# PRACTICING LEARNING AND LEARNING IN PRACTICE

## Testing learning tools for energy demand side management projects

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**Abstract**

The history of energy demand side management (DSM) projects shows that accomplishing lasting energy-behavioural changes is difficult. The CHANGING BEHAVIOUR project aims at a better understanding of energy-related behavioural change, in order to improve the DSM practice. The approach is one of continuous interaction between researchers and energy intermediaries (organisations implementing DSM projects at the micro-level). This collaborative project involves the development of 'learning tools' that help intermediaries improve their understanding of the context in which they work and their own role in the process of making a DSM project work. These issues have so far received insufficient attention in intermediaries' practical as well as in researchers' theoretical work. The learning tools have recently been tested in six pilot projects and this paper discusses the experiences of two pilot projects. We discuss the occurrence of social learning among the pilot project managers (intermediaries) and the extent to which the 'learning tools' have encouraged such learning in two pilots. Although the paper is explorative (based on two out of six pilots), we can conclude that the tools contribute to the creation of a setting that is conducive to social learning. Several activities can be helpful for intermediaries to reflect on their own role and assumptions, the targeted behaviour, the target group and the social context of the project. The extent to which the toolkit is useful depends on what the needs of the particular intermediary are. The final toolkit should be sufficiently flexible and context-sensitive to cater for the diverging needs of different intermediaries. In addition, as the pilots indicated, the role of external coaches who encourage the pilot manager to make use of the tools and who take on the role of a sparring partner appear to have been quite significant as well.

**Keywords**

*energy efficiency, energy saving, demand side management, social learning.*

# 1. Introduction

## *1.1. CHANGING BEHAVIOUR: background and rationale*

Households, small and medium sized businesses, schools, and public buildings together hold a large and largely untapped potential for energy efficiency and energy saving. All sorts of physical measures and appliances (e.g. isolation, heating system, etc) can help to realize this potential. The behaviour change needed involve onetime actions like the purchase of an energy efficient appliance. In addition to this, changes in the, often unconscious, patterns of habitual behaviour are needed. Over the past decades, many energy Demand Side Management (DSM) projects have aimed at reaching lasting changes in these often deeply entrenched behavioural patterns of people (Mourik, Heiskanen et al, 2009; Changing Behaviour Database). Two things are notable regarding the history of small scale DSM in Europe. First, DSM projects often fail to bring about lasting changes. Once a project terminates, people frequently fall back into their 'old' habits. This can have multiple causes, and the European research-practice project CHANGING BEHAVIOUR [1] has sought to address these causes (later more about that). Secondly, in the past, energy DSM was typically something promoted through programmes and projects by government and/or utilities. However, as a resulting of energy market liberalization, an increasing diversity of intermediary organizations has taken over these tasks (Hodson and Marvin, 2009). New organizations have risen that intermediate between the production and consumption of energy. These energy intermediaries vary in organizational backgrounds and motivations, funding streams, capacities, size and orientation. They include among others specialized energy service companies (ESCOs), energy agencies, or specific organizations that are partially publicly funded (Didden and d'Haeseleer, 2003). They furthermore include a variety of nongovernmental organizations, public-private partnerships and regional or sectoral networks (Breukers, Heiskanen, Mourik et al, 2009; Hodson and Marvin, 2008).

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[1] *Changing Behaviour* is supported by the European Commission under its Seventh Framework Programme (contract number: 213217). The project is coordinated by the National Consumer Research Centre (Finland). Other research partners of the consortium include Oeko Institute (Germany), SURF Centre (UK), Central European University (Hungary) and Energy research Centre of the Netherlands (Netherlands). The practitioner-partners include SEI-Tallinn (Estonia), Cowi Baltic (Lithuania), Enespa (Finland), Manchester Knowledge Capital (UK), Green Dependent Sustainable Solutions (Hungary), Ekodoma (Latvia), Verbraucherzentrale Nordrhein-Westfalen (Germany) and Centre for Renewable Energy Sources (Greece). For more information, see www.energychange.info.

The CHANGING BEHAVIOUR project aims at a better understanding of energy-related behavioural changes, in order to support energy intermediaries to be more successful in their DSM projects and programmes. This European Commission-funded project involves 5 research and 7 practitioner intermediary organizations. So far this international and transdisciplinary team has performed an in-depth literature review on behavioural change (addressing insights from economics, psychology, sociology), a systematic study of past and present DSM experiences, a range of project meetings, and 4 workshop meetings with over 150 energy DSM intermediaries from across Europe. The understanding and insights thus acquired have been translated into a set of 'learning activities and tools' for intermediaries to use in the preparation and development of their DSM project. The tools have been tried out in six pilot projects. Hence, within the CHANGING BEHAVIOUR project, knowledge is assessed, produced, translated for and tried out in practice through the continuous interaction between the research and practitioner partners of the consortium (Feenstra, Backhaus and Heiskanen, 2009).

Returning to the reason why so many DSM projects have failed so far, both the theoretical and empirical work of the CHANGING BEHAVIOUR project pointed out that behavioural changes need to 'fit' within the context in order to become durable (see Breukers et al, 2009). Contex**t**s in and with which intermediaries work are highly diverse. A better understanding of the context (physical, social, cultural, economic, institutional and political environment, including various actors) in which behaviour is situated is crucial to understand opportunities for behavioural change. It spans from the immediate context of the family, household, workplace and everyday surroundings to national media and policies and to the global economy. In other words, individual change processes are nested within – and interacting with – broader societal processes. In addition, intermediaries' roles are not given, but very much dependent on and embedded in the particular context they work in and dependent on the sort of resources they can draw on. As the role of intermediaries is not given, but can take many forms, any tools to assist them should take account of the diversity of energy intermediaries in the field.

## *1.2 A Toolkit for energy intermediaries*

The tools are based on an extensive theoretical and empirical inquiry into the relevant conditions that affect behavioural changes which we will briefly present (see Breukers et al, 2009 for the full inquiry). Well-known conditions affecting the success of DSM projects include sufficient finances and resources, clear focus and goal, sound energy and technical

data, continuity and sufficient time for change, regular monitoring and feedback to participants as well as good collaboration with other projects and institutions. In addition, the following less-often discussed conditions for success were identified: taking context on board; timing the intervention; making the intervention meaningful to the target group; making use of long-term networks; finding a balance between central planning and bottom-up processes (Breukers et al, 2009; Mourik et al, 2009). The tools and activities developed within Changing Behaviour have focused mostly on these conditions (see Table 1). Not all pilot projects made use of all activities, as not all activities are relevant – that depends on the particular project, the particular intermediary organization and the challenges they face. The final toolbox intends to be a 'pick-and-mix' devise rather than a chronological exercise. Therefore, the pilot reports also did not report in detail on each separate activity, tool and task depicted in table 1.

