International Energy Agency

Energy Technology Initiative on
Demand Side Management Technologies and Programmes

ST8 Toolkit of Interventions

Task 24 – Phase II
Helping the Behaviour Changers

Case study template

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Contents

Background

Why undertake case study analyses?

From Kohn (1997): "The case study methodology is frequently applied in programme evaluation studies or studies that track changes in complex systems. It is also not unusual for researchers to combine case studies with quantitative analyses that use larger data sets. The nature of the problem and the theories of interest dictate the mix of methods used to answer any particular set of questions." Researchers can use case study methodology for many purposes:

- to explore new areas and issues where little theory is available or measurement is unclear;
- to describe a process or the effects of an event or an intervention, especially when such events affect many different parties; and
- to explain a complex phenomenon.

Like any research process, quantitative or qualitative, one of the first steps of the case study method is to state the theory and the set of research questions to be answered.

Zainal (2007) cautions that "Although case study methods remain a controversial approach to data collection, they are widely recognised in many social science studies, especially when in-depth explanations of a social behaviour are sought after. Case study research, through reports of past studies, allows the exploration and understanding of complex issues. Through case study methods, a researcher is able to go beyond the quantitative statistical results and understand the behavioural conditions through the actor's perspective."

Yin (1984) notes three categories, namely **exploratory**, **descriptive** and **explanatory** case studies, other categories include **interpretive** and **evaluative** case studies:

1. **Exploratory** case studies set to explore any phenomenon in the data which serves as a point of interest to the researcher.
2. **Descriptive** case studies set to describe the natural phenomena which occur within the data in question. The goal set by the researcher is to describe the data as they occur. Some authors suggest that descriptive case studies may be in a narrative form.
3. **Explanatory** case studies examine the data closely both at a surface and deep level in order to explain the phenomena in the data.
4. Through **interpretive** case studies, the researcher aims to interpret the data by developing conceptual categories, supporting or challenging the assumptions made regarding them.
5. In **evaluative** case studies, the researcher goes further by adding their judgement to the phenomena found in the data.

Case studies are considered useful in research as they enable researchers to examine data at the micro level. As an alternative to quantitative or qualitative research, case studies can be a practical solution when a big sample population is difficult to obtain. Although case studies have various advantages, in that they present data of real-life situations and they provide better insights into the detailed behaviours of the subjects of interest, they are also criticised for their inability to generalise their results. Case study method has always been criticised for its lack of rigour and the tendency for a researcher to have a biased interpretation of the data. Grounds for establishing reliability and generality are also subjected to scepticism when a small sampling is deployed. Often time, case study research is dismissed as useful only as an exploratory tool. This was not regarded as a major problem here, as Phase 1 of Task 24 engaged in largely a theoretical, exploratory meta-analysis of different models and theories of behaviour change, using case studies to illustrate how they are implemented in real-life situations.

Task 24 tools to undertake case study analyses

Subtask 1 – the "Monster" case study analysis

The first phase of Task 24 concentrated almost entirely on an analysis of international case studies – programmes, policies, pilots and projects, summarised under the heading of "behaviour change interventions" (see Mourik and Rotmann, 2013). The main theoretical overview of how these various interventions were applied in real-life, and how they were based, implicitly or explicitly, on models of understanding behaviour or theories of change (see Darnton, 2008) followed an initial case study template created by former Task 24 project partner *Duneworks*. It is re-created in Appendix 1.

These templates are brief sketches of a project or programme, following a line of questioning that aims to highlight the impact of a chosen theory or model of behaviour change aimed at energy conservation or efficiency for the actual design, implementation, monitoring and evaluation of the project or programme. The case studies were collected from four main domains**: transport, building retrofits, SMEs and smart meters**, thus encompassing a very wide range of DSM interventions. Some came from government (both national and local), some from the energy industry, some from businesses, some from the third sector and some from researchers. Some have used similar models or similar approaches, but they all encompass a wide variety of themes, contexts and outcomes. Due to the large variability and inter-disciplinarity of both the models and the stakeholders applying the models, we realised early on that we were going to have a potential communication problem. This is why we chose to use narrative descriptions of each case study and model of behaviour to reduce jargon and improve legibility (see Rotmann et al, 2015; Rotmann, 2017 and 2018a).

