



IEA DSM TASK 25

Business models for a more effective market uptake of EE energy services for SMEs and communities

Task Work Plan V 2.0

September 2014

This task work plan is submitted to the IEA's

Demand Side Management Implementing Agreement <http://www.ieadsm.org>



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The Operating Agents and the expert team

Dr. Ruth Mourik: Operating agent.

Ruth is the cooperating agent for Task 24 on DSM and behavioural change and as such has ample experience with running a task for the IEA DSM IA. In addition Ruth is an expert in the field of DSM and the sustainable energy transition. Her specialisation on end-users and unique buying reasons for end-users and societal acceptance of new energy technologies will add valuable knowledge to the field.

MA. Renske Bouwknegt: Cooperating Agent.

Renske is a service innovation specialist with extensive experience in designing energy services, e.g. the “Neighbourhood Power” (Buurkracht) <https://www.buurkracht.nl/> service rolled-out in the Netherlands for a DSO. She has experience in strategic marketing, innovation and service design. Renske is partner of Ideate, a service innovation consultancy. Ideate designs service propositions from a human perspective. Ideate contributes to research on design for behavioural change, business models and social innovation.

Professor Geert Verbong: supporting agent.

Geert is a Full Professor in the section of Technology Innovation & Society of the School of Innovation Sciences at the Eindhoven University of Technology (TU/e). He has managed several research projects, funded by NWO and the Dutch Government (BSIK, EOS) and provides policy advices. He teaches in the Innovations Sciences MSc. program and the MSc. program Sustainable Energy Technology (SET) at TU/e. He was for four years a part-time research coordinator at the Brabant Centre for Sustainable Development (Telos) at Tilburg University. Currently he is also research and education coordinator at the Eindhoven Energy Institute. He has been a core member of the Dutch Knowledge Network on System Innovations or Transitions, in particularly working on the social dimensions of smart grids and the implementation of solar PV. The TU/e will contribute valuable knowledge and research assistance on business models in different national contexts.

PhD Boukje Huijben: supporting agent.

Boukje is a PhD Candidate at Eindhoven University of Technology. Her PhD project about mechanisms for up scaling of the solar energy market, with a focus on the Netherlands. Cooperation between the Eindhoven University of Technology and various business partners. Boukje furthermore is member of the Smart Energy Regions strategy team. Smart Energy Regions is a new initiative aiming at supporting the development of a decentralized regional sustainable energy system by connecting citizens, companies, knowledge institutes, governmental agencies and the Eindhoven University of technology.

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National experts

The national experts have an important role to play in balancing the project between an academic perspective and competence and knowledge of the specific field of energy services. The project team has a strong interdisciplinary (research) focus and the national experts will therefore be key in providing access to knowledge and experience from the field of energy services within the different countries. This will allow for the collection of interesting case studies and workshops aiming at close cooperation with relevant actors from the sector in order to share learning and produce new knowledge together.

The country experts will thus be actively involved in the work, and will also serve as facilitators and multipliers in their countries. It will be valuable if the experts/participants in the task have experience from practical application of energy efficiency (service) implementation and developing business models to deliver these EE services.

Financing partners of task work plan and other collaborations

Task 25 on Business Models for energy services has been discussed at the Executive Committee meeting in Switzerland, October 2013 and again In March 2014 in New Zealand. It was decided that this Task is highly needed and may enter the Task Definition Phase, under Task number 25.

Countries/organisations that participate:

1. Switzerland
2. The European Copper Institute (in kind)

Countries that expressed strong interest and are now in the process of deciding/securing funding

3. Netherlands
4. Sweden
5. Austria
6. UK

Collaboration with other IEA DSM tasks and IAs

This task will explicitly seek collaboration with Task 16 to make sure the results build upon the work done in Task 16. Task 16 focuses on innovative EScO Energy-Contracting models and elaboration and assessment of business models for Demand Response energy services for these models. Our Task 25 will focus explicitly on other types of business models and services.

We will also collaborate closely with Task 24 on the behavioural issues around business models and energy services on both the level of households and SMEs.

We will aim for shared workshops, and publications of both reports and academic journal papers. In addition, Task 25 will not set-up its own expert platform as a stand-alone platform, but try to use the platforms set-up by Task 16 and 24 and other tasks.

Collaboration with other Implementing Agreements is key for the success of the IEA DSM and for this task.

In 2013, the DSM Implementing Agreement worked on collaboration with ISGAN, and Task 25 explicitly includes an expert from one of the ISGAN tasks, Prof. Dr. Geert Verbong, from the Eindhoven University of Technology (TU/e) as one of the team members.

The International Energy Agency's Energy in Buildings and Communities Programme will also be contacted for cooperation, and at least operating agents meetings will be organised with Task 61 on Business and Technical Concepts for Deep Energy Retrofit of Public Buildings, and Task 63 on implementing effective energy strategies in communities.

The IEA PV Power Systems programme will be a third cooperation partner to be contacted. Again Prof. Geert Verbong and PhD candidate Boukje Huijben are already cooperating with this IA and as such good transfer of results will be easy to accomplish.

Introduction

Worldwide, many studies are being conducted in order to understand what is causing the -apparent – lack of market uptake of energy efficiency and DSM. A growing understanding is that in many business models underlying energy efficiency and DSM services, the supplier perspective is dominant, and too little attention is given to the customer/buyer perspective, their needs. Energy services are increasingly considered to be a good delivery mechanism for EE and it is necessary to understand and what business models would be necessary for potential customers to buy more energy services (make more energy efficient choices).

In the energy system we witness a transition where customers increasingly buy services that they value and that fit their particular needs, or as the Cambridge Service Alliance, a leading research-industry cooperation states: we are facing a transition from a system consisting of products, outputs, elements suppliers and transactions to a system consisting of solutions, outcomes, relationships, network partners and ecosystems, packaged as services.¹ The demand for these energy services follows from their ability to provide customers with financially sound (good return on investment or revenues), easy-to-use solutions to problems they experience or needs they feel. These problems are not necessarily directly linked to energy, but can also be health, comfort, wellbeing, cost, control or ease related.

Business models and energy services focusing on the customer perspective and their unique buying reasons for energy efficiency are therefore the next step in creating a mass market for energy efficiency. These new types of business models and energy services are arguably much more effective than the so far rather technocratic and technology push approach. Consequently the ability of business model developers and providers of services to focus on this customer perspective and tailor their services is becoming increasingly important in creating future competitive market strategies. This certainly applies to the changing customer market for energy companies and utilities and other suppliers, which are in dire need for new business models and effective energy services. For a more extensive discussion of the need for this Task we refer to appendix 1 where we have included a more lengthy discussion of the premises underlying this task.

This task will focus on identifying existing business models and customer approaches providing EE and DSM services to SMEs and residential communities, analysing promising effective business models and services, identifying and supporting the creation of national energy ecosystems in which these business models can succeed, provide guidelines to remove barriers and solve problems, and finally working together closely with both national suppliers and clients of business models to contribute to the setting up of piloting activities in each participating country. The longer term aim of this Task is to contribute to the growth of the supply and demand market for energy efficiency and DSM amongst SMEs and communities in participating countries.

Below we briefly discuss the scope, focus, objectives and outcomes of this task, to continue in following sections with a more in-depth discussion of the premises underlying this task, the frameworks we will be using and the work plan and management structures for this task.

¹ Cambridge service Alliance: <http://www.cambridgeservicealliance.org/research.html>

Scope, focus, objectives and outcomes

Defining business model and energy service

For this task, we build on the definition of a business model as defined in the RE-BIZZ study commissioned by IEA-RETD (Wurtenberger et al. 2012). Task 25 therefore defines a business model as **‘a strategy to invest in EE and DSM, which uses services as delivery mechanisms to create value and to lead to an increased penetration of EE and DSM in the built environment.’**

Following the below explanation our Task defines the energy service we will focus on as: ‘a combination of a user centred process involving both suppliers and customers aimed at the use of a package of DSM and or energy efficient technologies/products and or behavioural change interventions which targets a minimum of 10% energy efficiency improvements of gas or electricity use through the delivery of a by the client valued package of solutions and or benefits (which can also be health, employee productivity, comfort, identity etc.).’

In this task we start with or follow the definition of Vargo and Lusch (2006) who define a ‘service’ as: “the application of competencies for and to the benefit of the receiver. [...] This service centred view of exchange implies that the goal is to customize offerings, to recognize the consumer is always co-producer [of value], and to strive to maximize consumer involvement in the customization in order to better fit his or her needs (Vargo and Lusch, 2006).

This definition of a service² thus stresses that a service is actually not the goal in itself but a delivery mechanism, a process. In the above definition, goods, technologies, commodities and or tangibles like smart meters, algorithms, smart home devices, appliances, solar panels etc. are a distribution mechanism for service provision that assist in providing benefits. (Vargo and Lusch, 2006).

The definition of what the group of experts and researchers involved in this task consider to be a service needs to be further defined in the first three months of the project. However, we already propose the following elements to the definition to allow for selection of energy services and business models to focus on. The energy services we will focus on will have to consider the following:

- They need to be focused at least on energy efficiency of use (reachable both through technological changes and behavioural interventions)
- Some of the services we will focus on will not only deliver energy efficiency but take a broader approach and also include for example home management (including comfort, care and safety functions) and potentially also decentralised generation of RES.
- Focused on services which include energy efficiency installations but delivering not simply an installation of a device (e.g. solar panels or smart meter) but explicitly focus on both the client and supplier perspective and the process to reach alignment and add value to the mix.
- It is important to capture both the supplier and client perspective and learn how alignment of these different perspectives, interests and needs result in successful and financially sound value propositions that deliver successful energy efficiency services. Research has demonstrated that the best business models are built around a very good durable process between client and supplier.

² Vargo and Lusch emphasize service (singular) which is process as distinct to services, which implies intangible goods.

- The services need to aim for substantial energy efficiency (minimum 10% savings) compared to BAU in either the SME, the community or the household.

Our focus

Since the Task focus will be tailored to country specific needs and demands, the categories of energy services and target groups we will focus are not determined in detail up front but will be further delimited during the first 3 months of the Task in close cooperation with the national experts and funding organisations. Therefore, the task will start with a workshop with all country experts to make sure we assess all the country specific needs and find common ground broad enough to make valuable comparison, among themselves and between the countries, possible.

