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Energy behavioural changes

Deliverable 6:
Conceptual framework and model: Synthesis report tailored for policy makers as target group. A practical and conceptual framework of intermediary demand-side practice

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Executive summary

This document (Deliverable 6, D6) encompasses the work completed in work package 2 of the CHANGING BEHAVIOUR project, an EC FP7 project which aims to support change in energy use and energy services through the application of social research on technological change and practical application. The overall aim of Work Package 2 is to develop a theoretically rich yet practicable model of the sociotechnical change involved in energy demand-side management programmes. The project focuses on demand side management as the vehicle to realise the potential of energy efficiency and describes demand side management as, "an organised set of programmes, and initiatives that primarily aim to change the quantity and patterns of energy consumption on the end-user level, by initiating interaction schemes between end-users and programme initiators to motivate and facilitate end-user energy demand reduction."

D6 targets policymakers and those working with demand side management projects and presents the conceptual framework of the CHANGING BEHAVIOUR project. This conceptual framework follows from the comprehensive body of knowledge that has resulted from theoretical investigation and empirical research, the latter involving case studies and a variety of interactive encounters between researchers and intermediary practitioners.

D6 attempts to illustrate, on an abstract, conceptual level, the complex relationships and necessary inclusions which must be taken into account to develop demand side programmes which address context, timing and actors to promote durable behavioural changes and how policymakers can assist and facilitate intermediaries in achieving this. Below is a brief discussion of the conceptual framework and the particular focus of CHANGING BEHAVIOUR.

The CHANGING BEHAVIOUR project and conceptual framework places particular focus on programmes involving intermediary organisations that work on demand side management. By energy intermediary organisations we are referring to a wide variety of organisations that include government or semi government energy agencies working at various levels, Non Governmental Organisations (NGOs), agencies sponsored by utilities, ESCOs and so on. It is this unique positioning of intermediaries, which is best described as their 'inbetweenness,' which affords them the ability to network, align, and translate between actors on the regulator or producer side and the end-user side bringing these often disconnected actors to the same ground.

The project focuses on four different, yet related, end-use sectors: households, small and medium sized enterprises (SMEs), the building sector and municipalities. In each of these sectors, a significant proportion of the potential for energy efficiency improvements are not realised and is commonly referred to in the literature as the 'energy efficiency gap.' Simply put this is the discrepancy between levels of investment in energy efficiency that appears to be cost effective and the lower levels that are actually observed.

CHANGING BEHAVIOUR views demand-side management projects as being developed and implemented in a multilayered context. Each layer engages with a variety of target groups and other stakeholders. The recognition of this behaviour as nested in various layers of context is represented in **Figure E.1**.
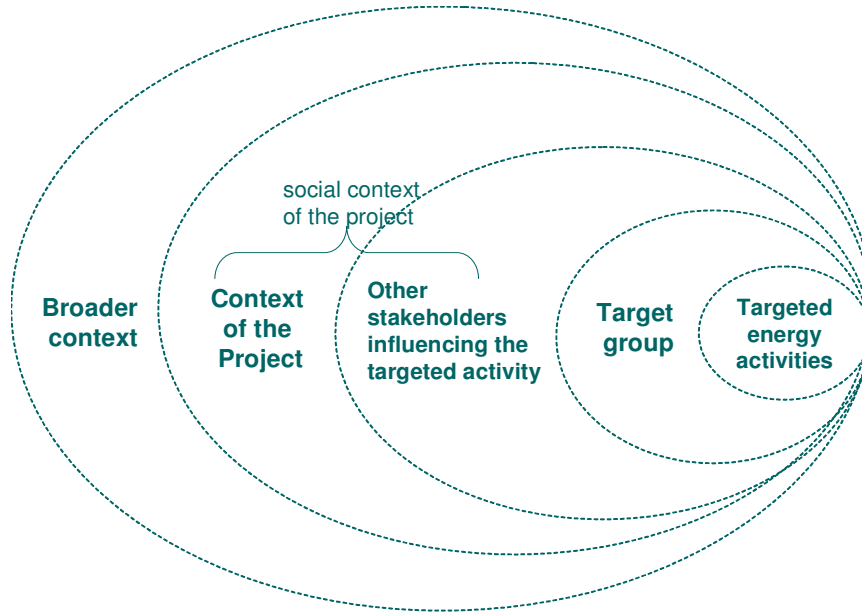
Figure E.1 *Understanding context as multilayered*

In addition, each layer includes a variety of factors which may influence the demand-side management initiative for the better or the worse. Relevant contextual factors consist of many dimensions and may be knowledge-related (e.g. new research; controversies; user competencies), legislative and policy institutions, economic conditions (economic cycles, cost of energy, other cost considerations, available capital), norms and values (e.g. environmental values, social norms, local identity), or more technology-related (end-use applications, monitoring tools, basic technologies). Following Dahlbom et al. (2009) we identify predisposing, enabling and reinforcing factors. Predisposing (motivating) factors include awareness, knowledge, social influence, attitude, social and personal norms, perceived capabilities and self efficacy; enabling factors include financial, technical and organizational resources, new skills, and reinforcing factors include feedback from peers, experts, authorities and customers (Dahlbom et al, 2009).

The first context layer consists of the targeted energy activities or behaviours. This context layer can directly be tackled by the intermediary.

The second layer entails the target group members, which are neither homogenous nor static in their logic of action. End users are heterogeneous and complex; and we need to acknowledge the diversity of motivations held by various individuals. In addition, their behaviour (and changes in this) is structured by the particular social-institutional context that they are part of. Through their actions, actors can change this context. The target group can also exert influence on all other context layers, although in increasingly diminished way, the further away the layer is from theirs.

Other stakeholders and the context of the project may affect the opportunities, constraints and chances of success of a programme. Examples of other stakeholders include: local or regional governments, banks, housing corporations, service providers, energy agencies, NGOs, utilities, etcetera.

Finally, a broader context influences all others layers through politics, institutions, market mechanisms, infrastructures etc. This broader context e.g. entails that energy use practices are socially shared: most of our energy consumption is 'invisible' and shaped by habits and conven-

tions - it is not primarily determined by conscious decisions, but rather by the broader (social) context.

The sociotechnical perspective of change in CHANGING BEHAVIOUR thus emphasises that efforts to change end-user behaviour should not only focus on individual change but also include the other stakeholders influencing energy-related social practices and the social level of change. Change requires collective action and a collective approach. Individual energy end-users are powerless to change social rules, to say nothing of the shared infrastructures conditioning energy use. They can only do this by working together with others - discussing, questioning and trying new practices collectively, which requires collaboration, cooperation and open networks.

In addition the context of the project itself, other stakeholders, and broader context play an important role in the durability of changes: many interventions to change the behaviour of the target group are successful as long as they last, but the target group tends to revert to its original behaviour once the intervention has ended. This is because end-user behaviour is largely shaped by the context in which they live and work. Therefore, if the context of the project itself, other stakeholders, and broader context do not change, lasting behaviour change on the individual level cannot be achieved. See Figure E.2 for an overview of the role of intermediaries in developing demand-side management programmes which address context, timing and actors to promote durable behavioural changes
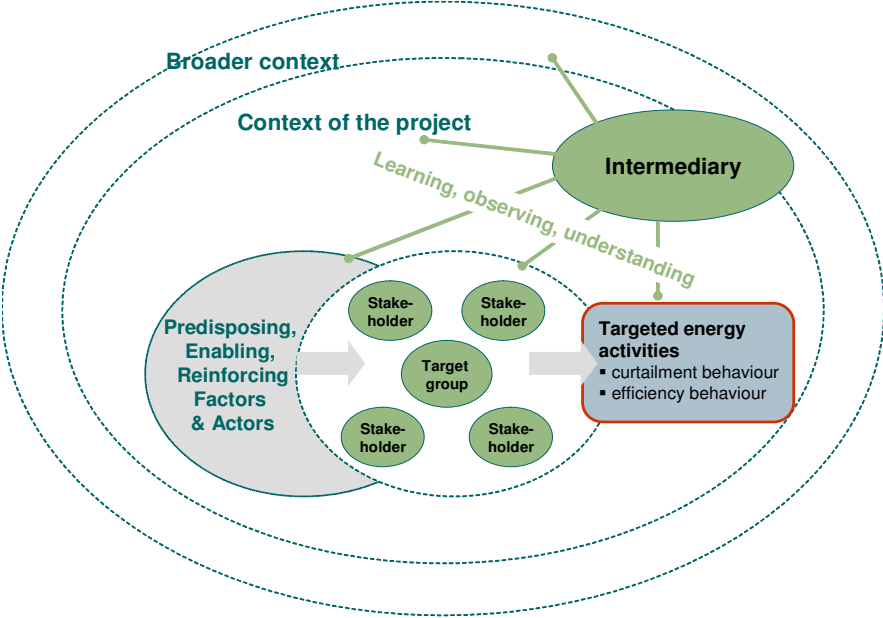
Figure E.2 *Developing demand-side programmes which address context, timing and actors to promote durable behavioural changes*

When considering interventions and instruments we stress that the exact choice and 'content' of the overall approach of a programme has to be tailored to the project's specific aims and context, the intermediary, the end users and other stakeholders. Factors that can influence the successfulness of instruments differ from project to project and therefore need to be analysed as part of the programme design. Overall, a general conclusion is that instruments of a different kind have to be combined to build a policy or a programme (instrument bundles). Furthermore, a participatory phase of preparation and the integration of end-users into the design of programmes is mentioned as a successful strategy. In addition, we consider that monitoring and evaluation of both the process and the output of a programme should always be part of the pro-

gramme. Programme evaluations should address the issue of learning. Learning processes may take a long time and span across multiple consecutive programmes. In addition to individual learning, energy demand-side programmes also need to stimulate 'social or societal learning', which means that the new practice is adopted and embedded into its social context.