**Table 1: Tools and activities for intermediaries**[2]

| |
|---|
| **A: Pinpoint your problem and target group** |
| A1: Analyse the problem. *Tool: problem tree* |
| A2: Learn to know your target group. *Task: learn to know your target group* |
| A3: Test your ideas with the target group. *Task: test your ideas* |
| **B: Exploiting opportunities in the context & building a powerful network** |
| B1: Understanding your existing intermediary network and context. *Tool: Reflection checklist* |
| B2: Mapping your network and context *Tool: Visualise your network in context* |
| B3: Identifying opportunities and barriers in the context *Tool: Visualise your target groups' network in context* |
| B4: Get your timing right. *Tool: Questionnaire on timing* |
| B5: Strategic assessment of partnerships *Tool: Strategic assessment of partnerships* |
| B6: What does a successful network look like? *Task: Informal meeting utilizing your visualization* |
| **C: Develop a learning culture** |
| C1: Assess your project approach *Tool: identify the flexibility of your project* |
| C2: Learning questions *Tool: learning questions* |
| **D. Monitoring, evaluation and feedback activities** |
| Activity 0: Define progress: defining a baseline in relation to your success criteria, in order to be able to judge your progress and develop ideas on how to reach your targets. |
| Activity 1: Learn from others: ways in which you can learn from your target group and other stakeholders |
| Activity 2: Evaluate and improve: reflecting on progress in the project and deciding whether you need to make changes |
| Activity 3: Motivate your target group: based on the collection of feedback and the evaluation, customising feedback to your target group in order to motivate it |

[2] This table is not the final but a preliminary version of the tools & activities

Activity 4: Fit to external demands: fitting your success criteria to external demands while ensuring that your own criteria are not sidestepped.
Activity 5: Feedback to yourself: Learning about the project and its process via 'feedback to yourself'.

The *context-sensitive* toolkit that the CHANGING BEHAVIOUR project aims to develop intends to provide support in getting a grip on the particular context an intermediary is faced with when developing a DSM project (Heiskanen, Feenstra and Johnson, 2010). The tools support the intermediaries to improve their understanding of the context and target group of their DSM project, as well as to improve their understanding of their own role and position. These tools have been tested in six pilots, managed by intermediary project partners of the CHANGING BEHAVIOUR project. The role of the researchers has been to support the pilot project partners in the use of these 'activities'. The results and feedback from these pilots will feed into a final comprehensive set of activities and tools (toolkit). This paper provides a first explorative evaluation of how and to what extent these tools have affected learning, on the basis of two (out of six) pilot projects.[3]

Below, we first discuss the concept of learning and how to evaluate learning in section 2. Next, in section 3 we present our empirical analysis of two pilot cases, involving an assessment of the occurrence of single-loop learning, double-loop learning and the role of the activities for the occurrence of this learning. Section 4 closes with a discussion on the extent and conditions under which this toolkit can be considered useful to trigger learning among energy intermediaries involved in DSM projects.

# 2. Learning in interaction

## *2.1 Social learning*

Behaviour is shaped by existing infrastructures, institutions, social norms and structures. For changes in behaviours to last, they need to be supported by their physical, institutional and social environment. In other words, change that does not 'fit' with these broader systemic dimensions is difficult to sustain and spread. For energy intermediary organizations, it is useful to consider the context in which behaviours targeted by their DSM projects are

[3] The final version of the toolkit will be ready and available online by the end of 2010.

embedded, in order to understand how behaviours are embedded in broader socio-technical systems, what these systems are constituted of and how they can be changed (Breukers, Heiskanen, Mourik et al, 2009). A rather contextualized and socially oriented understanding of behavioural change is reflected by the notion of *social learning*. Before presenting any definition of social learning, we first clarify what we are going to address in this paper – in a rather pragmatic manner.

The subject, object, process and (envisaged) outcomes of the learning addressed in the empirical part of the paper are as follows. The subject of learning (*who learns*) is the energy intermediary, the objects of learning (*what is learned about*) can include the goals of the pilot project; the target group; the context of the pilot project; the interventions planned, etc. When addressing the process of learning (*how has this learning taken place/come about*) we are interested in the role that the tools have played, but we will also address other interactions, e.g. with the research partner. Regarding the outcome (*to what effect has this learning taken place*) this can involve changes in content and context of the project.

For our purpose – evaluating learning among DSM intermediaries during the pilots and the extent to which the tools have affected this learning – we distinguish between the *learning-what* and *learning-how* when analyzing the empirical material. The learning-what can subsequently be further analysed by addressing single and double loop learning objects. When discussing the learning-how, we address processes of social learning. Although social learning involves both single and double loop learning, we use the term social learning mostly when referring to the *process*. Likewise, while single and double loop learning refer to process elements too, we find these terms particularly useful to discuss the *content* of learning processes. This distinction serves primarily to unravel the process and content elements of learning in the pilots

### 2.1.2 Learning-how: scope & scale

Russel and Williams (2002) define social learning as a

> *"protracted process entailed in creating and appropriating new technologies, in which developers, implementers and users learn from experience and interaction. The process is seen not just in individual and cognitive terms but as necessarily social and political and entailing institutional change: the concept stresses negotiation and interaction among a wide range of actors, subject to conflicts and differences of interest and power. … The concept serves to alert participants, managers and policy makers to the necessity of the process and what is required to facilitate it."*

We can analytically distinguish between different levels (micro, niche, system) and time-frames (short, medium to longer term) of learning. Micro and short term learning processes can be(come) part of longer term and more systemic changes. Such processes which involve social, political and institutional changes over time are usually studied with longitudinal ex-post inquiries (Agterbosch and Breukers, 2008; Geels, 2004; Suurs, 2009), as these changes do not occur overnight. Such studies attempt to identify underlying mechanisms that have produced these changes for particular contexts.