We do need to ensure that comparison of results, among themselves and between the countries, are possible. Therefore a preliminary analysis of potential needs of interested countries and common issues was undertaken (see appendix 2). In addition we had detailed feedback and discussions with interested countries and parties. Finally, we identified how to avoid overlap with IEA DSM Task 16 and other Implementing agreements and tasks.

As a result we have narrowed the focus to include a selection of target groups and type of business models and energy services, with the possibility of adding other foci tailored to the specifics of the countries at a later stage.

The most reasonable way to limit the scope further is to focus on specific target groups in combination with a limitation of technologies delivered with the services.

The target groups focused on in this task as clients and or customers are:

1. SMEs (with distinction between SMEs with small energy bills and little revenue possibilities versus the standard type of SMEs targeted (high bills, high revenues).
2. Residential communities/cities

The first target group (both as suppliers and receivers) we will focus on in all participating countries are SME's. SMEs are interesting for multiple reasons. First they are important both as customers and as providers. Next, there are big saving potentials amongst many SMEs but it is difficult to skim the market. Companies are furthermore of interest in relation with the new uptake of the EE law and several service related aspects.

Still, the definition of SMEs is still too broad to ensure good comparisons, so we will make sure that we make pools of services oriented towards different types and sizes and energy users amongst SMEs. We will in any case make a distinction between SMEs with small energy bills and little revenue possibilities versus the standard type of SMEs targeted (high bills, high revenues).

We will ensure at least 4 cases in different countries for comparison. And with the participation of the Copper Institute we will certainly be able to have at least two comparable cases per country per pool.

We will learn from this narrowing down of the focus and then use the learning to start the selection and analysis of our second target group: residential communities or neighbourhoods. In this target group we will also look at principal-agent (owner-tenant) issues. Regarding technologies, for residential communities or districts, the limits for technologies is more easy, these will most certainly include smart metering and billing,

PV and smart heating technologies. Communities or cities need new solutions and BM for smart city developments (integrating various technologies and aspects on a district scale). And there is a new need to secure space heating in cities with district heating due to the fact that the low electricity prices led to a CHP crisis in Europe, which is a major source of heat for the DH systems.

The suppliers or providers of energy services we will focus on are:

- SME's
- Intermediary organisations
- Utility companies and DSO's

Based on the preliminary analysis of interested countries and feedback received, in this task we will **include a focus on business models targeting SMEs and Communities and or residential districts that provide energy services that amongst others aim to:**

- Support the obligations for energy utilities to save energy at their customers.
- Aim at making industries and businesses to participate in EE activities (e.g. energy management systems, ISO 50001, smart grids, behavior change, re-commissioning, y audits or advice).
- Contribute to smart districts, viable smart grid based services
- Provide warm homes (heat for district heating systems, integrated approach with decentralized energy sources and measures on the demand side (renovation, heating system change, EE measures).
- Solve the principle agent problem.

Load reduction

The focus will be on energy efficiency and energy savings, maybe integrating the use of renewable energies at the demand side. Load shifting is a quite different topic relevant mainly for larger industries and has to some extent been dealt with in other projects. This might be the focus of an extension to this Task.

We will primarily focus on energy efficiency and DSM services aimed at primarily **electricity, but will also include other heating and cooling carriers as a secondary focus**. We will explicitly not focus on ESCO's using any kind of performance contracting aimed at businesses.³

Issues of common interest we will focus on in all business models, irrespective of country specific differences are:

³ ESCO's are a specific Energy service proposition. IEA-DSM Task 16 focuses on ESCO's providing Energy Performance contracting. Therefore, ESCO's will be out of scope within task 25, when their focus is on EPC. In cooperation with task 16 relevant insights and knowledge will be exchanged in order to reach optimal results in both tasks.

- Technology acceptability (related also to privacy, ownership of data and security), behaviour issues, shaping of incentives as well as governance and regulation;
- Outputs beyond energy and cost savings as identified by the IEA in spreading the net (2012): health and wellbeing improvements, job creation, poverty alleviation or increased disposable income, industrial competitiveness and productiveness, energy provider and infrastructure benefits, energy security, development goals.

Objectives of Task

As mentioned above, this task will focus on identifying existing business models and customer approaches providing EE and DSM services to SMEs and residential communities, analysing promising effective or best practice business models and services, identifying and supporting the creation of national energy ecosystems in which these business models can succeed and finally working together closely with both national suppliers and clients of business models to contributing to the setting up of piloting activities in each participating country. The longer term aim of this Task is to contribute to the growth of the supply and demand market for energy efficiency and DSM amongst SMEs and communities in participating countries.

To achieve the above the following objectives have been identified:

1. Reviewing existing business models/ customer approaches targeting EE and DSM for SME and community clients and developing a list and or mapping of categories of existing business models/ approaches for each country and a selection of non-participating countries.
2. Analysing and identifying effective business models (in achieving significant EE and DSM) in the different countries, including the sociotechnical socio-economic and political framework conditions they need (different conducive market dynamics and policies in different countries).
3. Performing a cross-country comparison of the different existing business models and their frameworks.
4. Performing a cross-country knowledge exchange and capacity building about effective business models and services, and iterative feedback for country specific market development activities within and between the participating countries. In order to feed in the SME- and supplier perspective, the task will include participants representing the supply and client side. Such actors will be identified either network (e.g. an energy service association), by establishing contact with relevant suppliers, (or by creating a network).
5. Creating a set of guidelines and advice supporting the creation of policies to encourage market creation and mainstreaming of best practice business models in different countries; based on a cross-country comparison.
6. Providing a (digital) platform for shared learning, best practices, relevant documentation and frameworks and know-how. This will be achieved through the use of existing platforms such as the expert platforms of other tasks and the DSM University.
7. (Within the task 25 period) contributing to the setting up of piloting activities in each participating country (preferably through the participating national experts and their organisation) in order to make the developed/identified business models useful in reality.
8. Contribute to both the energy efficiency field and the academic discussions on effective business models and services aimed at Energy Efficiency and DSM.

Expected Outcomes

The benefits for the participating countries and for the DSM agreement will encompass:

- Overview of existing business models/ customer approaches in the different countries;
- Insight in best practice business models and comparable best practices based on a comparison of business models in the participating countries;
- Exchange of valuable knowledge and learnings between EE business developers, service providers, researchers, policymakers and clients within and between participating countries;
- Access to relevant stakeholders, documents, and information through participation in a new network of expertise and participation of this network in expert platforms of other tasks;
- Best practice guidelines on how to support the creation of national markets for business models for energy services that effectively achieve load reduction at SMEs and residential communities. This will again be based on a country comparison;
- Contributing to the setting up of piloting activities in each participating country.

Methodological approach and analysis frameworks

This Task works from the premise that only a comprehensive approach taking both the supplier and client perspective centre stage is worthwhile. One of the big shortcomings of many approaches today is that they focus only on the client or the supplier, instead of the interactions and processes and mechanisms used to match both sides. Research indeed also suggests that this matching is essential for a good business model.

Centre stage in our approach is the researched fact that a successful service is tailored to real customers' needs. This implies that in the development of services, the supplier needs to take the end user perspective as a starting point. This ability of suppliers to really appreciate the customer perspective therefore is one of the key indicators of success. (Also, one of the main success characteristics of a successful service is that its value is co-created with the user.)

Paradoxically enough, many approaches to date take such a critical stand towards the push approach of many technology and service suppliers and business models that they have asymmetrically focused on the client perspective, forgetting about the supplier side and dynamics. In this Task we will attempt to be as symmetrical as possible.

We will use several analytical frameworks to conduct the analysis that ensure that both a supplier and client perspective is prominent: the Business model canvas, the customer value model, the value flow model and the socio-technical or ecosystem framework. We discuss these analytical tools in the sections below.

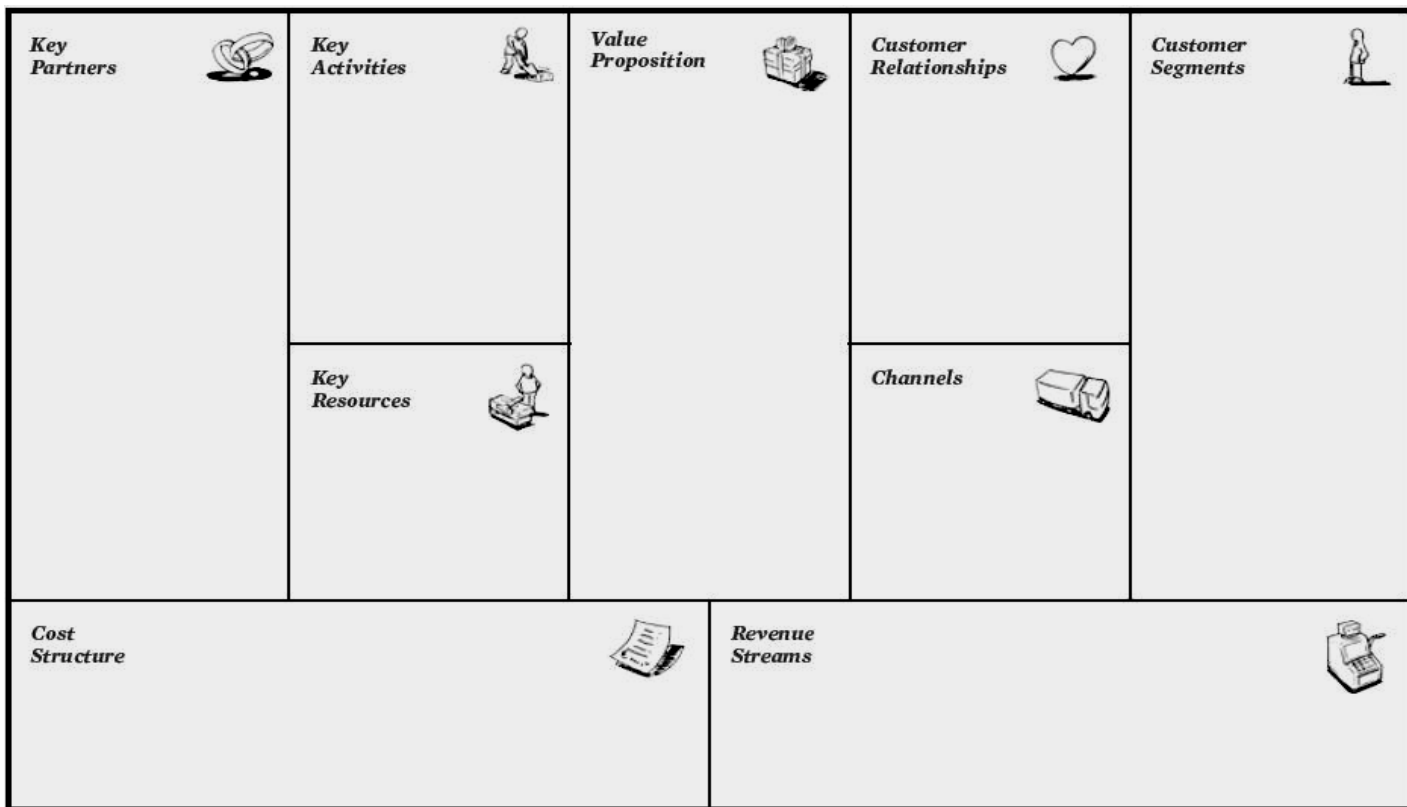
Business model canvas

We will ensure a good mapping of supplier perspectives and implicitly client perspectives present in business models and services using amongst others the business model canvas as developed by Alexander Osterwalder, with enhancements from different users, e.g. the social business model canvas as developed by Anja Cheriakova (2013). When the business model is at the centre of analysis there is a natural focus on the company/agent that is implementing it, therefore analytical models will have the company as a starting point. However, the essence of the business model itself is of course also an answer/a solution to the client's need/problem, so the "customer perspective" is there implicitly.