Kohl (1997) describes the need for developing a "logic model" early in the case study design phase, which is the theory against which rival explanations are tested. "In large projects, logic models can also facilitate building consensus among many researchers representing different disciplines and serve as a mechanism for involving study participants, particularly in evaluation studies in which an intervention needs to be specified in detail." After our first major international workshop in Oxford in 2012 (see Churchhouse et al 2012), we realised we had to refine our "logic model" and decided on using Darnton's (2008) overview of different models and theories of change, as a starting point. Another major design question faced by the researcher is defining the "case," or unit of analysis. A tension in case study design is how much structure should be built into the instrument. A very structured instrument, with a lot of close-ended questions, brings one closer to a survey design that contains fieldwork. It can fail to take advantage of the strength of the case study approach to uncover subtle distinctions and provide a richness of understanding and multiple perspectives that experienced researchers are able to obtain on-site. On the other hand, very large studies with many people involved in data collection (as was the case in Task 24, with over 60 case studies collected from 15 countries) may require a relatively greater degree of standardisation to ensure consistent implementation and improve reliability. Many researchers view analysis of qualitative data as the most difficult aspect of conducting case studies for several reasons. Typical concerns with conducting case studies are the intensity of the data collection process and the overload of information obtained – hence we jokingly refer to our Subtask 1 case study report as "the Monster".

Although modest in intention, the "Monster" report distinguished itself from other studies that contrast the use and usefulness of diverse social scientific theories and models that underlie interventions by using a diverse set of international empirical case materials. In that sense, this report was a first empirical exploration of the ways in which models and theories underlying interventions may affect particular outcomes and under which circumstances. An important aim of this study was also to arrive at questions for further in-depth empirical case study research (as part of Subtask 2). In addition, it was meant to be a start at creating better interventions through a critical assessment of underlying perspectives.

However, we also took several learnings from using this template, one major one being that it was clearly too complex for most behaviour change experts (researchers and policymakers often from countries that don't speak English as first language) to easily understand. The quality of the case studies and how comprehensively they were filled out, thus suffered. For example, most experts could not easily answer the question which Models of Understanding Behaviour (MoUs) or Theories of Change (ToCs) were used, even implicitly, when designing the interventions. It was thus rather difficult to draw explicit insights from the case study templates alone, and additional background research (which wasn't always easy, as there often weren't reports or published papers, and if they were, they often were not in English) was needed. Ultimately, the quality of the "Monster" case study analysis suffered from these limitations. In addition, the size of the report, despite the much-lauded use of summary stories using a "fairy tale story spine" (see Rotmann, 2017 and 2018a), caused issues particularly with our policymaking audience. In order to make it more digestible and support the usefulness of the report, we also created a Wiki (which used a lot of time and effort to get going but unfortunately broke down after a couple of years) and a decision-making tree, which unfortunately was not finished by our project partners (see Zeeuw, 2018).

Subtask 2 – In-depth country case studies

In Subtask 2 we delved further into chosen case studies in our financially-participating countries only (and only in ones where we had National Experts, which excluded Italy and Belgium). This Subtask had a combined, empirical and scientific approach to developing a country- and sector-specific overview of key context factors and provide case study examples highlighting these factors, and successful (and less successful) approaches to work around, or with these factors. Policy, research and DSM-implementing experts from a variety of sectoral and national backgrounds were asked to contribute DSM cases and assist in the analysis of these.

We studied a variety of behaviours and sectors, using the original case study template (Appendix 1) and semi-structured interviews with programme managers, policy makers and researchers (Appendix 2). This led to more comprehensive insights into the case studies, although they would have benefitted from more empirical research including small literature reviews.

In Austria:
The difference between a neoclassical economic and social learning approach to residential behaviour change programmes - the European "€CO$_2$ Management" and "Energy Neighbourhoods 2" projects (Lang, 2016).

In the Netherlands:
A living smart grid lab called "PowerMatching City" (Mourik, 2014).

In New Zealand:
A smart home pilot called "Powering Tomorrow's Homes" (Rotmann, 2014).