Choosing the right moment for influencing the targeted energy activities is another issue that deserves more attention. Context is not a static condition either facilitating or hampering change. Different elements (issues, stakeholders) of the multilayered context change over time, sometimes slowly, sometimes quickly, and sometimes only a small part of the context changes (changing family circumstances, newly built neighbourhoods, economic restructuring of a region), but it can also involve a major change (public awareness, financial crises). Timing a demand-side management programme to successfully interact with these contextual changes is suggested in our cases to be of utmost importance. Timing can be defined broadly in terms of 'planning' the start of the programme; making use of windows of opportunity (for example sector specific economic situations, or specific user needs, specific regulations in place, natural moments of change such as a renovation of a neighbourhood), but also in terms of linking to ongoing activities such as other campaigns.

To summarise, it is through an emphasis on context, timing and actors that the CHANGING BEHAVIOUR project proposes a departure from behavioural change based on psychology and economics to a more sociotechnical approach which acknowledges the connections between certain technological solutions and systems (like energy efficient solutions) and certain social arrangements (such as the presence of intermediary organisations, social networks and social movements with interests in energy efficiency). Furthermore, our approach also aims to contribute to the growing body of literature which advocates for moving beyond behavioural change on the individual level to more systemic level changes.

In D6, the conceptual framework is translated into general recommendations for intermediaries and policy makers which are listed below. By the end of 2010 a context-sensitive toolkit will be developed and made available online free of charge.

Recommendations for intermediaries

The basics
The following conditions are essential for a successful demand-side management programme and already quite well-known - but no less important for that matter:
• Financial support
• Clear focus and goal
• Sound background in energy and technical data
• Continuity and sufficient time for change
• Regular monitoring and feedback to participants
• Open collaboration with other projects and institutions

Context matters
The project is not going to be implemented in a 'void', so it is important that the context and timing issues are addressed and understood. These involve predisposing (e.g. what motivations people have at a certain time), enabling (e.g., what they are capable of doing), reinforcing (are there context/timing issues that can support the change) factors. The last point, in particular, relates to durability of the intended changes. Good timing can benefit from 'windows of opportunity' created by changes that are already underway in the context.

There is no one single critical failure or success factor
Energy efficiency programmes and projects are informed by a range of critical failure and success factors - there is no one single critical failure or success factor. Many of these issues - financial, staffing, communication, knowledge base are not isolated issues, rather they are interrelated. Appreciating that there is no single critical factor is of crucial importance.

Engaging with a wide variety of different knowledge and expertise
Different forms of knowledge and expertise need to be mobilised in bringing together the knowledge necessary for change, often in a context of habitual actions and entrenched institutions. In doing so there is a need to understand who the 'target' of energy efficiency projects and programmes is and how to effectively communicate and work with this target group. There is also a need to bring all relevant stakeholders on board.

Beyond a one size fits all approach
Understanding, balancing and managing of different combinations of the critical factors is the critical challenge: combinations of these issues means that a variety of actors, with different motivations are implicated and involved, e.g. practitioners, policymakers, funding bodies, different users etc. Not only this but these combinations of issues and actors may look different in different settings and where various agencies and 'intermediaries' are involved. This highlights a need to move beyond a one size fits all approach whilst at the same time not reducing our understanding of specific contexts. Consequently, rather than creating universal recipes for success, combinations of issues need to be understood in relation to different projects/programmes and the contexts of their 'targeting' and 'implementation'. Whether an issue is important or not depends on the context.

Set goals but be flexible
As a result of focusing on and involving target groups and other stakeholders, and appreciating the need to go beyond a one size fits all approach, intermediaries may change their original plans to adapt to needs and existing initiatives among other stakeholders. Flexibility to adapt to the needs and requirements of the target group and the social context can be promoted by an ongoing process of interaction, monitoring, learning, collecting feedback and iterative planning.

Implementing on the individual level, working on the community level
Behavioural change does not only take place on the individual level but is interrelated with and thus influenced by the wider social system that creates the possibilities for changing the behaviour on the individual level.

Knowing your target groups
Knowing your target group involves understanding a target group prior to the project and understanding their goals in relation to your organisational goals. The recognition that a target group is not homogenous is crucial to the effectiveness of your programme.

The target group is more than a recipient
Intermediaries are dependent on the target groups to achieve their goals. Thus, it is important to find the appropriate ways to learn to understand each target group and make your project meaningful for each individually. Target groups should be engaged as active players, who may also have their own opinions of what is meaningful. However, they are not always able to articulate the factors influencing their behaviour, so analytical concepts like the predisposing, enabling and reinforcing factors can help intermediaries and target groups to make sense of the conditions for change.

Making it 'fit' helps making it 'stick'
The more the targeted new practice fits into the everyday practices, rules and conventions in the context of the target group and the other stakeholders, the more likely it is to survive after the

intervention is discontinued. This requires a good understanding of the particular context of each target group and stakeholder and can be enhanced by learning participation and building on target group initiatives.

Making messages meaningful
Making the message of a programme meaningful to the target group challenges practitioners to adapt their language and communication formats to be tailored to different local contexts in order to communicate the message of energy efficiency and behavioural change effectively in a way that resonates with different interests. One strong view is that there is a need for new narratives, challenging the 'we are on board a runaway train' messages or the 'do-nothing' messages and devising different motivating messages such as "together we can make a difference" to underpin engagement in productive behavioural change. These messages need to be broader than energy efficiency and encompass climate change messages or 'piggyback' off other agendas as a process of making energy efficiency messages meaningful for 'target groups'.

Aligning interests on different scales
The target groups' practices are usually influenced by multiple stakeholders - not only the target groups themselves. All of these stakeholders have their own interests, which will support or obstruct the proposed change. In order to support sustainable change, it is important to align interests on different scales - from national policies to local players such as local government, local service providers, residents' associations or workplace communities and different kinds of end-users. Finding solutions requires an articulation of these different interests and negotiations, which may include conflicts. However, if these different interests are not openly addressed, they may obstruct the achievement of change and will likely be a source of tension throughout the programme as some actors may feel their interests have been marginalised. Thus it is important to (early on) stress the mutually agreeable aspects among the various players influencing target groups' energy use patterns, because these interests will continue to support the targeted new practices.

Creating networks that support the changed activities
Creating networks and social structures that support the new behaviour and make it lasting after the programme ends is of outmost importance. Creating networks refers explicitly to making the change resilient by supporting the evolution of existing structures, networks and institutions. So in that sense it is primarily about reinforcing change. But in other ways networks can also be predisposing and enabling (e.g. providing resources, offering more competencies). These networks of actors engaged in the change will 'carry' the new practice and reinforce it also after the intervention is concluded. They can be 'self-help' networks, preferably including diverse competencies and diverse actors that have an influence on the targeted practices.

Understanding your own organisational context and resources
Many practitioners outlined the importance of understanding clearly their own organisational context and the resources available to them, especially when dealing with investors. In particular it is deemed important to understand the opportunities and constraints financial resources bring to the organisation; the importance of having a good network behind you but not overrating collaboration and connections to other ongoing programmes; and finally recognising the importance for the continuity of staffing where the staff and manager may benefit from working together from the earliest stages and throughout a project; also developing longstanding relationships with users.

Monitoring, evaluating and learning increase the success of next projects
A crucial issue relates to the ability of intermediaries to monitor, understand, learn about and adapt their practices in a more systematic manner. There is a need for more appropriate and effective monitoring, evaluation and learning. But, we need also to acknowledge the very immediate and resource limited context within which many intermediaries operate. It is common for

practitioners to complete tasks which can improve their work but often this gained knowledge is not put to use in new projects and practitioners return to their typical procedure for designing and implementing projects.

Recommendations for policy makers

This final section concludes with some relevant lessons for policymakers involved in demand-side management programmes (directly in a programme or indirectly by facilitating these through e.g. policy). As discussed in this document, for behavioural change to be durable, it should be seen as part of a more structural and systemic change - not just the sum of a number of individual behavioural changes. The changes (in patterns of consumption and production) need to become embedded in new or renewed institutions and networks, which are practical manifestations of contextual change. This is where policy makers who are co-shaping the broader (institutional) context have an important role to play, not in the least in providing resources for intermediaries to undertake their work, and by creating environments that support and facilitate the practice of intermediaries.

Support intermediaries working on the ground for change in energy use patterns
Energy intermediaries in Europe are today under increasing pressures to support national states and local governments in the active reconfiguration of energy systems in response to issues like climate change and energy dependency. Critically, there are likely to be intensified requirements for the capacity to develop managed and purposive transitions in the social and technical organisation of energy systems. Intermediaries are thus expected to accomplish more than isolated projects; they are expected to promote energy systems transitions by co-ordinating and integrating diverse local actions. Intermediaries are a valuable asset for any country aiming seriously to reduce energy demand because they can shape end-user behaviour by entering the end-user context and changing the most important features in order to achieve the desired changes. This is a difficult task, however, and some aspects of the context are beyond the influence of local intermediaries. In addition, resources and institutional support for intermediary organisations working 'on the ground' are often lacking. Policy-makers have an important role in supporting change by acting as role models and creating favourable conditions (providing adequate resources and powers, set prices, incentives, ensure the availability of technologies). In addition, it is worth listening to the views and experiences of intermediaries as they often posses firsthand and contextually relevant insights.

Orchestrating policy interventions
Existing energy efficiency and demand-side policies have often been piecemeal and short-term and different initiatives and measures are not necessarily timed to support each other optimally. Policy makers need to develop coherent and longer-term policies. In addition to national policy instruments and programmes, important accompanying measures can be found by stimulating and supporting local and sectoral initiatives. For policy makers working on a more systemic level, market transformation and urban multi-stakeholder programmes are examples of policy strategies that combine intervention options and support systemic change and that can be used to facilitate the work of intermediaries working on demand-side management programmes.

Creating new institutions to support the new behaviour
Institutions are not easy to create, but examples of 'proto-institutions' can include certification schemes, permanent bodies including end-user representatives, permanent physical fixtures like new metering devices, new service providers and supply chains, or new rules of 'appropriate' behaviour. The institutions can promote the durability of behaviour change after the project has ended.

Put theory to practice
There is significant valuable theoretical research that can be used in designing energy demand-side programmes. However, it is important to recognise that social and behavioural science

theories are usually 'middle-range' theories that apply in certain contexts (certain kinds of be-
haviour, end-users or social structures in the end-user community). This is why theory needs to
be applied in practice, and the best way to do this is for policy-makers, researchers and interme-
diaries to work together to combine theoretical insights with practical experience on the ground.
National level policy makers can support the development of practicable theoretical understand-
ing by providing resources for learning and research to intermediaries, as well as through the
development of context-sensitive evaluation methods.

