovation Agenda Energy* (February 2007- 27. June 2008). This part of the history concerns the period from the Governmental Agreement of the new Dutch cabinet, the birth of the government policy program Clean and Efficient as a result of this agreement, and the development of the Societal Innovation Agenda Energy as, again, part of the governmental policy program Clean and Efficient;
3. *The development of the innovation program Experimental Gardens for Sustainable Mobility within the framework of the Innovation Agenda Energy* (June 2008 – February 2009) with the decision-making on the innovation program by the management of IPE, the board of 6 Directors of the six different Ministries, the Secretaries of States and the Council of Ministers.
4. *The jump to practice!* (February 2009 - March 2009). This part describes the transition to the execution of the program and the political attention for the introduction on a large scale of the electric vehicle in the Netherlands.

For the Learning History of this innovation program eight people have been interviewed: the innovation program coordinator of the Ministry of Transport, Public Works and Water Management (also a member of the transition platform Sustainable Mobility), the chairman of the platform Sustainable Mobility, the two platform secretaries, a member of the platform being a transition manager of a multinational company, the project manager of the Societal Innovation Agenda Energy of IPE, the secretary of IPE and the managing director of IPE.

In figure 5 the most important steps in the development of the innovation program are given.

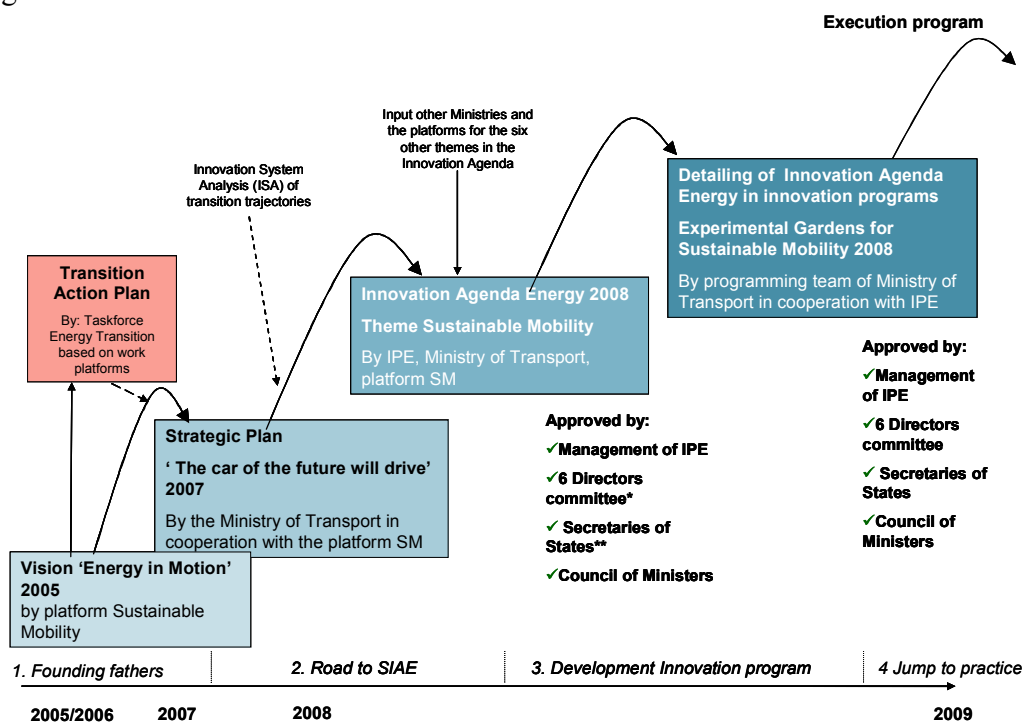


Figure 5. Most important steps in the development of the innovation program Experimental Gardens for Sustainable Mobility

The founding fathers of the innovation program (2002-February 2007).