Osterwalder's business model canvas is rather technocratic and supplier oriented, technology or service push driven and consists of 9 building blocks and we will focus on each of these when analysing the selected business models: Key partners; Key activities; Key resources; Value proposition; Customer relationships; Channels; Customer Segments; Cost structure; Revenue Streams.

A new canvas is being developed by Osterwalder et al. that indeed appreciates the client perspective more equally and less implicitly. We will use that revised canvas as soon as it is available. In addition we will also use the social business model canvas because some of the business models we will take a look at might also focus on creating social next to financial value. This mapping method of business models using the canvas is widely used in business development, and thus not a purely scientific exercise and will ensure a practical use of the mapping results. A visual representation of both

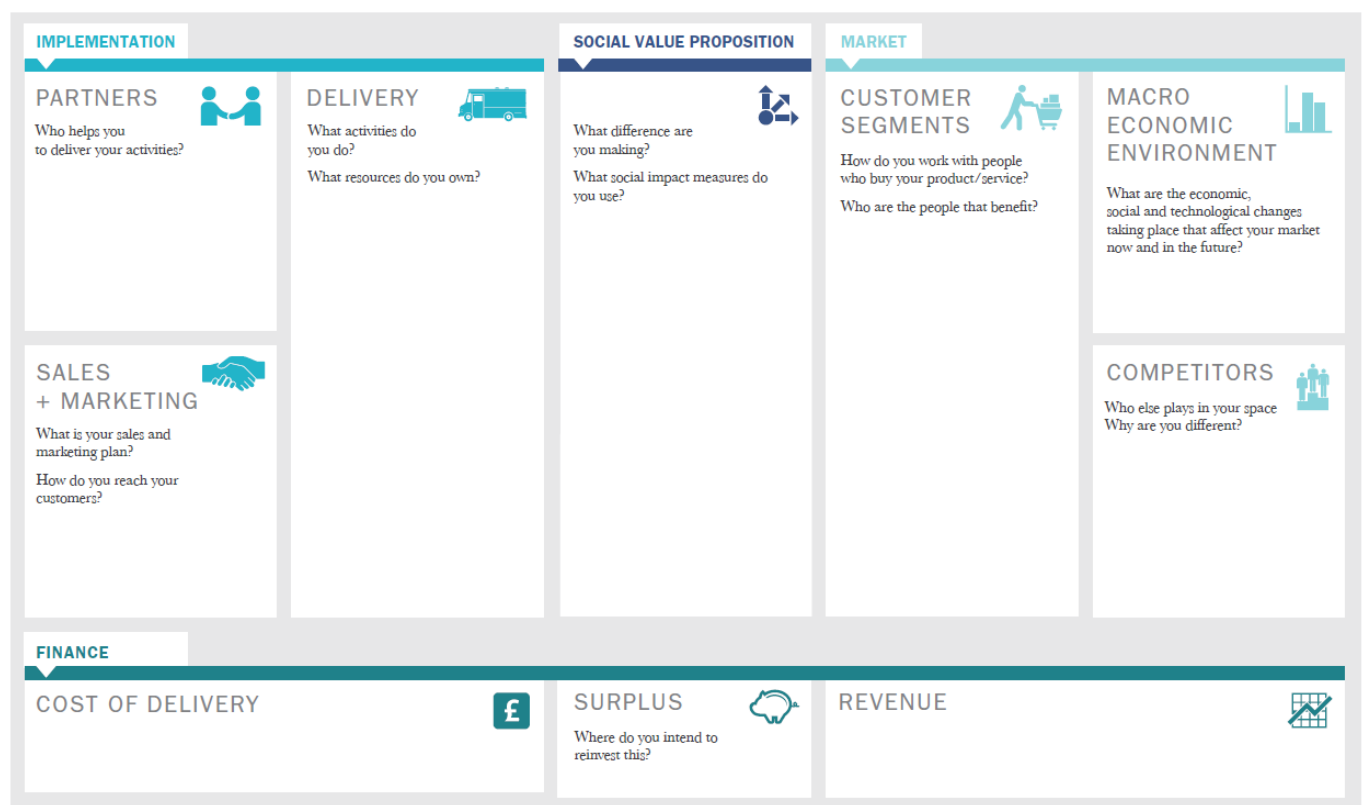
canvas frameworks can be found below. For the type of questions following this 9 building block framework we refer to Appendix 3.



The business model canvas by Osterwalder

THE SOCIAL BUSINESS MODEL CANVAS

Social venture:



Follow us @YFAccelerator

Inspired by The Business Model Canvas: www.businessmodelgeneration.com

The social business canvas model by Cheriakova (2013)

The Customer Value Canvas and the Value Flow Model

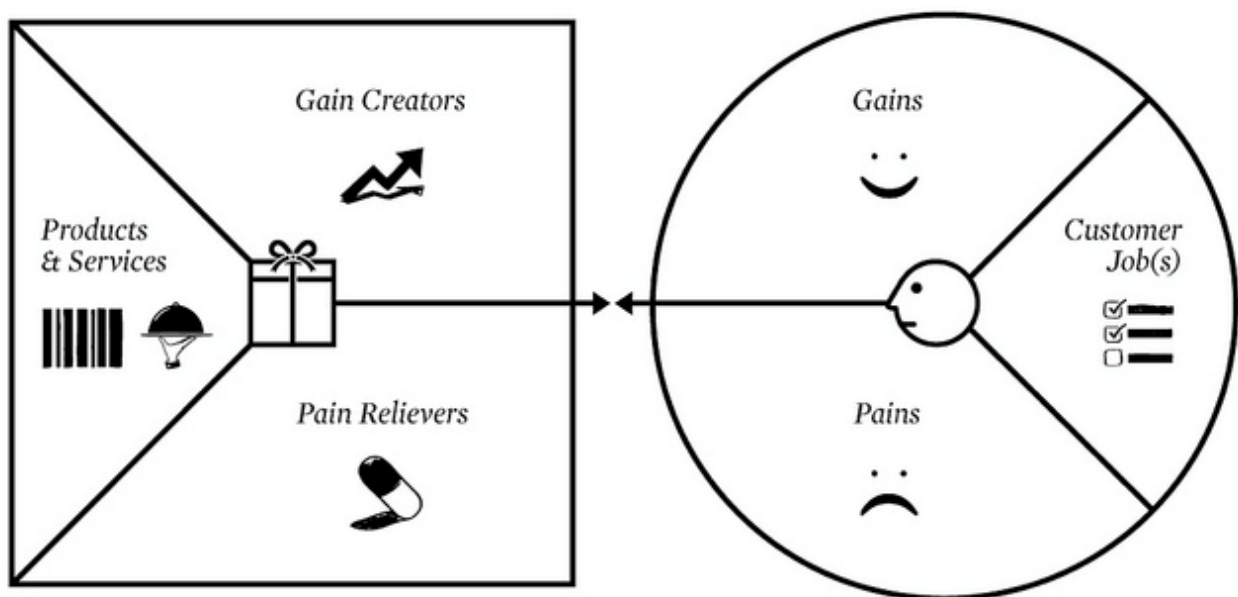
The second type of framework we will use is the Customer value canvas and the Value Flow Model, see visuals below for both these frameworks. In order to get a good understanding of how the service value proposition is tailored to the needs, we'll use the Customer value canvas, also by Alexander Osterwalder. This framework is an extension of the business model canvas and can be used to describe the desired outcomes (Customer Jobs) and the (barriers) pains and gains he's experiencing. The value proposition can then be specified with means to either relieve the pain (remove barriers) or increase or create the gains.

One particular aspect of business models we will focus on is the value flow. To analyse this value flow we will use the Value flow model which is a method to identify the relevant stakeholders and the values that are important to each of them, and to balance those values in the total system. These models allow for a symmetrical analysis of the client perspective. The method has proved to be valuable in enriching value propositions, but also in gaining commitment from the different business actors to make the investments required for implementation. The visualization of tangible and intangible value flows enables the balancing of value across the different parties to ensure

sustainable value for all (Den Ouden, 2012). The value flow map specifically takes interaction with parties outside the organization into account.