Allowing for flexibility
Many funding schemes require very detailed plans and very careful execution according to these
plans. This makes it very difficult for intermediaries to adapt programmes to context and to les-
sons learned in the context during implementation. It also makes it difficult to engage target
groups and other stakeholders in design and implementation. More flexible planning and moni-
toring and process and or output evaluation mechanisms need to be developed; which does not
mean that intermediaries do not need to be accountable for achievements but rather they need
not be accountable for implementing the programme exactly as planned when they receive
counter-indications from the context.

Allowing for continuity
As mentioned above, many policy instruments and interventions are short-term. Behaviour
change, however, is a very long-term process that involves learning and adaptation at different
levels (individual, social and societal). Thus, sufficient continuity of instruments and initiatives
needs to ensured, in spite of the problems of electoral cycles e.g. by breaking larger systemic
changes down to a series of smaller ones and aim for realization of sub-changes within one elec-
toral cycle.

Evaluating long-term achievements
It is important to make effectiveness and cost-effectiveness analyses of demand-side pro-
grammes, but it is also important to see what permanent capacity they leave in the end-user con-
text. There is need for a 'balanced scorecard' approach to energy efficiency policies and meas-
ures, which takes into account not only techno-economic achievements, but also the socio-
cultural capacity to adopt and retain energy efficient practices. Various measures can be used,
such as the involvement of diverse interests in the programme and the creation of new networks
and new institutions that survive after the intervention. Also, 'soft behavioural' intervention can
often produce quantifiable or semi-quantifiable results; thus a more flexible approach to evalua-
tion would contribute to the growing need for behavioural demand-side management pro-
grammes

1.   Introduction

This document (Deliverable 6, D6) has evolved from the work completed in Work Package 2 of the CHANGING BEHAVIOUR project. CHANGING BEHAVIOUR aims to support change in energy efficiency and energy conservation through the application of social research on technological change to help design more successful demand side management programmes in practice. By energy demand side management (DSM) we mean an organised set of programmes and initiatives[1] that primarily aim to change the quantity and patterns of energy consumption on the end-user level. We conceptualise such programmes as interaction schemes between target groups and programme initiators to motivate and facilitate end-user energy demand reduction.

Work on energy efficiency and energy conservation has a long history in Europe and certain notable achievements have been made (Geller et al. 2006). For example, it is argued that energy use in the OECD would be 50% higher were it not for energy efficiency (Action Plan for Energy Efficiency 2006). On the other hand, energy consumption has continued to grow. There are thus achievements which suggest there is further realistic potential, but also challenges which suggest that more needs to be done.

For years, the promotion of energy efficiency was the prerogative of national government and energy utilities, but this has changed over the past years. Increasingly, new intermediary organisations address the demand side of energy efficiency. CHANGING BEHAVIOUR has a particular focus on these intermediary organizations and this deliverable, D6, particularly targets energy intermediaries and policy makers. Energy intermediaries can benefit from feedback on their work and can gain valuable insight from an external analysis of prior best and worst practices on how to effectively work with target groups in reducing the demand for energy. CHANGING BEHAVIOUR aims, in particular, to provide scientific support for the work of energy intermediaries and policy makers by developing a sophisticated but practical approach to energy demand-side projects and programmes. Below a brief discussion on energy intermediaries follows.

Energy intermediaries encompass a wide variety of organizations, including government or semi-government energy agencies working at different scales of governance, Non Governmental Organisations (NGOs), agencies sponsored by utilities, Energy Service Companies (ESCOs) etc. Different intermediaries function over timescales that can vary from a short-term project or initiative (e.g. six months) to much more long-term and programmatic activities (e.g. 10 years and upwards). Energy intermediaries operate on different scales, but the vast majority is quite small and quite local - either geographically or in the sense of working with a certain target groups. In addition, intermediaries can seek to intervene on either a (limited) project or a more strategic or even systemic level in energy systems. Project intermediaries in general perform functions such as the provision of energy advice and advice centres; consultancy activities; energy audits; project initiation, management and coordination; demonstrations; technology procurement; installation; promotion; advocacy; lobbying, demonstration, dissemination and awareness raising; organising campaigns; education; trainings and courses; and network-building. The instruments used and functions performed by intermediaries vary according to their approach being project based or more systemically based. The project-based approach focuses more on individual instruments to achieve one shot (efficiency) behavioural change, by means of instruments such as e.g. financial incentives, audits and advice on investments, and general information. The strategic/systemic approaches go beyond individual instruments to

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[1]   Programmes are long-term and strategic, and may consist of multiple individual projects. We acknowledge that intermediaries can be involved in both programmes and projects (i.e., more short-term initiatives), and thus use both terms to denote intermediary practice. We use the term 'interventions' to refer to both programmes and projects.

look at the change process and ideally use the most appropriate mix of instruments to help the process and focus more on providing advice, feedback and support for repetitive (curtailment) behavioural change, creating social networks to sustain this change.

In general intermediaries are positioned closer to the target groups than national policy makers are, and thus have better opportunities to understand and adapt the target groups' specific contexts. The emergence of new intermediary organizations also holds potential for shifting the European energy market from energy supply to energy services. Intermediaries can be characterised in terms of three aspects of their mediating function (Hodson and Marvin 2009). These aspects defined below are the core competencies of intermediaries and their 'in-betweenness' allows them to align, translate and make use of networks between programme developers/initiators and the target group. Intermediaries:

- Mediate between production and consumption rather than focusing solely on production or consumption issues.
- Mediate the different priorities (of different other stakeholders) across different levels (e.g. translating between householders and municipalities).
- Mediate not only between different priorities but also between the embodiment of these priorities in plans or policies and their application.
- It is possible to identify a fourth, partly emerging form of mediation, too. As people and communities become increasingly aware of the importance of conserving energy, and initiate voluntary energy awareness and efficiency programmes (e.g. Carbonarium in Hungary, carbon rationing action groups, low-carbon housing estates, etc.), new organisations are created that in a way mediate needs emerging from the bottom-up. (Heiskanen et al. 2009).

Realizing that scientific facts are not sufficient to address the intricacies involved in the daily practice of demand-side management programmes, knowledge from experts in the field: intermediaries and their best practices has been sought. This approach is in line with the methodology of action research (Lewin 1939/1999; Argyris et al. 1985; Cunningham 1993; Snyder 2009). This action research methodology implies that we have taken a specific integrated research approach in CHANGING BEHAVIOUR, developing and testing theoretical concepts in real-world conditions together with real-world intermediaries. Through a close monitoring of processes and systematic reflection together with the actors involved, we aim to produce results that are both theoretically valid and practically applicable.

CHANGING BEHAVIOUR focuses on small-scale energy users: households, schools, the building sector, municipalities and small and medium-sized enterprises (SMEs), and analyses two types of energy-related behaviour:

- Efficiency behaviour: one-shot behaviour, i.e. the purchase of energy efficient equipment.
- Curtailment behaviour: repetitive efforts to reduce energy use.

This distinction is useful because different mechanisms underlie efficiency and curtailment behaviour. Purchasing an energy-efficient appliance is a rather discrete event, preceded by information processing and the use of specific decision rules. Curtailment, on the other hand, refers to types of behaviour that are much less the subject of conscious decisions. These involve activities that need to be repeated frequently and are often determined by habits.

Energy intermediaries can target both forms of behaviour. Intermediaries that aim to influence efficiency behaviour attempt at changing the decision-making process and the rules applied by means of information, energy audits that make recommendations about investments and/or incentives. Curtailment behaviour in general takes more time and often is more difficult to accomplish and requires a combined approach targeting motivation, attitude and initiating a broader change around the target group to support the change. We will discuss this further in the following sections.

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The overall aim of Work Package 2 was to develop a theoretically rich yet practicable model of the socio-technical change involved in energy demand-side programmes. This deliverable presents the building blocks of our conceptual framework and takes the first steps towards a more practicable model. Parallel deliverables on which this conceptual framework builds are available on the CHANGING BEHAVIOUR website[2]:

- For an elaborate presentation of our theoretical and empirical inquiry, we refer to Deliverable 5
- For a detailed analysis of previous best and worst practices, we refer to Deliverable 2 and 4.
- For a detailed mapping of intermediary practice in Europe, we refer to Deliverable 7 and 8.
- Detailed case studies of individual demand-side programmes and projects are also available on the website (Project output → Case studies).

1.1   Aim and structure of this document

This document aims to present a conceptual model of intermediary demand-side practice at its best. The intended audience for this deliverable are policymakers and intermediaries working on demand-side management. It tries to show - on an abstract, conceptual level - what intermediaries can do to change target groups' energy behaviour in a way that takes account of context and promotes durable changes, and how policymakers can assist and facilitate intermediaries in achieving this. This deliverable is a summary and a synthesis of the research conducted in the other deliverables presented above. While conceptual, this framework also aims to be practicable. This means that it recognises the expertise already present in intermediary practices and tries to identify where and how intermediaries can do even better and where and how policy makers can best support them best.

Another aim of this document is to extend the dominant perspective on energy-related behaviour change, which until now has mostly focused on individual behaviour. While we deem an understanding of the economics and psychology of individual behaviour highly relevant, we follow recent sociological research in proposing a more sociotechnical approach to energy behaviour. A sociotechnical approach refers to an approach that acknowledges the connections between certain technological solutions and systems (like energy efficient solutions) and certain social arrangements (such as the presence of intermediary organisations, social networks and social movements with interests in energy efficiency). Our sociotechnical approach aims to complement the existing approaches to energy-related behaviour and extend the perspective to social systems, thus providing a more strategic focus for the research and practice of energy demand-side management.

The structure of the document is as follows:
- Chapter 2 ties together the conclusions and findings from D4 and D5 and discusses the main building blocks for our conceptual framework that were retrieved from theory and daily demand-side management practice.
- Chapter 3 discusses the conceptual framework that follows from merging building blocks from theory and practice in the operating context of intermediaries.
- Chapter 4 presents recommendations for both intermediaries and policy makers.