Before the start up of the energy transition platform Sustainable Mobility in 2005, the policy development starts with the set-up of the so-called Round Table for Sustainable Mobility, an initiative of a civil servant of the Ministry of Transport, Public Works and Water Management (TPW). The Round Table has a diversity in participants: representatives of the producers and importers of vehicles, the Nature and Environment foundation, Ministry of Economic Affairs, the Ministry of Housing, Spatial Planning and Environment, Ministry of TPW itself, universities, Shell. The objective is a public private

cooperation to realise sustainable mobility. In 2004 the Round Table is followed up by the Innovation Council Mobility and Water with approximately the same participants. The objective is somewhat changed: the Innovation Council focusses on development and execution of innovation policy by means of a public private cooperation.

With the creation of the Interdepartmental Project Board Energy Transition (IPE) in 2005, the platform has been created as well. The platform formulates as her ambition:

1. a factor two reduction of greenhouse gasses for new vehicles in the Netherlands in 2015;
2. a factor three reduction of greenhouse gasses for every vehicle in the Netherlands in 2035.

To achieve this the platform focusses on *'the acceleration of the market introduction of sustainable fuels and vehicle technology, especially commercially viable option for the Netherlands in the nearby future. The options will be enabling at the long term desired sustainable developments like biofuels, hydrogen as energy carrier, the fuel cell as generator of electricity in vehicles and intelligent automatic vehicles.'* (Senternovem, 2009)

The platform has an independent chairman, a so-called linking pin to the Ministry of TPW (the future innovation program coordinator) and two platform secretaries. The platform consists of representatives of market parties that would like to play a role in sustainable mobility, NGO's, and the governmental bodies involved. The platform has two strategy groups: Fuels and Vehicles. The strategy groups formulate a joint vision for a transition to sustainable mobility. Besides that, different working groups that are linked to the platform perform studies and experiments, and advise the government on the long term policy for sustainable mobility. In 2005 the vision and strategy is ready in the shape of the document 'Energy in Motion, next steps- a vision document'.

The next step is the so-called Transition Action Plan 'More with Energy' in May 2006. The Transition Action Plan is then presented to the Minister of Economic Affairs. The plan is based on the vision documents of all different transition platforms and gives the highlights of a national strategy towards a sustainable energy infrastructure. It will later be incorporated in the governmental policy program Clean and Efficient.

In November 2006 the elections for the House of Parliament take place. In the months after the elections the Cabinet is formed, consisting of Social Democrats (PvdA), Christian Democrats (CDA) and the Christian Union (ChristenUnie). In the beginning of 2007 the civil servant of the Ministry of TPW (the same that took the initiative for the Round Table) and one of the platform secretaries draw the outline for a strategic governmental plan 'The car of the future will drive'. The content of this strategic plan is already more or less the content of the innovation program Experimental Gardens for Sustainable Mobility.

The road to the Societal Innovation Agenda Energy (February 2007- 27. June 2008).

In February 2007 the Governmental Agreement of the Dutch cabinet is finally ready. One of the major tasks in the agreement is the transition to a more sustainable energy system.

This task will be carried out by means of two governmental policy programs: 'Clean and Efficient' and 'the Netherlands, a country for innovation'. Three directors (the managing director of IPE with two other directors of Climate and Energy of the Ministry of Housing, Spatial Planning and the Environment and of Energy and Sustainability of the Ministry of Economic Affairs) have to develop the governmental policy program Clean and Efficient.

The managing director feeds the knowledge base of transitions and the visions of the platforms into this development process. The outcome is that innovation will play an important role in achieving the objectives of Clean and Efficient. Because of IPE's role in the energy transition, IPE will also play a central role in stimulating innovation for achieving the long term goals of Clean and Efficient. The stimulation of innovation is put together under the umbrella of the Societal Innovation Agenda Energy and is given 25% of the total budget, 438 million Euros. Never before an innovation agenda was allocated such a large budget.

An important event in the process of formulating the Societal Innovation Agenda Energy is the analysis of all transition plans of the Energy Transition platform by means of a so-called Innovation System Analysis (ISA). Each transition plan consisted of several so-called transition paths, technological and social innovations that were expected to contribute to realizing part of the sustainable energy system.

The ISA analyses the state of the art of the innovation system for the transition path (i.e. technological and/or social innovation) and gave insight in the barriers and drivers for the successful implementation and diffusion of an innovation in society. The managing director of IPE wants to have an overview of the most important barriers and opportunities of all themes and transition paths to target the Societal Innovation Agenda Energy on those elements.