In Norway:
Implementing large-scale energy efficiency measures in a family owned SME. The "Finnfjord" case study (Karlstrøm, 2014).

In Sweden:
A transport congestion trial in Stockholm City (Nyström, 2014).

In Switzerland:
Changing the whole Swiss society to only consume 2000 Watts per person per year – the "2000 Watt Society" (Eberwein et al, 2015).

Subtask 4 – Country recommendations

In this Subtask, we took the learnings from Subtasks 1, 2 and 3 (on evaluation) and prepared country-specific recommendations for our policy funders. This included taking the case studies examined for each country and re-iterating their design, implementation and evaluation according to the insights and recommendations from Subtasks 1, 2 and 3 (for example, see Appendix 3).

Subtask 6 – the Issues

In this Subtask, we decided on the top issues to be examined for each country, with relevant *Behaviour Changers* in each country. This was done in facilitated multi-stakeholder workshops (see Task 24 workshop minutes), using the "Behaviour Changer Framework" (Rotmann, 2016). The case study template that was used for the in-depth development of the Dutch Subtask 6 issue on ICT use in Higher Education (Mourik and Smits, 2018) can be found in Appendix 4. For all other countries, this in-depth case study template proved too cumbersome and information was collected during workshops and the actual pilots that were co-developed with Behaviour Changers in the field.

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Appendix 1. Case study template for Subtask 1 and 2 case study analysis

This is the template for describing the use of models of understanding (MoU) behaviour and theories of behavioural change (ToC) in specific projects or pilots or policies (p/p/p) (see GSR review Table of theories and models in Addendum)

Questions on the case study	Is this a project, policy or programme? Please provide its name	
	Country and geographical scope in which project, policy or programme was implemented	
	Contact details of person in charge/in the know, website or link to report, if available	
	Summary (1 page max) with description of project, policy or programme and model of behaviour or theory of behavioural change used	
	Context-specific issues that had an impact on the implementation of the case and the use of the MoU	e.g. legislation, geography, social norms, tradition, technology, infrastructure etc.
	What is the target of the project/programme or policy and what is the goal for a successful behaviour change outcome?	e.g. reduce energy use, increase comfort and warmth, reduced GHGs, change market etc.
	Description of monitoring and evaluation metrics or key performance indicators used evaluate successful outcomes/if the model worked	
	Main outcomes: findings and conclusions up to ½ side A4	
Questions on models of understanding/ theories of change	Summary of the essence of the MoU/ToC up to ½ side A4	
	Principal experts for this MoU/ToC	
	Disciplinary origin of this MoU/ToC	
	What sectors or topics has the MoU/ToC been used to analyse previously? (e.g. health, comfort, energy, mobility)?	
	What methodology is best suited to work with this MoU/ToC (e.g. qualitative, quantitative, interviews, surveys, focus groups, statistical analysis, lab experiments etc.)?	
	Who is the focus group of the model/theory?	e.g. individuals, groups, society
	Does the model/theory deal with one-off actions or repeated/habitual actions, or practices and/or if they have impacts that last/extend into the future ?	
	Does the MoU/ToC provide a clear definition of 'behaviour'?	
	Does the MoU/ToC provide a definition of DSM? Does it focus on energy use or the use of energy services?	
	What does the MoU/ToC say about the role of technology, infrastructure, institutions, norms, values, stakeholders in the effective implementation of behaviour change?	
	Does the model/theory specifically target discrete behaviours in (relative) isolation, or is it able to deal with significant interactions between a target behavior and other interrelated behaviours?	
	Which key issues need to be monitored and evaluated according to this MoU/ToC, and which indicators can be used to do this?	
	What are the 5 key lessons this MoU/ToC generate with respect to behaviour and behaviour change	
Questions on combination of MoU/ToC and case/programme/policy	Is the MoU/ToC used explicitly or implicitly?	
	Why was the MoU/ToC used?	(e.g. prior experience)
	How was the model/theory chosen?	(e.g. chance, on purpose)
	Which elements of the MoU/ToC were used?	Design, implementation, evaluation
	Did the use of the MoU/ToC clearly add value to the p/p/p or would the same interventions have been deployed in much the same way without the theoretical input?	
	How can, or was, this model/theory (be) made practicable for DSM practitioners and policy makers?	
	What were the most important lessons learnt concerning the use of the MoU in this case in bullet point?	
Generic Questions	Key words/tags, e.g.	Energy policy, transport, housing
To add	Publications/ reports/ weblinks	