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[2]   Available at www.energychange.info

2.   From a general theoretical understanding of behavioural change to a sociotechnical approach

The main goal of CHANGING BEHAVIOUR is not to develop and test hypotheses and generate theoretical knowledge, but rather to develop a practicable framework of thinking about behavioural change that helps to design and implement more successful demand-side management programmes. While being context sensitive our Conceptual Framework should also be generalist enough to provide a good set of recommendations for energy intermediaries on how to influence behavioural change. Our conceptual framework consists of several building blocks: a review of existing theories on changing energy behaviour, empirical best and worst practices as found in 27 case studies and tips and tricks from intermediaries who participated in four workshops. This section first very briefly discusses researchers' general theoretical understanding of behavioural change and then continues discussing the CHANGING BEHAVIOUR approach to energy behavioural change.

Research on behavioural change has been conducted in various social science fields, most notably economics and psychology. Because these disciplines strongly focus on individual behaviour, they only provide a partial understanding of the dynamics of behavioural change; mainly highlighting factors that relate to information processing, decision making and various 'barriers' to energy efficiency. This focus on individual behaviour and barriers is based on the fact that the research literature rarely deals with the process of change and the issues of embedding change within the social context. Sociologists of energy use are often critical toward the concept of 'barriers' to energy efficiency (Guy and Shove 2000; Wilhite 2000) as this notion views 'social' or 'non-technical' barriers as the main obstacles to the flow of energy efficiency knowledge into practice. In this model, the social scientist only has an 'end-of-pipe' role of conducting attitude surveys to inform advertising campaigns to overcome 'barriers' and is discouraged from further analysis of the social organization of decision making on energy efficiency. Therefore, in this report, when we use the notion of barriers, we put this term in inverted commas, extend the concept to refer to contexts for action that delimit or enlarge types of responses and actions. This extended definition of 'barriers' follows from our more socio-technical approach

Moreover, from these economic and psychological perspectives, the intermediary is usually perceived of as being rational and 'outside' the system that he or she is trying to manage and until now, the dominant approach has been based on a belief in the unproblematic transfer of self-contained expert knowledge on energy efficiency solutions into end-user practices (Guy and Shove 2000; Wilhite et al. 2000). While there are good experiences for applying economic and psychological research findings to practice, the changes in end-user behaviour are often short-term and rarely last once the intervention is discontinued (Kurz 2002; Abrahamse 2007).

The CHANGING BEHAVIOUR perspective criticises the above general theoretical understanding of behavioural change. Our perspective on change is more sociotechnical. We briefly discuss our perspective in the following text, and it is summarised in Table 2.1**, that can be found at the end of this chapter.**

When addressing 'barriers' and considering how to motivate actors to save energy we combine a *perspective on change that addresses both the individual and the social levels of change*. We recognise that the individual change process is nested within - and interacts with - a broader societal change process and that the context of individual behaviour is shaped by and interacts with the broader context. To tackle 'barriers' three factors determining behaviour can be addressed. Following Dahlbom et al. (2009) we identify *predisposing, enabling and reinforcing factors*. Predisposing (motivating) factors include awareness, knowledge, social influence, attitude, social and personal norms, perceived capabilities and self efficacy; enabling factors in-

clude financial, technical and organizational resources, new skills, and reinforcing factors include feedback from peers, experts, authorities and customers (Dahlbom et al, 2009). We build on and contribute to the literature (e.g. Dahlbom et al, 2009) that distinguishes between behavioural conditions that are internal and external to the individual. In BEHAVE (Dahlbom et al, 2009), the predisposing factors are individual and internal drivers of behaviour; the enabling factors are understood as external constraints on behaviour; while reinforcing factors are also external, in that they involve feedback on actions to individuals. While we would not disagree that some of these factors may be internal (i.e. particular to each individual person's life history, his/her idiosyncratic routines), efforts to exert influence on any of these factors is always through external means - via the context of the individual.

Demand-side management projects are developed and implemented in a multilayered context. Each layer engages with a variety of target groups and other stakeholders and also includes a variety of conditions which may influence the demand-side management initiative for the better or the worse. Relevant contextual conditions consist of many dimensions and may be knowledge-related (e.g. new research; controversies; user competencies), legislative and policy institutions, economic conditions (economic cycles, cost of energy, other cost considerations, available capital), norms and values (e.g. environmental values, social norms, local identity), or more technology-related (end-use applications, monitoring tools, basic technologies). This recognition of behaviour as nested in various layers of context is represented in Figure 2.1.
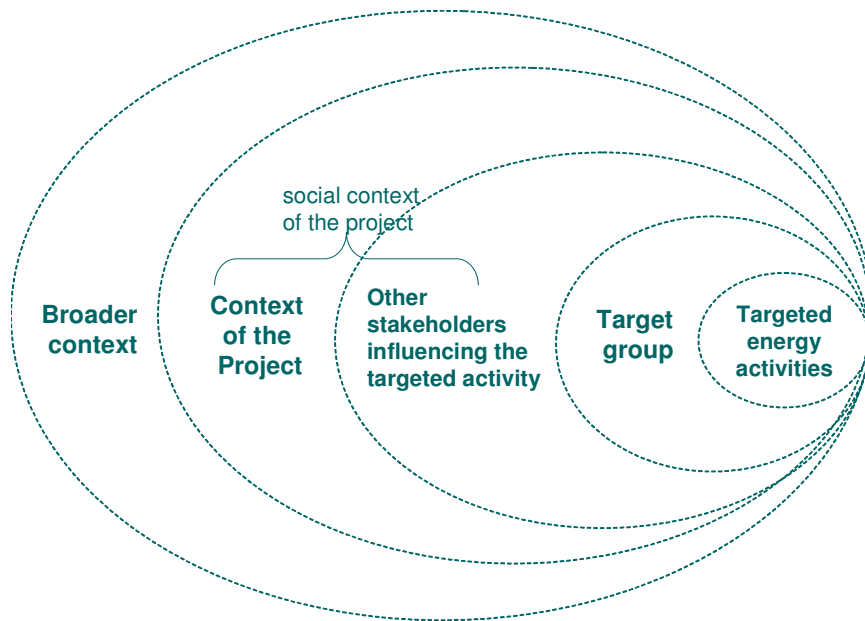

Figure 2.1 *Understanding context as multilayered*

The first context layer consists of the targeted energy activities or behaviours. This context layer can directly be tackled by the intermediary. These activities and/or behaviours are conducted by a particular target group of end-users with specific problems, needs and issues. Households, small and medium sized enterprises (SMEs), schools, the building sector and municipalities each have their particular issues which may encourage or constrain opportunities for energy efficiency and behavioural change.

In addition, we consider that the *target group members are neither homogenous nor static in their logic of action.* End users are heterogeneous and complex; and we need to acknowledge the diversity of motivations held by various individuals. Multiple ways of thinking and acting

can be distinguished amongst target groups, as well as multiple motivations for their actions, e.g. calculated self-interest, altruism, 'rules of appropriateness' (norms and conventions). In addition, their behaviour (and changes in this) is structured by the particular social-institutional context that they are part of. Through their actions, actors can change this context. The target group can also exert influence on all other context layers, although in increasingly diminished way, the further away the layer is from theirs.

Other stakeholders and the context of the project may affect the opportunities, constraints and chances of success of a programme. These other stakeholders form a third layer of context. Examples of other stakeholders include: local or regional governments, banks, housing corporations, service providers, energy agencies, NGOs, utilities, residents associations, equipment suppliers, installers, contractors, business associations, youth organisations, ministry officials, media, research institutes, advisory centres, etcetera.

Finally, *a broader context influences all others layers*. This broader context e.g. entails that *energy use practices are socially shared:* most of our energy consumption is 'invisible' and shaped by habits and conventions - it is not primarily determined by conscious decisions, but rather by the broader (social) context. Conventions (such as practices of washing, heating and living) are socially shared and defined by our culture. Individuals cannot easily depart from conventions: they want to 'fit in' and behave appropriately, as defined by their peers, co-workers and neighbours rather than as defined by energy policy. Some conventions are beneficial for energy use reduction and these should be recognised, communicated and taken advantage of. The broader context also influences the other layers through politics, institutions, market mechanisms etc.

The sociotechnical perspective of change in CHANGING BEHAVIOUR thus emphasises that *efforts to change end-user behaviour should not only focus on individual change but also include the other stakeholders influencing energy-related social practices and the social level of change* (e.g. Wilhite et al. 2000; Lucas et al. 2008; Ornetzeder et al 2006; Rohracher 2001). Change requires collective action. People can change the values and unwritten rules that govern their social context, but they cannot do this alone. Individual energy end-users are powerless to change social rules, to say nothing of the shared infrastructures conditioning energy use. They can only do this by working together with others - discussing, questioning and trying new practices collectively, which requires collaboration, cooperation and open networks.

In addition, *tackling common problems requires a collective approach.* When the financial benefits of energy saving are not evident, people are in effect asked to make a sacrifice when saving energy to promote collective 'goods' like the reduction of carbon emissions or energy dependency. Individual actions are meaningless unless people can make sure that others will also contribute. This is referred to as the 'social dilemma' and the best way to overcome this perception is to reassure end users that they are not alone in their efforts but part of a larger social movement (see Kurz, 2002).

We recognise the relationship between the context of individual energy activities and/or behaviour and the other context layers to be reciprocal: while individual action is structured by context, context can also be changed by the actions of individuals. In addition the context of the project itself, other stakeholders, and broader context play an important role in the durability of changes: many interventions to change the behaviour of the target group are successful as long as they last, but as mentioned the target group tends to revert to its original behaviour once the intervention has ended (e.g. Kurz 2002; Abrahamse 2006). This is because end-user behaviour is largely shaped by the context in which they live and work. *People need to be motivated and empowered to change:* Social psychologists have stressed the importance of self-efficacy - feeling the capability and the ability to make a difference - in behaviour change. A lack of perceived self-efficacy among end-users is evident, for example, in responses to the Eurobarometer (2005) survey *Europeans and the Environment*. Here, a total of 57% of the respondents stated that they

do what they can for the environment, but it does not make a difference because "other citizens" or "large polluters" do not do so. This mindset makes it difficult to sustain motivation for change. Therefore, if the context of the project itself, other stakeholders, and broader context do not change, lasting behaviour change on the individual level cannot be achieved. In other words, curtailment behaviour can only be successful when other stakeholders and the broader context also changes to reinforce the individual behavioural change.