Most of the people involved with the different transition platforms react rather critical to the ISA as they feel all the information is already known to them. The ISA not adding very much. The people of the platform of sustainable mobility however are not so critical. They feel the results of the analysis of the domain sustainable mobility are supporting their views.

The development of the innovation program Experimental Gardens for Sustainable Mobility within the framework of the Innovation Agenda Energy (June 2008 – February 2009)

For all seven themes an innovation program coordinator is assigned. These coordinators are civil servants of the involved departments. For sustainable mobility the department involved is the Ministry of Transport, Public Works and Water Management (TPW).

The innovation program coordinator decides to take the *transition plan of Sustainable mobility* as the basis of the innovation program. Because of bureaucratic demands to fit in the innovation agenda, the original transition plan needs to be rewritten.

It is unclear for the innovation program coordinator what budget is available for the innovation program.

IPE finally decides to allocate only 210 million Euro of the available 438 (30 million for seven themes), and reserve the remainder of the money for crosscutting topics and a second round of funding. For sustainable mobility this means that about 60% of the original plan needs to be left out.

The plans for the innovation program experimental gardens for sustainable mobility are finished in October 2008. The program is based on the 4 transition paths formulated in the transition platform sustainable mobility

- Hybrid and electric driving
- Hydrogen transport, with driving on natural gas and biogas as stepping stones
- The use of sustainable biofuels
- Intelligent transport systems

The focus of the innovation program is on activities accelerating market introduction and upscaling of clean, fuel-efficient and sustainable vehicles. At the heart of the program is a series of demonstration and pilot projects. There is also a R&D track for innovation in sustainable automotive technology.

The innovation program needs to be approved by an increasing number of bureaucratic bodies. After being approved by the management team of IPE it also needs approval of the 6 directors board, the ICRE and the council of Ministers. The program coordinator is rather agitated by the slow progress.

Approval of the program is even more delayed for about one month in January 2009 when the ICRE-council (a pre Minister-council) refuses to discuss the program because of sending in a required form 30 minutes late. By February 2009 the innovation program is approved by all mentioned bodies.

The jump to practice! (February 2009 - March 2009).

Once the Council of Ministers finally approves the program the jump to practice needs to be made. This entails the translation of the policy document in an executable program which can be published and applicants can apply for funding for their projects.

The innovation program coordinator employs the government agency of SenterNovem for this goal. The platform is worried that the whole process will turn very bureaucratic by doing this.

On the outside the Dutch government is pressed by two members of parliament to create an extra policy program for electric cars. In a few months another innovation program for electric cars is drafted. To the platform secretary this is a contrast to the slow and meticulous planning of the innovation program.

Learning History 2: Development of the innovation program Energy in the Built Environment

The history of the development of the innovation program for Energy in the Built Environment is also divided in four periods:

1. *The founding fathers of the innovation program energy in the built environment.* (2002- juni 2008).
2. *The road to the Societal Innovation Agenda Energy* (February 2007- 27 juni 2008).
3. *Development of the innovation program Energy in the Built Environment within the framework of the Innovation Agenda Energy* (June 2008 – February 2009)
4. *Jump to practice!* (February 2009 - March 2009).

In figure 6 the most important steps in the development of the innovation program of Energy in the built environment are given.