For analysis: lessons learned and recommendations based on the analysis of this intervention:

- What, if any, lessons can be learned regarding the use(fulness) of the particular MoU/ToC that informed this intervention?
- Use and usefulness of other insights, knowledge and ideas? (e.g. tacit knowledge, know-how, learning-by-doing as a way to arrive at an intervention)
- Opportunities for and limitations to monitoring and evaluation?
- Opportunities for and limitations to replication
- How has the use of theoretical insights contributed to the effect of this intervention? (or/and: How could a better use of theoretical insights have contributed to the effect of this intervention?)
- How is the use/uptake of MoU/ToC affected by the day-to-day realities that a project has to deal with?
- How to account for the monitoring and evaluation efforts undertaken?

Addendum: TABLE FROM GSR REVIEW ON BEHAVIOURAL MODELS AND THEORIES OF CHANGE (*http://ebookbrowse.com/behaviour-change-reference-report-tcm6-9697-pdf-d219871801*)

Table 1: An Index to the Featured Models and Theories

Section	Models & Theories	page	figure
Models & Theories of Behaviour at the Individual Level			
2.1 Economic Assumptions	Expected Utility (EU) Theory	7	
2.2 Behavioural Economics	Principles of Hyperbolic Discounting, Framing, Inertia	8	
	Simon's Bounded Rationality (1955)	8	
	Tversky and Kahneman's Judgment Heuristics (1974)	9	
	Kahneman and Tversky's Prospect Theory (1979)	9	
	Stanovich and West's System 1/System 2 Cognition (2000)	9	
2.3 The Role of Information	(Information) Deficit Models	10	2.1
	Awareness Interest Decision Action (AIDA)	10	
	The Value Action Gap (eg. Blake 1999)	10	2.2
2.4 Values, Beliefs and Attitudes	(Adjusted) Expectancy Value (EV) Theory	11	
	Fishbein and Ajzen's Theory of Reasoned Action (TRA), (1975)	11	2.3
	Rosenstock's Health Belief Model (1974)	12	2.4
	Rogers' Protection Motivation Theory (1977)	12	2.5
	Stern et al's Schematic Causal Model of Environmental Concern (1995)	14	2.7
	Stern et al's Values Beliefs Norms (VBN) Theory (1999)	15	2.8
	Petty and Cacioppo's Elaboration Likelihood Model of Persuasion (ELM) (1986)	15	
	Fazio's MODE Model (1986)	15	
2.5 Norms and Identity	Schwartz's Norm Activation Theory (1977)	16	2.9

Appendix 2. Semi-structured interview questions for programme managers for Subtask 2 case study analysis

Semi structured interviews: order of questions and topics is not very relevant. In addition to the questions below, the questions in template (Appendix 1) for which no satisfactory answer was found also need to be addressed.

1. What drove the project manager/initiator?
2. How has the organisational culture affected design and implementation?
3. How have earlier experiences influenced the choice for a particular intervention, the design and implementation of it?
4. How have national, regional and local context factors been of influence on the choices made (for the intervention, the MoU, design and implementation)?
5. How successful is the intervention? In what terms? How has this been assessed?
6. To what extent is it useful for replication? (which elements, where, what scale)
7. What preliminary ideas did the PM have with regard to (the need for) behavioural change and the mechanisms behind behavioural change? What, if any, theories or insights did the PM draw upon? How were these insights translated into the project design?
8. How where these insights translated into the monitoring and evaluation approach?
9. What trade-offs have been made in terms of the scope of the project, elements addressed, and in terms of monitoring and evaluation (e.g. what things that might have seemed logical to do, considering the choice for this particular approach and intervention, but was not done, and why?)
10. Have these MoU/ToC and (other) social scientific insights of use? Why and how (not)?
11. What practical barriers are there that hinder a proper use of existing social scientific insights?
12. What if they would not have used these insights as a basis, would that have been a problem? Why (not)?
13. To what extent is the design an outcome of the choice of a particular MoU?
14. Do you think that this choice resulted in too little attention for other aspects? If so, for which ones? How did you resolve that?
15. What are the 3 most important lessons to be learned from this intervention?