Intermediaries
An important point of departure is that the CHANGING BEHAVIOUR model will address questions through the eyes of an intermediary. We do not take the intermediary as an external change agent, but as an actor with its own (varying) characteristics (which may differ from intermediary to intermediary) which is part of the context it is working in and within. Intermediaries are part of the society that they interact with; their choices and interventions are structured by the particular socio-institutional context that they are part of. This entails that some intermediaries will focus on efficiency behaviour whilst others would rather target curtailment behaviour or while others will tackle both. And their interventions in turn may change and/or restructure the context they are part of. CHANGING BEHAVIOUR in addition argues that the picture of a rational programme manager, who is trying to change the behaviour of 'less rational' target groups is problematic. It implies that intermediaries know more about 'everything' (not only energy efficiency issues), including the everyday life and all the practical problems that particular target group experience (e.g. Guy and Shove 2000; Parnell and Popovic Larsen 2005). Programme managers however, are diverse: they act according to rational calculation, and according to 'rules of appropriateness' (norms and conventions). They may be more or less reflexive. Considering resources, an intermediary can draw on scientific facts (about energy use and behaviour), but also on resources such as their relationships with target groups and other stakeholders, their own emotions and motivations, their familiarity with local contexts, and their 'tacit' skills and knowledge based on practical experience (Table 2.1, row 2).

Instruments
When considering interventions and instruments (Table 2.1, row 6), we stress that the exact choice and 'content' of the overall approach of a programme has to be tailored to the project's specific aims and context, the intermediary, the end users and other stakeholders. Factors that can influence the successfulness of instruments differ from project to project and therefore need to be analysed as part of the programme design. In Deliverable 5 we provide an extensive overview of context factors that influence the implementation of the different instruments in different contexts. We furthermore stress the importance of the interrelatedness of instruments, i.e., viewing them as contributing to an overall strategy that addresses both the individual and the broader societal changes needed. There are however some recommendations that we can make in general. Overall, a growing interest in examining combinations of instruments is increasing, and a general conclusion is that instruments of different kind have to be combined to build a policy or a programme (instrument bundles). Our understanding is that neither a particular approach nor combination of approaches will automatically deliver the desired outcomes. Furthermore, a participatory phase of preparation and the integration of end-user into the design of programmes is mentioned as a successful strategy. In addition, we consider that monitoring and evaluation of both the process and the output of a programme should always be part of the programme. Programme evaluations should address the issue of learning (Table 2.1, row 7). Learning processes may take a long time and span across multiple consecutive programmes. In addition to individual learning, energy demand-side programmes also need to stimulate 'social or societal learning', which means that the new practice is adopted and embedded into its social context. It is important to try to capture processes of social learning, i.e. processes in which the intermediary learns in interaction with the target groups and other stakeholders, and in which this learning changes *both* the contents and context of the programme.

Table 2.1   *Summary of the Changing Behaviour Conceptual Framework*

1. Key units of analysis in energy-related behavioural change	• Actors: these can be individuals (that may include 'internalised others', via social norms); in addition, these can be e.g. organizations. A selection of actors can be the target of a demand-side management programme: the target groups. • Social practices: routinised behaviours enabling/constraining the scope of action for individuals. • Broader context in which behavioural change takes place: society at large; systems of provisions (including markets), institutions (formal and informal rules, norms); sociotechnical networks (configured around technologies).
2. Logic of action[3] of intermediaries	• Acknowledgement that programme managers are diverse: they act according to rational calculation, and according to 'rules of appropriateness' (norms and conventions). They may be more or less reflexive. In any case, they are part of the society that they intervene in. Their choices and interventions are structured by the particular socio-institutional context that they are part of.
3. Logic of action of end users	• End users are neither homogenous nor static in their logic of action. Multiple ways of thinking and acting can be distinguished, as well as multiple motivations for action, e.g. calculated self-interest, altruism, 'rules of appropriateness' (norms and conventions). In addition, their behaviour (and changes in it) is structured by the particular socio-institutional context that they are part of. Through their actions, actors can change this context.
4. Barriers to energy efficiency	Multiple barriers: • Perceptions of risk, of long payback times; limited availability of capital. • Market failures: externalities (e.g. environmental costs are not reflected in current prices); transaction costs (e.g. (search and information costs, contracting costs, enforcement costs), agency issues (e.g. tenants cannot force their landlord to install energy efficient applications). • Psychological barriers (lack of feedback or information processing capacity; lack of social pressure; lack of perceived self-efficacy; lack of skills & opportunities; habits; helplessness). • Social system barriers (discouraging energy efficient behaviour) that relate to the characteristics of our present system of provision: prevailing infrastructures, institutions and networks (and concomitant power relations), 'ways of doing' , norms, culture.
5. How can actors be motivated and mobilised to save energy?	By addressing barriers at different levels: • market failures: providing cheaper information, new institutions, incentives, • information, feedback and (social or economic) incentives in suitable formats & combinations. By aiming a strategy at social interaction and mobilisation: • collective action, • interaction, negotiation and reorganization of sociotechnical networks (networks around innovations and the technologies that are part of these innovations),

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[3]   'Logic of action' here refers to particular goals, strategies, and bases of evaluation that are common in a particular context (Friedland and Alford 1991). A logic of action embodies certain goals or values, appropriate means to realise those goals or values, and criteria for judging success that appear to be mutually consistent to those following that logic. An economic logic of action, for example, involves utilitarian reasoning, efficiency and means-ends calculations.

	• capacity building.

6. What intervention instruments (concerning demand-side management programmes) are relevant	• Measures that transfer risk or that address some of the transaction costs & agency problems (e.g. performance contracting, energy service contracting)
	• Instruments to correct market failures, e.g. financial instruments, information (audits and feedback) and combinations of instruments
	• Instruments that address
	  - Barriers
	  - Facilitating factors
	• Strategies that take account of the broader social system in which current practices are embedded and that aim at transforming current systems. Focus on interaction between promoters of solutions, end users and other stakeholders.
	• Learning from bottom-up alternatives (e.g. new systems of co-provision)
	• Encouraging processes of learning (group dynamic, user participation and flexible design)
	• Market transformation, transformation of urban infrastructures

7. How to evaluate successful action/ successful interventions?	Evaluate success by addressing: • efficiency & effectiveness (energy saved, cost-effectiveness; 'free-rider' and rebound effects; social welfare), • lasting behavioural change, potential for changes in the social system, • learning processes (individual, organisational, social, societal) (of intermediaries, target group and other stakeholders).

3. From theory to practice

The CHANGING BEHAVIOUR project began from the identified need for a more interactive, user-oriented and context sensitive approach to demand-side management. As briefly discussed in the section above, we recognise the importance of shifting the focus from isolated target groups to target groups in context, i.e., embedded in a social environment that facilitates and constrains their behaviour and activities. Furthermore, other stakeholders are also part of the context intermediaries have to work with and within. Particular attention is thus awarded to interactions between intermediaries, target groups and other stakeholders within a particular context. In this section we move towards the 'world of daily practice' of intermediaries and consider how behavioural changes towards more energy efficiency may actually be influenced. An important question is how to bring about lasting (curtailment) behavioural changes towards more energy efficiency in practice. On the basis of the discussion in chapter 2 we now take a first effort at drawing out a conceptual model of how intermediaries ideally can go about better preparing and implementing their demand-side management programme[4].

3.1 Intermediaries working with and within context

Intermediaries aim at influencing a sociotechnical system that encompasses the targeted energy-related activities that need to change, the target group performing the activities and the other stakeholders and conditions that influence the changes in this behaviour. Understanding the various contextual layers of the targeted energy activities and the target group is therefore central for a successful programme. Intermediaries accomplish this by combining diverse types of knowledge and practical skills. What is important to recognise is that although the intermediary and target group may share some context conditions, in most cases contextual conditions are different for the target group, other stakeholders and the intermediary. The impact of and interaction with these contextual conditions will differ according to the respective position of the intermediary, the target group and the other stakeholders. See Figure 3.1 for a visual representation of the interaction between context conditions and actors.

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[4] This model is based on a meta-analysis of 27 cases of best and worst demand-side practice in Europe (Deliverable 4) as well as the conceptual understanding built in Deliverable 5.
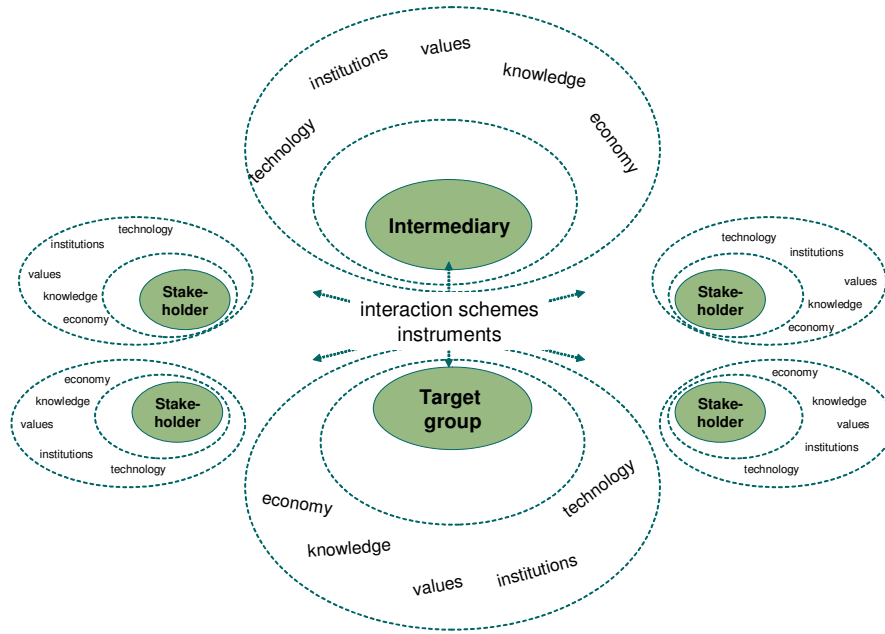
Figure 3.1 V*arying context conditions for varying actors*

For every new project or programme the concrete problem, the target group and other stake-holders that may influence this problem and the extent to which these other stakeholders may be influenced differs. To improve the success of the intervention, learning (both on the side of in-termediaries and policy-makers) how these other stakeholders help to predispose, enable, or re-inforce the desired energy related activities and/or behaviours of the target group (or, in turn, de-motivate, disable or dampen the desired change) is of crucial importance.