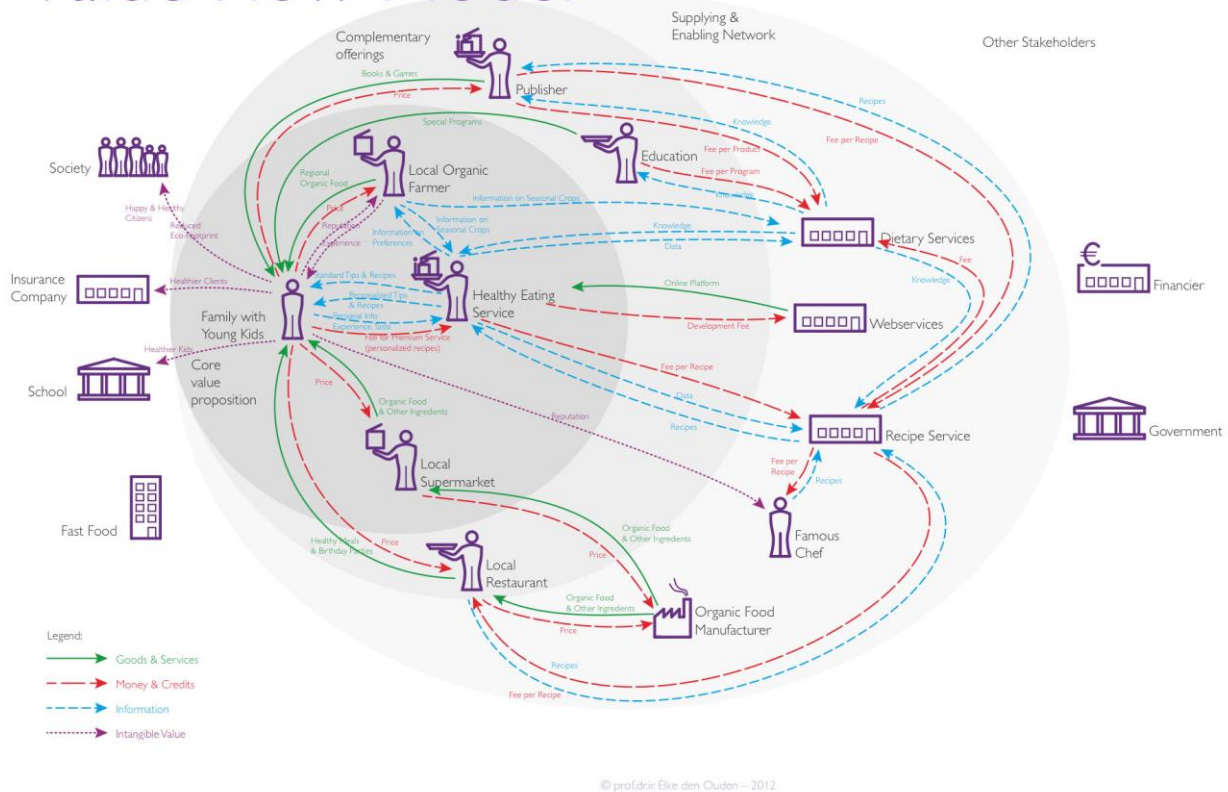
The Value Flow Model is used to indicate all relevant stakeholders and the various flows between them:

- Goods and services;
- Money and other financial means;
- Information;
- Intangible value (e.g. reputation)



The Customer value canvas by Osterwalder

Value Flow Model



The sociotechnical approach or ecosystems approach

As mentioned earlier business models are part of a socio-technical system or an ecosystem under change. According to Johnson and Suscewicz (2009) systems consist of four main elements: ‘an enabling technology, a business model, a market adoption strategy and a favourable governmental policy’ (Johnson and Suskewicz, 2009: 3). If we want to create markets for clean tech products we need to consider current energy markets infrastructures, regulation and support mechanisms in place (both for old and new technologies) since these directly influence the business model opportunities in a country (e.g. Huijben and Verbong, 2013). Furthermore learning and experimentation are of main importance for business model development since business models are embedded in fast changing and complex environments they will need to change over time. Therefore we will also analyse these issues and the following preliminary questions (based on the questionnaire by Huijben & Verbong 2013) will be of importance to elicit the relevant insights in regulation and support mechanisms:

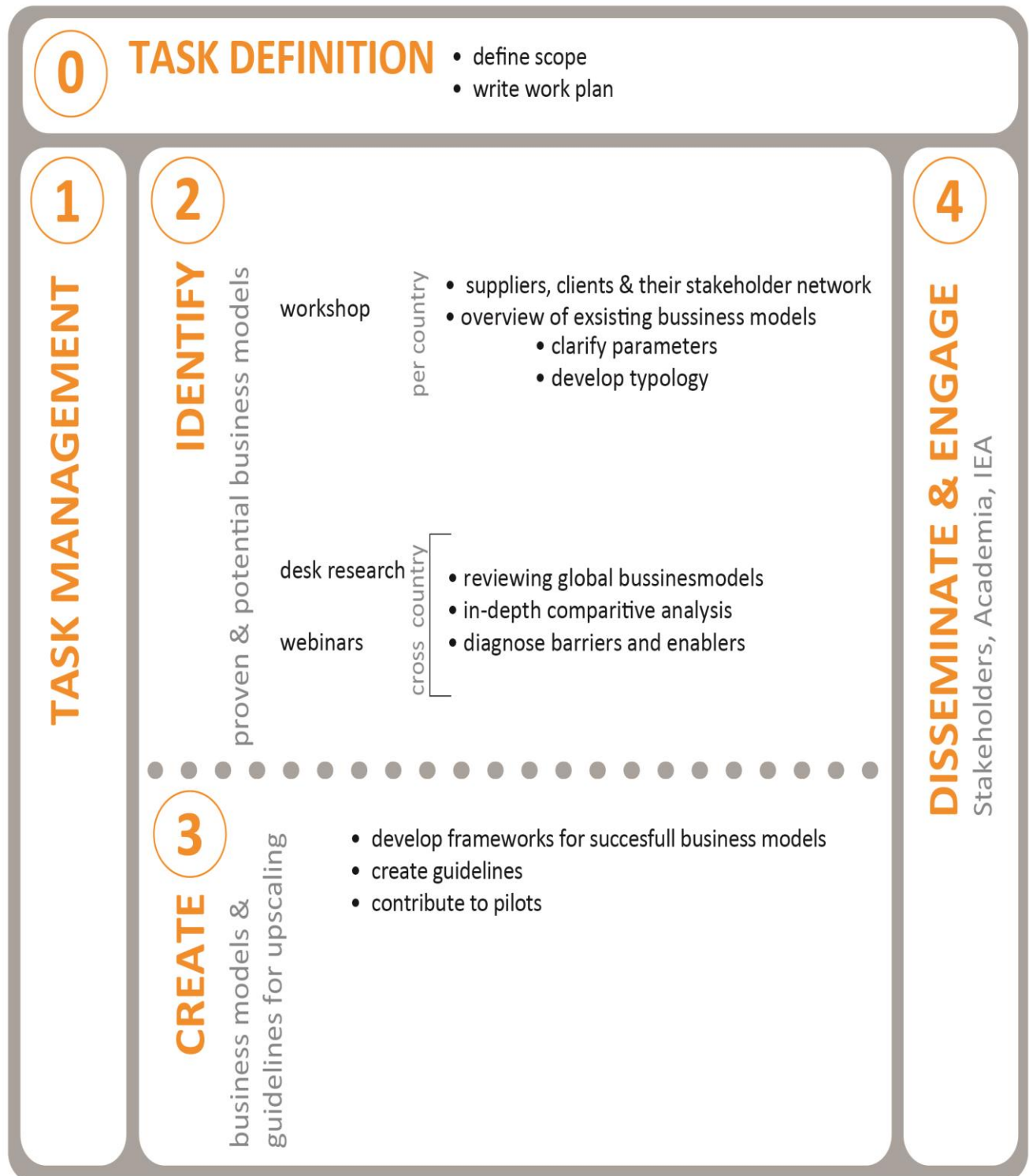
- Did the business model under analysis undergo changes since the beginning?
- What were the driving factors for the changes to the model?

- What was the impact of these changes for the supplier of the business model?
- How was the marketing of the product/service affected by the Government?
- Are benefits provided by subsidies, etc. important to the business case to get around?
- Was the business model, or parts of it, influenced by law changes that have been made over the past six years, and how did it respond to these changes?
- Has the business model tried to address the law changes to gain an advantage or were the adjustments out of necessity?
- What would need to change in the current policy structure to facilitate the business model?
- What were key problems encountered, what were solutions? What problems could not be solved?
- Is there any sharing and learning amongst business models and developers of services?
- Which business models have been implemented in the country in the last five years?
- Is there a trend observable in the types of business models developed?
- What types of support mechanisms relevant for specific business models were implemented in the country? Did these differ geographically (i.e. at national, provincial or municipal level)?
- Were there any business models that failed because of existing legislation or organization of the energy market in the country?
- Which trade or lobbying organizations are active in the country? When were they started and who do they represent? What kinds of activities do they perform?
- What kinds of activities related to knowledge sharing and networking have been organized over the last years?

Similar questions will be developed to assess the impact of (energy) market structures.

business models (IEA-DSM Task 25) project overview

for a more effective market uptake of DSM energy services



Subtask 0: Task Definition Phase

Subtask number	0
Start date or starting event:	Month -3 till 0
End date of subtask	Month 1
Subtask title	Definition phase
Activity Type	Scoping

Background to this Subtask

The focus of this subtask was on making a first inventory of issues of common interest regarding business models and Service Value propositions on Energy efficiency and defining an initial working scope and definition. Success and failure of these services is highly dependent on country specifics. Already many studies are conducted that are valuable for this task. This subtask main objective was to map valuable knowledge, identify country specifics and general objectives. After agreement on this task, country expert will be lined up and prepared for their part in this task.

Activities

- Writing work plan, in close cooperation with interested countries and their experts
- Performing a quick scan of country specifics (relevant policy and regulation, research, business models. Energy targets etc.)
- Attendance (virtual) of ExCo meetings in 2014

Description of activities and timing

Subtask 0: pre scoping	2013	2014
0.1 Task definition: discussing with interested countries what their needs are, establishing goals and objectives, tailoring task to country needs		
0.2 very quick scan of country specifics (relevant policy and regulation, research, business models. Energy targets etc.)		
0.3 identifying potential national experts		
0.4 Virtual participation in Exco meeting New Zealand March 2014		

Description of activities and methodologies

This subtask focuses on defining the scope and content of the new task. It will be a highly interactive subtask, requiring input from interested countries ranging between 8 to 16 hours.

Task Sharing and expected person hours

Subtask 0	DW	Ideate	TUE	National experts (in this ST exco members or appointed experts)
total hours	38	30	0	8
budget euro	2850	2250	0	?

Deliverables:

- D0: draft work plan

Subtask 1: Task Management

Subtask number	1
Start date or starting event:	Month 1
End date of subtask	Month 24 (or 36 with participation of 5+ countries)
Subtask title	Project coordination, ExCo feedback and reporting
Activity Type	Management and administration

Background to this Subtask

This subtask is dealing with all management issues.