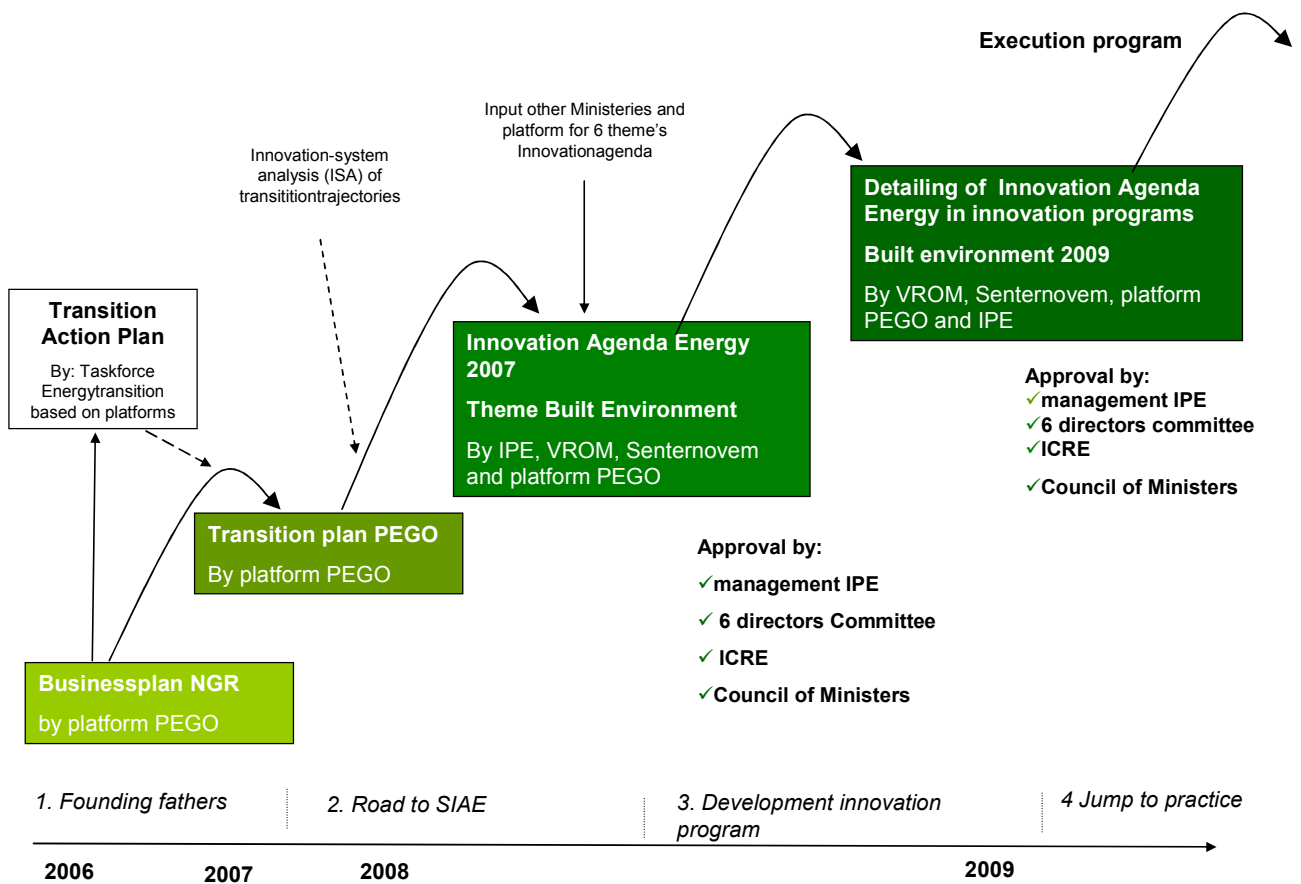


Figure 6. Most important steps in the development of the innovation program Energy in the Built Environment

For the Learning History of this innovation program seven people have been interviewed: the innovation program coordinator of the Ministry of Housing, Environmental Planning

and th Environment, a member of the innovation workgroup of the transition platform Energy in the Built Environment, the operational director of this transition platform, two SenterNovem employees taking part in the writing team for the innovation program, the project manager of the Societal Innovation Agenda Energy of IPE, the secretary of IPE and the managing director of IPE.

1. *The founding fathers of the innovation program energy in the built environment. (2002- feb 2007).*

The period starts in 2006 with the installment of the Platform Energy transition in the built environment. The ambition of the platform is to reduce the use of energy in buildings in the Netherlands by fifty percent in 2030, compared with 1990. By 2030, homes as well as office buildings, old as well as new buildings, will, on average, use half as much fossil fuel.

This platform also has an independent chairman, a so-called linking pin to the Ministry of VROM and a platform secretary. The platform consists of representatives of market parties that would like to play a role in energy reduction in the built environment, NGO's, Knowledge institutes and the governmental bodies involved. The platform has three workgroups: Innovation, Existing Buildings and Regulations.

The chair of the PEGO platform challenges all workgroups to develop plans for an innovative approach for greening the building sector. The workgroup innovation develops *the businessplan NGR* (New buildings, Maintenance and Renovation.)