The further away the context layers from the layer of energy activities and target group, the weaker the influence of the intermediary is on these specific context issues. It follows from this that the intermediary can work towards *understanding* the context layers of the targeted energy activities and the target group; can attempt to *learn* about the issues relevant in the context layer of the other stakeholders and the context of the project, and can effectively often only *observe* what is going on in the broader context and as such try to anticipate changes in that furthest layer, although efforts to influence that context layer can be undertaken through mobilisation of all relevant stakeholders. See **Figure 3.2** for a depiction of the different layers of context that the intermediary can understand, observe or learn about when initiating a project or programme:
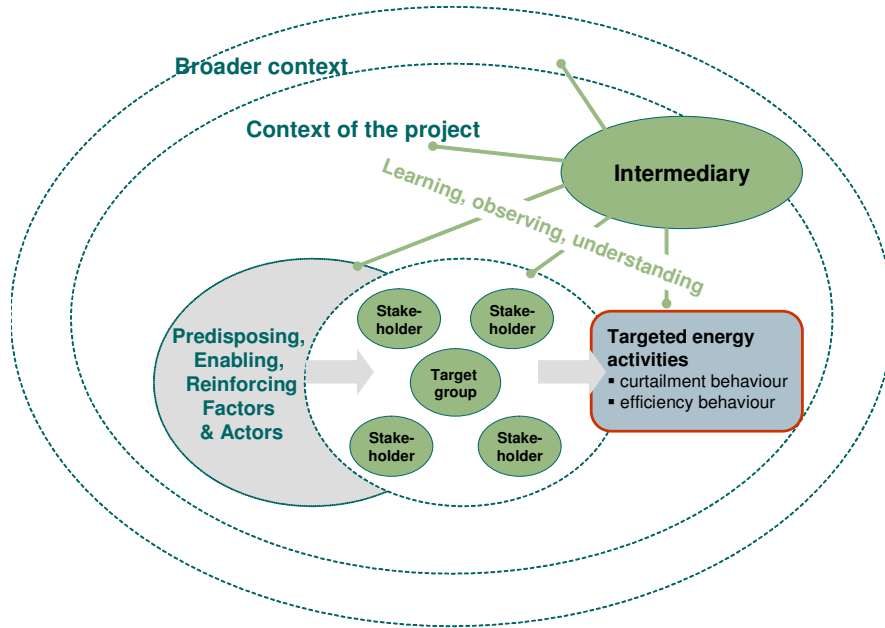
Figure 3.2 *Understanding, observing and learning about context from the intermediary practice*

As the above figure depicts, intermediaries are a part of society which they engage with. Their choices and interventions are structured by the particular socio-institutional context that they are part of and their interventions in turn may change and/or restructure this context.

3.2   Intermediaries and their daily practice: understanding the targeted energy activities

As established earlier, influencing the 'individual level' of the targeted energy activities and the target group context layers can only be accomplished by addressing both this individual and the other layers of context/social levels of change. For many intermediaries, targeting the social level of change is however, quite a daunting task, and in many cases a task beyond their capacity. Therefore, policy-makers have an important role in creating supporting and facilitating environments for the intermediary practice of changing behaviour. How this can be achieved is discussed in more detail in the section on recommendations.

Concerning the first step in the intervention, the intermediary can start with selecting a target group and consider what the relevant 'barriers' and facilitating factors that can influence a behavioural change among (parts of) this target group are. Rather than viewing target groups and their contexts as 'barriers' to energy efficiency, intermediaries are challenged to understand how and why target groups' energy practices are socially shaped (Wilhite et al. 2000; Shove and Guy 2000; Guy 2006), and thus, how they can be reshaped. Interaction with and engagement of target groups is today stressed as an important task for programmes that aim to understand how to change energy end-use practices (Stern 1999). We identified the following types of interaction schemes[5]:

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[5]   The different pros and contras of these interaction schemes are discussed in more detail in Deliverable 5. See www.energychange.info.

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- **Surveys, interviews or group meetings**
  These are conventional methods for learning about target groups which can be used in the project design. In addition, focus group discussions can also contribute to better insights on programme development.
- **Prior research and/or particular theoretical perspectives**.
  These can be more theoretical or empirical, or can combine theoretical insights and findings from current surveys, in order to better understand target groups.
- **Experience from prior projects and similar examples.**
  Prior and/or similar projects can serve as an example and this may include even formal research and statistics. Although deriving from a different context, these experiences may serve to give some impression of the target groups' needs, capacities and culture.
- **User-driven project (or pilot project)**
  A programme can be initiated and designed (at least in part) by the users. These users can be organizations (municipality, schools), or involve private citizens. Users can be involved in the initial stage, but as the scale of the programme increases (e.g. in pilots) their participation and input will become increasingly difficult to manage.
- **Familiarity and informal interaction with the target group.**
  There are other ways to give user experience a place in the design of a programme in more informal ways (e.g. asking for feedback, discussing programme design elements with the target group and other stakeholders representing various user groups; awarding implementation responsibilities to longstanding members of the user community, or having programme managers and staff with prior personal experience of being 'one of the users'.

3.3 Intermediaries and their daily practice: influencing the targeted energy activities

When an intermediary has engaged with, learned about and understands the different contexts, he can then try to influence the targeted energy activities and target groups and other stakeholders. In addition, policy-makers who have focused on understanding the implementation context of demand-side management programmes can also work towards creating facilitating environments for the intermediaries.

Choosing the right moment for influencing the targeted energy activities is an issue that also needs more attention. What does not become apparent from the previous figures is that context is not a static condition either facilitating or hampering change. Different elements (issues, stakeholders) of the multilayered context change over time, sometimes slowly, sometimes quickly, and sometimes only a small part of the context changes (changing family circumstances, newly built neighbourhoods, economic restructuring of a region), but it can also involve a major change (public awareness, financial crises). Timing a demand-side management programme to successfully interact with these contextual changes is suggested in our cases to be of utmost importance. Timing can be defined broadly in terms of 'planning' the start of the programme; making use of windows of opportunity (for example sector specific economic situations, or specific user needs, specific regulations in place, natural moments of change such as a renovation of a neighbourhood), but also in terms of linking to ongoing activities such as other campaigns. We acknowledge that 'planning' the start of the programme is a very intricate issue, as the context of a project can change rapidly, e.g. in reaction to a global event such as the 2008-2009 financial crisis.

Once the issue of timing has been dealt with and the intermediary has learned about all relevant issues regarding the target group, the other stakeholders and the factors influencing the room for action; then a strategy to influence the behaviour by means of well thought through and appropriately selected interventions can begin. By making use of a strategy that uses interrelated instruments that address both the individual and the broader societal changes needed, meaningful

change can be given an opportunity to succeed. See **Figure 3.3** for a depiction of the different targeted context layers.
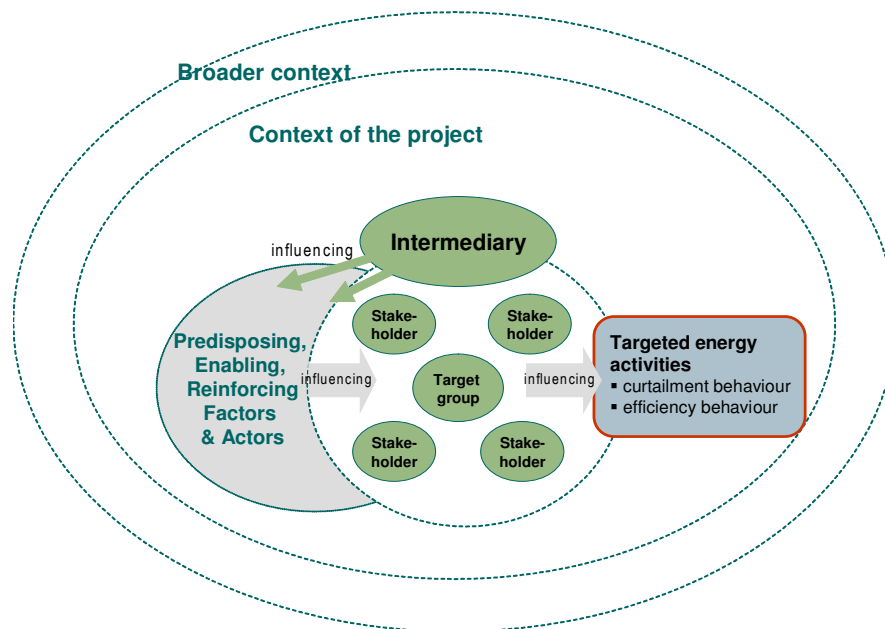

Figure 3.3 D*ifferent layers influenced by the intermediary*

By means of the detailed analysis of the different relevant contexts the intervention and the instruments can be tailored to the particular situation. This is important since, as discussed earlier, the effectiveness of different instruments and their combinations depends on particular features of the context. For example, as most target groups are rather heterogeneous, different types of conditions will likely influence the effectiveness of the intervention instruments (Pawson and Tilley 1997, for energy programme examples, see AID-EE 2007). In addition, the instruments can be more effective if their selection has also been shaped to match the aims, capacities and resources of the intermediary. Examining the 'fit' between the goals and ideals of the intermediary and the targeted energy activities and the target group may also lead to the discovery of 'bottom-up' processes that can support the intermediaries' goals.

Neither a particular approach nor combination of approaches will automatically deliver the desired outcomes in all cases. In general, intermediaries can try to make the intervention more effective by using a mix of instruments to influence multiple aspects of the different relevant contexts. Thereby, more people of the heterogeneous target group might feel addressed by the programme, or effective implementation might be further facilitated. Securing the resources for this process, gaining social acceptance and support, and ensuring that the change process becomes a part of the social structure and culture is essential.