The usefulness of the concept of social learning lies perhaps not so much in contributing to such longer-term analyses, but rather in connecting the very concrete learning needs and experiences to longer term systemic transitions – as without learning such transitions are unlikely to take place (Van Mierlo et al, 2010). Sociotechnical change involves negotiations about new systems of provision (and breakdown of old systems), for which social learning is required. This learning is based on interaction between relevant social actors. For instance, involving the prospective users in the design process and allowing for a flexible design can help to promote the adoption and appropriation of new practices (Rohracher 2001; Rohracher 2003; Aune et al. 2002; Midden et al. 2007). In the field of energy, Rohracher (2001) has examined how energy efficient renovations can be promoted by engaging the relevant actors and networks (e.g. residents, facility managers, supply chains, etc.) and actively exploring and developing the social meanings and relations that relate to energy efficiency in buildings. The benefit of this type of change process is that it holds the potential to create a durable network that continues to exist and work also after the interventions. Characteristic of such learning is that both designers/interveners and prospective and targeted end users[4] learn – in interaction.

In this paper, social learning refers to processes in which practitioners/intermediaries in energy DSM learn in interaction with other social actors - the end-users, other stakeholders, the CHANGING BEHAVIOUR partners. This form of learning can change both the content and context of the DSM programme.

[4] Learning about end users in the CHANGING BEHAVIOUR project is addressed in another paper presented at the ERSCP conference by Heiskanen et al, 2010.

### 2.1.3 Learning-what: in single and double loops

The notion of social learning includes both single and double loop learning (Argyris, 2002). Single-loop learning is instrumental learning about a given set of measures and goals – not the problem definition, but the solutions may change. It can involve learning on instrumental issues like e.g. the effectiveness of an incentive. As for single-loop learning among the intermediaries in the two pilots, we are interested in the extent to which they learned about instrumental aspects of their project (plans) – resulting in some corrections or adaptations.

Double loop learning addresses underlying assumptions and problem definitions that inform the choice of certain instruments, target groups, goals, etc. As for double-loop learning among energy DSM intermediary organizations, the extent to which they learn about their own assumptions, norms and beliefs (as a result of interactions with the end users or others (social learning)) is relevant.

## *2.2 Evaluating learning*

This paper evaluates the occurrence of social learning in two pilot projects, i.e., processes in which the intermediary learns in interaction with the end-users and other stakeholders and in which this learning changes both the contents and context of the programme. In addition, we aim to evaluate the usefulness of the tools in triggering social learning.

The empirical material available involves two elaborate reports on each pilot. The reports document the 'baseline' situation and changes along the course of the project. Even though the format should enable a comparison of a 'baseline' situation with the eventual project plans and implementation, it remains a challenge to assess to what extent changes can be attributed to learning within the CHANGING BEHAVIOUR project and as a result of using the tools or to other events/circumstances. This difficulty is not just due to the different styles of reporting, but also methodological in nature: the pilots are done in a real life context which renders the attributing of social change to isolated events/circumstances difficult. Changes in practice are the outcome of interplays between various conditions. Still, as the reports are rather elaborate and written together by both pilot partners and research partners that were closely involved with the pilot, a qualitative assessment appears feasible and useful to our understanding of how the CB tools could be of help to encourage learning (and where the utility of such tools falls short and why).

As the pilots have not all yet been finalized and reported on, we present a first exploration based on two pilots. The scope and scale of the empirical material is limited to the micro level and short-term (namely the duration of the CHANGING BEHAVOUR project and of the pilot projects). However, the sociotechnical understanding of social learning means that connections are sought to the systemic levels and longer-term processes as well (also with respect to the intermediary organization itself).

# 3 Learning tools in two energy DSM project

From the empirical material we first address *what* has been learned and *how* this learning has come about. Next we discuss the occurrence of social learning, single and double loop learning. Because different aspects stood out in both projects, their analysis is not following the exact same themes and issues.

## *3.1 Towards energy efficiency of dwellings in Latvia*

**Table 2: Basic information regarding the Latvian pilot project to increase energy efficiency in multi-appartment blocks (final design)**

| | |
|---|---|
| **Intermediary organization(s) and role** | Ekodoma is a Latvian consultant company. Ekodoma's role was to inform the residents about the renovations, the costs, the benefits and Ekodoma intended convince the residents to renovate their buildings. |
| **Objectives** | - Improving the energy efficiency of several multi-apartment buildings in the Latvian towns of Cesis and Sigulda by means of renovation and insulation.<br>- Increase the number of residents in support of measures to improve the energy efficiency of their building<br>- Address residents' attitude- and opinion formation about renovation plans.<br>- Improve trust relations between residents and their BMC, align interests.<br>- Devise a clear strategy for improving the energy efficiency of buildings involved<br>- Provide detailed and tailored information for residents concerning renovation and financing options, to inform the formation of (a strategy for) the development of renovation plans. Assess support of renovation plans among residents<br>- Concrete building-specific objectives specified along the process |
| **Project basics** | In total, nine apartment buildings in the Latvian towns of Cesis and Sigulda are involved in the project. There are about 29-36 flats in each building. 90-95% is owned, the remainder rented.<br>Five non-renovated buildings are participating in the project and four renovated buildings are involved, the latter in order to learn about and benefit from their experiences. The multi-apartment buildings are maintained by a building management company and have a 'building elder' who functions as a representative or spokesperson of the building.<br>The Latvian government provides 40% co-financing for renovations that increase the efficiency of a building by at least 20%. This means that the residents have to pay 60% of the renovation costs themselves. Decisions about the renovations must be supported by 51% of the residents before they can take place, |

| | |
|---|---|
| | Three out of five non-renovated buildings developed renovation plans:<br>- 1 building: concrete plans for full-renovation, official application for governmental co-financing achieved<br>- 2 buildings: concrete plans for renovation of hot water and heating system developed, residents approved financial plan (collective bank loan)<br>- 1 building: support of building manager and building elder; (spokesperson/ representative) missing → no progress<br>- 1 building: recently bank loan taken for urgent repair of roof damage → no interest in renovation while repaying loan |

### 3.1.1 Learning what and learning how on the part of Ekodoma

*What was learned regarding the problem definition and the main project objectives*

The overall aim to improve the energy efficiency of Latvian dwellings[5] remained intact, but several of the objectives have been altered. Initially, objectives were formulated very much in terms of one-direction information provision from the expert (being the energy intermediary) towards municipality, building management company (BMC) and residents. This information addressed factors that influence energy consumption, ideas to reduce energy consumption and to save energy. An additional objective was to encourage residents to implement efficiency measures and change their energy behaviour.