Activities

- Overall project coordination and management, including contact relationship management
- Attendance of ExCo meetings, conferences and reporting to IEA DSM ExCo
- Set-up Task Advisory Board (AB) of stakeholders (ExCo, IEA, intermediaries from research, industry, government, community sectors)

Description of activities and timing

Subtask 1: Management of the task	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24
1.1 Set-up of an advisory board (AB)												
1.2 Annual Advisory Board (AB) meetings, exco meetings												
1.3 Overall projectmanagement and financial and administrative duties												

Description of activities and methodologies

This subtask will focus on overall project management, attending ExCo meetings and report-back to the IEA DSM ExCo members, organising financial and other administrative issues and publicising the task. It will also involve a series of kick-off workshops and webinars to finalise the task definition and expert input/output. Outputs include: Overall project organisation and management (OAs); Task Status reports (OAs with inputs of NEs, AB); Annual reports (OAs); End of Term report, if

applicable (OAs with inputs from NEs, AB); Participation in IEA DSM ExCo meetings (OAs); Final report and task management report (OAs with inputs of NEs, AB); Task flyers – at the start and at the conclusion of the project (OAs); Communication with related IEA tasks and other projects (OAs).

Task Sharing and expected person hours

Subtask 1	DW	Ideate	TUE	National experts
total HOURS	420	20	0	0
BUDGET EURO	31500	1500	0	?

An additional budget of 20.000 is reserved for travel costs and outreach material

The Operating Agent (OA) will ensure project progress according to the timetable, deliverables, milestones and expected results and the professional, result-oriented implementation of the project in close collaboration with the national experts (NEs). The OA is also responsible for all reporting to the DSM ExCo. The Advisory Board (AB) will provide strategic overview and governance.

Task Management and Distribution of Responsibilities⁴

The Operating Agent (OAs) is responsible for the overall performance, time schedule, information transfer, reporting etc. of Task 25 following the Procedural Guidelines for the IEA DSM Programme.

The responsibilities of the OAs include:

- Taking care of the overall management of the task, including co-ordination, liaison between the subtasks, flow of information between the participants and communication with the Executive Committee;
- Providing a task status report to each ExCo meeting, the Final Report and the Task Management Report;
- Distributing the results of the work;
- Chairing the task meetings and setting the agenda. Assistance at each meeting will be provided by the participant from the country hosting the meeting;
- In her role as Subtask leader, the Operating Agent is responsible for the quality and the management of the work to be performed under the Subtask; including the preparing, editing, and organizing of Subtask deliverables, providing status reports on the progress made and convening and leading Subtask meetings as required;
- Performing additional services and actions as may be decided by the ExCo if provided with appropriate resources;
- Maintaining contacts with work related to this Task going on in other Implementing Agreements or in other international organizations; organizing other meetings as presented in the work plan.

⁴ Note that the responsibilities described here apply to other subtasks as well

Task 25 Operating Agents

Dr Ruth Mourik (DuneWorks, NL) and Renske Bouwknecht (Ideate, NL) are the two co-Operating Agents of Task 25, with Dr Ruth Mourik undertaking primary duties such as invoicing.

Each National Expert (NE):

- Will provide the subtask leaders with detailed reports on the results of the work carried out and all relevant information and data;
- Will give the best possible contribution to the content and reviewing of the draft reports of the Task and the subtasks;
- May organise one expert meeting and/or stakeholder workshop in his/her home country over the course of the task;
- Will contribute to the Task expert platform and provide case studies and country-specific input;
- Supports the Oas in disseminating the results of the work.

The participating countries will assign national experts (Nes) to Task 25 on their notice of participation.

Task 25 National Experts

- To be determined
- XX
- XX

The Advisory Board:

Will provide OAs with overarching strategic and governance advice and feedback (at least once a year in a face-to-face or online meeting set up by the OAs).

Deliverables

- D1: Advisory committee of stakeholders from ExCo, IEA, research, commercial, community, policy and end user sectors providing strategic guidance.

Other deliverables:

- Four half-yearly task status reports
- Three annual reports
- One End of term report (if applicable)
- One Final report (compilation of subtask deliverables)
- Task management report
- IEA DSM Spotlight articles
- Two Task flyers

Subtask 2: Identify proven and potential business models for energy services

Subtask number	2
Start date or starting event:	Month 1
End date of subtask	Month 20
Subtask title	Identify proven and potential business models for energy services in different countries, with special focus on (how to create conducive) market dynamics and policies in different countries.
Activity Type	Scientific and empirical inventory

Background to this Subtask

There are many energy service business models “out there” and often they are closely linked to existing market structures and policies. In other words, business models are often country and context specific. We will start with an inventory of different existing business models, both in the participating countries and also including global examples of successful business models. In the different participating countries we will analyse what business models exist, and what frameworks (market and policy) accompany them.

Activities

1. Identifying country specific suppliers, clients, and their stakeholder networks and establishing national advisory expert networks to continue working with throughout the task. These actors will receive frequent webinars, but also quite some face to face time and be the first to ask for relevant case studies. Members include policymakers in the field, end-user representatives, collectives, SME suppliers and receivers of energy services, academia, business developers, consultants, technology developers and NGOs in the field. All relevant expertise needs to be present, from economic to policy making.
2. Narrowing down the focus of both services, target groups and typology of business models in close cooperation with national experts and other relevant stakeholders.
3. Clarifying how the different parameters of success of business models and services will relate to each other in the analysis – economic profitability, scale of impact and real savings, business creation, growth rate, synergies with other values, adoption rate etc.
4. Developing a task specific typology or categorisation of business models and services for EE.
5. Developing an overview of existing energy service business models in the participating countries and their frameworks/ecosystems and how they meet and incorporate client needs.
6. Reviewing global existing business models and their frameworks/ecosystems with a clear focus on quantifying and qualifying effectiveness (e.g. amount of customers reached, market share, savings aimed for, other outcomes, ROI).

7. In-depth comparative analysis of at least 4 similar business models in different countries and at least 12 per country. Determining patterns, drivers and pitfalls.
8. Identifying key factors that make services (and their vendors) succeed in the participating countries through an in-depth analysis of country specific markets and policies for energy services and their influences on business models;
9. Organising regular country workshops with service providers and clients.
10. Creating a report with all the national examples, the best practices and the analysis including useful tips and tricks etcetera.

Description of activities and timing

Subtask 2	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24
2.1 Identifying relevant stakeholders and establishing national advisory expert networks												
2.2 Narrowing down the focus												
2.3 Clarifying parameters of successful business models and services												
2.4 Developing a typology of existing energy service business models												
2.5 Identifying existing business models and frameworks in participating countries												
2.6 reviewing global business models and services and frameworks												
2.7 In-depth comparative analysis												
2.8 Identifying key factors on national level												
2.9 organising regular workshops												
2.10 reporting results												

Task Sharing and expected person hours

Subtask 2	DW	Ideate	TUE	National experts
total hours	420	710	140	280
budget euro	31500	53250	11100	?

Deliverables

- D2: report with typology and description of existing services and business models in each participating country and their framework/ecosystem;
- D3: report with review of global business models and services in non-participating countries and their framework/ecosystem;
- D4: report with comparative analysis and key factors for success, including overview of success parameters to assess effectiveness of business models and services.

Subtask 3: Creating country specific business models and guidelines for upscaling

Subtask number	3
Start date or starting event:	15
End date of Subtask	24
Subtask title	Creating country specific business models and guidelines for upscaling.
Activity Type	Research and development and dissemination

Background to this subtask

When the key factors that make services (and their vendors) succeed have been identified in the different countries we will need to start applying this knowledge to help creating a mass market for energy services. This will be achieved through the co-creating of potential effective business models and services with national stakeholders, in addition we will contributing to the setting up of piloting activities in each participating country and define guidelines for policymakers to allow a more effective upscaling of proven business models and services.

Activities

- 1 Develop frameworks for potentially effective business models and services in co creation with national stakeholders, e.g. suppliers and clients. We will do so in face to face workshops, with the national experts and other relevant stakeholders.
- 2 Creating policy guidelines with necessary policies and strategies of different stakeholders, and their timing, to encourage market creation and mainstreaming of selected business models in participating countries
- 3 Contributing to the setting up of piloting activities in each participating country. This activity will be initiated on the basis of the lessons learnt that we would like to turn into practice. The aim is to support one or two relevant stakeholder in the participating country to set-up a business model and service for EE based on the key success factors identified in this task, and support the set up of a pilot or deployment strategy for this service and business model.

Description of activities and timing

Subtask 3	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24
3.1 Developing potentially effective business models/services for each country												
3.2 creating policy guidelines/ roadmaps for policy makers and stakeholders												

3.3 contributing to setting-up piloting activities													
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Task Sharing and expected person hours

Subtask 3	DW	Ideate	TUE	National experts
total hours	300	300	100	240
budget euro	22500	22500	6650	?

Deliverables

- D5: report with repository of potentially effective business models and services in each country
- D6: Country specific reports identifying potential barriers and opportunities for upscaling or mainstream selected potentially effective business models with guidelines/roadmaps for different stakeholders, i.e. policy makers, EE service suppliers and business model developers.

Subtask 4: Dissemination and expert engagement

Subtask number	4
Start date or starting event:	1
End date of subtask	24
Subtask title	Dissemination and Expert engagement
Activity Type	Networking and dissemination

Background to this subtask

This subtask is about creating effective means to disseminate, engage, collaborate and share learnings with the experts and stakeholders from participating or contributing countries and the wider community.

It is both important to disseminate the findings about effective business models and energy services for EE as widely as possible to contribute to a market uptake of EE services, though without the country specific recommendations and foci; and to learn as much as possible from other stakeholders and countries and collect as many relevant best and bad practices as possible.

The connection to existing IEA expert platforms and dissemination channels is aimed to create a learning culture and social network among the experts from various countries, disciplines and stakeholder groups and to foster collaboration within and outside this Task.

Activities

We will disseminate, engage, collaborate and share learnings through two activities:

1. Set up a stakeholder communication and engagement plan
2. Traditional dissemination to external stakeholders and academia
3. Creating and facilitating a good connection to existing digital and off-line expert platforms within the IEA, e.g. the expert platforms of Tasks 16, 24 and other relevant tasks and the expert platforms for other Implementing Agreements. This connection is meant to provide a 'matchmaking' service to enable trans-national, inter-disciplinary teams of experts and end users to collaborate and learn.