The exact choice and 'content' of the overall approach of a programme has thus to be tailored to the specifics of the project's aims (changing efficiency and/or curtailment behaviour), and to the characteristics of the intermediary, the target group, other stakeholders and the broader context. For example, the choice of a particular approach may reflect the needs and resources of the programme: large-scale programmes addressing broad and heterogeneous target groups naturally need to gain representative data on characteristics of the target group through e.g. surveys, whereas smaller, more 'local' projects can build on more informal experiences - and in fact, often most do so due to resource constraints.

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Intermediaries can operate on a 'project' level, often targeting efficiency behaviour, providing practical (investment and implementation) advice and support to energy target groups, or 'delivering' policy programmes like campaigns or audits. But they can also aim for a more 'strategic' level by actively seeking to target curtailment behaviour on a larger scale; thus attempting to re-shape social practices, institutions and infrastructures. The systemic approaches go beyond the use of individual instruments and ideally use the most appropriate *mix* of instruments to facilitate the process.

The intermediary can influence the energy related activities of the target group and to a certain extent also of the other stakeholders by means of a variety of instruments. These instruments can target either efficiency and/or curtailment behaviour. The available instruments can generally be split into financial instruments, instruments based on information and instruments that involve some kind of voluntary agreement or commitment. The regulatory command and control instruments are generally not set up by intermediaries, although they can be used by them. In general the financial instruments are instruments that target efficiency/investment behaviour, although they can of course stimulate actual long lasting behaviour change in use practices. Instruments that involve information, feedback, voluntary agreement and or commitment in principle target curtailment behaviour. Table 3.1 summarises how the different instruments available can be tailor-made to the targeted aims and group and as such become more effective.

Table 3.1 *Summary of examples to tailor instruments to the contextual characteristics*

Instruments	Examples of a sociotechnical approach to applying the instrument
Economic instruments and energy service companies	• Understand (various) end-user groups' problem framings and decision rules. • Take into account the symbolic/signalling role of economic instruments. • Take into account social (user-to-user) diffusion of information and opinions on the instrument. • Consider how broad uptake of the instrument increases trust and decreases uncertainty for individual end-users (network effects). • Make sure the incentivised solutions (including the necessary competences and support services) are easily available. • Allow for local variation and tailoring of solutions.
Information and education	• Understand (various) target groups' practices, tailor messages to target groups' practices. • Take into account the agenda-setting role of campaigns. • Make use of changes in the context of the target group that alert them to information. • Make sure information sources are trusted by the target group. • Do not place the entire burden on individual end-users, show what others are doing. • Make sure people can follow-up on the information provided (solutions available). • Build on participation, successful local practices, local 'multipliers', existing social networks and peer-to-peer communications.
Metering and feedback	• Understand context of the target groups. • Design metering and feedback systems on the basis of user needs and practices early on in project development. • Consider providing feedback on the cumulative achievements of all participants and on a regular (also interim) basis. • Consider how feedback and metering helps to make energy use 'visible' and 'actionable'. • Make metering part of a broader effort to integrate energy users into electricity market operation.
Energy audits	• Understand (various) end-user groups' problem framings and decision rules. • Design audit model to meet the needs and practices of the target group. • Consider how audits help to make energy use 'visible' and 'actionable'. • Consider timing of audits (vis-à-vis other priorities). • Involve target group and other stakeholders in the audit process. • Make sure qualified auditors and service providers (for follow-up) are available.
Energy advice	• Understand end-user practices (what advice is needed and in what form). • Provide advice at an opportune moment (when topical for the user). • Involve users in the development of advice formats (successful user practices, discovery of user needs). • Consider how advice helps to build a culture of energy competence (through peer-to-peer forwarding of advice received). • Provide advice through intermediaries and peer-to-peer networks that are close to the users.
Negotiated agreements, voluntary commitments	• Allow users scope to decide on actions, but provide sufficient advice. • Ensure peer-to-peer support and pressure, group empowerment and rewards for participation. • Use the right timing considering the capacity of the target groups and the development of more binding regulations. • Adapt programmes to local conditions. • Use local intermediaries to anchor the programme and ensure durability of changes.

In addition to the recommendation to tailor the specific combination of instruments to the characteristics of the target group, the targeted activities, the other stakeholders and the intermediary, recent programmes to reduce energy demand have recognised that, in general, a socially-oriented approach is fruitful. This approach recognises the fundamentally social nature of human behaviour: people acquire most of their knowledge and behaviour from other people around them - thus it is important that target groups involved in change can see that others are changing, too. This is evident, for example, in the use of 'community-based social marketing' in energy conservation projects (see MacKenzie-Mohr 2000; Jackson 2005; Olli et al. 2001; Lucas et al. 2008. Such programmes employ the following types of measures:

Peer-to-peer communication
People do not often trust advice that comes from 'above' or 'afar', such as the government or abstract agencies. And in many ways they are also somewhat right in this approach, because general advice needs to be adapted to particular contexts. Furthermore, people also want to conform to social conventions in their own context. Finally, it is easier to engage energy end-users when bringing the information very close to their everyday lives. This has given rise to an intensive use of peer-to-peer communication - not only in social marketing, but in marketing in general (viral marketing, buzz marketing, etc.). Peer-to-peer communications also stress the primacy of face-to-face contact. In a world increasingly crowded with media messages, face-to-face communications are more salient and gain genuine attention. People who are similar to the target group that an intermediary wishes to target can be engaged as 'multipliers' of the message conveyed. The key issue here is to identify the social networks of the target groups and find communicators who are close to the end users to carry the message forward. These communicators are also able to better customise the message to 'fit' the target groups' contexts. There are many examples of how this can work, including:
- The use of 'train-the-trainers' programmes
- Volunteer advice networks
- Local NGOs
- Social media (discussion sites, Facebook, etc.)
- The use of naturally occurring social contexts and events at the workplace, neighbourhoods, etc.

Social support and social pressure
Because energy use is largely conditioned by social conventions, social influences are also important in changing energy use patterns. Social support is important for many reasons: it can provide 'moral support' and reinforce commitment, but it can also provide practical 'how to support' though peer-to-peer exchange of experiences and common pitfalls to avoid. Social pressure is the opposite side of the coin. Target groups are stimulated to change because other stakeholders whose opinion matters to them or who they admire make their commitment to change visible, and may even disapprove of those who do not participate in the change process. Practical examples of how to utilise social support and social pressure are evident in many voluntary energy change programmes:
- The use of support networks - e.g. via regular meetings or social media - allow for target groups to see what others have done and show their own achievements to others.
- Competitions often make use of social needs to excel and better oneself.
- Human beings gain intrinsic pleasure from interacting with others - the opportunity for social interaction and gaining new contacts by participating in a programme may be a reward in itself.

Making sure everyone 'does their bit'
Social dilemmas are powerful impediments to behaviour change that aim to conserve common goods. Target groups need to know that others are doing their bit (Kollock 1998). The following are practical examples of how to mitigate the social dilemma of public vs. private interests in reducing energy demand:

- Public commitments and pledges: Public commitments and pledge campaigns can help to show target groups that many other people are also concerned and are committed to taking action.
- Monitoring of collective achievements: Various kinds of publicly make visible the collective achievement of programmes; highlighting that others are also taking action and that the sum of these individual actions is collectively making a difference.
- Showing the effects of actions on the local level: even relatively concerted actions to, e.g., mitigate climate change have only small and long-term impacts on the global climate. Thus, aggregating energy saving and carbon reduction achievements on the local level may serve as an 'intermediary step' that provides motivation.

Participation

Social change is rarely initiated from 'top-down'. In order to become empowered and to take the change process into their own hands, target groups need to be involved in designing the demand-side programmes. Furthermore, participation allows target groups to bring their own concerns and their particular contextual opportunities and constraints into the design and implementation of the programme (Stern 2000). Engaging target groups in the design and implementation can also enhance 'buy-in' and make the programme more socially acceptable (Futerra 2005). End-user participation can also provide 'free resources' for programme managers. Examples of how to include participatory elements in the design and implementation of demand-side programmes include:

- The use of focus groups, surveys, questionnaires to gain user input into design, implementation and evaluation of the project
- Public meetings to gain feedback into design or during implementation
- The engagement of local associations and residents' networks in design and implementation
- The use of idea competitions and provision of support for end-user initiated programmes

To conclude this chapter, we emphasise again that the CHANGING BEHAVIOUR conceptual framework aims to facilitate demand-side management programmes which actively engage with contexts rather than just 'dropping' programmes into contexts. In order to improve the successfulness of such programmes we address change as a process related to 'context, actors and timing'. In other words, our conceptual framework is flexible and addresses context seriously - in a generalised manner by indicating the embeddedness of change and the impossibility of proper understanding without addressing the context as well.

4.   Recommendations

Having discussed how we understand demand-side management practice, we now conclude with some relevant lessons learned from our analysis of the literature and best intermediary practices that can be taken on board by intermediaries and policy makers. These recommendations are about embedding the project by making it 'fit' better. Changes that 'fit' within contexts are more likely to be become resilient while changes that do not fit very well to begin with may be easily discarded once the project has finished.

4.1   Recommendations for intermediaries

The basics

The following conditions are essential for a successful demand-side management programme and already quite well-known - but no less important for that matter:
- Financial support
- Clear focus and goal
- Sound background in energy and technical data
- Continuity and sufficient time for change
- Regular monitoring and feedback to participants
- Open collaboration with other projects and institutions

Context matters

The project is not going to be implemented in a 'void', so it is important that the context and timing issues are addressed and understood. These involve predisposing (e.g. what motivations people have at a certain time), enabling (e.g., what they are capable of doing), reinforcing (are there context/timing issues that can support the change) factors. The last point, in particular, relates to durability of the intended changes. Good timing can benefit from 'windows of opportunity' created by changes that are already underway in the context.

There is no one single critical failure or success factor

Energy efficiency programmes and projects are informed by a range of critical failure and success factors - there is no one single critical failure or success factor. Many of these issues – financial, staffing, communication and knowledge base – are not isolated issues, rather they are interrelated. Appreciating that there is no single critical factor is of crucial importance.