In Latvia, the building management company (BMC) fulfils a gatekeeper role in that it often mediates between residents and other actors. Therefore, the trust that residents have in the information provided by the BMC is crucial in the development and realisation of renovation plans. An important change in the pilot was that Ekodoma decided to address the relations of trust between residents and their BMC. In addition, Ekodoma decided to address residents' attitudes and opinion formation concerning renovations. An improved understanding of both trust issues and the opinion formation process was considered necessary to design decision-making processes in such a way that they would better serve residents' needs, concerns, and worries. This was considered to increase the chance of

[5] Improvements of the building envelope, windows, staircase doors, heating substation and efficiency of the heating and hot water preparation and dispersion system is considered; furthermore, residents have been informed about possibilities to implement energy efficiency measures in flats (change of lighting installations, window and doors sealing, old window replacement, etc.).

getting a majority of residents in support of renovation plans and energy efficiency measures. Accordingly, new objectives were formulated as follows:

1. Address residents' attitude- and opinion formation concerning renovation and assess their support for renovation plans.
2. Improve the interaction between residents and their building management company in order to increase trust and alignment of interests.
3. Creation of a clear strategy for improving the energy efficiency of participating buildings.
4. Provide detailed and tailored information for residents concerning renovation and financing options, to inform the formation of (a strategy for) the development of renovation plans. Assess if an increase of support for renovation plans among residents occurs - based on detailed and tailored information.

Ekodoma learned that it takes a lot of effort to learn more about the backgrounds of residents' resistance and that such an effort is needed to be able to find ways to prevent or circumvent such resistance.

*How did this learning about project objectives take place*

Before this project, Ekodoma was already aware of the distrust of residents regarding the BMCs, but little was known about the reasons behind this distrust. Recognizing the crucial importance of this trust-issue was triggered by a publication of the University of Latvia that assigns crucial importance to trust with respect to the implementation of renovation plans. Ekodoma decided that it wanted to improve its own understanding of the role of trust and how such trust can be built.

The activities were helpful to get a clear understanding of the problem definition, to gain a better understanding of barriers that keep residents from supporting renovation plans, and to sharpen the objectives. Over time, objectives became further specified for each particular building participating in the project. Ekodoma learned about attitudes towards renovation plans and how to support residents' decision-making best (depending on residents' knowledge, opinions, motivation and personal objectives, and based on the relationship between residents and building managers).

*What was learned regarding the target group*

Initially, no choice was yet made regarding the size of the target group. Ekodoma even considered involving banks and media representatives as active stakeholders, next to residents and BMCs. However, these ideas were abandoned once the trust-issue became a focus. Trust of residents towards the municipality, the media and banks is (in that order increasingly) low. Addressing trust issues between residents and their BMC seemed difficult

enough and most useful to arrive at a better understanding of the core problem of too little support for the implementation of energy efficiency measures.

The main target group – the residents – was not well-known at all. All that was known was that they often do not support BMCs who attempt to implement renovation plans. Ekodoma assumed reasons to be related to a lack of information, the fear of having to make a large financial investment, the influence of other actors, e.g. neighbours, on opinion formation concerning renovation, and a general resistance to change. In order to learn if these assumptions regarding underlying reasons for withholding support for renovation made any sense, Ekodoma decided to start with a relatively small target group, namely the residents of nine apartment buildings, each of them containing 29-36 flats. Four of these buildings had already been renovated and were included in order to learn from their experiences. Five of these buildings had not been renovated since their constructions in the 1970s. These buildings formed the main target group. The ninth building was added during the implementation phase, after the elder (building representative or spokesperson) had become interested via local media and asked if this building could participate.

The target group consisted of a manageable number of targeted residents, allowing for close and in-depth interaction with residents over a longer period of time. It also allowed for tailoring advice for each building individually. This decision was furthermore based on the limited time frame of the pilot project.

*How did this learning about the target group take place*

Changes with respect to the target group have partially been attributed to CHANGING BEHAVIOUR activities. The activities helped to reveal the complexity and multi-layeredness of the barriers that keep residents from investing in energy efficiency measures for their houses, especially since these decisions are linked to a majority vote in Latvian multi-apartment buildings. It became clear that during the project attention needs to be paid to these barriers, how they interact and how they might be overcome. The activities clarified the benefits of a narrow project focus, including a relatively small number of buildings and people. It also resulted in the decision to focus on residents and the BMC and no longer have the municipality as a key stakeholder involved. Activities revealed gaps in knowledge about the target group and helped in designing a questionnaire aimed at learning about the residents' level of knowledge, attitude and motivation to support changes.[6] Additionally some

[6] The response rate of the questionnaire was very high (around 90%), probably due to the free energy audit that was promised to the building returning most questionnaires.

fifteen in-depth interviews were carried out in order to understand better how people form opinions, how they are influenced by others with respect to the voting and where they see problems when it comes to renovation plans. These inquiries improved Ekodoma's understanding of which issues needed addressing in subsequent interactions and meetings with the target group.

*What was learned regarding the project design*

The project design was kept rather flexible initially, which allowed for several crucial aspects to be adapted: the size of the target group, the involvement of stakeholders, the role of the BMC and the measures of intervention taken.

*How did this learning come about*

Deciding to do a pilot in which the activities would be used already implied a willingness to change several aspects of the project in response to learning.

*What was learned regarding the accomplishing of main objectives?*

Initial success indicators included changes in residents' attitudes, the amount of energy saved in kWh/$m_2$, the amount of $CO_2$ saved due to energy consumption reduction after renovation and the additional votes achieved in favour of renovation in cases where no renovation was implemented. The indicators were adapted because of the change in objectives and because it became clear that no renovation could be successfully implemented during the short length of the pilot. Instead, focus shifted to the development of renovation plans and progress towards actual realisation. The new success indicators still included a monitoring of residents' opinion formation concerning renovation and their support for renovation plans. Instead of energy savings after renovation, two new criteria were set: improved interaction among residents and their building management company, and (a strategy for) the development of renovation plans. Below, we discuss Ekodoma's learning about the four main objectives.

1. *Address residents' attitude-and opinion formation concerning renovation and their support for renovation plans.*

*What was learned?*

Ekodoma learned about the barriers that keep residents from supporting renovation plans. For each building, Ekodoma learned to tailor implementation to specific needs and concerns and chose a different strategy to enhance the support for renovation among residents.