The so-called task force energy transition which supersedes all energy transition platforms asks all platforms to create a transition plan. Therefore the *businessplan NGR* is transformed into a *transition plan PEGO*. This transition plan puts forward the ideas of stakeholders that the biggest challenge for the sector is not to develop new technologies, but to structurally stimulate the adoption of technologies developed in the last decade. The transition plan is structured in three parts: thinking, acting and scaling up. With a lot of emphasis on the last part. It aims to give financial support for commercial organisations incorporating innovative sustainable technologies in their projects. Four organisations are mainly responsible for drafting this plan: The knowledge institutions Energy Centre Netherlands (ECN) and TNO organisation of applied research, The commercial consultants of Builddesk and Cauberg-Huygen.

When the plan is presented it is unclear when it can be realised and if budget is available to finance the transition plan. The responsible Ministry of VROM (environment) is somewhat hesitant to take over the plan. The Ministry is concerned that the plan lacks backing from commercial organisations.

2. *The road to the Societal Innovation Agenda Energy (February 2007- 27 June 2008).*

This part of the history is similar to the part described in the case of sustainable mobility. Notably different in this case is that the workgroup innovation of PEGO is very critical about the Innovation System Analysis. They fear that their domain is not evaluated well because the ISA method aims at evaluating single technologies rather than whole sectors.

3. Development of the innovation program Energy in the Built Environment within the framework of the Innovation Agenda Energy (June 2008 – February 2009)

For this theme an innovation program coordinator from the Ministry of Housing, Spatial Planning and the Environment (VROM) is assigned.

The innovation program coordinator decides to take the *transition plan PEGO* as the basis of the innovation program. Because of bureaucratic demands to fit in the innovation agenda, the original transtionplan needs to be rewritten.

The innovation program coordinator sets up a team consisting of the PEGO platform, government agency SenterNovem and the Ministry of VROM to write the innovation program.

Because of workload pressure the innovation program coordinator hardly has any time to work on the innovation program. Therefor most of the coordination and work ends up with SenterNovem and the PEGO platform.

The coordinator hires a former marketer with a commercial background to take over most of his tasks for the innovation program. The new coordinator takes coordination back to the Ministry.

The innovation program is all but ready in october 2008. Compared to other programs it is very proces oriented, ie not focussing on new technology but on stimulating new ways of organizing in the buidling sector which can facilitate the uptake of energy reducing technologies. The program is divided in THINKING, DOING and SCALING UP. The *thinking* part provides for a small part funding for new smart technologies. The *doing* part funds demonstration projects and the *scaling up* part is targetted at facilitating the repetition of projects. The plan is aimed at new buildings and contains three increasing ambition levels: 45% reduction in energyuse in 2015, 60% in 2020 and 80% in 2030.

The concept innovation program is sent to about 200 private enterprises to react on in oktober 2008. The writing team gets very encouraging reactions to their approach form both private enterprises as governmental bodies..

It is unclear for the writing team what budget is available for the innovation program. Only after a few months it becomes clear that because of budgettary restraints about 60% of the original plan needs to be left out. IPE then decides to allocate only 210 milion Euro of the available 438 (30 milion for seven themes), and reserve the remainder of the money for crosutting topics and a second round of funding. The budgetreduction implies that from the original *transition plan* the ambition of a reduction in energyuse of 80% needs to be left out. The PEGO platfom is very concerned if the whole program is not falling apart by skipping the final 80% ambition.

This innovation program also needs to be approved by a growing number of bureaucratic bodies. After being approved by the management team of IPE it also needs approval of

the 6 directors board, the ICRE and the council of Ministers. The writing team gets rather frustrated by the bureaucratic demands. The frustration peaks in January 2009 when the afore mentioned ICRE-council (a pre Ministercouncil) refuses to discuss the program because of sending in a required form 30 minutes late. Contrary to coordinators for other themes, the new coordinator for Energy in the Built Environment however does not accept this delay and by referring to expectations raised with outside private parties on the timescheme, makes the council discuss the program.

By the end of January 2009 the innovation program is approved by all mentioned bodies:

4 Jump to practice! (February 2009 - March 2009).

Once the Council of Ministers finally approves the program the jump to practice needs to be made. This entails the translation of the policy document in an executable program which can be published and applicants can apply for funding for their projects.