Appendix 3. Example of a re-cast case study based on our insights and recommendations

WARM UP NEW ZEALAND: HEAT SMART INSULATION PROGRAMME
Domain: Building Retrofits
Target: Individual Investment Behaviours

Recommendations	What the programme did	What the programme could do better
1. Focus on the social side	The core model of this programme is still neoclassical economics which focuses on the individual, although in this context it includes the house(hold)	Utilising the **wider social context** of individuals, including other household members (for example, teaching children in school about the importance of clean, dry housing and how that can be achieved) and the wider peer group. For example, EECA could prompt people who got installations to talk about it to their family and friends, eg create a **facebook site** where feedback and photos can be shared and liked; create **a sticker** for each home or letterbox that says something like 'I am a warm and dry home'; give vouchers for referring a friend; use **trusted members of their community**, like church leaders or hair dressers to promote the message etc.
2. It's not just what we buy, it's what we do	To be truly effective, DSM programmes have to go beyond the (granted, very high potential) one-off investment behaviours like insulation and clean heat and change smaller, frequent purchasing behaviours, use and maintenance of technology and habits and routines as well. WUNZ is largely focused on the one-off investment behaviour but largely misses out on wider conversations around e.g. the weathertightness of a home, the age of appliances, how they are used or maintained at peak capacity etc.	Although **energy audits** can be useful in addressing some of these issues, as are **moments of change** (e.g. when buying or selling a house or when a new baby or elderly family member arrives), the current programme misses out on utilising some very powerful intermediaries right there and then: the **insulation installers** and **public health nurses** who provide information on the subsidy scheme to the most needy tenants. Training these trusted intermediaries to be able to inform the householders on wider energy issues aside from insulation and clean heating would be a very important step into further behaviour changes that would help the most vulnerable (by improving their housing and health and reducing their energy (and health) bills).
3. Change lifestyles not just light bulbs	This leads into the bigger issue of changing lifestyles, attitudes and values around energy efficiency, not just installing a technology that is largely invisible and needs no further change from the householder. EECA has many other programmes that address energy efficiency but they are not as well funded as WUNZ, nor are they well integrated into this flagship scheme (which will also lose its funding in the near future).	Seeing there is limited funding in the Government agency for new large-scale programmes or national social marketing initiatives (other than the Energy Spot), the use of **trusted intermediaries** (especially the ones already gained as partners in the WUNZ programme) to further promote learning and support is essential.
4. Think of the benefits of the end user as well	WUNZ is doing this well in terms of the health benefits and the wider social benefits being highlighted by the scheme.	
5. Focus your messaging, use trusted intermediaries	WUNZ already does this well in the regard of having a solid insulation training and audit regime, standards and a good market of installers. Where it can go further on this issue is beyond one-off investment behaviours (see 1. and 3.)	