*How did this learning come about?*

The survey among residents provided first insights what keeps people from supporting investment in building renovation. This survey was planned independently from CHANGING BEHAVIOUR tools, although surveys are among the tools presented to intermediaries in order to learn about the target group. The objective to learn about how residents form opinions concerning renovation plans caused Ekodoma to include a survey in the pilot project design. Further insights into attitude and opinion formation were gained at each meeting during project implementation. In other words, social learning about different actors and their roles in opinion formation occurred 'along the way'.

2. *Improve the interaction between residents and their building management company in order to increase trust and alignment of interests.*

*What was learned?*

Ekodoma wanted to learn how to improve the relation between residents and BMC in order to be able to develop mutual interests towards the development of renovation plans. In three of five non-renovated building, residents, elders[7] and building managers have formulated common goals in the course of pilot.

*How did this learning come about?*

This was achieved by means of several meetings during which the need for renovation, different renovation options and finances were explained and discussed. Ekodoma prepared these meetings in collaboration with the BMC and provided expert advice to the BMC and residents whenever required. Ekodoma learned to be flexible in its role (double-loop learning), supporting top-down as well as bottom-up decision-making processes in the development of renovation plans. Thereby, Ekodoma could support any kind of interaction existent or developing between residents and their BMC. This approach appears to be effective as the majority of buildings has developed or is developing renovation plans.

3. *Creation of a clear strategy for improving the energy efficiency of participating buildings.*

*What was learned?*

[7] An elder has the role of spokesperson or representative of a building who has not been elected but took over this role voluntarily. Frequently, the person living in the building longest takes over the role of building elder. In this position, building elders function as important 'gatekeepers' between the BMC or other actors and the building residents. Elder support is crucial for project development as planned in this pilot project as elders are highly involved in the 'informal corridor chat' and often have valuable insight about residents' opinions and also play an important role in shaping these.

Ekodoma has successfully supported the development of renovation plans in three buildings (one is still in a very early stage of decision-making). The intervention methods have been effective in that they have resulted in concrete plans for building renovation. Questionnaires however have also indicated that residents indicated that they would prefer a stronger involvement in these processes. The collaboration between elders, BMCs and pilot manager could be further improved. More frequent interactions cost time and money but facilitate processes that are better targeted at the specific needs of residents in one building.

*How did this learning come about?*

This learning was based on activities that involved the setting up of questionnaires and interactions and discussion with research partners and other stakeholders?

4. *Assessment of an increase of support of renovation plans among residents based on detailed and tailored information.*

*What was learned?*

Ekodoma has learned to provide more tailored information to residents in different buildings. This proved effective in buildings with a strong support by the elder and building manager. In other buildings with medium support by these key actors, Ekodoma found that it should have taken on a stronger role. More frequent interaction and perhaps also other methods are needed to win the support of building elders and managers to support the difficult processes of renovation implementation. The lack of appropriate means to convince elders and BMCs first is exemplified by the two non-renovated buildings where no plans for renovation have been developed during pilot implementation, although residents indicated in questionnaires that they are interested in receiving support and information.

In three other buildings renovation plans were developed. In two of them initial resistance changed to sufficient support to realise renovation plans. In the third building residents had trust in the elder's decisions and fast progress to renovation plans could be made.

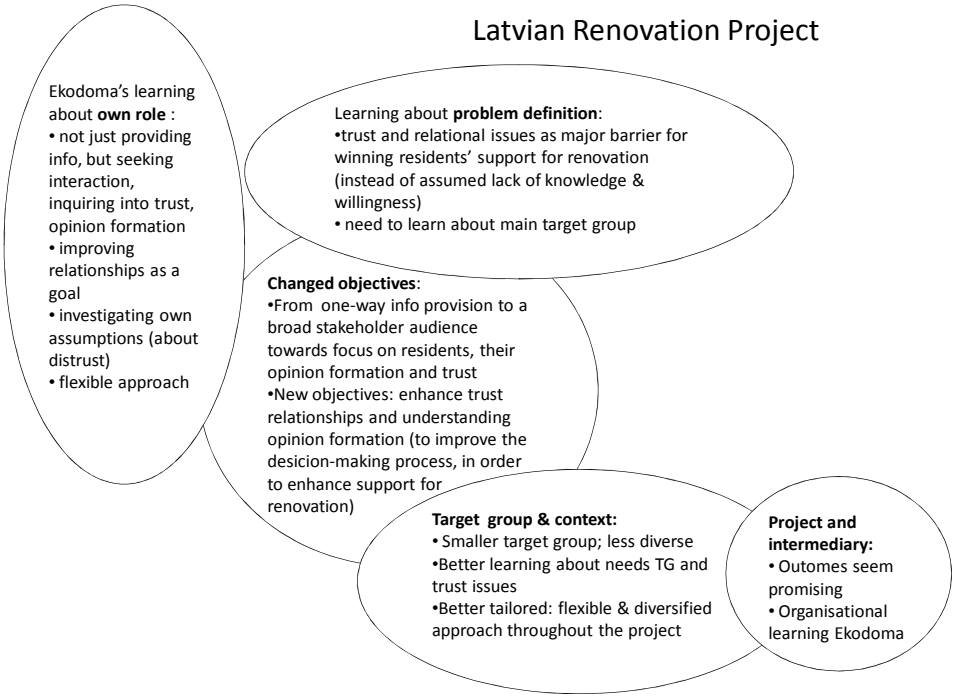
*How did this learning come about? ?*

The learning how to assess the change or increase of support of renovation plans was based on learning tools that involved the setting up of questionnaires and the strong support of the pilot partner in the construction of the questionnaire. Learning how to provide tailored information took place based on learning tools and based on interaction with building elders and managers whenever a meeting with residents was under preparation. Both taught Ekodoma what kind of information is relevant for residents and how to best present this information in order to increase support.

### 3.1.2 Overall assessment of Ekodoma's learning trajectory

A step-by-step approach to project design, each step logically following from the previous decision made, either building on Ekodoma's own expertise and experiences or building on knowledge generated within the CHANGING BEHAVIOUR project, allowed the development of a project responsive to its context. Flexibility allowed for playing with various options and basing the actual design on earlier findings. Questionnaires and interviews, together with results of benchmarking analyses allowed starting well-informed and tailored communication with the target group about possible energy efficiency options. The activities were most fruitful not so much as prescriptive but rather as ideas to match the expertise embodied in project participants and helpful in triggering effective and successful interaction between them.