The new coordinator employs the government agency of SenterNovem for this goal.

Lessons learned in the development of the innovation programs

In this paragraph the most important lessons which can be drawn from the Learning Histories are described.

- 1) The Societal Innovation Agenda Energy formed a legitimizing bureaucratic structure for the outcomes of the Energy Transition process so far. Therefore, it was logical to look back in the Learning Histories at the start of the platforms, and the plans articulated in that period. Looking back, the Societal Innovation Agenda Energy can be seen as a vehicle to provide the transition plans of the Energy Transition platforms with legitimation ('license to operate'), a firm position of the Energy Transition policy program in the innovation policy of the Dutch government and with a budget to carry out the plans. In the period before the Societal Innovation Agenda most transition platforms drafted transition plans with a lot of enthusiastic stakeholders. However there was no clear trajectory how these plans should be incorporated in regular policy. The work of the transition plans were considered as well founded advice to the involved Ministries. The Societal Innovation Agenda of Energy provided both budget for the transition plans and explicit acceptance of the transition platforms in policy.
- 2) The Ministry of Economic Affairs (IPE) experimented with a new method for assessing innovation programmes developed. The Innovation System Analysis (ISA) was used for targeting the so-called transition paths in each innovation programme. The use of this method was of strategic importance in several ways. First of all, the transition paths of all programmes were analysed with the same scientific framework. This provided the transition paths (which were the outcome of the vision and strategy process in the transition platforms) of a legitimation for the Dutch politicians. Besides, assessing all the transition paths with the same methods makes them comparable. Secondly, the focus of the ISA on social and technical barriers for the realisation of the transition paths made clear that

successful innovation is not a matter of technology development and money alone. Social innovation is needed also, maybe even more so. Besides that, focus on analysing the barriers in the innovation system ensured that the innovation program teams focused on eliminating barriers instead of proposing solutions that might not match with the barriers. Thirdly, the ISA made it possible for the civil servants of the Ministries involved to easily get an overview off and insight in all different transition paths. This enables them to be an equivalent partner in discussions with the members of the transition platforms. Finally, the framework and outcome of the ISA made it clear that the criterium of efficiency is of minor importance when judging programmes aiming at system innovation.

- 3) The Ministry of Economic Affairs (IPE) developed the Societal Innovation Agenda Energy and the first set of innovation program in a ‘learning by doing’ mode. There was no clear procedure available for this time of innovation programs based on a transition approach. This made a fast start-up possible, but took also extra time because of changing the procedures and criteria for the programme along the way which caused frustration among involved civil servants and platform participants (both public and private). However, in making the lessons learned explicit by means of the Learning Histories the second set of innovation programs will profit from this experimental period .
- 4) Working on the Energy Transition clashes with the bureaucratic culture of the government itself. Civil servants working in the Energy Transition need to spent a lot of energy in developing or changing procedures that are inefficient. Thus, step by step the Energy Transition results in a new way of working policy making for the Dutch government: more in interaction with societal stakeholders, more risk taking, more focused on long term goals and sustainability. The Learning Histories show that one should not surrender to bureaucratic culture but that it can be dealt with. Working with people with a background outside the civil service might be necessary for new ways of making policy.
- 5) The Energy Transition policy program and the development of the Societal Innovation Agenda showed that the cooperation between Ministries can be fruitful despite the different cultures within the Ministries. Cooperation between the Ministries is a boundary condition when aiming for the realisation of a sustainable energy system. Therefore, supporting interdepartmental cooperation is a major issue for the management of IPE.
- 6) The innovation programs built on the vision and strategy of the transition platforms and the visions of the different ministries. However, because of the budget constraints the innovation programs can only support the execution of a part of these visions and strategy. In the second round of the development of innovation programs attention must be paid to the parts that have been cut or left out.