Engaging with a wide variety of different knowledge and expertise

Different forms of knowledge and expertise need to be mobilised in bringing together the knowledge necessary for change, often in a context of habitual actions and entrenched institutions. In doing so there is a need to understand who the 'target' of energy efficiency projects and programmes is and how to effectively communicate and work with this target group. There is also a need to bring all relevant stakeholders on board.

Beyond a one size fits all approach

Understanding, balancing and managing of different combinations of the critical factors is the critical challenge: combinations of these issues means that a variety of actors, with different motivations are implicated and involved, e.g. practitioners, policymakers, funding bodies, different users etc. Not only this, but these combinations of issues and actors may look different in different settings and where various agencies and 'intermediaries' are involved. This highlights a need to move beyond a 'one size fits all' approach whilst at the same time not reducing our understanding of specific contexts. Consequently, rather than creating universal recipes for success, combinations of issues need to be understood in relation to different projects/programmes and the contexts of their 'targeting' and 'implementation'. Whether an issue is important or not depends on the context.

Set goals but be flexible
As a result of focusing on and involving target groups and other stakeholders, and appreciating the need to go beyond a one size fits all approach, intermediaries may change their original plans to adapt to needs and existing initiatives among other stakeholders. Flexibility to adapt to the needs and requirements of the target group and the social context can be promoted by an on-going process of interaction, monitoring, learning, collecting feedback and iterative planning.

Implementing on the individual level, working on the community level
Behavioural change does not only take place on the individual level but is interrelated with and thus influenced by the wider social system that creates the possibilities for changing the behaviour on the individual level.

Knowing your target groups
Knowing your target group involves understanding a target group prior to the project and understanding their goals in relation to your organisational goals. The recognition that a target group is not homogenous is crucial to the effectiveness of your programme.

The target group is more than a recipient
Intermediaries are dependent on the target groups to achieve their goals. Thus, it is important to find the appropriate ways to learn to understand each target group and make your project meaningful for each individually. Target groups should be engaged as active players, who may also have their own opinions of what is meaningful. However, they are not always able to articulate the factors influencing their behaviour, so analytical concepts like the predisposing, enabling and reinforcing factors can help intermediaries and target groups to make sense of the conditions for change.

Making it 'fit' helps making it 'stick'
The more the targeted new practice fits into the everyday practices, rules and conventions in the context of the target group and the other stakeholders, the more likely it is to survive after the intervention is discontinued. This requires a good understanding of the particular context of each target group and stakeholder and can be enhanced by learning participation and building on target group initiatives.

Making messages meaningful
Making the message of a programme meaningful to the target group challenges practitioners to adapt their language and communication formats to be tailored to different local contexts in order to communicate the message of energy efficiency and behavioural change effectively in a way that resonates with different interests. One strong view is that there is a need for new narratives, challenging the 'we are on board a runaway train' messages or the 'do-nothing' messages and devising different motivating messages such as "together we can make a difference" to underpin engagement in productive behavioural change. These messages need to be broader than energy efficiency and encompass climate change messages or 'piggyback' off other agendas as a process of making energy efficiency messages meaningful for 'target groups'.

Aligning interests on different scales
The target groups' practices are usually influenced by multiple stakeholders - not only the target groups themselves. All of these stakeholders have their own interests which will support or obstruct the proposed change. In order to support sustainable change, it is important to align interests on different scales - from national policies to local players such as local government, local service providers, residents' associations or workplace communities and different kinds of end-users. Finding solutions requires an articulation of these different interests and negotiations which may include conflicts. However, if these different interests are not openly addressed, they may obstruct the achievement of change and will likely be a source of tension throughout the

programme as some actors may feel their interests have been marginalised. Thus it is important to (early on) stress the mutually agreeable aspects among the various players influencing target groups' energy use patterns, because these interests will continue to support the targeted new practices.

Creating networks that support the changed activities
Creating networks and social structures that support the new behaviour and make it lasting after the programme ends is of outmost importance. Creating networks refers explicitly to making the change resilient by supporting the evolution of existing structures, networks and institutions. So in that sense it is primarily about reinforcing change. But in other ways networks can also be predisposing and enabling (e.g. providing resources, offering more competencies). These networks of actors engaged in the change will 'carry' the new practice and reinforce it also after the intervention is concluded. They can be 'self-help' networks, preferably including diverse competencies and diverse actors that have an influence on the targeted practices.

Understanding your own organisational context and resources
Many practitioners outlined the importance of understanding clearly their own organisational context and the resources available to them, especially when dealing with investors. In particular it is deemed important to understand the opportunities and constraints financial resources bring to the organisation; the importance of having a good network behind you but not overrating collaboration and connections to other ongoing programmes; and finally recognising the importance for the continuity of staffing where the staff and manager may benefit from working together from the earliest stages and throughout a project; also developing longstanding relationships with users.

Monitoring, evaluating and learning increase the success of next projects
A crucial issue relates to the ability of intermediaries to monitor, understand, learn about and adapt their practices in a more systematic manner. There is a need for more appropriate and effective monitoring, evaluation and learning. But, we need also to acknowledge the very immediate and resource limited context within which many intermediaries operate. It is common for practitioners to complete tasks which can improve their work but often this gained knowledge is not put to use in new projects, and practitioners return to their typical procedure for designing and implementing projects.

4.2   Recommendations for policy makers

This final section concludes with some relevant lessons for policymakers involved in demand-side management programmes (directly in a programme or indirectly by facilitating these through e.g. policy). As discussed in this document, for behavioural change to be durable, it should be seen as part of a more structural and systemic change - not just the sum of a number of individual behavioural changes. The changes (in patterns of consumption and production) need to become embedded in new or renewed institutions and networks, which are practical manifestations of contextual change. This is where policy makers who are co-shaping the broader (institutional) context have an important role to play, not in the least in providing resources for intermediaries to undertake their work, and by creating environments that support and facilitate the practice of intermediaries.

Support intermediaries working on the ground for change in energy use patterns
Energy intermediaries in Europe are today under increasing pressures to support national states and local governments in the active reconfiguration of energy systems in response to issues like climate change and energy dependency. Critically, there are likely to be intensified requirements for the capacity to develop managed and purposive transitions in the social and technical organisation of energy systems. Intermediaries are thus expected to accomplish more than isolated projects; they are expected to promote energy systems transitions by co-ordinating and integrat-

ing diverse local actions. Intermediaries are a valuable asset for any country aiming seriously to reduce energy demand because they can shape end-user behaviour by entering the end-user context and changing the most important features in order to achieve the desired changes. This is a difficult task, however, and some aspects of the context are beyond the influence of local intermediaries. In addition, resources and institutional support for intermediary organisations working 'on the ground' are often lacking. Policy-makers have an important role in supporting change by acting as role models and creating favourable conditions (providing adequate resources and powers, set prices, incentives, ensure the availability of technologies). In addition, it is worth listening to the views and experiences of intermediaries as they often posess firsthand and contextually relevant insights.

Orchestrating policy interventions
Existing energy efficiency and demand-side policies have often been piecemeal and short-term and different initiatives and measures are not necessarily timed to support each other optimally. Policy makers need to develop coherent and longer-term policies. In addition to national policy instruments and programmes, important accompanying measures can be found by stimulating and supporting local and sectoral initiatives. For policy makers working on a more systemic level, market transformation and urban multi-stakeholder programmes are examples of policy strategies that combine intervention options and support systemic change and that can be used to facilitate the work of intermediaries working on demand-side management programmes.

Creating new institutions to support the new behaviour
Institutions are not easy to create, but examples of 'proto-institutions' can include certification schemes, permanent bodies including end-user representatives, permanent physical fixtures like new metering devices, new service providers and supply chains, or new rules of 'appropriate' behaviour. The institutions can promote the durability of behaviour change after the project has ended.

Put theory to practice
There is significant valuable theoretical research that can be used in designing energy demand-side programmes. However, it is important to recognise that social and behavioural science theories are usually 'middle-range' theories that apply in certain contexts (certain kinds of behaviour, end-users or social structures in the end-user community). This is why theory needs to be applied in practice, and the best way to do this is for policy-makers, researchers and intermediaries to work together to combine theoretical insights with practical experience on the ground. National level policy makers can support the development of practicable theoretical understanding by providing resources for learning and research to intermediaries, as well as through the development of context-sensitive evaluation methods.

Allowing for flexibility
Many funding schemes require very detailed plans and very careful execution according to these plans. This makes it very difficult for intermediaries to adapt programmes to context and to lessons learned in the context during implementation. It also makes it difficult to engage target groups and other stakeholders in design and implementation. More flexible planning and monitoring and process and or output evaluation mechanisms need to be developed; which does not mean that intermediaries do not need to be accountable for achievements but rather they need not be accountable for implementing the programme exactly as planned when they receive counter-indications from the context.

Allowing for continuity
As mentioned above, many policy instruments and interventions are short-term. Behaviour change, however, is a very long-term process that involves learning and adaptation at different levels (individual, social and societal). Thus, sufficient continuity of instruments and initiatives needs to ensured, in spite of the problems of electoral cycles e.g. by breaking larger systemic

changes down to a series of smaller ones and aim for realization of sub-changes within one electoral cycle.

Evaluating long-term achievements
It is important to make effectiveness and cost-effectiveness analyses of demand-side programmes, but it is also important to see what permanent capacity they leave in the end-user context. There is need for a 'balanced scorecard' approach to energy efficiency policies and measures, which takes into account not only techno-economic achievements, but also the socio-cultural capacity to adopt and retain energy efficient practices. Various measures can be used, such as the involvement of diverse interests in the programme and the creation of new networks and new institutions that survive after the intervention. Also, 'soft behavioural' intervention can often produce quantifiable or semi-quantifiable results; thus a more flexible approach to evaluation would contribute to the growing need for behavioural demand-side management programmes

4.3   Further activities and reporting

This document has summarised the practical and theoretical knowledge base of the CHANGING BEHAVIOUR project, by presenting our conceptual framework and a more practical model that starts from the position of the intermediary practitioner. We concluded with several recommendations with relevance for policy makers and intermediaries - both programme-specific as well as more generic. The elaboration of the work of Work Package 2, and in particular of the recommendations identified in this deliverable, into a truly practicable and context-sensitive toolkit is underway and will be finalised the end of 2010. This toolkit will be made publicly available online.

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