**Figure 1: Main changes and learning in the Latvian project**




*Single and double loop learning*

In Ekodoma's pilot project, firstly the problem definition changed: no longer was it a lack of information and unwillingness on the side of residents that was regarded the root of failing renovation projects. Instead, Ekodoma recognized that a lack of trust between residents and BMCs as something it needed to learn more about. This and the wish to better understand

the residents' opinion formation process set in motion several changes in the project's content and context. The project objectives (content) changed: instead of one-way information provision and urging residents to adopt efficiency measures, Ekodoma aimed to improve relations of trust. Ekodoma used its improved understanding of opinion formation in order to facilitate better decision-making processes – that take account of residents' needs and worries – as an alternative way to achieve their support for renovation. Another change in content was the target group – less diverse and smaller in size. These changes in content effectively meant a project approach that was much more tailored to the specific context of the target group (context change) allowing Ekodoma to learn about the target group and to adapt the project in response to this learning.

Single loop learning occurred in relation to concrete tailoring of project to the specifics of each building. This was made possible by a preceding double loop learning process, whereby Ekodoma learned about its own assumptions regarding the causes of earlier project/renovation failures, and regarding the role of trust in the relationship between BMC and residents. Double loop learning also occurred in the sense that the learning has been not just helpful for the further design and implementation of this project, but potentially also for other future projects that Ekodoma embarks upon (understanding of trust issues, experience with of tailoring the project, aligning interests etc.).

*Social learning*

A flexible approach has been a precondition for learning in the project. In terms of social learning, interactions with the targeted residents resulted in a better understanding of the resident's social context, their concerns and wishes – facilitating a better tailoring of project approach to the differentiated needs of residents in different building blocks. Interactions with the BMC were geared towards gaining trust of residents – making the BMC more aware of the need for this trust to accomplish successful renovation. Interactions within the CHANGING BEHAVIOUR project has contributed to learning. Especially the regular contacts with the CHANGING BEHAVIOUR research partner was useful. She supported and encouraged Ekodoma to make use of several of the activities, and also served as a sparring-partner, stimulating reflection and discussion. These interactions have stimulated learning about problem definition, target group, project approach, and about Ekodoma's own role.

*Role of the activities in Ekodoma*

The shift of focus in problem orientation and as such the change in assumptions and ways of working of Ekodoma was the direct result of the use of several activities. These tools have

certainly contributed to social learning, but not on their own. Being swayed by the issues of the day, freeing time for doing the activities was difficult for Ekodoma. The support of the research partner appears crucial in encouraging Ekodoma to make use of these activities.

## *3.2 The Energy Academy Project in Manchester*

**Table 3: Basic information regarding the UK pilot project Energy Academy (final design)**

| | |
|---|---|
| **Intermediary organization(s) and role** | - Manchester Knowledge Capital (M:KC)<br>- Greater Manchester Energy Saving Trust Advice Centre (GM ESTac)<br>- Action for Sustainable Living (AfSL): charity that helps people to live more sustainably |
| **Objectives** | 1. To increase referrals to the Greater Manchester agency of the national domestic energy efficiency / renewables advice (GM ESTAC).<br>2. To increase uptake of ESTAC services including home energy checks, grant support.<br>3. To increase awareness of climate change and the need for personal action.<br>Additional objectives: improving the comfort and well-being of local people; general health of local people; combating fuel poverty; helping the local economy; creating employment and training/volunteering opportunities; promoting social inclusion; saving money; helping the environment |
| **Project basics** | The aim of Energy Academy project is to recruit 10 to 15 volunteers who are interested in being trained to learn how to engage, enthuse and support local residents taking practical action on climate change. The volunteers operate in the Greater Manchester borough of Trafford, and in doing so also refer people to the domestic energy efficiency services offered by the Greater Manchester 'spoke' of the national Energy Savings Trust Advice Centre (GM ESTAC) network. |

### 3.2.1 Learning what and learning how on the part of Manchester Knowledge Capital

*Organizational complexities & main problem definitions*

*What was learned?*

Central to the Energy Academy pilot project was that there was not one single intermediary, but three intermediaries working together. The three included Manchester Knowledge Capital (M:KC), the Greater Manchester office of a national domestic energy efficiency agency (GM ESTAC) and the sustainable development charity Action for Sustainable Living (AfSL). M:KC was partner in the CHANGING BEHAVIOUR consortium, the other two were not. All three had their own organisational targets to achieve, often based on the different

modes of funding that permitted them to operate. A major challenge throughout the pilot was the stitching together of numerous funding streams, with different targets attached. The critical issue in the Energy Academy was how multiple targets – at national, city-regional, community level and at the level of the Energy Academy project – of different intermediary organizations could collectively be met. The ongoing negotiation was about how to define the objectives and modes of engagement in the Energy Academy project and how the involved intermediaries would know if it had been successful.

*How did the learning come about?*

Much of the learning was not based on the activities as interventions that directly and explicitly contributed to different forms of learning. Instead the learning was based on the efforts of the intermediary at the centre of the Energy Academy (M:KC) that was constantly working to ensure that the different aims and targets of the three intermediaries and the broader project could be met. Effectively the subject of learning (who) and the object of learning (what) became conflated.

*Multiple Intermediaries + Multiple Funders = Multiple Objectives*

The three primary objectives of the Energy Academy broadly reflected the organisational motivations, funding and competences of the three intermediaries and were as follows:

1. To increase referrals to the Greater Manchester agency of the national domestic energy efficiency / renewables advice (GM ESTAC).
2. To increase the uptake of ESTAC services including home energy checks, grant support.
3. To increase awareness of climate change and the need for personal action.

Additional aims encompassing the three different intermediaries' areas of interest were:

- Improving the comfort and well-being of local people (as thermal comfort is improved)
- Improve the general health of local people (as living conditions are improved)
- Combating fuel poverty (through comprehensive benefits checks to maximise uptake of eligible welfare payments; through reduced energy bills)
- Helping the local economy (through increased demand for supply and installation energy efficiency / renewable energy measures)
- Creating employment and training/volunteering opportunities (as demand for installation of measures increases)
- Promoting social inclusion (by bringing communities together in common purpose)
- Saving money (through reduced energy bills)
- Helping the environment (through carbon savings)

Double loop learning about the broader intermediary context was needed in order to be able to translate the multiple objectives into a programme of work.