6. Be a one-stop-shop	WUNZ is good at this seeing it takes a lot of the pain out of having to provide too much information, and often the money for insulation, up front (as opposed to some of the international insulation subsidies schemes described in the Monster). This can always be improved but the high uptake of the scheme shows that it is doing so successfully.	One area where improvement is needed is **landlords** and the split incentive/principal agent issue, which is an area of likely focus in the Task 24 extension (and could be tested in the Subtask 11 participation by EECA).
7. Use a toolbox of interventions and go beyond kWh targets	WUNZ is an international best practice example on this.	
8. Don't box people in too much	What's more important to people than energy? Many things, but especially their health and that of their families, and WUNZ is promoting this message very well also with a good collaboration with the health sector.	
9. Benchmark your heart out, measure not model	This is one area where WUNZ could have done a little better to begin with, as most of the metrics were based on modelled estimates and savings.	However, the shift of the focus to **health** and strong research and evaluation on this aspect have modified this critique somewhat. However, in general, a **minimum of 10%** of the total cost of a programme should be spent on monitoring and evaluation. The **installer audits** are a good example of monitoring but a **double-loop learning** evaluation among the wider group of Behaviour Changers and the end users' perceptions would be recommended (see ST3 report 'Do you behave as we designed you to?' and the Building Retrofits ST3 factsheet).
10. Learn from the unwilling	The programme was best practice in evaluating issues and outcomes that are more relevant to end-users, e.g. the opinion of residents and the reasons for (not) participating, the way in which residents are approached and by whom, and how they feel how they have been approached, the satisfaction of residents participating in the project and reporting on increased level of comfort and warmth. A focus on this type of evaluation allows to create more effective future programmes because important aspects other than economic and informational barriers are potentially identified, e.g. trust, comfort, warmth, wellbeing etc. The programme is designed to learn from different types of implementations and find success factors to be applied broadly in later stages. It works with voluntary participation and allows 14 participating cities to adjust the implementation to home owners' needs. Social learning between the programme developers and implementers is explicitly aimed for, incl. knowledge exchange between various projects to gain insight into success factors.	The project did explicitly aim to learn from the unwilling and unsatisfied participants.

Appendix 4. Subtask 6 - Behavior Changer Framework Case Study Template

Based on the Dutch Subtask 6&7 case study (Mourik and Smits, 2018)

1	The interventions
	• What has been done to improve energy saving and efficiency? When? How? • What was the character and scale of the intervention (e.g. small scale, only in part of the campus buildings or across all buildings; entailing technology mainly or also other elements; addressing all staff and students or only a selected group; etc.) • With what results?
2	**Involved actors in design and implementation**
	• Who was involved and how in the design and implementation of the interventions? • In which ways did the changes entail ICT-based interventions? • How did ICT support the changes? • How was ICT also targeted by the interventions? • How was ICT staff involved? • In what ways have changes been adopted in building management? • How was building management staff involved? • Where there options to couple ICT to building management and have these options been used? (e.g. to improve heating and lighting schedules)
3.	**Description end users**

	• Employees1 (office): Working in offices on fixed times and days on a working office during office hours (using more desktop?), facilitating, financial, supportive work for educational staff and students, therefore working a lot on computers.
	• Employees2 (educational staff): working on offices on a less regular basis to do research and lectures and to meetings (using more laptops?), being supported by employees1
	• Students: On specific time ranges using buildings to go to lectures, study, eat and socialize. Employees1 and employees2 are facilitating and supporting the learning processes of the students
	Groups will encounter:
	    1. Building specific energy use: related to characteristics of buildings in which persons are located
	    2. User-specific energy use: all equipment used by people (like ICT) in buildings in order to do their work, to communicate etc.

4.	**Behavior to change(d)/aimed at**
	Behavior before project Which old practices and ways of working/doing affected the block of adoption of energy saving and efficiency improvement in the past? How? - On which levels and among whom (or connected to what and where) do we see these practices? - How does it relate to the way in which collaboration, exchange and decision-making is organized? - To what extent is it related to practices and behaviours of particular departments/ - To what extent it is related to individual behaviours of staff and students? **Behavior after/during project** • What behavioural issues have been addressed and in what ways? • Whose behaviours and practices have been targeted and how? • With what results? • How have the interventions been monitored and evaluated? • What impacts have been identified?
5.	**Technologies involved in current and future behavior/ current and past behavior**
	• Which technologies have contributed to the old behaviors and practices? • Which technologies contributed to a change in the current behavior and how? (using current technology in a better way, using new technology, non-use of technology, division hard and software) • Where the technologies in the behavior change more based on energy savings or efficiency changings programs? (first is for example about computers turning off, second about better use of resources)

6.	**Social influences of end user group/organization itself**
	• What does the organizational structures of decision making that is relevant for energy saving and efficiency look like? (draw visual depicting this) • What organizational issues have been addressed to enable the change towards energy saving and efficiency? With what results? • Does a gap exist between board and other employees? • Did the employees support energy related questions in the past? Are there any bottom-up initiative examples of the past? • Where there split incentive problems? If so, how have these been addressed? • How have research, educational and supportive/administrative staff been involved? • How have students been engaged? • Have traditions, social norms affected the (possibilities for and character of) interventions? • Can we discern organizational commitments and interests in energy saving and efficiency? What motivations inform these and are there differences between different departments/levels/functions? • Are there any projects found which were aimed at peer-to-peer? What was the impact of people influencing each other and the related consequences?
7.	**Infrastructure available and lacking**