Description of activities and timing

Subtask 4	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24
4.1 Design of a Stakeholder Engagement Plan												

Final budget and hour breakdown overview

Subtask 0	DW	Ideate	TUE	National experts (in this ST exco members)	
total hours	38	30	0	4	
budget euro	2850	2250	0	Depends on national rules	
Subtask 1	DW	Ideate	TUE	National experts	
total HOURS	420	20	0	0	
BUDGET EURO	31500	1500	0	Depends on national rules	
Subtask 2	DW	Ideate	TUE	National experts	
total hours	420	710	148	280	
budget euro	31500	53250	11100	Depends on national rules	
Subtask 3	DW	Ideate	TUE	National experts	
total hours	300	300	100	240	
budget euro	22500	22500	6650	Depends on national rules	
Subtask 4	DW	Ideate	TUE	National experts	
total hours	316	316	0	240	
budget euro	23700	23700	0	Depends on national rules	
Total Task hour investment	1194	1076	248	524	
Additional budget for travelling + outreach materials					20000
TOTAL TASK BUDGET	89550	80700	11100 + 6650 in kind		208000

Task 25 total budget

Contribution per country total	Contribution per country total
4 countries	5 - 10 countries
Euro 52.000	Euro 52.000
24 months duration	36 months duration

The contribution per year is irrespective of the number of participating countries because of the tailored approach of this task, which implies that we need a fixed number of hours per year per country for each task, except the task definition subtask. This task also benefits from the maximum number of to be identified additional experts such as professional suppliers, clients, policy makers (in addition to the national experts) we can engage to draw on their learnings. Not all of them may be part of participating countries, thus in-kind contributions of experts and countries to specific sub-tasks will be welcome.

The European Copper Institute will contribute in kind to subtask 1 with number of hours equivalent of the yearly task budget.

Task 25 Task sharing overview

In addition to the cost sharing to the OA budget, each country will be required to:

Provide funding for national expert time of approximately 524 person-hours months total. This includes:

- Undertaking part of the research and or writing work for selected parts of task 0 to 4
- Attending up to six meetings/workshops of the Task and preparing for them
- Hosting two country specific meeting/workshop during the lifetime of the Task
- Carrying out the national dissemination activities, plus
- Actively engaging in the expert platform.

Participation may partly involve funding already allocated to a national activity, which falls substantially within the scope of work to be performed under this Task.

Risk Register

The early identification and management of potential risks is one essential element of our Project Management system. As such, the possible risks to the successful completion of this project have been assessed and mitigation approaches identified as shown below.

Risk	Likelihood of Occurrence	Impact	Risk Category	Risk Mitigation Measure(s)	Risk Category, Mitigation
Lack of full range of requisite expertise, with which to deliver the required services	Low	High	Medium	Composition and make-up of Task Experts; Access to wider range of specialists and support staff within all the Project Participants; Knowledge of and access to range of key stakeholders, within the wider industry.	Low
Inability of Operating Agent and Task Experts to work together	Low	High	Medium	Prior working relationships and interactions; Regular reporting to the Executive Committee of any issues arising.	Low
Sudden unavailability or withdrawal of Task Experts	Medium	High	High	Participants aware of level of commitment required, and decision to participate in project indicates that sufficient resources will be made available.	Medium, in short term, reducing to low, in the medium term.
Sudden unavailability of Operating Agents, other key staff member(s)	Low	Medium	Medium	Ability of Duneworks to re-allocate staff from wider complementary skill pools	Medium, in very short term. Low, in short to medium term.
Inability to access requisite information on consumer behaviours and context-specific case studies	Medium	High	High	Composition and make-up of Project Participants to be developed such as to give a full and balanced coverage of consumer behaviours, policies and programmes aimed at behaviour change. All Participants will be asked to provide National Data for the project.	Low
Project delivery timescale over-runs	Low	High	Medium	Formal Project Management procedures; Regular reporting to the IEA DSM ExCo. Clearly identified Operating Agent and escalation procedures.	Low

Cost over-runs, particularly on expert platform and data repository (if IEA DSM website proves insufficient)	High	High	High	Formalised Project Management and review procedures; Project to be performed on fixed price total contract basis; Operating Agents to find additional financing for software applications, if needed.	Low
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Appendix

Appendix 1: The need for this Task

The shift to energy services

Business models for energy services

In this task, when we speak of an energy efficiency service we refer to a service with a focus on an outcome related to energy efficiency or DSM. Again, to an end user, this energy efficiency or DSM outcome may not be valued as such, but its other accompanying benefits might be more valuable, e.g. the increase of comfort, a lower bill. Therefore, to a service provider, it is necessary not only to have a thorough understanding of the consumer (end user) perspective, context and needs but also to collaborate with this end-user in order to co-produce value. In other words, a shift from products to services means a shift in orientation from producer to consumer.

This shift to selling outcomes rather than products is extremely challenging. It requires new ways of working, communicating, interacting, planning and delivering continuous and progressive value to customers. Some business models for energy services are very successful on a small scale, in particular when tailored to the needs of the end-users/clients and developed in a participatory process with the end-users. However, to significantly contribute to the necessary energy targets on a national and international level, to facilitate the creation of a new market for energy services and in particular to support the creation of a better match between demand and supply of energy on a national level, these bottom-up focused services need to be up scaled and mainstreamed. However, many energy services still face an acceptance and uptake problem when they are to be up scaled and mainstreamed. Successful value propositions not only need to integrate the needs of people and match them to the possibilities of technology, but also match the requirements for business success. In other words, there is an urge to understand energy services and in particular the systems in which they are deployed and get a grip on the right building blocks for successful business used to create, propose and use these services.

We will explicitly focus on business models and their context in this task. This analysis in context is important because:

Business models are a means to bring new technologies to the market (Zott et al., 2011). We already stated that a technology alone would not do the trick, business models are needed to provide meaningful value propositions to the end users and to create value for the involved organizations (focal firm and its partners). Business models are part of a socio-technical system or an ecosystem under change. According to Johnson and Suscewicz (2009) these systems consist of four main elements: 'an enabling technology, a business model, a market adoption strategy and a favourable governmental policy' (Johnson and Suskewicz, 2009: 3). If we want to create markets for clean tech products we need to consider all these elements. This is also acknowledged by Boons et al. (2012) who consider sustainable business models as the 'link between individual firms and the wider production and consumption system in which it operates' (Boons et al., 2012: 1). Also, customer

needs for services are often better addressed by networks of interacting organizations – focal firms, suppliers, competitors, partners, and other stakeholders. Such networks act as business ecosystems in which companies' strategies are closely interdependent, competition goes hand in hand with cooperation, and no single firm can succeed without relying on resources and capabilities controlled by others. Thinking in terms of ecosystems is increasingly important for large corporations worldwide, and crucial to the strategic agenda of the partner companies. [Cambridge service alliance]

Thus, **if we want to change our current energy system we need to not only take business models into account but also, we need to consider current energy markets infrastructures, regulation and support mechanisms in place (both for old and new technologies) since these directly influence the business model opportunities in a country** (e.g. Huijben and Verbong, 2013). For example the recent Energy Efficiency Directive created a situation where utilities and energy companies face a big change in their business paradigm from selling energy to selling services. More and more communities are setting up cooperatives to create a local market for renewable energy, with accompanying business models. Often these business models face great problem with the regulatory national systems. All these system changes and issues need to be understood to understand the uptake of EE services.

In different countries different systems exist, and cross-cultural learning and experimentation are of main importance for business model development aimed at mass uptake of EE. Since business models are embedded in fast changing and complex environments, they will change over time and cannot be fully known from the start (McGrath, 2010; Mullins and Comisar, 2009). Therefore, business model learning within and between projects is of main importance (McGrath, 2010). This is what this task aims to do as well by comparing energy service business models from various countries. Another important point to make here is that new technologies and business models often cannot directly compete under existing energy market conditions. Therefore, a protected space is needed to nurture the new business models so that they can be further developed and scaled up in a later phase (Geels and Schot, 2010). Such protection can have the form of financial support or exemption from existing legislation. In this task, we will study whether this is the case for the various business models under development and provide related policy recommendations.

Why is there a need for this task?

As discussed before there are several premises that underlie this task:

1. We need energy services to mass market energy efficiency and deal with changing market structures and new regulations.
2. The *what's in it for me* of these goods and services is often insufficiently tailored to the actual end-users; The suppliers of these goods and services insufficiently develop and or use business models that take the client or customer perspective as a starting point and consequently the business models do not sufficiently meet the needs of their target users. As a result the technocratic approach, with a multitude of goods and products for energy efficiency (e.g. smart

meters, smart grid technologies, efficient building systems) faces an acceptability problem on the side of end-user;

3. Even when suppliers are able to deliver value propositions valued by clients and or customers, and which are being supported with viable business models, they still face barriers on a national level and related to behavioural issues⁵ which impede market uptake;
4. There is therefore a dire need for healthy national systems in which viable business models can be created, tested and flourish.

Ad 1

We need energy services to mass market energy efficiency and deal with changing market structures and new regulations

Over the years, we have learned that Energy Efficiency is a diverse and therefore complex proposition that is very difficult to grasp. Many end-users -households, house owners, managers of businesses etc.- intent to behave, manage, live or purchase more energy efficient, whether consciously or not. Despite their intentions, many of them still have great difficulty identifying the opportunities they have to do so, let alone they're able to decide if and which solution to choose or how to change their behaviour. In order to solve this problem, it is not enough to provide a technology as a solution. In order to provide an energy efficiency service as a clear solution to a perceived need, the service provider needs to learn how to perform a business that provides outcomes rather than products.

Ad 2

The *what's in it for me* of these goods and services is often still insufficiently tailored to the actual end-user: The technocratic approach, with a multitude of goods and products for energy efficiency (e.g. smart meters, smart grid technologies, efficient building systems) faces an acceptability problem on the side of the end-user.

There are many value propositions/energy services and accompanying business models out there and saving money on energy costs seems an easy proposition, but most of these energy efficiency services face great difficulty finding entrance into mass market. Some of them succeed in pilots, though experience great difficulty in being mainstreamed or replicated in other contexts (ecosystems). Acceptance and acceptability of many innovative services and smart technologies thus is not present on a large scale. And despite various attempts to introduce pull elements, such as labels, certification of products and providers, the present approach still is very much a push approach.