*Constructing the Target Group over Time: What was the learning about?*

Given this range of objectives and discussions about how to realise the different objectives, the target group was constructed and re-constructed over time. The target group was not clearly identified at the outside, but it developed over time. In late 2008, the target group included residents within two of the ten boroughs of Greater Manchester, Stockport and Trafford. These two boroughs were identified by the national agency – the Energy Savings Trust (EST), within which the GM ESTAC sits - as encompassing significant concentrations of relatively wealthy, and hence fuel-rich, communities. This meshed with the EST's approach nationally (from 2008) of targeting marketing of domestic energy measures at the fuel rich. By contrast the motivations of M:KC, AfSL and also those of the funder required that the issue of fuel poverty informed the focus of the target group rather than the fuel rich. To 'square the circle' between the fuel rich and the fuel poor the target groups within the borough aim to focus on a combination of the fuel rich, the fuel poor and mixed communities. The target group for the Energy Academy eventually consisted of four groups: a fuel rich community, a fuel poor community, a mixed community and a further education college.

In addition, the target group also involved volunteers who would work with the four targeted communities. These volunteers had to be targeted, recruited and given training and support.

*How did this learning take place?*

The target group was not clearly identified at the outset, but developed over time and through processes of double loop learning about the broader intermediary context. The eventual diversity of target groups is a consequence of the different interests that have aligned themselves around the project (a national energy savings agency, a city-regional initiative, a community sustainable development charity and a local authority) and their various motivations for involvement.

In total then there were five target groups: the volunteers and four different groups of end users. Their motivations were likely to be diverse and were a priori unknown. Hence, an understanding was needed of modes of engagement that could be used with different

groups.[8] Through engaging with different target groups, possibilities for comparing and contrasting the lessons from these different groups were created.

*Creating and Learning: Organisational Context, Target Group and Intervention*

The principle lessons to be taken from the Energy Academy project related to: learning about and creation of the organisational context of the pilot project; the learning about and the definition of the target group; and the learning from intervening with the target group. Three lessons were learned from the feedback that came from the three intermediaries working in partnership, the recruits and volunteers working on the ground, and householders who were the target of behavioural change interventions.

First, a critical lesson gained from multiple partner working is that partnership working is itself a skill. This was part of a wider issue of communication. The partners had a memorandum of understanding and also 6-8 week steering group meetings where partners reported progress but where issues of improving communication between partners remained. Sometimes partners found it difficult to get across in partnership the depth of information required. This was a cultural gap that requires a different way of working between partners and also requires time. An important precondition for learning, and double loop learning in particular is the strength of the working relationships and trust between partners. Three tangible instruments were developed that visualized the learning achieved in terms of alignment of expectations and missions (double loop learning).

a. The development of a memorandum of understanding between the intermediary partners was important in creating a common, shared sense of understanding among the three different intermediaries and the council involved and in building personal trust with colleagues.
b. A reporting system developed by AfSL included recorded activity and minutes. This will be used to report findings to all local authorities in Greater Manchester and to shape a strategic approach for engaging communities in energy demand management.
c. An evaluation tool was created by M:KC. It is an MS Excel spreadsheet based tool that captures all the project's inputs and outputs in one place. In addition it records all the particular measures that have been installed in the target groups' homes. This has

[8] M:KC operated as an intermediary one step removed from direct interactions with the target group. Knowledge of the target group was provided by the GM ESTAC's understanding of communities in relation to energy consumption and AfSL's more grassroots understandings of intervening and communicating with local communities. The process through which M:KC learned about these interactions was via monthly meetings of the project partners who reported back to each other.

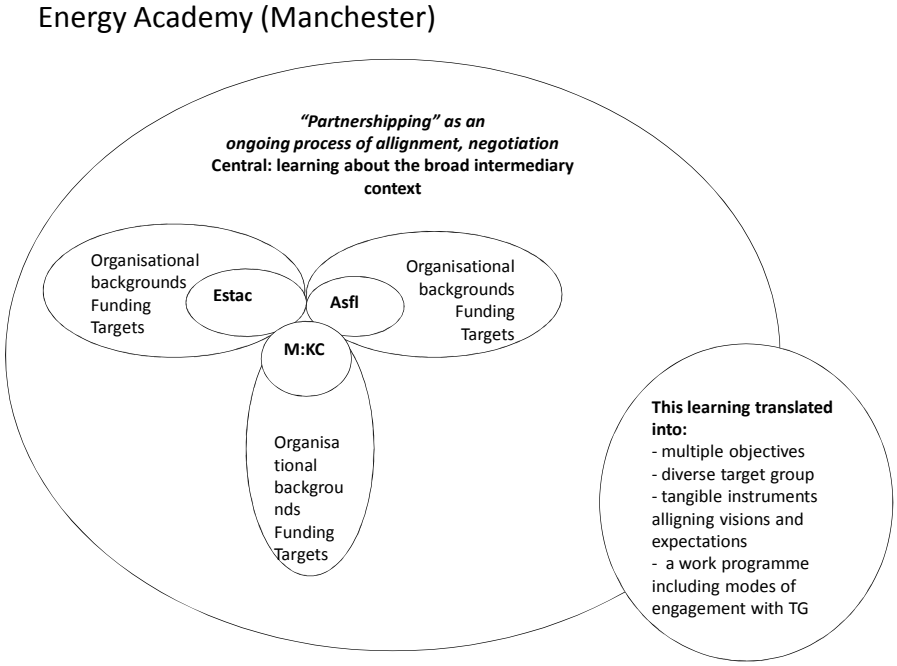
entailed using the EST's conversion factors to work out carbon saved and the price of a tonne of carbon saved. This has provided a measure for all partners which has entailed M:KC facilitating the gluing together of the three different project partners that weren't working together previously.

A second important lesson learned in the Energy Academy project relates to the engagement of volunteers. One of the most intensive phases was that of volunteer recruitment. Addressing the targets for the numbers of volunteers and advocates was done through a range of sympathetic websites, local press, advertisements in local coffee shops and so on. The process of enrolling volunteers, following an initial contact, was through an application form and usually a face to face meeting. The different aspects of their role were detailed in a handbook and action plan. There was also an evening introduction and a full day community and skills programme and drop in talks. These processes of engaging volunteers by AfSL have also meant that built into their support model is what is referred to as 'coping with volunteer churn'. This is a recognition that often, if you are lucky, you get a six month burst of activity and then their involvement may, but not always, come to an end. Feedback on the motivations of volunteers for getting involved is highly anecdotal, but often involvement was some combination of being about keeping busy, getting involved and something for a volunteer's CV. The pilot stakeholder poll - provided by CHANGING BEHAVIOUR - confirmed the anecdotal feedback that the Energy Academy was seen as a successful and popular project. Furthermore the poll prompted a wider discussion yielding insights into how the project had progressed.