- 7) The innovation program coordinators face difficulties in connecting the different themes of the innovation programs. Because of the time constraints and the load of the procedures that had to be followed, the program coordinators found it very difficult to create synergy with the other innovation programs (interconnectiveness). Eg. How can the program for the built environment connect to the program for sustainable mobility? In the next development round IPE will support the program coordinators more in making the overlap between themes explicit. The Learning history showed there was a lot of talk about interconnectiveness and all involved deemed it very important, but no clear results of it were visible in the innovation programs.
- 8) The development of the innovation programs shows the struggle of the government with private organisations. The government could have assigned the job of making the innovation programs to the platforms which already had made plans. However the principle ruled: 'Government money needs to be under responsibility of government officials.'
- 9) Private enterprises need to get accustomed to the new role of the government. Can they expect funding? How much funding and when? Innovation programs which involved private enterprises intensively had most problems in informing private partners about the slow progress. However the example from Energy in the Built environment shows that contacts with outside private partners can help overcome inside (bureaucratic) barriers. Private enterprises are requested to cooperate in the development of vision and transition plans, but this does not necessarily mean that they will receive funding for their own projects. The dynamics of private enterprise clash with the need to act carefully and rightfully of the Ministries.

Lessons learned in applying the Learning History in monitoring the Energy Transition

This paragraph reflects on the usefulness and the limitations of the method of making Learning Histories for monitoring the Energy Transition.

The Learning History process gives the stakeholders the rare opportunity to reflect upon what has happened in the process of developing the innovation programs. The management of IPE, the innovation program coordinators and transition platform secretaries are completely occupied in developing the innovation programs within a short timeframe. Reflection is considered necessary to learn from this critical period. However, it is hard to find the time and discipline to learn. The process of making the Learning History enables stakeholders to lean back and reflect.

Discussing the Learning Histories also proved very useful for people that were involved later in the process to gain a quick insight. But also the innovation program managers and platform secretaries were surprised with the insights in the policy process the Learning History gave. Everybody knew their own bits and pieces of the policy developing process, but they also saw the bits and pieces of the other stakeholders. Thus, the

Learning History supports the cooperation of the different stakeholders in the Energy Transition by supporting the construction of a collective history.

The Learning History seems a suitable method to make the lessons learned explicit of a critical period in the Energy Transition for the management of IPE, the innovation program coordinators and the transition platform secretaries in the first place. The Learning Histories about the development of the innovation programs were used to draw conclusions about the development of the next set of innovation programs. In this way the Learning Histories proved to be useful and gave the management of IPE valuable suggestions to change their procedures and organisation of the process.

There are a number of limitations of the Learning History method which became apparent in the project:

- 1) The limited number of interviews carried out for each theme (because of time and budget constraints) resulting in an only partial view on the process..
- 2) The transferability of the lessons learned from the learning histories to other interested professionals. Due to increasing workload it is difficult to have all involved professionals gathered in a workshop to discuss the results.

The amount of reading required for transition professionals may not be too much. The researcher is therefore faced with a dilemma in how to present the learning history. Should the Learning history be short thereby minimising the reading effort. Or should the Learning history be longer and contain a lot of detailed descriptions of events. An important added value of the method is the detail with which learning experiences and their contexts are described.

The management of IPE chose to make Learning Histories for making lessons learned explicit. Other innovation programs in the Netherlands chose to make the lessons learned in their projects explicit by participatory and longitudinal research: a researcher is part of the project team. By observing and researching what happens in the project the researcher makes the lessons learned explicit and intervenes in the projects by giving the results back to project team. The advantages of this approach is that it gives more and better results. The researcher can make sure that the learning experiences of the stakeholders are less manipulated by memory or wishful thinking, because it is possible to ask about them directly or observe them directly. Also, the researcher will be able to get more insight in what the stakeholders learn, since the researcher knows them more profoundly. That marks immediately the disadvantage of this approach: the independent point of view of the researcher is harder to maintain because she will become part of the project team. Besides that a practical disadvantage is that this approach is more time consuming (and costly).

The nature of the Learning History makes it describe the policymaking process very close without adding much analysis from the researchers or authors. Analysis can be found in the reflection by outside experts on the Learning History. However the researchers experience that the commissioner of the assignment (IPE) wants the researchers to put forward their own conclusions on the process as well.

The creation of a Learning History is primarily a learning process, secondly a way of documenting lessons learned. Therefor the value of creating a Learning History is more than the final written product. The transition professionals involved indicate they find the different steps to bring about the Learning History very rewarding.

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