Customers (house owners and business owners) need (hire) energy services in order to get a job done. For example, a business owner doesn't buy energy management system just to know his energy use. More so, he buys a solution that helps him to get a hold on his expenses, or maybe even

⁵ We will work in close cooperation with Task 24 to make full use of the knowledge on behavioural issues impeding on the uptake of EE and DSM value propositions.

to be seen as a real business professional. To him, a valuable –energy- management system therefore consists of more benefits than the energy related ones sec.

Most energy services still are designed from a technical perspective and as a result the services proposed are insufficiently tailored to their needs and thus unsuccessful. When the users' perspective is centre stage right from the start developing services, chances raise users will experience the services as valuable.

Therefore, we need to understand what Unique Buying Reasons users have, as well as what they perceive as valuable, instead of the current focus on the Unique Selling propositions and technical possibilities (Nilsson et al 2012). Value can be financial, but may also be wellbeing, status, comfort, health, knowledge or skills (IEA 2012). To design, develop and deliver services that get the end users job done, there is an urge that service provider understands their needs and motives and their context and make Energy Efficiency fit. We will build strongly on work done in Task 24 on these specific behavioural issues.

Ad 3

The potential suppliers of these goods and services insufficiently know how to develop viable business models that meet the needs of their target users.

There are many possible ways to provide services on energy efficiency: new forms of cooperation; alternative 'roles' for end users or new revenue models. Unfortunately, many suppliers of products and services that can provide energy efficiency are not trained to put together a viable business model. For example energy utilities and energy companies that are potential big suppliers of energy efficiency services (given recent regulation such as the Energy Efficiency Directive that demands that these companies realize substantial energy efficiency with their clients) are in dire need for good business models. In addition many of these stakeholders so not know how or why to cooperate with stakeholders within the value chain, or fail to use the right channels to bring the propositions to their presumed customers. As a *result, potentially* great ideas and propositions never take off in the marketplace. Apart from some standardized cases and for some larger users who have the capacity to procure services (ESCO and EPC) such as is investigated in IAE DSM Task 16.

Therefore, in order to create the right instruments or measures to create a market or stimulate innovation, we need to gain understanding of multiple ways to create sustainable business models.

Ad 4

Even when value propositions are being supported with (possible) viable business models, barriers on a national level may inhibit market uptake

Barriers on a national level may relate to policy and regulatory frameworks that are not functioning in favour of certain business models, or infrastructural issues hindering the use of certain technologies that are part of an energy service. The market structure also can be a barrier as it inhibits competition or innovation. In addition we need to gain understanding of the roles of all the members of the many different national systems in different countries, the way they interact as well as the different types of value they exchange. New developments also need to be assessed for they

may be drivers for energy efficiency business models and energy services. For example, energy companies and utilities are more and more focusing on energy services and trying to find viable business models. They face a big change in their paradigms from selling energy to providing solutions (due to e.g. the EE Directive). Therefore, there is a dire need for understanding how to support the creation of (inter) national systems that in turn can help create viable business models.

When knowing the impediments and potential drivers, we can make a start by working on them and help the creation of circumstances for a healthy energy service national system. If we do so, we can:

- Make a real business of energy services on national scale;
- Learn to work with market dynamics (e.g. banks);
- Create demand from clients and thus new markets for energy services;
- Help promising innovative energy services (not only software but including technologies) penetrate the market;
- Meet energy targets on (inter) national level;
- Support a better match between demand and supply of energy on national level;
- Transform the energy system.

Appendix 2: Preliminary quick scan analysis of interested countries

Below you find an overview of a first quick scan of relevant DSM developments in interested countries and the way this task sets out to support these developments.

Task 25 and Austrian DSM Developments and priorities

In the DSM IA Annual report it is mentioned that⁶ energy efficiency plays a vital role in Austria's energy strategy and energy research strategy. The vision of the energy research strategy puts this further and formulates a share of 85% of renewables as a goal for 2050. This will only be possible through a massive increase of energy efficiency and reduction in consumption. Austria's government submitted a draft energy efficiency law in early 2013 in order to implement the European energy Efficiency Directive. However, the bill didn't get the necessary 2/3 majority and was put on hold until after the election of the federal government in autumn 2013. The new government has to take it up again in 2014. A second development is that with the "Smart meters Regulation" of April 2012, the Roadmap for Smart Metering in Austria is set. By 2015 15% of customers are to be equipped with smart meters, by 2017 17% and by 2019 95%. The regulator called e-control specified minimum technical requirements, but some issues like privacy issues, data management and ownership of data are still unsolved, which might have a clear impact on business models might look like for Austria. Finally, the Technology Platform "Smart Grids Austria" is developing a "Technology Roadmap Smart Grids 2020" with the short-to medium-term time horizon to 2020. The stakeholder process and the completion of the roadmap are planned for autumn 2014.

Given the Austrian context sketched above our task will aim at delivering results to Austria that support the issues described above. In discussion with Austria the following issues and topics will be focused on in this task when we identify and analyze relevant energy service value propositions and their business models:

The focus will be on energy efficiency and energy savings, maybe integrating the use of renewable energies at the demand side. Load shifting is not going to be part of the focus for Austria, it is deemed quite a different topic relevant mainly for larger industries and has been dealt with in other projects.

Two segments or key target groups to focus on will be companies and communities/cities. Companies are of interest in relation with the new uptake of the EE law and several service related aspects. Communities or cities need new solutions and BM for smart city developments (integrating various technologies and aspects on a district scale). And there is a new need to secure space heating in cities with district heating due to the fact that the low electricity prices led to a CHP crisis in Europe, which is a major source of heat for the DH systems.

Households are already quite well covered for Austria (although there is still a lack of functioning business models).

⁶ Text taken integrally from IEA DSM IA Annual Report 2013

As stated before, business models in energy services highly depend on the ecosystem in which they function. Therefore, this task will also focus specifically on measures and policies needed to be created and flourish. For Austria, the main areas of interest are:

- Business models aimed at making industries and businesses to participate: energy management systems ISO 50001, Smart grids and uptake of new technology, behavior change issues, Re-Commissioning. Energy audits or advice, depending on size.
- Separate BM for SMEs with rather small energy bills and little revenue possibilities (-> highly standardized BM)
- Energy efficiency services by energy utilities. Business models that support the obligations for energy companies to save energy at their customers.
- Cities: BM for smart districts, viable smart grid based services (customer needs, markets, other actors?); BM to provide warm homes (heat for district heating systems, integrated approach with decentralized energy sources and measures on the demand side (renovation, heating system change, EE measures)).

Task 25 and Belgium DSM Developments and Priorities

In Belgium, although DSM has not been a hot topic for the federal Government in 2013 several developments are taking place and themes have been identified that form the context for our task. We appreciate that the federal system the Belgian energy market is very complex, with actors and responsibilities at different levels. This will have an impact on the possibilities to develop new business models in the different parts of Belgium.

Task 25 can explicitly support these developments through an explicit focus on:

1. Value propositions and their business models aimed at increasing security of supply;
2. Value propositions and their business models focusing on smaller grid users, operating either through an aggregator or as grid user directly, for a limited power volume (50 MW);
3. Value propositions and their business models aimed at the uptake of actions and technologies supporting a new balancing system to allow flexibility both at transmission and distribution level, in order to avoid local imbalances;
4. Business models aimed at the uptake of actions and technologies supporting the reduction of final demand thanks to automatic and manual actions, in the case of predicted electricity shortfall;
5. Business models aimed at the uptake of actions and technologies supporting the smooth consumer acceptance of smart metering devices, as preparation for a full roll out in the future.

At the level of ecosystems, this task focuses on:

1. Policies and measures supporting a new balancing system to allow flexibility both at transmission and distribution level,
2. Policies and measures aimed at the smooth acceptance of smart grid technologies

Task 25 and Finnish DSM Developments and Priorities⁷

The Finnish government has decided to implement energy efficiency measures for the period between 2009 and 2020 to enforce the objectives of Long-Term Climate and Energy Strategy (2008) and of the Government Foresight Report on Long-Term Climate and Energy Policy (2009). The measures comprise energy efficiency agreements with industry, services, energy production, municipalities, transportation, residential buildings, and agriculture and forestry. The goal is to enhance final energy consumption by 37 TWh from which electricity comprises 5-6 TWh. In order to avoid complexity the network regulation in Finland is biased to make network owners favor network investments instead of demand side management, distributed generation and storage. In some rural network areas this combination may lead to situations where network strengthening and cabling with high costs is applied where demand side resources and their management combined with smart network automation could do the same for much smaller costs to the consumers. Research and debate regarding this issue has not yet properly started, but in the near future needs may emerge to focus on this regulatory challenge. Relevant stakeholders for results from Task 25 in Finland would be electricity retailers, HEMS and BEMS vendors/developers, aggregators of Demand Side Flexibilities, provider of ICT services for the actors of the competitive electricity market, DSOs, Universities.

In Finland main areas of energy efficiency policy themes relevant to Task 25 are listed below, with a translation to what Task 25 could focus on (a selection of) the following themes and issues for Finland:

1. Value propositions and their business models for energy services that explicitly focus on use of renewable energy sources, Integration of flexible Demand Side Resources and technologies such as CHP to energy markets and grids, DR services for the competitive market actors, communication services and data models for the integration and integration with the automation and ICT systems and services for the energy market actors and the energy consumers;
2. Value propositions and their business models for energy services that explicitly focus on energy renovations of residential buildings, labeling, EBD, ESD, Eco design;
3. Value propositions and their business models for energy services that focus on integration of Demand Side Responses into the ESCO business and the monitoring of energy performance;
4. Value propositions and their business models for energy services that focus on Smart metering based DSM and Demand Response (DR), including Time of Use (yoU) and load control to enable more demand response, HEMS and BEMS based DSM (mainly DR);

At the level of the ecosystem, this task focuses on:

1. Policies and measures that aim at supporting Energy efficiency agreements, energy auditing scheme, energy efficiency investments in industry etc.
2. Policies and measures that focus on information activities improving consumer awareness of energy consumption, giving consumers better access and engagement to the electricity market,

⁷ Based on information from the IEA DSM Annual report 2013 and a personal discussion with the Finnish Exco member

3. Policies and measures that enable easy exchange of the electricity retailer, forecasting responses, predictability of responses, use power based tariff structures hourly measurement and cost minimization of customers;
4. Policies and measures that focus on consumer acceptance and trust, behaviour change and including a focus on indirect benefits, such as health aspects. Energy saving by reducing ventilation has already caused large scale health problems in Finland;
5. We will also explicitly focus on relevant issues to legal requirements on how to implement data security and privacy (similar to Austria).