	• To what extent has the history of buildings and more recent campus developments affected the choice, design and implementation of interventions?
	1. Are the current buildings inviting you to be there?
	    2. Are the current buildings connected? (via ICT systems, bridges between them etc.)
	    3. Are the buildings reachable?
	• To what extent has existing physical infrastructure (access; heating and lighting systems; ICT infrastructures; other technological infrastructures) affected the choice, design and implementation of interventions?
	1. Influence of employees and student themselves on energy behavior
	2. Infrastructure for online learning
	3. ICT structure of learning on distance, video lectures

8.	**Wider context** General questions: - Who was involved and how in the design and implementation of the interventions? - What motivations inform these and are there differences between different departments/levels/functions?

9.	**Policy context:**
	    • What is the influence of University level policy (e.g. sustainability policy or energy-neutrality targets)?
	    • What is the influence of existing policy (municipal, provincial, national, EU levels) and regulation? (e.g. any subsidies)
	Economic:
	    • Economic context of the sector, the university?
	    • Company involvement in the intervantions?
	Geography:
	    • Does the geography influence the intervention? (e.g. geographical location may affect the sort of partnerships possible and extent of using inhouse knowledge; possibilities for roll-out of intervnetinos elsewhere)
	External relations:
	    • Are there any important connections to other higher education institutions?
	    • Any other relations with important stakeholders?

10.	**Lock-ins (institutional, organizational, technological, infrastructural):** - Can we discern lock-ins: historically evolved patterns that inhibit or facilitate changes towards improved energy saving and energy efficiency? - How do these lock-ins affect possibilities for change? - How can lock-ins that inhibit behavioural changers' possibilities to encourage change be addressed?
11.	**Behavior Changers**

	- Who are (have been/can be/are likely to be) the behaviour changers in the context of this case?
	- What are their respective roles and how can they exert influence and on what levels?
	    • Decision-makers:
	    • Provider:
	    • Experts/consultancy:
	    • Conscience:
	    • Middle Actor:
	
	Indirectly involved:
	….

12.	**Relations end users, behavior changers and other stakeholders**
	Who are (can be/are likely to be) the Behaviour Changers in the context of this case? What are their respective roles and how can they exert influence and on what levels? **Can we discern lock-ins: historically evolved patterns that inhibit or facilitate changes towards improved energy saving and energy efficiency?** **How can lock-ins that inhibit behavioural changers' possibilities to encourage change be addressed?** **Which existing practices and ways of doing/working affect the adoption of energy saving and efficiency improvement?** How? - On which levels and among whom (or connected to what and where) do we see these practices? - How does it relate to the way in which collaboration, exchange and decision-making is organized? - To what extent is it related to practices and behaviours of particular departments/ - To what extent it is related to individual behaviours of staff and students?

IEA Demand Side Management Energy Technology Initiative

The Demand-Side Management (DSM) Energy Technology Initiative is one of more than 40 Co-operative Energy Technology Initiatives within the framework of the International Energy Agency (IEA).The Demand-Side Management (DSM) Energy Technology Initiative, which was initiated in 1993, deals with a variety of strategies to reduce energy demand. The following member countries and sponsors have been working to identify and promote opportunities for DSM:

Austria	Norway
Belgium	Spain
Finland	Sweden
India	Switzerland
Italy	United Kingdom
Republic of Korea	United States
Netherlands	ECI (sponsor)
New Zealand	RAP (sponsor)

Programme Vision: Demand side activities should be active elements and the first choice in all energy policy decisions designed to create more reliable and more sustainable energy systems

Programme Mission: Deliver to its stakeholders, materials that are readily applicable for them in crafting and implementing policies and measures. The Programme should also deliver technology and applications that either facilitate operations of energy systems or facilitate necessary market transformations

The DSM Energy Technology Initiative's work is organized into two clusters:
The load shape cluster, and
The load level cluster.