A third lesson, relating to the householders, was that different things attract different people and that ways of working can be manifold in recognition of this. Volunteers engaging members of the public and householders was through a variety of different modes of engagement - quiz nights, film nights, social evenings, door knocking and so on. One view from within the project was that engaging the public has to be handled with great care as potentially engagement can be quite invasive. If you get the engagement wrong, you may fail in finding champions or promoters and advocates in particular communities. This is important as the Energy Academy ethos was that this is not about elite engagement but about using recruits from within the target area to develop a peer to peer communication at a low cost.

### *3.2.2 Overall assessment of M:KC's learning trajectory*

**Figure 2: Main changes and learning in the Energy Academy project**




*Single and double loop learning*

In the case of the Energy Academy, the multiplicity of intermediaries, funding streams and objectives was the trigger of subsequent learning and changes. The main learning was about context, namely the ongoing process of aligning, negotiating, of making the partnership work and of making the project work. This learning translated into changes in the content of the project: the objectives and target groups were formulated so as to fit the different organizational targets and ambitions of the intermediaries.

Single loop learning about the objectives, about the target group selection resulted from the double loop learning among the intermediaries. This double loop learning was about making the partnership work and in that manner create the organizational context of the project. In addition, double loop learning occurred through feedback from the target group (the volunteers churn; and need to approach householders in diverse manners). The context of the Energy Academy was one in which double loop learning preceded single loop learning and whereby double loop learning continued to take place and co-shape the project throughout.

*Social learning*

A flexible attitude and approach obviously was a precondition for social learning in the Energy Academy pilot project. The main social learning was between the intermediaries involved, whereby M:CK's role was to try and align the diverse aims and priorities of the three intermediaries. This process involved an ongoing negotiation in which the target groups, the project objectives and approaches got shape. Hence social learning within the project setting among the intermediaries has been crucial to arrive at the eventual format.
In addition, the close interactions with the CHANGING BEHAVIOUR research partner were valuable as these supported (self)reflection on the part of the intermediary (M:KC). Interaction with the volunteers resulted in learning about this target group's motivations and barriers.

*Role of the activities*

The main learning has occurred as a result of the circumstances asking for an ongoing 'partnershipping' to make the project work. The activities did not play a role in this. They had a limited role as key principles, supporting the project manager in the process of reflection and orientation. An important lesson from the Energy Academy pilot project is that the eventual toolkit should take care not to be prescriptive but rather serve as a means of orientation to help intermediary practitioners reflect, think and learn about the process they are involved in. Practically this means a sort of a 'health check' on the project process that allows intermediaries the space for critical reflection on their practices. Using the activities prescriptively runs the danger of stifling reflections rather than assisting them.

# 4. Preliminary conclusions and discussion

The CHANGING BEHAVIOUR project involves a contextualized and socially oriented approach to change, which is reflected in the notion of social learning (Russel and Williams 2002). Within the CB project, social learning referred to processes in which practitioners/intermediaries in energy DSM learn in interaction with other social actors - the end-users, other stakeholders, the CB partners and within their own organisation. This learning can change both the content and context of the DSM programme. We have discussed changes in content and context as a result of learning in two pilots and point out single and double loop learning in both pilot project histories. And we addressed the question as to what extent learning had been triggered by the activities.

The CHANGING BEHAVIOUR toolkit is work in progress, whereby feedback from intermediaries and their clients (target group, external stakeholders) will improve the tools and our understanding of how and to what extent and under which conditions this toolkit can be considered useful. The two pilot experiences have already pointed at some interesting lessons:

- That different projects have different needs, which means that the toolkit may perform different functions (e.g. a step-by-step guide or providing some orientation points or some key issues for reflection). The toolkit itself should be flexible enough to provide both guidance and stimulus – which means that the toolkit elements have to operate separately.
- Both pilots underline the importance of reflection on their objectives, design and content, initiated by the activities of the toolkit.
- Both pilots showed the importance of trust for social learning. While in the Latvian pilot project, trust between residents and building management company was crucial, in the Energy Academy project, trust relations between the intermediaries were central.
- Both projects showed the importance of having a flexible attitude that leaves room for (both single and double) loop learning. This flexibility was inherent to being a pilot (trying out learning tools and adapting the project to it was 'part of the deal'). In different circumstances it could turn out to be more difficult for an organization to have an open approach and the respective attention.
- The use of a toolkit – even theoretically and practically well-informed activities as in CHANGING BEHAVIOUR – may be limited in a context where there is more than one intermediary responsible for a DSM project and where the relationships between the intermediaries is fluid and changing. Furthermore, different target groups – as indicated by the pilots – require the adjustment of the toolkit elements to their respective needs (e.g. how to gain feedback or how to measure effects).
- In the pilot projects, research partners supported the pilot partners in the use of the toolkit. Although these roles may have been fulfilled differently by different research partners, it appears that their role has been valuable in encouraging pilot partners to make use of the activities, in stimulating discussions and in being a sparring partner for the pilot project managers. The question that remains is if the online toolkit on its own can trigger such learning or if some sort of coaching would always be needed.

There lies a difficulty in conceptualizing complex and multi-faceted processes involved in social learning. It is quite hard to unravel the constitutive elements of a learning process conceptually. Making a distinction between single- and double-loop learning has been of some help to evaluate both pilot cases of situated learning. Empirically, there is a difficulty in attributing change over time to learning and in this explorative paper we have relied heavily on the self-reports from pilot managers and research partners.

While acknowledging these limitations, we feel confident in concluding that the CHANGING BEHAVIOUR activities that constitute the toolkit can contribute to the creation of a setting in which there is room for social learning. In addition, several activities are conducive to learning about the intermediaries' own role and assumptions, the targeted behaviour, the target group and the social context of the project. Whether this learning affects the organizational way of working, and whether this learning will affect future projects, remains to be seen. Any spill-over impacts can at this point not yet be assessed. In theory, the Toolkit could function as a system that allows for feedback and learning after a project has stopped – if intermediaries who make use of it provide their feedback in such a way that it can be useful for subsequent users of the toolkit.

In addition, the role of the research partner in coaching the pilot manager is something that appears to have been of influence (importance of live/face-to-face external support). Hence, while the CHANGING BEHAVIOUR Toolkit helps in creating favourable conditions for learning in DSM projects, the role of an external actor who coaches and encourages the intermediary in making use of it adequately may be just as important.

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