Task 25 and Dutch DSM Developments and Priorities⁸

The Dutch energy policy is strongly interrelated with the climate change policy and concentrates its efforts in three areas: increase of renewable energy, improved energy efficiency and security of supply. In 2010 renewable energy accounted for just 4% of total Dutch energy consumption. In 2020 this percentage must have risen to 14. Innovation is necessary to enable renewables to compete with grey energy in the long term (2050 onwards). In November 2013 two important policy papers were published: the *Energy Agreement for Sustainable Growth* and the *Climate Agenda: resilient, prosperous and green*. Task 25 will make sure its activities are in line with issues deemed relevant in these two documents. The *Energy Agreement for Sustainable Growth* (Energieakkoord voor duurzame groei) aims to stimulate a saving in final energy consumption averaging 1.5% annually, an increase in the proportion of energy generated from renewable sources from 4.4% currently to 14% in 2020, and 16% in 2023; at least 15,000 full-time jobs. The *arrangements for saving energy* focus both on the built environment and on increasing energy efficiency in industry, agriculture, and the rest of the commercial sector as well as for mobility and transport. The package of measures will focus on the end-user and therefore not on the supplier. Other relevant developments are taking place in the Netherlands. First there is the aim to provide all homeowners, landlords, and tenants who do not yet have an energy label with an indicative label for their home in 2014 and 2015, based on a uniform method applying to the whole country. Furthermore the tax exemption aimed for cooperatives of individuals who own decentral generation is a development with potential impact on the development of new business models.

For the Netherlands Task 25 can therefore probably best focus on the built environment and on energy efficiency in industry (SMEs) and focus on (a selection of) the following themes and issues:

1. Value propositions and their business models for energy services aimed at saving energy or making houses more energy efficient at the level of owners occupiers, and e.g. using innovative financing options with loans being repaid via the energy bill, or focusing on energy performance certificates connected to the energy label to be introduced in 2014-2015;
2. Value propositions and their business models for energy services aimed at saving energy at business level, in particular supporting the implementation and enforcement of the

⁸ Based on information from the IEA DSM Annual report 2013 and a personal discussion with the Dutch Exco member

Environmental Management Act [Wet milieubeheer] – with an obligation to implement energy-saving measures with a cost-recovery period of five years or less;

3. Value propositions and their Business models for energy services aimed at increasing the uptake of the system for Energy Performance Assessment (“EPA”) at business level,
4. Value propositions and their Business models aimed at energy services to reduce energy consumption and CO2 emissions with the horticulture business, and traffic and transport, which fit the green agenda and its twelve key areas;
5. Value propositions and their Business models for energy services that aim at the uptake of *decentralised generation of renewable energy* by people themselves and by cooperative initiatives;
6. Value propositions and their Business models for energy services that aim at the uptake of demand-side management actions aimed at shifting the pattern of demand, including storage.

At the level of the ecosystem, this task focuses on:

7. Policies and measures that stimulate the using innovative financing options with loans being repaid via the energy bill, or focusing on energy performance certificates connected to the energy label to be introduced in 2014-2015
8. Policies and measures aimed at supporting the parties to the Voluntary Energy Saving Agreement for the Rented Sector [Convenant Energiebesparing Huursector] that have committed themselves to ensuring an average of Label B for corporations and a minimum of Label C for 80% of private landlords by 2020.
9. In the business models aimed at businesses we will explicitly focus on impact of the business model on the competitiveness of energy-intensive businesses, on the creation of employment, and the achievement of climate objectives in a cost-effective manner
10. Policies and measures aimed at information provision, awareness-raising, reducing the burden, and funding support

Task 25 and Swedish DSM Developments and Priorities⁹

Demand side management related research and development are of great interest to Sweden, including the more technical aspects as well as behavioral/social science issues related to load level and load shape (energy efficiency as well as flexible use of renewables). The Swedish government is implementing many policy innovations to stimulate DSM, e.g. the tax credit for micro-producers of renewable electricity. Smart grids are a theme of strong interest for Sweden. The Swedish government has appointed the Swedish Coordination Council for Smart Grid to develop a road map (for the years 2015-2030), with recommendations on how to stimulate the deployment of smart grids. Several research lines are undergoing, and Task 25 will aim at conducting its research and development in line with the findings from these researches, and their focus.

Task 25 can therefore focus on the following issues and themes:

⁹ Based on information from the IEA DSM Annual report 2013 and a personal discussion with the Swedish alternate and Exco member

- Business models for energy services that focus on energy efficient and or sustainable buildings or even urban areas and that explicitly take into account the inhabitants and their lifestyles related to energy use (and that contribute for example to improved knowledge of customer expectations).
- Business models for energy services that focus on solar energy, district heating and cooling
- Business models for energy services that focus on efficient and flexible solutions for future sustainable energy systems
- Business models for energy services that focus on the use of ICT and Design to make energy efficiency and DSM easy and attractive
 - When identifying and analysing relevant models for Sweden Task 25 will target a selection of these segments (individual/communities/companies (owners/facility manager)/buildings, association (branches) and both high and low energy users.

Task 25 and Swiss DSM Developments and Priorities¹⁰

The Swiss energy policy is in an interesting and turbulent phase. The Swiss government has decided to phase out nuclear power and is developing a new energy strategy. Several goals have been set, including an important role for demand-side management, expansion of hydropower and new renewable energies, and increased energy savings (energy efficiency). Very ambitious aims have been set with energy consumption per capita to be reduced by 43% and the electricity consumption by 13% by 2035 compared to 2000. An accompanying development is that the Federal Council intends to encourage the economical use of energy in general, and of electricity in particular through mechanisms such as enhanced efficiency measures, e.g. minimum requirements for appliances (best practice, energy label) and other regulations, bonus-malus mechanisms (efficiency bonus), measures to raise public awareness (strengthening of the program SwissEnergy), incentives to retrofit the building envelope, and measures regarding the production of heat. Switzerland furthermore aims to create a power grid that will be optimally integrated into the European grid and the future European 'supergrid'

Task 25 will take account of this specific Swiss context and can focus her work on the following issues and themes:

- Business models for energy efficiency services aimed at creating an uptake of energy efficiency home-use appliances
- Business models for energy efficiency services aimed at awareness rising, information, consulting, (further) education, quality control, and networking and promotion in the fields of energy efficiency and renewable energy.
- Business models for energy efficiency services aimed at retrofitting buildings and install efficient and renewable heating systems.
- Business models for energy efficiency services aimed at the uptake of more energy efficient cars

¹⁰ Based on information from the IEA DSM Annual report 2013

- Business models for energy efficiency services aimed at the level of smart cities and municipality level (e.g. the 2000 Watt society).
- Business models for energy efficiency services aimed at optimal interaction between production, storage and (flexible) end-users with special attention to the uptake of energy efficient appliances and intelligent steering of consumption through smart meters and smart grids and the economic, psychological, social and environmental issues relating to the extraction, distribution and use of energy.

Appendix 3 Quick scan for analyzing the PV business model

To analyse the selected business models we will build on the Quick scan for PV business model development as developed for the IEA_PVPS Task 1 by Prof. Geert Verbong, PhD candidate Boukje Huijben and Otto Bernsen, RVO the Netherlands. See below for an example of the type of templates.

Business model type	Description
Solar Shares	Groups of residents financing a PV project together
Collective buying	Groups of residents collectively order solar panels
Utility scale power producer	Large scale PV project, managed as traditional large scale energy plant
Turnkey	Projects delivered turnkey to end user (B2B or B2C)
Built-own-operate rooftop PV	Turnkey projects delivered (B2B, B2C), end user is not the owner of the system but pays a monthly fee or pays per kWh consumed
Construction and installation service provider	Services for construction and installation (roof mounting, electricity connection)
Value added service provider	Any other value adding service like project development, insurance or consultancy
Virtual power plant	Control of supply and demand in order to deal with peaks
Multiple Value	Combined functionality provides added value, e.g. BIPV, desalinization of water, electrical vehicle charging, water cleaning etc.

PV business model types (based on Schoettl and Lehmann Ortega (2010) and Huijben and Verbong (2013)).

Below is a list of questions for each of the business model canvas model building blocks, based on Huijben & Verbong (2013). This list is preliminary and will be subject to change.

- Key partners
 - Who are the main project partners and what is their role in the creation of your value proposition?
 - What parties affect the delivery of your product/service but are not direct project partners? (Think of trade associations, network clubs etc.)
 - Is your organization influenced by the activities of a non-profit organization, in what way? (E. Non-profit)
- Key activities
 - What are the core activities required to realize your value proposition?
 - What activities are carried out by your organization, and how do these relate to each other?
 - What activities take up most of the time?

- What products/services are outsourced by your organization?
- Who is or are responsible for the delivered work?
- Key resources
 - What resources are necessary to secure your proposition?
 - How do these necessary resources relate to what resources you have in-house?
- Value proposition
 - What problem are you trying to solve for the customer with your product/service?
 - What does your organization offer for its clients/participants?
 - What benefits are there for the customer when they use your product/service?
 - What additional value has your product/service for the customers compared to competitors?
- Customer relationships
 - What kind of relationships do you have with your different customers and how were these relationships formed?
 - What frequency do the relationship need to be maintained and over what time frame?
 - How can potential clients come into contact with your organization and how do you approach potential customers?
- Channels
 - What channels prove most effective to reach customers what are the costs to do this? (for example, ordering online is cheap but not very effective)
 - Why has your organisation chosen for precisely these forms?
 - How are customers helped in their choice of products/services of your organization
 - How will your product/services be supplied to the customer?
 - Does the customer have control within your organization?
- Customer Segments
 - What are the customer specific characteristics?
 - For which client or type of customer is the service meant?
 - Is the actual client the same as the targeted client? If no, what caused this difference?
- Cost structure
 - What costs does your organization have?
 - What core activities/resources are the largest cost items in your organization?
 - What are priorities related to your spending patterns?
- Revenue Streams
 - To what extent are your fees covered by direct compensation from the customer and what percentage is covered by (in-) direct subsidy schemes?
 - Which funding or subsidy schemes could you access and which ones do you use? Why?