The 'load shape" cluster will include Tasks that seek to impact the shape of the load curve over very short (minutes-hours-day) to longer (days-week-season) time periods. Work within this cluster primarily increases the reliability of systems. The "load level" will include Tasks that seek to shift the load curve to lower demand levels or shift between loads from one energy system to another. Work within this cluster primarily targets the reduction of emissions.

A total of 24 projects or "Tasks" have been initiated since the beginning of the DSM Programme. The overall program is monitored by an Executive Committee consisting of representatives from each contracting party to the DSM Energy Technology Initiative. The leadership and management of the individual Tasks are the responsibility of Operating Agents. These Tasks and their respective

Operating Agents are:
Task 1 International Database on Demand-Side Management & Evaluation Guidebook on the Impact of DSM and EE for Kyoto's GHG Targets – *Completed*
Harry Vreuls, NOVEM, the Netherlands

Task 2 Communications Technologies for Demand-Side Management – *Completed*
Richard Formby, EA Technology, United Kingdom

Task 3 Cooperative Procurement of Innovative Technologies for Demand-Side Management – *Completed*
Hans Westling, Promandat AB, Sweden

Task 4 Development of Improved Methods for Integrating Demand-Side Management into Resource Planning – *Completed*
Grayson Heffner, EPRI, United States

Task 5 Techniques for Implementation of Demand-Side Management Technology in the Marketplace – *Completed*
Juan Comas, FECSA, Spain

Task 6 DSM and Energy Efficiency in Changing Electricity Business Environments – *Completed*
David Crossley, Energy Futures, Australia Pty. Ltd., Australia

Task 7 International Collaboration on Market Transformation – *Completed*
Verney Ryan, BRE, United Kingdom

Task 8 Demand-Side Bidding in a Competitive Electricity Market – *Completed*
Linda Hull, EA Technology Ltd, United Kingdom

Task 9 The Role of Municipalities in a Liberalised System – *Completed*
Martin Cahn, Energie Cites, France

Task 10 Performance Contracting – *Completed*
Hans Westling, Promandat AB, Sweden

Task 11 Time of Use Pricing and Energy Use for Demand Management Delivery- *Completed*
Richard Formby, EA Technology Ltd, United Kingdom

Task 12 Energy Standards
To be determined

Task 13 Demand Response Resources - *Completed*
Ross Malme, RETX, United States

Task 14 White Certificates – *Completed*
Antonio Capozza, CESI, Italy

Task 15 Network-Driven DSM - *Completed*
David Crossley, Energy Futures Australia Pty. Ltd, Australia

Task 16 Competitive Energy Services
Jan W. Bleyl, Graz Energy Agency, Austria / Seppo Silvonen/Pertti Koski, Motiva, Finland

Task 17 Integration of Demand Side Management, Distributed Generation, Renewable Energy Sources and
Energy Storages
Seppo Kärkkäinen, Elektraflex Oy, Finland

Task 18 Demand Side Management and Climate Change - *Completed*
David Crossley, Energy Futures Australia Pty. Ltd, Australia

Task 19 Micro Demand Response and Energy Saving - *Completed*
Linda Hull, EA Technology Ltd, United Kingdom

Task 20 Branding of Energy Efficiency - *Completed*
Balawant Joshi, ABPS Infrastructure Private Limited, India

Task 21 Standardisation of Energy Savings Calculations - *Completed*
Harry Vreuls, SenterNovem, Netherlands

Task 22 Energy Efficiency Portfolio Standards - *Completed*
Balawant Joshi, ABPS Infrastructure Private Limited, India

Task 23 The Role of Customers in Delivering Effective Smart Grids - *Completed*
Linda Hull. EA Technology Ltd, United Kingdom

Task 24 Closing the loop - Behaviour Change in DSM: From theory to policies and practice
Sea Rotmann, SEA, New Zealand and Ruth Mourik DuneWorks, Netherlands

Task 25 Business Models for a more Effective Market Uptake of DSM Energy Services
Ruth Mourik, DuneWorks, The Netherlands

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